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Abstract

This document lists 20323 symbols and the corresponding $\text{\LaTeX}$ commands that produce them. Some of these symbols are guaranteed to be available in every $\text{\LaTeX} 2_{\epsilon}$ system; others require fonts and packages that may not accompany a given distribution and that therefore need to be installed. All of the fonts and packages used to prepare this document—as well as this document itself—are freely available from the Comprehensive $\text{\TeX}$ Archive Network (<https://www.ctan.org/>).

Contents

Contents	1
1 Introduction	16
1.1 Document Usage	16
1.2 Frequently Requested Symbols	17
2 Body-text symbols	18
Table 1: L ^A T _E X 2 _ε Escapable “Special” Characters	18
Table 2: Predefined L ^A T _E X 2 _ε Text-mode Commands	19
Table 3: L ^A T _E X 2 _ε Commands Defined to Work in Both Math and Text Mode	19
Table 4: $\mathcal{A}\mathcal{M}\mathcal{S}$ Commands Defined to Work in Both Math and Text Mode	20
Table 5: Non-ASCII Letters (Excluding Accented Letters)	20
Table 6: textgreek Upright Greek Letters	20
Table 7: Letters Used to Typeset African Languages	21
Table 8: Letters Used to Typeset Vietnamese	21
Table 9: Punctuation Marks Not Found in OT1	21
Table 10: pifont Decorative Punctuation Marks	21
Table 11: fontawesome5 Decorative Punctuation Marks and Typographic Symbols	22
Table 12: tipa Phonetic Symbols	22
Table 13: tipx Phonetic Symbols	23
Table 14: wsuipa Phonetic Symbols	24
Table 15: wasysym Phonetic Symbols	25
Table 16: phonetic Phonetic Symbols	25
Table 17: t4phonet Phonetic Symbols	25
Table 18: semtrans Transliteration Symbols	25
Table 19: Text-mode Accents	26
Table 20: tipa Text-mode Accents	26
Table 21: extraipa Text-mode Accents	28
Table 22: wsuipa Text-mode Accents	28
Table 23: phonetic Text-mode Accents	29
Table 24: metre Text-mode Accents	29
Table 25: t4phonet Text-mode Accents	29
Table 26: arcs Text-mode Accents	30
Table 27: semtrans Accents	30
Table 28: ogonek Accents	30
Table 29: combelow Accents	30
Table 30: wsuipa Diacritics	31
Table 31: textcomp Diacritics	31
Table 32: marvosym Diacritics	31
Table 33: textcomp Currency Symbols	31

Table 34:	marvosym Currency Symbols	32
Table 35:	fontawesome5 Currency Symbols	32
Table 36:	wasysym Currency Symbols	32
Table 37:	ꝀA2e Currency Symbols	32
Table 38:	teubner Currency Symbols	32
Table 39:	tfrupée Currency Symbols	32
Table 40:	eurosym Euro Signs	33
Table 41:	fourier Euro Signs	33
Table 42:	textcomp Legal Symbols	33
Table 43:	fontawesome5 Legal Symbols	33
Table 44:	cclicenses Creative Commons License Icons	34
Table 45:	ccicons Creative Commons License Icons	34
Table 46:	textcomp Old-style Numerals	34
Table 47:	Miscellaneous textcomp Symbols	34
Table 48:	Miscellaneous wasysym Text-mode Symbols	35
3	Mathematical symbols	36
Table 49:	Math-mode Versions of Text Symbols	36
Table 50:	logix Math-mode Versions of Text Symbols	37
Table 51:	logix Basic Operators	37
Table 52:	cmll Unary Operators	37
Table 53:	Binary Operators	37
Table 54:	$\mathcal{AMS}$ Binary Operators	38
Table 55:	stmaryrd Binary Operators	38
Table 56:	wasysym Binary Operators	38
Table 57:	txfonts/pxfonts Binary Operators	39
Table 58:	mathabx Binary Operators	39
Table 59:	MnSymbol Binary Operators	39
Table 60:	fdsymbol Binary Operators	40
Table 61:	boisik Binary Operators	41
Table 62:	stix Binary Operators	42
Table 63:	mathdesign Binary Operators	43
Table 64:	pdfMSym Binary Operators	43
Table 65:	cmll Binary Operators	44
Table 66:	shuffle Binary Operators	44
Table 67:	resmes Binary Operators	44
Table 68:	logix Logical Operators	44
Table 69:	ulsy Geometric Binary Operators	44
Table 70:	mathabx Geometric Binary Operators	45
Table 71:	MnSymbol Geometric Binary Operators	45
Table 72:	fdsymbol Geometric Binary Operators	46
Table 73:	boisik Geometric Binary Operators	47
Table 74:	stix Geometric Binary Operators	47
Table 75:	logix Geometric Binary Operators	48
Table 76:	halloweenmath Halloween-Themed Math Operators	52
Table 77:	stix Small Integrals	53
Table 78:	stix Small Integrals with Explicit Slant	53
Table 79:	Variable-sized Math Operators	54
Table 80:	$\mathcal{AMS}$ Variable-sized Math Operators	54
Table 81:	stmaryrd Variable-sized Math Operators	54
Table 82:	wasysym Variable-sized Math Operators	55

Table 83:	mathabx Variable-sized Math Operators	55
Table 84:	txfonts/pxfonts Variable-sized Math Operators	56
Table 85:	esint Variable-sized Math Operators	57
Table 86:	bigints Variable-sized Math Operators	58
Table 87:	MnSymbol Variable-sized Math Operators	58
Table 88:	fdsymbol Variable-sized Math Operators	59
Table 89:	boisik Variable-sized Math Operators	60
Table 90:	stix Variable-sized Math Operators	61
Table 91:	stix Integrals with Explicit Slant	62
Table 92:	cmupint Variable-sized Upright Integrals	64
Table 93:	mathdesign Variable-sized Math Operators	65
Table 94:	pdfMsym Variable-sized Math Operators	66
Table 95:	pro dint Variable-sized Math Operators	66
Table 96:	pdfMsym Extensible Math Operators	67
Table 97:	cmll Large Math Operators	67
Table 98:	Binary Relations	67
Table 99:	$\mathcal{AMS}$ Binary Relations	68
Table 100:	$\mathcal{AMS}$ Negated Binary Relations	68
Table 101:	stmaryrd Binary Relations	68
Table 102:	wasysym Binary Relations	68
Table 103:	txfonts/pxfonts Binary Relations	69
Table 104:	txfonts/pxfonts Negated Binary Relations	69
Table 105:	mathabx Binary Relations	69
Table 106:	mathabx Negated Binary Relations	70
Table 107:	MnSymbol Binary Relations	70
Table 108:	MnSymbol Negated Binary Relations	72
Table 109:	fdsymbol Binary Relations	73
Table 110:	fdsymbol Negated Binary Relations	74
Table 111:	boisik Binary Relations	76
Table 112:	boisik Negated Binary Relations	76
Table 113:	stix Binary Relations	77
Table 114:	stix Negated Binary Relations	78
Table 115:	mathtools Binary Relations	79
Table 116:	turnstile Binary Relations	79
Table 117:	trsym Binary Relations	80
Table 118:	trfsigns Binary Relations	80
Table 119:	pdfMsym Binary Relations	81
Table 120:	cmll Binary Relations	81
Table 121:	colonequals Binary Relations	81
Table 122:	fourier Binary Relations	81
Table 123:	logix Binary Relations	81
Table 124:	logix Set Symbols	82
Table 125:	Subset and Superset Relations	82
Table 126:	$\mathcal{AMS}$ Subset and Superset Relations	82
Table 127:	stmaryrd Subset and Superset Relations	82
Table 128:	wasysym Subset and Superset Relations	82
Table 129:	txfonts/pxfonts Subset and Superset Relations	82
Table 130:	mathabx Subset and Superset Relations	83
Table 131:	MnSymbol Subset and Superset Relations	83
Table 132:	fdsymbol Subset and Superset Relations	84
Table 133:	boisik Subset and Superset Relations	84

Table 134: stix Subset and Superset Relations	84
Table 135: logix Subset and Superset Relations	85
Table 136: Inequalities	85
Table 137: $\mathcal{AMS}$ Inequalities	85
Table 138: wasysym Inequalities	86
Table 139: txfonts/pxfonts Inequalities	86
Table 140: mathabx Inequalities	86
Table 141: MnSymbol Inequalities	87
Table 142: fdsymbol Inequalities	88
Table 143: boisk Inequalities	89
Table 144: stix Inequalities	89
Table 145: logix Inequalities and Equalities	91
Table 146: $\mathcal{AMS}$ Triangle Relations	91
Table 147: stmaryrd Triangle Relations	91
Table 148: mathabx Triangle Relations	91
Table 149: MnSymbol Triangle Relations	92
Table 150: fdsymbol Triangle Relations	93
Table 151: boisk Triangle Relations	93
Table 152: stix Triangle Relations	93
Table 153: Arrows	94
Table 154: Harpoons	94
Table 155: textcomp Text-mode Arrows	94
Table 156: $\mathcal{AMS}$ Arrows	94
Table 157: $\mathcal{AMS}$ Negated Arrows	94
Table 158: $\mathcal{AMS}$ Harpoons	95
Table 159: stmaryrd Arrows	95
Table 160: txfonts/pxfonts Arrows	95
Table 161: mathabx Arrows	95
Table 162: mathabx Negated Arrows	96
Table 163: mathabx Harpoons	96
Table 164: MnSymbol Arrows	96
Table 165: MnSymbol Negated Arrows	98
Table 166: MnSymbol Harpoons	99
Table 167: MnSymbol Negated Harpoons	100
Table 168: fdsymbol Arrows	100
Table 169: fdsymbol Negated Arrows	102
Table 170: fdsymbol Harpoons	104
Table 171: fdsymbol Negated Harpoons	105
Table 172: boisk Arrows	105
Table 173: boisk Negated Arrows	106
Table 174: boisk Harpoons	107
Table 175: stix Arrows	107
Table 176: stix Negated Arrows	109
Table 177: stix Harpoons	110
Table 178: pdfMsym Arrows	110
Table 179: pdfMsym Harpoons	111
Table 180: chemarrow Arrows	111
Table 181: fge Arrows	111
Table 182: old-arrows Arrows	112
Table 183: old-arrows Harpoons	112
Table 184: logix Arrows	113

Table 185: logix Negated Arrows	114
Table 186: logix Harpoons	114
Table 187: logix Implications and Equivalences	114
Table 188: logix Negated Implications and Equivalences	115
Table 189: esrelation Restrictions	115
Table 190: MnSymbol Spoons	115
Table 191: MnSymbol Pitchforks	116
Table 192: MnSymbol Smiles and Frowns	116
Table 193: fdsymbol Spoons	117
Table 194: fdsymbol Pitchforks	117
Table 195: fdsymbol Smiles and Frowns	117
Table 196: halloweenmath Brooms and Pitchforks	117
Table 197: ulsy Contradiction Symbols	118
Table 198: Extension Characters	118
Table 199: stmaryrd Extension Characters	118
Table 200: txfonts/pxfonts Extension Characters	118
Table 201: mathabx Extension Characters	118
Table 202: stix Extension Characters	118
Table 203: Log-like Symbols	118
Table 204: $\mathcal{AMS}$ Log-like Symbols	119
Table 205: mismath Log-like Symbols	119
Table 206: mismath Asymptotic Notation	119
Table 207: $\mathbb{A}2e$ Number Sets	119
Table 208: Greek Letters	120
Table 209: $\mathcal{AMS}$ Greek Letters	120
Table 210: txfonts/pxfonts Upright Greek Letters	121
Table 211: upgreek Upright Greek Letters	121
Table 212: fourier Variant Greek Letters	122
Table 213: txfonts/pxfonts Variant Latin Letters	122
Table 214: boisk Variant Greek Letters	122
Table 215: boisk Variant Latin Letters	122
Table 216: stix Variant Greek Letters	122
Table 217: stix Transformed Greek Letters	122
Table 218: $\mathcal{AMS}$ Hebrew Letters	122
Table 219: MnSymbol Hebrew Letters	122
Table 220: fdsymbol Hebrew Letters	123
Table 221: boisk Hebrew Letters	123
Table 222: stix Hebrew Letters	123
Table 223: Letter-like Symbols	123
Table 224: $\mathcal{AMS}$ Letter-like Symbols	123
Table 225: txfonts/pxfonts Letter-like Symbols	123
Table 226: mathabx Letter-like Symbols	123
Table 227: MnSymbol Letter-like Symbols	124
Table 228: fdsymbol Letter-like Symbols	124
Table 229: boisk Letter-like Symbols	124
Table 230: stix Letter-like Symbols	124
Table 231: trfsigns Letter-like Symbols	124
Table 232: mathdesign Letter-like Symbols	125
Table 233: fge Letter-like Symbols	125
Table 234: fourier Letter-like Symbols	125
Table 235: cmlt Letter-like Symbols	125

Table 236: logix Proof Symbols	125
Table 237: endofproofwd End-of-Proof Symbols	126
Table 238: $\mathcal{AMS}$ Delimiters	126
Table 239: stmaryrd Delimiters	126
Table 240: mathabx Delimiters	126
Table 241: boisik Delimiters	126
Table 242: stix Delimiters	126
Table 243: nath Delimiters	127
Table 244: Variable-sized Delimiters	127
Table 245: Large, Variable-sized Delimiters	127
Table 246: $\mathcal{AMS}$ Variable-sized Delimiters	128
Table 247: stmaryrd Variable-sized Delimiters	128
Table 248: mathabx Variable-sized Delimiters	128
Table 249: MnSymbol Variable-sized Delimiters	128
Table 250: fdsymbol Variable-sized Delimiters	130
Table 251: stix Variable-sized Delimiters	131
Table 252: mathdesign Variable-sized Delimiters	132
Table 253: nath Variable-sized Delimiters (Double)	133
Table 254: nath Variable-sized Delimiters (Triple)	133
Table 255: fourier Variable-sized Delimiters	133
Table 256: logix Variable-sized Delimiters	134
Table 257: textcomp Text-mode Delimiters	135
Table 258: metre Text-mode Delimiters	135
Table 259: Math-mode Accents	136
Table 260: $\mathcal{AMS}$ Math-mode Accents	136
Table 261: MnSymbol Math-mode Accents	136
Table 262: fdsymbol Math-mode Accents	137
Table 263: boisik Math-mode Accents	137
Table 264: stix Math-mode Accents	137
Table 265: fge Math-mode Accents	137
Table 266: yhmath Math-mode Accents	137
Table 267: pdfMsym Math-mode Accents	138
Table 268: halloweenmath Halloween-Themed Math-mode Accents	138
Table 269: realhats Math-mode Hat Accents	138
Table 270: Extensible Accents	139
Table 271: overrightarrow Extensible Accents	139
Table 272: yhmath Extensible Accents	139
Table 273: $\mathcal{AMS}$ Extensible Accents	140
Table 274: MnSymbol Extensible Accents	140
Table 275: fdsymbol Extensible Accents	140
Table 276: stix Extensible Accents	141
Table 277: mathtools Extensible Accents	141
Table 278: mathabx Extensible Accents	141
Table 279: fourier Extensible Accents	142
Table 280: esvect Extensible Accents	142
Table 281: pdfMsym Extensible Accents	143
Table 282: overarrows Extensible Accents	144
Table 283: abracas Extensible Accents	144
Table 284: undertilde Extensible Accents	144
Table 285: ushort Extensible Accents	145
Table 286: mdwmath Extensible Accents	145

Table 287: actuarialangle Extensible Accents	145
Table 288: $\mathcal{AMS}$ Extensible Arrows	145
Table 289: mathtools Extensible Arrows	145
Table 290: chemarr Extensible Arrows	146
Table 291: chemarrow Extensible Arrows	146
Table 292: extarrows Extensible Arrows	146
Table 293: pdfMsym Extensible Arrows	147
Table 294: extpfeil Extensible Arrows	147
Table 295: DotArrow Extensible Arrows	147
Table 296: halloweenmath Extensible Arrows	148
Table 297: pdfMsym Extensible Harpoons	148
Table 298: harpoon Extensible Harpoons	148
Table 299: trfsigns Extensible Transform Symbols	148
Table 300: esrelation Extensible Relations	149
Table 301: halloweenmath Extensible Brooms and Pitchforks	149
Table 302: halloweenmath Extensible Witches	150
Table 303: halloweenmath Extensible Ghosts	150
Table 304: halloweenmath Extensible Bats	150
Table 305: holtpolt Non-commutative Division Symbols	151
Table 306: Dots	151
Table 307: $\mathcal{AMS}$ Dots	151
Table 308: wasysym Dots	151
Table 309: MnSymbol Dots	152
Table 310: fdsymbol Dots	152
Table 311: stix Dots	152
Table 312: mathdots Dots	153
Table 313: yhmath Dots	153
Table 314: teubner Dots	153
Table 315: logix Dots	153
Table 316: begriff Begriffsschrift Symbols	153
Table 317: frege Begriffsschrift Symbols	154
Table 318: mathcomp Math Symbols	154
Table 319: marvosym Math Symbols	154
Table 320: marvosym Digits	154
Table 321: fge Digits	154
Table 322: dozenal Base-12 Digits	155
Table 323: mathabx Mayan Digits	155
Table 324: stix Infinities	155
Table 325: stix Primes	155
Table 326: stix Empty Sets	155
Table 327: $\mathcal{AMS}$ Angles	155
Table 328: MnSymbol Angles	155
Table 329: fdsymbol Angles	156
Table 330: boisik Angles	156
Table 331: stix Angles	156
Table 332: typicons Decorative Mathematical Symbols	156
Table 333: fontawesome5 Decorative Mathematical Symbols	157
Table 334: Miscellaneous L ^A T _E X 2 _ε Math Symbols	157
Table 335: Miscellaneous $\mathcal{AMS}$ Math Symbols	157
Table 336: Miscellaneous wasysym Math Symbols	157
Table 337: Miscellaneous txfonts/pxfonts Math Symbols	158

Table 338: Miscellaneous <code>mathabx</code> Math Symbols	158
Table 339: Miscellaneous <code>MnSymbol</code> Math Symbols	158
Table 340: Miscellaneous Internal <code>MnSymbol</code> Math Symbols	158
Table 341: Miscellaneous <code>fdsymbol</code> Math Symbols	159
Table 342: Miscellaneous <code>boisik</code> Math Symbols	159
Table 343: Miscellaneous <code>stix</code> Math Symbols	159
Table 344: Miscellaneous <code>textcomp</code> Text-mode Math Symbols	160
Table 345: Miscellaneous <code>fge</code> Math Symbols	160
Table 346: Miscellaneous <code>mathdesign</code> Math Symbols	160
Table 347: Miscellaneous <code>logix</code> Math Symbols	161
Table 348: Math Alphabets	162
4 Science and technology symbols	164
Table 349: <code>gensymb</code> Symbols Defined to Work in Both Math and Text Mode	164
Table 350: <code>wasysym</code> Electrical and Physical Symbols	164
Table 351: <code>ifsym</code> Pulse Diagram Symbols	164
Table 352: <code>ar</code> Aspect Ratio Symbol	165
Table 353: <code>plimsoll</code> Plimsoll Symbol	165
Table 354: <code>textcomp</code> Text-mode Science and Engineering Symbols	165
Table 355: <code>steinmetz</code> Extensible Phasor Symbol	165
Table 356: <code>emf</code> Electromotive Force Symbols	165
Table 357: <code>wasysym</code> Astronomical Symbols	166
Table 358: <code>marvosym</code> Astronomical Symbols	166
Table 359: <code>mathabx</code> Astronomical Symbols	166
Table 360: <code>stix</code> Astronomical Symbols	166
Table 361: <code>utfsym</code> Astronomical Symbols	167
Table 362: <code>starfont</code> Astronomical Symbols	168
Table 363: <code>wasysym</code> APL Symbols	168
Table 364: <code>stix</code> APL Symbols	169
Table 365: <code>apl</code> APL Symbols	169
Table 366: <code>marvosym</code> Computer Hardware Symbols	169
Table 367: <code>keystroke</code> Computer Keys	169
Table 368: <code>ascii</code> Control Characters (CP437)	170
Table 369: <code>logic</code> Logic Gates	170
Table 370: <code>quantikz</code> Quantum-Mechanics Notation	171
Table 371: <code>marvosym</code> Communication Symbols	171
Table 372: <code>marvosym</code> Engineering Symbols	171
Table 373: <code>typicons</code> User-Interface Symbols	171
Table 374: <code>fontawesome5</code> User-Interface Symbols	173
Table 375: <code>wasysym</code> Biological Symbols	176
Table 376: <code>stix</code> Biological Symbols	176
Table 377: <code>marvosym</code> Biological Symbols	176
Table 378: <code>utfsym</code> Biological Symbols	176
Table 379: <code>fontawesome5</code> Biological Symbols	176
Table 380: <code>marvosym</code> Safety-related Symbols	176
Table 381: <code>feyn</code> Feynman Diagram Symbols	177
Table 382: <code>svrsymbols</code> Physics Ideograms	177
5 Dingbats	179
Table 383: <code>bbding</code> Arrows	179
Table 384: <code>pifont</code> Arrows	179

Table 385: adfsymbols Arrows	180
Table 386: adforn Arrows	180
Table 387: arev Arrows	180
Table 388: utfsym Arrows	181
Table 389: asapsym Arrows	181
Table 390: typicons Arrows	182
Table 391: fontawesome5 Arrows	182
Table 392: marvosym Scissors	182
Table 393: bbding Scissors	182
Table 394: pifont Scissors	182
Table 395: utfsym Scissors	183
Table 396: dingbat Pencils	183
Table 397: arev Pencils	183
Table 398: typicons Pencils and Pens	183
Table 399: fontawesome5 Pencils, Pens, and Nibs	183
Table 400: bbding Pencils and Nibs	183
Table 401: pifont Pencils and Nibs	184
Table 402: utfsym Pencils, Pens, and Nibs	184
Table 403: dingbat Fists	184
Table 404: bbding Fists	184
Table 405: pifont Fists	184
Table 406: fourier Fists	184
Table 407: arev Fists	184
Table 408: utfsym Fists	185
Table 409: typicons Fists	185
Table 410: fontawesome5 Fists	186
Table 411: bbding Crosses and Plusses	186
Table 412: pifont Crosses and Plusses	186
Table 413: adfsymbols Crosses and Plusses	186
Table 414: utfsym Crosses and Plusses	187
Table 415: arev Crosses	187
Table 416: bbding Xs and Check Marks	187
Table 417: pifont Xs and Check Marks	187
Table 418: wasysym Xs and Check Marks	187
Table 419: marvosym Xs and Check Marks	187
Table 420: arev Xs and Check Marks	187
Table 421: utfsym Xs and Check Marks	188
Table 422: typicons Xs and Check Marks	188
Table 423: fontawesome5 Xs and Check Marks	188
Table 424: pifont Circled Numerals	188
Table 425: utfsym Circled Numerals	189
Table 426: wasysym Stars	189
Table 427: bbding Stars, Flowers, and Similar Shapes	189
Table 428: pifont Stars, Flowers, and Similar Shapes	190
Table 429: adfsymbols Stars, Flowers, and Similar Shapes	190
Table 430: utfsym Stars, Flowers, and Similar Shapes	190
Table 431: adforn Stars	190
Table 432: typicons Stars	191
Table 433: fontawesome5 Stars	191
Table 434: fourier Fleurons and Flowers	191
Table 435: adforn Fleurons and Flowers	191

Table 436: wasysym Geometric Shapes	192
Table 437: MnSymbol Geometric Shapes	192
Table 438: fdsymbol Geometric Shapes	192
Table 439: boisk Geometric Shapes	192
Table 440: stix Geometric Shapes	193
Table 441: ifsym Geometric Shapes	194
Table 442: bbding Geometric Shapes	195
Table 443: pifont Geometric Shapes	195
Table 444: universa Geometric Shapes	195
Table 445: adfsymbols Geometric Shapes	196
Table 446: utfsym Geometric Shapes	196
Table 447: fontawesome5 Geometric Shapes	196
Table 448: oplotsymb1 Geometric Shapes	196
Table 449: adform Flourishes	197
Table 450: Miscellaneous oplotsymb1 Symbols	198
Table 451: Miscellaneous dingbat Dingbats	198
Table 452: Miscellaneous bbding Dingbats	198
Table 453: Miscellaneous pifont Dingbats	198
Table 454: Miscellaneous adform Dingbats	198
Table 455: Miscellaneous utfsym Dingbats	199
6 Ancient languages	200
Table 456: phaistos Symbols from the Phaistos Disk	200
Table 457: protosem Proto-Semitic Characters	201
Table 458: hieroglf Hieroglyphics	202
Table 459: linearA Linear A Script	202
Table 460: linearb Linear B Basic and Optional Letters	205
Table 461: linearb Linear B Numerals	205
Table 462: linearb Linear B Weights and Measures	206
Table 463: linearb Linear B Ideograms	206
Table 464: linearb Unidentified Linear B Symbols	206
Table 465: cypriot Cypriot Letters	207
Table 466: sarabian South Arabian Letters	207
Table 467: teubner Archaic Greek Letters and Greek Numerals	208
Table 468: boisk Archaic Greek Letters and Greek Numerals	208
Table 469: epiolmec Epi-Olmec Script	208
Table 470: epiolmec Epi-Olmec Numerals	210
Table 471: allrunes Runes	211
Table 472: allrunes Rune Separators	211
7 Musical symbols	212
Table 473: L ^A T _E X 2 _ε Musical Symbols	212
Table 474: textcomp Musical Symbols	212
Table 475: wasysym Musical Symbols	212
Table 476: MnSymbol Musical Symbols	212
Table 477: fdsymbol Musical Symbols	213
Table 478: boisk Musical Symbols	213
Table 479: stix Musical Symbols	213
Table 480: arev Musical Symbols	213
Table 481: utfsym Musical Symbols	213
Table 482: MusiX _T E _X Musical Symbols	214

Table 483: MusiX _{TEX} Alternative Clefs	215
Table 484: harmony Musical Symbols	215
Table 485: musicography Musical Symbols	216
Table 486: musicography Time Signatures	216
Table 487: harmony Musical Accents	217
Table 488: <i>lily_glyp_{bs}</i> Single Notes	217
Table 489: <i>lily_glyp_{bs}</i> Beamed Notes	218
Table 490: <i>lily_glyp_{bs}</i> Clefs	218
Table 491: <i>lily_glyp_{bs}</i> Time Signatures	219
Table 492: <i>lily_glyp_{bs}</i> Accidentals	219
Table 493: <i>lily_glyp_{bs}</i> Rests	219
Table 494: <i>lily_glyp_{bs}</i> Dynamics Letters	219
Table 495: <i>lily_glyp_{bs}</i> Dynamics Symbols	220
Table 496: <i>lily_glyp_{bs}</i> Articulations	220
Table 497: <i>lily_glyp_{bs}</i> Scripts	220
Table 498: <i>lily_glyp_{bs}</i> Accordion Notation	220
Table 499: <i>lily_glyp_{bs}</i> Named Time Signatures	220
Table 500: <i>lily_glyp_{bs}</i> Named Scripts	221
Table 501: <i>lily_glyp_{bs}</i> Named Rests	222
Table 502: <i>lily_glyp_{bs}</i> Named Pedals	222
Table 503: <i>lily_glyp_{bs}</i> Named Flags	223
Table 504: <i>lily_glyp_{bs}</i> Named Custodes	223
Table 505: <i>lily_glyp_{bs}</i> Named Clefs	224
Table 506: <i>lily_glyp_{bs}</i> Named Noteheads	225
Table 507: <i>lily_glyp_{bs}</i> Named Accordion Symbols	230
Table 508: <i>lily_glyp_{bs}</i> Named Accidentals	231
Table 509: <i>lily_glyp_{bs}</i> Named Arrowheads	232
Table 510: <i>lily_glyp_{bs}</i> Named Alphanumerics and Punctuation	232
Table 511: Miscellaneous <i>lily_glyp_{bs}</i> Named Musical Symbols	232
8 Gaming symbols	233
Table 512: L ^A T _E X 2 _ε Playing-Card Suits	233
Table 513: txfonts/pxfonts Playing-Card Suits	233
Table 514: MnSymbol Playing-Card Suits	233
Table 515: fdsymbol Playing-Card Suits	233
Table 516: boisk Playing-Card Suits	233
Table 517: stix Playing-Card Suits	234
Table 518: arev Playing-Card Suits	234
Table 519: twemojis Playing-Card Suits	234
Table 520: utfsym Playing-Card Suits	234
Table 521: utfsym Playing Cards	235
Table 522: epsdice Dice	235
Table 523: hhcount Dice	236

Table 524: stix Dice	236
Table 525: ifsym Dice	236
Table 526: utfsym Dice	236
Table 527: fontawesome5 Dice	236
Table 528: utfsym Domino Tiles	237
Table 529: utfsym Mahjong Tiles	238
Table 530: utfsym Chess Pieces	238
Table 531: skak Chess Informator Symbols	239
Table 532: skak Chess Pieces and Chessboard Squares	239
Table 533: fontawesome5 Chess Pieces and Chessboards	240
Table 534: igo Go Symbols	240
Table 535: go Go Symbols	240
Table 536: fontawesome5 Sports	240
Table 537: utfsym Games and Sports	241
9 Geographical Symbols	242
Table 538: countriesofeuropa Country Maps	242
Table 539: rojud Maps of Romanian Counties	245
Table 540: euflag European Union Flag	246
Table 541: worldflags Flags of Sovereign States	247
Table 542: worldflags Flags of Non-Sovereign Countries and Territories	248
Table 543: worldflags Flags of Austrian Federal States	249
Table 544: twemojis Flags	249
10 Other symbols	253
Table 545: textcomp Genealogical Symbols	253
Table 546: wasysym General Symbols	253
Table 547: utfsym Transportation Symbols	254
Table 548: manfnt Dangerous Bend Symbols	255
Table 549: Miscellaneous manfnt Symbols	255
Table 550: marvosym Media Control Symbols	255
Table 551: typicons Media Control Symbols	255
Table 552: fontawesome5 Media Control Symbols	256
Table 553: utfsym Media Control Symbols	256
Table 554: typicons Left/Right Pointers	256
Table 555: fontawesome5 Up/Down/Left/Right Pointers	256
Table 556: marvosym Laundry Symbols	257
Table 557: Miscellaneous marvosym Symbols	257
Table 558: Miscellaneous universa Symbols	257
Table 559: Miscellaneous fourier Symbols	257
Table 560: utfsym Weather Symbols	258
Table 561: twemojis Weather Symbols	258
Table 562: ifsym Weather Symbols	258
Table 563: typicons Weather Symbols	259
Table 564: fontawesome5 Weather Symbols	259
Table 565: figchild Weather Symbols	259
Table 566: ifsym Alpine Symbols	259
Table 567: ifsym Clocks	260
Table 568: utfsym Clocks	260
Table 569: clock Clocks	260
Table 570: twemojis Clocks	261

Table 622: figchild Food and Cooking Symbols	286
Table 623: utfsym Food and Cooking Symbols	287
Table 624: cookingsymbols Cooking Symbols	287
Table 625: tikzsymbols Cooking Symbols	288
Table 626: tikzsymbols Emoji	288
Table 627: tikzsymbols 3D Emoji	288
Table 628: utfsym Emoji	289
Table 629: tikzsymbols Trees	289
Table 630: utfsym Love Symbols	290
Table 631: Miscellaneous tikzsymbols Symbols	290
Table 632: Miscellaneous twemojis Emoji	290
Table 633: fontawesome5 Faces	305
Table 634: simpsons Characters from <i>The Simpsons</i>	306
Table 635: asapsym People	307
Table 636: utfsym People and Faces	307
Table 637: sillypage Silly Walks	308
Table 638: typicons Users	308
Table 639: fontawesome5 Users	308
Table 640: scsnowman Snowmen	309
Table 641: typicons Files and Folders	309
Table 642: fontawesome5 Files and Folders	309
Table 643: fontawesome5 Religion	310
Table 644: utfsym Religion	310
Table 645: asapsym Elevators, Escalators, and Stairs	310
Table 646: Miscellaneous bclogo Symbols	311
Table 647: Miscellaneous utfsym Symbols	312
Table 648: typicons Brand Icons	314
Table 649: fontawesome5 Brand Icons	315
Table 650: fontmfizz Brand Icons	318
Table 651: fontawesome5 Medical Symbols	319
Table 652: fontawesome5 Disability Symbols	320
Table 653: asapsym Transportation Symbols	320
Table 654: twemojis Transportation Emoji	320
Table 655: asapsym Everyday Objects	321
Table 656: typicons Everyday Objects	322
Table 657: fontawesome5 Everyday Objects	323
Table 658: figchild Everyday Objects	325
Table 659: Miscellaneous asapsym Symbols	327
Table 660: Miscellaneous typicons Symbols	328
Table 661: Miscellaneous fontawesome5 Symbols	328
Table 662: Miscellaneous fontmfizz Symbols	329
Table 663: rubikcube Rubik's Cube Rotations	329
Table 664: sacsymb Orchestrated Objective Reduction Symbols	329
Table 665: academicons Online Academic Profile Icons	330
Table 666: Miscellaneous figchild Symbols	331
11 Fonts with minimal L^AT_EX support	332
Table 667: hands Fists	332
Table 668: greenpoint Recycling Symbols	332
Table 669: nkarta Map Symbols	333
Table 670: moonphase Astronomical Symbols	334

Table 671: <code>astrosym</code> Astronomical Symbols	335
Table 672: <code>webomints</code> Decorative Borders	338
Table 673: <code>umranda</code> Decorative Borders	339
Table 674: <code>umrandb</code> Decorative Borders	340
Table 675: <code>dingbat</code> Decorative Borders	342
Table 676: <code>pgfornament</code> Decorative Borders (Vintage)	343
Table 677: <code>pgfornament</code> Decorative Borders (Traditional Chinese Motifs)	346
Table 678: <code>knot</code> Celtic Knots	348
Table 679: <code>dancers</code> Dancing Men	352
Table 680: <code>semaphor</code> Semaphore Alphabet	355
Table 681: <code>lcircuit</code> Logic Gates and VLSI Symbols	357
Table 682: <code>cryst</code> Crystallography Symbols	358
Table 683: <code>dice</code> Dice	360
Table 684: <code>figbas</code> Figured-Bass Ligatures	360
Table 685: <code>magic</code> Trading Card Symbols	361
Table 686: <code>bartel-chess-fonts</code> Chess Pieces and Chessboard Squares	361
12 Additional Information	364
12.1 Symbol Name Clashes	364
12.2 Resizing symbols	366
12.3 Where can I find the symbol for ...?	367
12.3.1 Reflecting and rotating existing symbols	368
12.3.2 Joining and overlapping existing symbols	368
12.3.3 Making new symbols work in superscripts and subscripts	371
12.3.4 Modifying L ^A T _E X-generated symbols	373
12.3.5 Encircling symbols	373
12.3.6 Producing complex accents	373
12.3.7 Creating extensible symbols	374
12.3.8 Developing new symbols from scratch	375
12.4 Math-mode spacing	379
12.5 Bold mathematical symbols	380
12.6 ASCII and Latin 1 quick reference	381
12.7 Unicode characters	384
12.7.1 Inputting Unicode characters	385
12.7.2 Outputting Unicode characters	385
12.8 About this document	386
12.9 Copyright and license	388
Bibliography	390
Index	391

Chapter 1

Introduction

Welcome to the Comprehensive L^AT_EX Symbol List! This document strives to be your primary source of L^AT_EX symbol information: font samples, L^AT_EX commands, packages, usage details, caveats—everything needed to put tens of thousands of different symbols at your disposal. All of the fonts covered herein meet the following criteria:

1. They are freely available from the Comprehensive T_EX Archive Network (<https://www.ctan.org/>).
2. All of their symbols have L^AT_EX 2_ε bindings. That is, a user should be able to access a symbol by name (e.g., `\bigtriangleup`).

As of version 12 of the Comprehensive L^AT_EX Symbol List, that second restriction has been relaxed with the inclusion of Chapter 11, which showcases fonts that provide, at a minimum, either T_EX font-metric files (`.tfm`) or the METAFONT sources (`.mf`) that produce those font-metric files. Some of the Chapter 11 fonts do include L^AT_EX font-definition files (`.fd`). However, what sets the fonts in Chapter 11 apart from the fonts in the rest of the document is that they lack a L^AT_EX style file (`.sty`) that individually names each of the glyphs.

The restrictions listed above are not particularly limiting criteria; the Comprehensive L^AT_EX Symbol List contains samples of 20323 symbols—quite a large number. Some of these symbols are guaranteed to be available in every L^AT_EX 2_ε system; others require fonts and packages that may not accompany a given distribution and that therefore need to be installed. See <http://www.texfaq.org/FAQ-installthings.html> for help with installing new fonts and packages.

1.1 Document Usage

Each chapter of this document contains a number of font tables. Each table shows a set of symbols, with the corresponding L^AT_EX command to the right of each symbol. A table’s caption indicates what package needs to be loaded in order to access that table’s symbols. For example, the symbols in Table 46, “textcomp Old-Style Numerals”, are made available by putting “`\usepackage{textcomp}`” in your document’s preamble. “*AMS*” means to use the *AMS* packages, viz. `amssymb` and/or `amsmath`. Notes below a table provide additional information about some or all the symbols in that table.

One note that appears a few times in this document, particularly in Chapter 2, indicates that certain symbols do not exist in the OT1 font encoding (Donald Knuth’s original, 7-bit font encoding, which is the default font encoding for L^AT_EX) and that you should use `fontenc` to select a different encoding, such as T1 (a common 8-bit font encoding). That means that you should put “`\usepackage[encoding]{fontenc}`” in your document’s preamble, where *encoding* is, e.g., T1 or LY1. To limit the change in font encoding to the current group, use “`\fontencoding{encoding}\selectfont`”.

Chapter 12 contains some additional information about the symbols in this document. It discusses how certain mathematical symbols can vary in height, shows which symbol names are not unique across packages, gives examples of how to create new symbols out of existing symbols, explains how symbols are spaced in math mode, compares various schemes for boldfacing symbols, presents L^AT_EX ASCII and Latin 1 tables, shows how to input and output Unicode characters, and provides some information about this document itself. The Comprehensive L^AT_EX Symbol List ends with an index of all the symbols in the document and various additional useful terms.

A companion document, Raw Font Tables, also presents a large number of symbols but with a very different structure from this document. Raw Font Tables includes only symbols produced via a font file, while this document also includes composite symbols (combinations of two or more glyphs) and symbols drawn as pictures (using, e.g., T_ikZ). This document sorts symbols by category while Raw Font Tables sorts symbols by underlying font file. The two documents are intended to complement each other. It is usually easier to find a desired symbol in The Comprehensive L^AT_EX Symbol List, but Raw Font Tables is helpful for identifying related symbols, for finding symbols that exist in some font but are not exposed to the user via a L^AT_EX package (or that this document inadvertently overlooked), and for the font name and character position needed to typeset a single symbol in isolation. The last of those is especially important for math symbols. T_EX imposes a limitation of at most 16 math alphabets per document, but symbols typeset with `\font` and `\char` are text symbols and do not consume a math alphabet. (They are less convenient to use within a mathematical expression, however.)

1.2 Frequently Requested Symbols

There are a number of symbols that are requested over and over again on `comp.text.tex`. If you're looking for such a symbol the following list will help you find it quickly.

<code>\,</code> , as in “ <code>Spaces_are_significant.</code> ”	19	<code>\cdots</code>	153
$\bar{\imath}$, $\tilde{\imath}$, $\check{\imath}$, $\grave{\imath}$, etc. (versus $\bar{\mathrm{i}}$, $\tilde{\mathrm{i}}$, $\check{\mathrm{i}}$, $\grave{\mathrm{i}}$, and $\mathring{\mathrm{i}}$)	26	$^{\circ}$, as in “180°” or “15°C”	160
$\text{\p}$	31	$\mathcal{L}$, $\mathcal{F}$, etc.	162
$\text{\pounds}$	32	$\mathbb{N}$, $\mathbb{Z}$, $\mathbb{R}$, etc.	162
$\text{\textcircled{C}}$, $\text{\textcircled{R}}$, and TM	33	$\text{\pzc}$	162
$\text{\textperthousand}$	34	f	371
$\text{\textff}$	56	$\acute{a}$, $\grave{e}$, etc. (i.e., several accents per character)	373
$\therefore$	68	$<$, $>$, and $ $ (instead of $\jmath$, $\imath$, and ---)	381
$\text{\text{:=}}$ and $\text{\text{::=}}$	69	$\wedge$ and $\sim$ (or $\sim$)	382
$\lesssim$ and $\gtrsim$	85		

Chapter 2

Body-text symbols

This chapter lists symbols that are intended for use in running text, such as punctuation marks, accents, ligatures, and currency symbols.

TABLE 1: $\text{\LaTeX} 2_{\varepsilon}$ Escapable “Special” Characters

\$	<code>\\$</code>	%	<code>\%</code>	-	<code>_*</code>	}	<code>\}</code>	&	<code>\&</code>	#	<code>\#</code>	{	<code>\{</code>
----	------------------	---	-----------------	---	------------------	---	-----------------	---	---------------------	---	-----------------	---	-----------------

* The `underscore` package redefines “_” to produce an underscore in text mode (i.e., it makes it unnecessary to escape the underscore character).

TABLE 2: Predefined L^AT_EX 2_ε Text-mode Commands

		<code>\textasciicircum*</code>	<		<code>\textless</code>
~		<code>\textasciitilde*</code>	ª	ª	<code>\textordfeminine</code>
*	*	<code>\textasteriskcentered</code>	º	º	<code>\textordmasculine</code>
\		<code>\textbackslash</code>	¶	¶	<code>\textparagraph†</code>
		<code>\textbar</code>	.	.	<code>\textperiodcentered</code>
		<code>\textbardbl</code>	‰ ₀₀	‰ ₀₀	<code>\textpertenthousand</code>
○	○	<code>\textbigcircle</code>	‰ ₀	‰ ₀	<code>\textperthousand</code>
{		<code>\textbraceleft†</code>	¿		<code>\textquestiondown</code>
}		<code>\textbraceright†</code>	“		<code>\textquotedblleft</code>
•	•	<code>\textbullet</code>	”		<code>\textquotedblright</code>
©	©	<code>\textcopyright†</code>	‘		<code>\textquoteleft</code>
†	†	<code>\textdagger†</code>	,’		<code>\textquoteright</code>
‡	‡	<code>\textdaggerdbl†</code>	®	®	<code>\textregistered</code>
\$	\$	<code>\textdollar†</code>	§	§	<code>\textsection†</code>
...		<code>\textellipsis†</code>	£	£	<code>\textsterling†</code>
—		<code>\textemdash</code>	™	™	<code>\texttrademark</code>
-		<code>\textendash</code>	-		<code>\textunderscore†</code>
!		<code>\textexclamdown</code>	␣		<code>\textvisiblespace</code>
>		<code>\textgreater</code>			

The first symbol column represents the—sometimes “faked”—symbol that L^AT_EX 2_ε provides by default. The second symbol column represents the symbol as redefined by `textcomp` (if `textcomp` redefines it). The `textcomp` package is generally required to typeset Table 2’s symbols in italic, and some symbols additionally require the T1 font encoding for italic.

* `\~{}` and `\~{}` can be used instead of `\textasciicircum` and `\textasciitilde`.
See the discussion of “~” on page 382.

[†] It's generally preferable to use the corresponding symbol from Table 3 because the symbols in that table work properly in both text mode and math mode.

TABLE 3: L^AT_EX_{2 ϵ} Commands Defined to Work in Both Math and Text Mode

{	\{	-	_	‡	‡	\ddag	£	\pounds
}	\}	©	©	...		\dots	§	§
\$	\$	\\$	†	†		\dag		
				¶	¶	\P		

The first symbol column represents the—sometimes “faked”—symbol that L^AT_EX 2_ε provides by default. The second symbol column represents the symbol as redefined by `textcomp` (if `textcomp` redefines it). The `textcomp` package is generally required to typeset Table 3’s symbols in italic, and some symbols additionally require the T1 font encoding for italic.

TABLE 4: $\mathcal{AMS}$ Commands Defined to Work in Both Math and Text Mode

✓ `\checkmark` ® `\circledR` ✕ `\maltese`

TABLE 5: Non-ASCII Letters (Excluding Accented Letters)

å	<code>\aa</code>	Ð	<code>\DH*</code>	L	<code>\L</code>	ø	<code>\o</code>	þ	<code>\th*</code>
Ä	<code>\AA</code>	Ð	<code>\DJ*</code>	l	<code>\l</code>	œ	<code>\oe</code>	Þ	<code>\TH*</code>
Æ	<code>\AE</code>	đ	<code>\dj*</code>	Ŋ	<code>\NG*</code>	Œ	<code>\OE</code>		
æ	<code>\ae</code>	IJ	<code>\IJ</code>	ŋ	<code>\ng*</code>	ß	<code>\ss</code>		
ð	<code>\dh*</code>	ij	<code>\ij</code>	Ø	<code>\O</code>	SS	<code>\SS</code>		

* Not available in the OT1 font encoding. Use the `fontenc` package to select an alternate font encoding, such as T1.

TABLE 6: `textgreek` Upright Greek Letters

α	<code>\textalpha</code>	η	<code>\texteta</code>	ν	<code>\textnu</code>	τ	<code>\texttau</code>
β	<code>\textbeta</code>	θ	<code>\texttheta</code>	ξ	<code>\textxi</code>	υ	<code>\textupsilon</code>
γ	<code>\textgamma</code>	ι	<code>\textiota</code>	ο	<code>\textomikron</code>	φ	<code>\textphi</code>
δ	<code>\textdelta</code>	κ	<code>\textkappa</code>	π	<code>\textpi</code>	χ	<code>\textchi</code>
ε	<code>\textepsilon</code>	λ	<code>\textlambda</code>	ρ	<code>\textrho</code>	ψ	<code>\textpsi</code>
ζ	<code>\textzeta</code>	μ	<code>\textmu*</code>	σ	<code>\textsigma</code>	ω	<code>\textomega</code>
A	<code>\textAlpha</code>	H	<code>\textEta</code>	N	<code>\textNu</code>	T	<code>\textTau</code>
B	<code>\textBeta</code>	Θ	<code>\textTheta</code>	Ξ	<code>\textXi</code>	Υ	<code>\textUpsilon</code>
Γ	<code>\textGamma</code>	I	<code>\textIota</code>	Ο	<code>\textOmikron</code>	Φ	<code>\textPhi</code>
Δ	<code>\textDelta</code>	K	<code>\textKappa</code>	Π	<code>\textPi</code>	Χ	<code>\textChi</code>
E	<code>\textEpsilon</code>	Λ	<code>\textLambda</code>	P	<code>\textRho</code>	Ψ	<code>\textPsi</code>
Z	<code>\textZeta</code>	M	<code>\textMu</code>	Σ	<code>\textSigma</code>	Ω	<code>\textOmega</code>

* Synonyms for `\textmu` include `\textmicro` and `\textmugreek`.

`textgreek` tries to use a Greek font that matches the body text. As a result, the glyphs may appear slightly different from the above.

Unlike `upgreek` (Table 211 on page 121), `textgreek` works in text mode.

The symbols in this table are intended to be used sporadically throughout a document (e.g., in phrases such as “β-decay”). In contrast, Greek body text can be typeset using the `babel` package’s `greek` (or `polutonikogreek`) option—and, of course, a font that provides the glyphs for the Greek alphabet.

TABLE 7: Letters Used to Typeset African Languages

Đ	\B{D}	ċ	\m{c}	f	\m{f}	k	\m{k}	t	\M{t}	Ƶ	\m{Z}
đ	\B{d}	Đ	\m{D}	F	\m{F}	lJ	\m{N}	T	\M{T}	Ě	\T{E}
H	\B{H}	đ	\M{d}	Y	\m{G}	ŋ	\m{n}	t	\m{t}	ē	\T{e}
h	\B{h}	Đ	\M{D}	γ	\m{g}	o	\m{o}	T	\m{T}	Ō	\T{O}
t	\B{t}	đ	\m{d}	l	\m{I}	Ō	\m{O}	v	\m{u}*	ō	\T{o}
T	\B{T}	Ě	\m{E}	ι	\m{i}	P	\m{P}	U	\m{U}*		
ḃ	\m{b}	ε	\m{e}	N	\m{J}	p	\m{p}	Y	\m{Y}		
B	\m{B}	Ɛ	\M{E}	ɲ	\m{j}	s	\m{s}	y	\m{y}		
Ċ	\m{C}	ə	\M{e}	K	\m{K}	J	\m{S}	z	\m{z}		

These characters all need the T4 font encoding, which is provided by the `fc` package.

* `\m{v}` and `\m{V}` are synonyms for `\m{u}` and `\m{U}`.

TABLE 8: Letters Used to Typeset Vietnamese

Ơ	\OHORN	ơ	\ohorn	Ư	\UHORN	ư	\uhorn
---	--------	---	--------	---	--------	---	--------

These characters all need the T5 font encoding, which is provided by the `vnTeX` package.

TABLE 9: Punctuation Marks Not Found in OT1

«	\guillemetleft*	<	\guilsinglleft	„	\quotedblbase	"	\textquotedbl
»	\guillemetright*	>	\guilsinglright	,	\quotesinglbase		

* Older versions of $\text{\LaTeX}$ misspelled these as `\guillemotleft` and `\guillemotright`. The older names are still retained for backward compatibility.

To get these symbols, use the `fontenc` package to select an alternate font encoding, such as T1.

TABLE 10: `pifont` Decorative Punctuation Marks

•	\ding{123}	“	\ding{125}	¶	\ding{161}	•	\ding{163}
•	\ding{124}	”	\ding{126}	•	\ding{162}		

TABLE 11: fontawesome5 Decorative Punctuation Marks and Typographic Symbols

*	\faAsterisk	!	\faExclamation	”	\faQuoteRight
@	\faAt	¶	\faParagraph	/	\faSlash
...	\faEllipsisH	?	\faQuestion		
:	\faEllipsisV	“	\faQuoteLeft		

TABLE 12: tipa Phonetic Symbols

ɤ	\textbabygamma	ʔ	\textglotstop	ɳ	\textrtailn
ɸ	\textbarb	˙	\texthalflength	ɽ	\textrtailr
ε	\textbarc	ɸ	\texthardsign	§	\textrtails
ɖ	\textbard	ˆ	\texthooktop	ɿ	\textrtailt
ɟ	\textbardotlessj	β	\texthtb	ʐ	\textrtailz
ɡ	\textbarg	f	\texthtbardotlessj	˘	\texttrthook
ʔ	\textbarglotstop	ɕ	\texthtc	Λ	\textasca
i	\textbari	ɖ	\texthtd	B	\textscb
ɭ	\textbarl	ɡ	\texthtg	E	\textsce
ə	\textbaro	ɦ	\texthth	G	\textscg
ɸ	\textbarrevglotstop	ɦ	\texththeng	H	\textsch
u	\textbaru	k	\texthtk	ə	\textschwa
ɬ	\textbeltl	β	\texthtp	I	\textsci
β	\textbeta	q	\texthtq	J	\textscj
⊙	\textbullseye	ɖ	\texthttrtaild	L	\textscL
˘	\textceltpal	ɕ	\texthtscg	N	\textscn
χ	\textchi	f	\texthtt	œ	\textscœlig
ə	\textcloseepsilon	hʋ	\texthvlig	Ω	\textscomega
ω	\textcloseomega	ɔ	\textinvglotstop	R	\textscr
ɜ	\textcloserevepsilon	ʁ	\textinvscr	ɑ	\textscripta
z	\textcommatailz	ɿ	\textiota	ɡ	\textscriptg
˘	\textcorner	λ	\textlambda	ʋ	\textscriptv
ɸ	\textcrb	:	\textlengthmark	U	\textscu
ɖ	\textcrd	ɿ	\textlhookt	Y	\textscy
ɡ	\textcrg	ɿ	\textlhtlongi	˘	\textsecstress
ɦ	\textcrh	ɿ	\textlhtlongy	ɸ	\textsoftsign
ɔ	\textcrinvglotstop	ɿ	\textlonglegr	Ĉ	\textstretchc
λ	\textcrlambda	˘	\textlptr	ɸ	\texttctclig
2	\textcrtwo	ɳ	\textltailm	ɸ	\texttreshlig
ɕ	\textctc	ɳ	\textltailn	θ	\texttheta
ɖ	\textctd	ɿ	\textltilde	þ	\textthorn
ɖz	\textctdctzlig	ɸ	\textlyoghlig	˘	\texttoneletterstem
ɸ	\textctesh	J	\textObardotlessj	ts	\texttslig

(continued on next page)

(continued from previous page)

j	\textctj	h	\textOlyoghlig	e	\textturna
n	\textctn	ω	\textomega	æ	\textturncelig
t	\textctt	┐	\textopencorner	u	\textturnh
⌘	\textcttctclig	o	\textopeno	x	\textturnk
z	\textctyogh	ς	\textpalhook	l	\textturnlonglegr
z	\textctz	φ	\textphi	u	\textturnm
⌘	\textdctzlig		\textpipe	u	\textturnmrleg
f	\textdoublebaresh	'	\textprimstress	ι	\textturnr
≡	\textdoublebarpipe	?	\textraiseglotstop	l	\textturnrrtail
≠	\textdoublebarslash	l	\textraisevibyi	ⓓ	\textturnscripta
	\textdoublepipe	γ	\textramshorns	‡	\textturnt
	\textdoublevertline	ˆ	\textrevapostrophe	Λ	\textturnv
↓	\textdownstep	ə	\textreve	ℳ	\textturnw
⌘	\textdyoghlig	z	\textrevepsilon	ℳ	\textturny
⌘	\textdzlig	ı	\textrevglotstop	υ	\textupsilon
ε	\textepsilon	ε	\textrevyogh	↑	\textupstep
f	\textesh	z	\textrhookrevepsilon		\textvertline
r	\textfishhookr	æ	\textrhookswa	l	\textvibyi
g	\textg	˘	\textrhoticity	u	\textvibyy
γ	\textgamma	>	\textrptr	p	\textwynn
↘	\textglobfall	d	\textrtaild	z	\textyogh
↗	\textglobrise	l	\textrtail		

tipa defines shortcut characters for many of the above. It also defines a command \tone for denoting tone letters (pitches). See the tipa documentation for more information.

TABLE 13: tipx Phonetic Symbols

æ	\textaalig	f	\texthtbardotlessjvar	l	\textrthooklong
z	\textbenttailyogh	ω	\textinvomega	Δ	\textascaolig
γ	\textbktaillgamma	v	\textinvsc	Δ	\textscdelta
ı	\textctinvglotstop	σ	\textinvscripta	F	\textscf
j	\textctjvar	f	\textlfishhookrlig	K	\textscck
⌘	\textctstretchc	4	\textlhookfour	M	\textscm
⌘	\textctstretchcvar	p	\textlhookp	P	\textscp
‡	\textctturnt	ι	\textlhti	Q	\textscq
db	\textdblign	l	\textlooptoprevesh	←	\textspleftarrow
≡	\textdoublebarpipevar	η	\textnrleg	⌘	\textstretchcvar
	\textdoublepipevar	⊙	\textObullseye	↔	\textsubdoublearrow

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↓	\textdownfullarrow	↵	\textpalhooklong	→	\textsubbrightarrow
♀	\textfemale	↵	\textpalhookvar	⋈	\textthornvari
n	\textfrbarn		\textpipevar	⋈	\textthornvarii
↵	\textfrhookd	ϕ	\textqplig	⋈	\textthornvariii
↵	\textfrhookdvar	▭	\textrectangle	⋈	\textthornvariv
↵	\textfrhookt	↵	\textretractingvar	↵	\textturnglotstop
γ	\textfrrtailgamma	↵	\textrevscl	↵	\textturnsck
?	\textglotstopvari	↵	\textrevscr	↵	\textturnscu
?	\textglotstopvarii	↵	\textrhoa	↵	\textturnthree
?	\textglotstopvariii	↵	\textrhoe	↵	\textturntwo
γ	\textgrgamma	↵	\textrhoepsilon	♀	\textuncrfemale
h	\textheng	↵	\textrhoopeno	↑	\textupfullarrow
h	\texthmlig	↵	\textrtailhth		

TABLE 14: wsuipa Phonetic Symbols

ɹ	\babygamma	ŋ	\eng	ŋ	\labdentalnas	ə	\schwa
ʙ	\barb	ʁ	\er	ʈ	\latfric	ɪ	\sci
ɖ	\bard	ʃ	\esh	ʉ	\legm	N	\scn
ɪ	\bari	ð	\eth	ɿ	\legr	R	\scr
ʈ	\barl	ɾ	\flapr	ʒ	\lz	ɑ	\scripta
ɵ	\baro	ʔ	\glotstop	α	\nialpha	ɡ	\scriptg
ɸ	\barp	β	\hookb	β	\nibeta	ʋ	\scriptv
ʈ	\barsci	ɖ	\hookd	χ	\nichi	U	\scu
ʈ	\barscu	ɡ	\hookg	ε	\niepsilon	Y	\scy
ʈ	\baru	ɦ	\hookh	γ	\nigamma	ʘ	\slashb
⊙	\clickb	ɦ	\hookheng	ι	\niiota	ø	\slashc
⊙	\clickc	ʔ	\hookrepsilon	λ	\nilambda	ø	\slashd
ɿ	\clickt	hʋ	\hv	ω	\niomega	ʏ	\slashu
ω	\closedniomega	ɐ	\inva	φ	\niphi	ɔ	\taild
ɔ	\closedrevepsilon	ɿ	\invf	σ	\nisigma	ɔ	\tailinvr
ʙ	\crossb	ɔ	\invglotstop	θ	\nitheta	ɔ	\taill
ɖ	\crossd	ɿ	\invh	ʋ	\niupsilon	ɿ	\tailn
ɦ	\crossh	ɔ	\invlegr	ɿ	\nj	ɔ	\tailr
λ	\crossnilambda	ʉ	\invm	∞	\oo	ɔ	\tails
ɔ	\curlyc	ɿ	\invr	ɔ	\openo	ɔ	\tailt
ɔ	\curlyesh	ʉ	\invscr	ə	\reve	ɔ	\tailz

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ȝ	\curlyyogh	ɒ	\invscripta	ɣ	\reveject	ʈ	\tesh
z	\curlyz	Λ	\invv	ɜ	\revepsilon	þ	\thorn
ɿ	\dlbari	ℳ	\invw	ʃ	\revglotstop	ɾ	\tildel
ɖ	\dz	ℒ	\invy	D	\scd	ʒ	\yogh
ɶ	\ejective	γ	\ipagamma	G	\scg		

TABLE 15: wasysym Phonetic Symbols

ð	\dh	ə	\inve	ʒ	\roundz	þ	\thorn
Ð	\DH	ɔ	\openo	Þ	\Thorn		

TABLE 16: phonetic Phonetic Symbols

ɟ	\barj	ɾ	\flap	ɿ	\ibar	ɒ	\rotvara	ɹ	\vari
λ	\barlambda	ʔ	\glottal	ɔ	\openo	ℳ	\rotw	Ω	\varomega
ɱ	\emgma	ʙ	\hausab	ħ	\planck	ℒ	\roty	ɔ	\varopeno
ɱ	\engma	ɓ	\hausab	Λ	\pwedge	ə	\schwa	ʋ	\vod
ɲ	\enya	ɗ	\hausad	ɔ	\revD	þ	\thorn	fi	\voicedh
ε	\epsi	Ḑ	\hausad	ɹ	\riota	u	\ubar	ʒ	\yogh
ʃ	\esh	ƙ	\hausak	ɯ	\rotm	ɥ	\udesc		
ð	\eth	K	\hausak	Ω	\rotOmega	ɑ	\vara		
fj	\fj	d	\hookd	ɹ	\rotr	g	\varg		

TABLE 17: t4phonet Phonetic Symbols

ḏ	\textcrd	ḏ	\texthtd		\textpipe
ḥ	\textcrh	ḥ	\texthtk	ḏ	\texttrtaild
ε	\textepsilon	ḥ	\texthtp	ḏ	\texttrtailt
ʃ	\textesh	ḥ	\texthtt	ḏ	\textschwa
fj	\textfjlig	ɹ	\textiota	ʃ	\textscriptv
ḥ	\texthtb	ɲ	\textltailn	ʈ	\texttreshlig
ḥ	\texthtc	ɔ	\textopeno	ʒ	\textyogh

The idea behind the **t4phonet** package's phonetic symbols is to provide an interface to some of the characters in the T4 font encoding (Table 7 on the next page) but using the same names as the **tipa** characters presented in Table 12 on page 22.

TABLE 18: semtrans Transliteration Symbols

ʾ	\Alif	ʿ	\Ayn
---	-------	---	------

TABLE 19: Text-mode Accents

Ää	\{"A}\{a}	Àà	\ {A}\ {a}†	Ââ	\f{A}\f{a}¶	Â̂	\t{A}\t{a}
Áá	\'{A}\'{a}	Ãã	\~{A}\~{a}	Ăă	\G{A}\G{a}‡	Ăă	\u{A}\u{a}
Āā	\.{A}\.{a}	Āā	\b{A}\b{a}	Ħħ	\h{A}\h{a}§	Ää	\U{A}\U{a}‡
Āā	\={A}\={a}	Ȧȧ	\c{A}\c{a}	Ĥĥ	\H{A}\H{a}	Ää	\U{A}\U{a}¶
Ââ	\^{A}\^{a}	Ăă	\C{A}\C{a}¶	Ȧȧ	\k{A}\k{a}†	Ää	\v{A}\v{a}
Àà	\^{A}\^{a}	Ȧȧ	\d{A}\d{a}	Ââ	\r{A}\r{a}		
Ââ	\newtie{A}\newtie{a}* * Requires the <code>textcomp</code> package.	Ⓐⓐ	\textcircled{A}\textcircled{a} See also the <code>circledsteps</code> package, which uses <code>TikZ</code> to encircle symbols of any size.				

* Requires the `textcomp` package.

† Not available in the OT1 font encoding. Use the `fontenc` package to select an alternate font encoding, such as T1.

‡ Requires the T4 font encoding, provided by the `fc` package.

§ Requires the T5 font encoding, provided by the `vntex` package.

¶ Requires one of the Cyrillic font encodings (T2A, T2B, T2C, or X2). Use the `fontenc` package to select an encoding.

|| See also the `circledsteps` package, which uses `TikZ` to encircle symbols of any size.

Also note the existence of `\i` and `\j`, which produce dotless versions of “i” and “j” (viz., “i” and “j”). These are useful when the accent is supposed to replace the dot in encodings that need to composite (i.e., combine) letters and accents. For example, “`na\{\i}ve`” always produces a correct “naïve”, while “`na\{i}ve`” yields the rather odd-looking “naïve” when using the OT1 font encoding and older versions of L^AT_EX. Font encodings other than OT1 and newer versions of L^AT_EX properly typeset “`na\{i}ve`” as “naïve”.

TABLE 20: tipa Text-mode Accents

Áá	\textacutemacron{A}\textacutemacron{a}
Ăă	\textacutewedge{A}\textacutewedge{a}
Ȧȧ	\textadvancing{A}\textadvancing{a}
Ȧȧ	\textbottomtiebar{A}\textbottomtiebar{a}
Ăă	\textbreve{A}\textbreve{a}
Ăă	\textcircumacute{A}\textcircumacute{a}
Ăă	\textcircumdot{A}\textcircumdot{a}

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Ăă	<code>\textdotacute{A}\textdotacute{a}</code>
Ăă	<code>\textdotbreve{A}\textdotbreve{a}</code>
Ää	<code>\textdoublegrave{A}\textdoublegrave{a}</code>
Ää	<code>\textdoublevbaraccent{A}\textdoublevbaraccent{a}</code>
Ằằ	<code>\textfallrise{A}\textfallrise{a}</code>
Ăă	<code>\textgravecircum{A}\textgravecircum{a}</code>
Ăă	<code>\textgravedot{A}\textgravedot{a}</code>
Ăă	<code>\textgravemacron{A}\textgravemacron{a}</code>
Ăă	<code>\textgravemid{A}\textgravemid{a}</code>
Ăă	<code>\texthighrise{A}\texthighrise{a}</code>
⏟	<code>\textinvsubbridge{A}\textinvsubbridge{a}</code>
⏟	<code>\textlowering{A}\textlowering{a}</code>
⏟	<code>\textlowrise{A}\textlowrise{a}</code>
Ăă	<code>\textmidacute{A}\textmidacute{a}</code>
Ăă	<code>\textovercross{A}\textovercross{a}</code>
Ăă	<code>\textoverw{A}\textoverw{a}</code>
⏟	<code>\textpolhook{A}\textpolhook{a}</code>
⏟	<code>\textraising{A}\textraising{a}</code>
⏟	<code>\textretracting{A}\textretracting{a}</code>
⏟	<code>\textringmacron{A}\textringmacron{a}</code>
Ăă	<code>\textrisefall{A}\textrisefall{a}</code>
Ââ	<code>\textroundcap{A}\textroundcap{a}</code>
⏟	<code>\textseagull{A}\textseagull{a}</code>
⏟	<code>\textsubacute{A}\textsubacute{a}</code>
⏟	<code>\textsubarch{A}\textsubarch{a}</code>
⏟	<code>\textsubbar{A}\textsubbar{a}</code>
⏟	<code>\textsubbridge{A}\textsubbridge{a}</code>
⏟	<code>\textsubcircum{A}\textsubcircum{a}</code>
⏟	<code>\textsubdot{A}\textsubdot{a}</code>
⏟	<code>\textsubgrave{A}\textsubgrave{a}</code>
⏟	<code>\textsublhalfring{A}\textsublhalfring{a}</code>
⏟	<code>\textsubplus{A}\textsubplus{a}</code>
⏟	<code>\textsubrhalfring{A}\textsubrhalfring{a}</code>
⏟	<code>\textsubring{A}\textsubring{a}</code>
⏟	<code>\textsubsquare{A}\textsubsquare{a}</code>
⏟	<code>\textsubtilde{A}\textsubtilde{a}</code>

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$\text{\AA}$	<code>\textsubumlaut{A}\textsubumlaut{a}</code>
$\text{\textsubw}$	<code>\textsubw{A}\textsubw{a}</code>
$\text{\textsubwedge}$	<code>\textsubwedge{A}\textsubwedge{a}</code>
$\text{\AA}$	<code>\textsuperimposetilde{A}\textsuperimposetilde{a}</code>
$\text{\AA}$	<code>\textsyllabic{A}\textsyllabic{a}</code>
$\text{\AA}$	<code>\texttildedot{A}\texttildedot{a}</code>
$\text{\AA}$	<code>\texttoptiebar{A}\texttoptiebar{a}</code>
$\text{\AA}$	<code>\textvbaraccent{A}\textvbaraccent{a}</code>

`tipa` defines shortcut sequences for many of the above. See the `tipa` documentation for more information.

TABLE 21: `extraipa` Text-mode Accents

$\text{\AA}$	<code>\bibbridge{A}\bibbridge{a}</code>	$\text{\AA}$	<code>\partvoiceless{A}\partvoiceless{a}</code>
$\text{\AA}$	<code>\crtilde{A}\crtilde{a}</code>	$\text{\AA}$	<code>\sliding{A}\sliding{a}</code>
$\text{\AA}$	<code>\dottedtilde{A}\dottedtilde{a}</code>	$\text{\AA}$	<code>\spreadlips{A}\spreadlips{a}</code>
$\text{\AA}$	<code>\doubletilde{A}\doubletilde{a}</code>	$\text{\AA}$	<code>\subcorner{A}\subcorner{a}</code>
$\text{\AA}$	<code>\finpartvoice{A}\finpartvoice{a}</code>	$\text{\AA}$	<code>\subdoublebar{A}\subdoublebar{a}</code>
$\text{\AA}$	<code>\finpartvoiceless{A}\finpartvoiceless{a}</code>	$\text{\AA}$	<code>\subdoublevert{A}\subdoublevert{a}</code>
$\text{\AA}$	<code>\inipartvoice{A}\inipartvoice{a}</code>	$\text{\AA}$	<code>\sublptr{A}\sublptr{a}</code>
$\text{\AA}$	<code>\inipartvoiceless{A}\inipartvoiceless{a}</code>	$\text{\AA}$	<code>\subrpctr{A}\subrpctr{a}</code>
$\text{\AA}$	<code>\overbridge{A}\overbridge{a}</code>	$\text{\AA}$	<code>\whistle{A}\whistle{a}</code>
$\text{\AA}$	<code>\partvoice{A}\partvoice{a}</code>		

TABLE 22: `wsuipa` Text-mode Accents

$\text{\AA}$	<code>\dental{A}\dental{a}</code>
$\text{\AA}$	<code>\underarch{A}\underarch{a}</code>

TABLE 23: phonetic Text-mode Accents

$\underset{\sim}{A}$	<code>\hill{A}\hill{a}</code>	$\tilde{A}$	<code>\rc{A}\rc{a}</code>	$\underset{\sim}{A}$	<code>\ut{A}\ut{a}</code>
$\underset{\cdot}{A}$	<code>\od{A}\od{a}</code>	$\underset{\cdot}{A}$	<code>\syl{A}\syl{a}</code>		
$\tilde{A}$	<code>\ohill{A}\ohill{a}</code>	$\underset{\cdot}{A}$	<code>\td{A}\td{a}</code>		

The `phonetic` package provides a few additional macros for linguistic accents. `\acbar` and `\acarc` compose characters with multiple accents; for example, `\acbar{'}{a}` produces “ $\tilde{a}$ ” and `\acarc{"}{e}` produces “ $\tilde{e}$ ”. `\labvel` joins two characters with an arc: `\labvel{mn}` $\rightarrow$ “ $\overline{mn}$ ”. `\upbar` is intended to go between characters as in “ $x\overline{y}$ ” $\rightarrow$ “ $x'y$ ”. Lastly, `\uplett` behaves like `\textsuperscript` but uses a smaller font. Contrast “ $p\uplett{h}$ ” $\rightarrow$ “ p^h ” with “ p^{h} ” $\rightarrow$ “ p^h ”.

TABLE 24: metre Text-mode Accents

$\acute{A}$	<code>\acutus{A}\acutus{a}</code>
$\breve{A}$	<code>\breve{A}\breve{a}</code>
$\tilde{A}$	<code>\circumflexus{A}\circumflexus{a}</code>
$\ddot{A}$	<code>\diaeresis{A}\diaeresis{a}</code>
$\grave{A}$	<code>\gravis{A}\gravis{a}</code>
$\bar{A}$	<code>\macron{A}\macron{a}</code>

TABLE 25: t4phonet Text-mode Accents

$\ddot{A}$	<code>\textdoublegrave{A}\textdoublegrave{a}</code>
$\acute{A}$	<code>\textvbaraccent{A}\textvbaraccent{a}</code>
$\breve{A}$	<code>\textdoublevbaraccent{A}\textdoublevbaraccent{a}</code>

The idea behind the `t4phonet` package’s text-mode accents is to provide an interface to some of the accents in the T4 font encoding (accents marked with “ $\ddot{}$ ” in Table 19 on the next page) but using the same names as the `tipa` accents presented in Table 20 on page 26.

TABLE 26: arcs Text-mode Accents

$$\widehat{Aa} \quad \backslash\overarc{A}\backslash\overarc{a} \quad \underline{Aa} \quad \backslash\underarc{A}\backslash\underarc{a}$$

The accents shown above scale only to a few characters wide. An optional macro argument alters the effective width of the accented characters. See the `arcs` documentation for more information.

At the time of this writing (2015/11/12), there exists an incompatibility between the `arcs` package and the `relsize` package, upon which `arcs` depends. As a workaround, one should apply the patch proposed by Michael Sharpe on the X_YTeX mailing list (Subject: “The arcs package”, dated 2013/08/25) to prevent spurious text from being added to the document (as in, “5.0pt $\widehat{A}$ ” when “ $\widehat{A}$ ” is expected).

TABLE 27: semtrans Accents

$$\mathring{Aa} \quad \backslash\mathring{D}\{A\}\backslash\mathring{D}\{a\} \quad \mathring{Aa} \quad \backslash\mathring{U}\{A\}\backslash\mathring{U}\{a\}$$

$$\mathring{V}e \quad \backslash\mathring{T}\{A\}\backslash\mathring{T}\{a\}^*$$

* $\mathring{T}$ is not actually an accent but a command that rotates its argument 180° using the `graphicx` package’s `\rotatebox` command.

TABLE 28: ogonek Accents

$$\mathring{Aa} \quad \backslash\mathring{k}\{A\}\backslash\mathring{k}\{a\}$$

TABLE 29: combelow Accents

$$\mathring{Aa} \quad \backslash\mathring{c}\mathring{b}\{A\}\backslash\mathring{c}\mathring{b}\{a\}$$

$\mathring{c}\mathring{b}$ places a comma *above* letters with descenders. Hence, while “ $\mathring{c}\mathring{b}\{s\}$ ” produces “š”, “ $\mathring{c}\mathring{b}\{g\}$ ” produces “g̣”.

TABLE 30: wsuipa Diacritics

ˆ	\ain	ˋ	\leftp	˚	\overring	ˊ	\stress	˘	\underwedge
⌈	\corner	⌋	\leftt	ˆ	\polishhook	ˌ	\syllabic	ˆ	\upp
˘	\downp	ː	\length	ˋ	\rightp	˙	\underdots	ˆ	\upt
˘	\downt	˘	\midtilde	ˋ	\rightt	˚	\underring		
˘	\halflength	ˆ	\open	ˌ	\secstress	˘	\undertilde		

The `wsuipa` package defines all of the above as ordinary characters, not as accents. However, it does provide `\diatop` and `\diaunder` commands, which are used to compose diacritics with other characters. For example, `\diatop[\overring|a]` produces “ $\overset{\circ}{a}$ ”, and `\diaunder[\underdots|a]` produces “ $\underset{\cdot}{a}$ ”. See the `wsuipa` documentation for more information.

TABLE 31: textcomp Diacritics

ˆ	\textacutedbl	˘	\textasciicaron	ˉ	\textasciimacron
˘	\textasciiacute	˝	\textasciidieresis	ˆ	\textgravedbl
˘	\textasciibreve	˘	\textasciigrave		

The `textcomp` package defines all of the above as ordinary characters, not as accents. You can use `\llap` or `\rlap` to combine them with other characters. See the discussion of `\llap` and `\rlap` on page 372 for more information.

TABLE 32: marvosym Diacritics

→	\arrowOver	—	\barOver	/	\StrikingThrough
→	\ArrowOver	—	\BarOver		

The `marvosym` package defines all of the above as ordinary characters, not as accents. You can use `\llap` or `\rlap` to combine them with other characters. See the discussion of `\llap` and `\rlap` on page 372 for more information.

TABLE 33: textcomp Currency Symbols

฿	\textbaht	\$	\textdollar*	₵	\textguarani	₩	\textwon
¢	\textcent	\$	\textdollaroldstyle	£	\textlira	¥	\textyen
¢	\textcentoldstyle	₫	\textdong	₦	\textnaira		
₯	\textcolonmonetary	€	\texteuro	₱	\textpeso		
₣	\textcurrency	f	\textflorin	£	\textsterling*		

* It’s generally preferable to use the corresponding symbol from Table 3 on page 19 because the symbols in that table work properly in both text mode and math mode.

TABLE 34: marvosym Currency Symbols

₯	<code>\Denarius</code>	€	<code>\EURcr</code>	€	<code>\EURtm</code>	℔	<code>\Pfund</code>
€	<code>\Ecommerce</code>	€	<code>\EURdig</code>	\$	<code>\EyesDollar</code>	β	<code>\Shilling</code>
€	<code>\EUR</code>	€	<code>\EURhv</code>	ℳ	<code>\Florin</code>		

The different euro signs are meant to be visually compatible with different fonts—Courier (`\EURcr`), Helvetica (`\EURhv`), Times Roman (`\EURtm`), and the `marvosym` digits listed in Table 320 (`\EURdig`). The `mathdesign` package redefines `\texteuro` to be visually compatible with one of three additional fonts: Utopia (€), Charter (€), or Garamond (€).

TABLE 35: fontawesome5 Currency Symbols

₿	<code>\faBtc</code>	₧	<code>\faLiraSign</code>	₪	<code>\faShekelSign</code>	¥	<code>\faYenSign</code>
\$	<code>\faDollarSign</code>	£	<code>\faPoundSign</code>	₮	<code>\faTenge</code>		
€	<code>\faEuroSign</code>	₽	<code>\faRubleSign</code>	₴	<code>\faViacoin</code>		
₴	<code>\faHryvnia</code>	₹	<code>\faRupeeSign</code>	₩	<code>\faWonSign</code>		

TABLE 36: wasysym Currency Symbols

¢	<code>\cent</code>	₡	<code>\currency</code>	€	<code>\wasyeuro*</code>
---	--------------------	---	------------------------	---	-------------------------

* `\wasyeuro` is also available as `\euro` unless you specify the `noeuro` package option.

TABLE 37: GPTA2e Currency Symbols

€	<code>\Euro</code>	£	<code>\Pound</code>
---	--------------------	---	---------------------

TABLE 38: teubner Currency Symbols

×	<code>\denarius</code>	c	<code>\hemiobelion</code>	⌌	<code>\tetartemorion</code>
⌌	<code>\dracma</code>	₯	<code>\stater</code>		

TABLE 39: tfrupree Currency Symbols

₹	<code>\rupee</code>
---	---------------------

TABLE 40: eurosym Euro Signs

€ \geneuro € \geneuronarrow € \geneurowide € \officiaeuro

\euro is automatically mapped to one of the above—by default, \officiaeuro—based on a eurosym package option. See the eurosym documentation for more information. The \geneuro... characters are generated from the current body font’s “C” character and therefore may not appear exactly as shown.

TABLE 41: fourier Euro Signs

€ \eurologo € \texteuro

TABLE 42: textcomp Legal Symbols

© \textcircledP © © \textcopyright ™ \textservicemark
 © \textcopyleft ® ® \textregistered ™ ™ \texttrademark

The first symbol column represents the—sometimes “faked”—symbol that L^AT_EX 2_ε provides by default. The second symbol column represents the symbol as redefined by textcomp. The textcomp package is generally required to typeset Table 42’s symbols in italic.

See <http://www.texfaq.org/FAQ-tradesyms.html> for solutions to common problems that occur when using these symbols (e.g., getting a “©” when you expected to get a “®”).

TABLE 43: fontawesome5 Legal Symbols

© \faCopyright	© \faCreativeCommonsRemix
© \faCopyright[regular]	© \faCreativeCommonsSa
© \faCreativeCommons	© \faCreativeCommonsSampling
© \faCreativeCommonsBy	© \faCreativeCommonsSamplingPlus
© \faCreativeCommonsNc	© \faCreativeCommonsShare
© \faCreativeCommonsNcEu	© \faCreativeCommonsZero
© \faCreativeCommonsNcJp	® \faRegistered
© \faCreativeCommonsNd	® \faRegistered[regular]
© \faCreativeCommonsPd*	™ \faTrademark
© \faCreativeCommonsPd	

TABLE 44: ccllicenses Creative Commons License Icons

	<code>\cc</code>		<code>\ccnc*</code>		<code>\ccsa*</code>
	<code>\ccby</code>		<code>\ccnd</code>		

* These symbols utilize the `rotating` package and therefore display improperly in some DVI viewers.

TABLE 45: ccicons Creative Commons License Icons

	<code>\ccAttribution</code>		<code>\ccNonCommercialEU</code>		<code>\ccShare</code>
	<code>\ccCopy</code>		<code>\ccNonCommercialJP</code>		<code>\ccShareAlike</code>
	<code>\ccLogo</code>		<code>\ccPublicDomain</code>		<code>\ccZero</code>
	<code>\ccNoDerivatives</code>		<code>\ccRemix</code>		
	<code>\ccNonCommercial</code>		<code>\ccSampling</code>		

`ccicons` additionally defines a set of commands for typesetting many complete Creative Commons licenses (i.e., juxtapositions of two or more of the preceding icons). For example, the `\ccbyncnd` command typesets the “Attribution–Noncommercial–No Derivative Works” license (“”). See the `ccicons` documentation for more information.

TABLE 46: textcomp Old-style Numerals

0	<code>\textzerooldstyle</code>	4	<code>\textfouroldstyle</code>	8	<code>\texteightoldstyle</code>
1	<code>\textoneoldstyle</code>	5	<code>\textfiveoldstyle</code>	9	<code>\textnineoldstyle</code>
2	<code>\texttwooldstyle</code>	6	<code>\textsixoldstyle</code>		
3	<code>\textthreeoldstyle</code>	7	<code>\textsevenoldstyle</code>		

Rather than use the bulky `\textoneoldstyle`, `\texttwooldstyle`, etc. commands shown above, consider using `\oldstylenums{...}` to typeset an old-style number.

TABLE 47: Miscellaneous textcomp Symbols

<code>\b</code>	<code>\textblank</code>	<code>\P</code>	<code>\textpilcrow</code>
<code>\ </code>	<code>\textbrokenbar</code>	<code>\'</code>	<code>\textquotesingle</code>
<code>=</code>	<code>\textdblhyphen</code>	<code>\,</code>	<code>\textquotestraightbase</code>
<code>=</code>	<code>\textdblhyphenchar</code>	<code>\"</code>	<code>\textquotestraightdblbase</code>
<code>\%</code>	<code>\textdiscount</code>	<code>\R</code>	<code>\textrecipe</code>
<code>\C</code>	<code>\textestimated</code>	<code>*</code>	<code>\textreferencemark</code>
<code>\?</code>	<code>\textinterrobang</code>	<code>\—</code>	<code>\textthreequartersemdash</code>
<code>\d</code>	<code>\textinterrobangdown</code>	<code>\~</code>	<code>\texttildelow</code>
<code>\N^o</code>	<code>\textnumero</code>	<code>\—</code>	<code>\texttwelveudash</code>
<code>\o</code>	<code>\textopenbullet</code>		

TABLE 48: Miscellaneous `wasysym` Text-mode Symbols

f	<code>\longs</code>	% ₀₀	<code>\permil</code>	§	<code>\wasyparagraph</code> *
---	---------------------	-----------------	----------------------	---	-------------------------------

* `wasysym` defines `\Paragraph` as a synonym for `\wasyparagraph`.

Chapter 3

Mathematical symbols

Most, but not all, of the symbols in this chapter are math-mode only. That is, they yield a “Missing \$ inserted” error message if not used within `$. . $`, `\[. . \]`, or another math-mode environment. Operators marked as “variable-sized” are taller in displayed formulas, shorter in in-text formulas, and possibly shorter still when used in various levels of superscripts or subscripts.

Alphanumeric symbols (e.g., “ $\mathcal{L}$ ” and “ $\mathbb{Z}$ ”) are usually produced using one of the math alphabets in Table 348 rather than with an explicit symbol command. Look there first if you need a symbol for a transform, number set, or some other alphanumeric.

Although there have been many requests on `comp.text.tex` for a contradiction symbol, the ensuing discussion invariably reveals innumerable ways to represent contradiction in a proof, including “ $\blacksquare$ ” (`\blitza`), “ $\Rightarrow\Leftarrow$ ” (`\Rightarrow\Leftarrow`), “ $\perp$ ” (`\bot`), “ $\Leftrightarrow$ ” (`\nletrightarrow`), and “ ✖ ” (`\textreferencemark`). Because of the lack of notational consensus, it is probably better to spell out “Contradiction!” than to use a symbol for this purpose. Similarly, discussions on `comp.text.tex` have revealed that there are a variety of ways to indicate the mathematical notion of “is defined as”. Common candidates include “ $\triangleq$ ” (`\triangleq`), “ $\equiv$ ” (`\equiv`), “ $\coloneqq$ ” (*various*¹), and “ $\stackrel{\text{def}}{=}$ ” (`\stackrel{\text{def}}{=}`). See also the example of `\equalsfill` on page 374. Depending upon the context, disjoint union may be represented as “ $\coprod$ ” (`\coprod`), “ $\sqcup$ ” (`\sqcup`), “ $\dot{\cup}$ ” (`\dotcup`), “ $\oplus$ ” (`\oplus`), “ $\amalg$ ” (`\amalg`), or any of a number of other symbols.² Finally, the average value of a variable x is written by some people as “ $\overline{x}$ ” (`\overline{x}`), by some people as “ $\langle x \rangle$ ” (`\langle x \rangle`), and by some people as “ $\varnothing x$ ” or “ $\oslash x$ ” (`\diameter x` or `\varnothing x`). The moral of the story is that you should be careful always to explain your notation to avoid confusing your readers.

TABLE 49: Math-mode Versions of Text Symbols

\$	<code>\mathdollar</code>	¶	<code>\mathparagraph</code>	£	<code>\mathsterling</code>
...	<code>\mathellipsis</code>	§	<code>\mathsection</code>	-	<code>\mathunderscore</code>

It’s generally preferable to use the corresponding symbol from Table 3 on page 19 because the symbols in that table work properly in both text mode and math mode.

¹In `txfonts`, `pxfonts`, and `mathtools` the symbol is called `\coloneqq`. In `mathabx` and `MnSymbol` it’s called `\coloneq`. In `colonequals` it’s called `\colonequals`.

²Bob Tennent listed these and other disjoint-union symbol possibilities in a November 2007 post to `comp.text.tex`.

TABLE 50: logix Math-mode Versions of Text Symbols

&	\AAnd	†	\Dagger	\	\LeftSlash	'	\SingleQuote
&	\Ampersand	‡	\Daggerr		\LngVrtBar	~	\Tild
`	\BackQuote	††	\Ddagger	#	\Numbr	"""	\TripleQuote
	\BndBar	‡‡	\Ddaggerr	%	\Percnt	_	\Underscore
^	\Circumflex	\$	\Dollar	?	\Queston		
,	\Coma	"	\DoubleQuote	/	\RightSlash		
©	\Cpyrght	!	\Exclaim	;	\Semicln		

logix requires either Lua $\text{\LaTeX}$ or X $\text{\LaTeX}$.

TABLE 51: logix Basic Operators

*	\Asterick	⊕	\CircMinusPlus	÷	\Divd	−	\Minus
⊗	\CircAsterick	⊕	\CircPls	/	\Divide	≠	\MinusPlus
⊖	\CircDivd	⊕	\CircPlusMinus	÷	\DMinus	+	\Pls
⊘	\CircDivide	⊗	\CircTimes	+	\DPlus	±	\PlusMinus
⊖	\CircMinus	*	\DAsterisk	×	\DTimes	×	\Times

logix requires either Lua $\text{\LaTeX}$ or X $\text{\LaTeX}$.

TABLE 52: cml Unary Operators

!	\oc*	↑	\shneg	?	\wn*
↕	\shift	↓	\shpos		

* \oc and \wn differ from “!” and “?” in terms of their math-mode spacing: $\$A=!B\$$ produces “ $A =!B$ ”, for example, while $\$A=\oc B\$$ produces “ $A = !B$ ”.

TABLE 53: Binary Operators

⊔	\amalg	⊔	\cup	⊕	\oplus	×	\times
*	\ast	†	\dagger	⊘	\oslash	◁	\triangleleft
○	\bigcirc	‡	\ddagger	⊗	\otimes	▷	\triangleright
▽	\bigtriangledown	◇	\diamond	±	\pm	≤	\unlhd*
△	\bigtriangleup	÷	\div	▷	\rhd*	≥	\unrhd*
•	\bullet	◁	\lhd*	\	\setminus	⊕	\uplus
∩	\cap	≠	\mp	□	\sqcap	∨	\vee
·	\cdot	⊙	\odot	□	\sqcup	∧	\wedge
○	\circ	⊖	\ominus	*	\star	}	\wr

* Not predefined by the $\text{\LaTeX} 2_{\epsilon}$ core. Use the latexsym package to expose this symbol.

TABLE 54: $\mathcal{AMS}$ Binary Operators

$\bar{\wedge}$	<code>\barwedge</code>	$\odot$	<code>\circledcirc</code>	$\intercal$	<code>\intercal*</code>
$\boxdot$	<code>\boxdot</code>	$\ominus$	<code>\circleddash</code>	$\backslash$	<code>\leftthreetimes</code>
$\boxminus$	<code>\boxminus</code>	$\cup$	<code>\Cup</code>	$\ltimes$	<code>\ltimes</code>
$\boxplus$	<code>\boxplus</code>	$\curlyvee$	<code>\curlyvee</code>	$\rtimes$	<code>\rightthreetimes</code>
$\boxtimes$	<code>\boxtimes</code>	$\curlywedge$	<code>\curlywedge</code>	$\rtimes$	<code>\rtimes</code>
$\Cap$	<code>\Cap</code>	$\div$	<code>\divideontimes</code>	$\smallsetminus$	<code>\smallsetminus</code>
$\centerdot$	<code>\centerdot</code>	$\dotplus$	<code>\dotplus</code>	$\veebar$	<code>\veebar</code>
$\circledast$	<code>\circledast</code>	$\overline{\wedge}$	<code>\doublebarwedge</code>		

* Some people use a superscripted `\intercal` for matrix transpose: “ $A^{\intercal}$ ” $\mapsto$ “ A^T ”. (See the May 2009 `comp.text.tex` thread, “raising math symbols”, for suggestions about altering the height of the superscript.) `\top` (Table 223 on page 123), `T`, and `\mathsf{T}` are other popular choices: “ A^T ”, “ A^T ”, “ A^T ”.

TABLE 55: `stmaryrd` Binary Operators

ϕ	<code>\baro</code>	$\parallel$	<code>\interleave</code>	$\otimes$	<code>\varoast</code>
$\backslash$	<code>\bbslash</code>	$\triangleleft$	<code>\leftslice</code>	$\oplus$	<code>\varobar</code>
$\&$	<code>\binampersand</code>	$\M$	<code>\merge</code>	$\oslash$	<code>\varobslash</code>
$\wp$	<code>\bindnasrepma</code>	$\oplus$	<code>\minuso</code>	$\odot$	<code>\varocircle</code>
$\boxast$	<code>\boxast</code>	$\pm$	<code>\moo</code>	$\odot$	<code>\varodot</code>
$\boxbar$	<code>\boxbar</code>	$\oplus$	<code>\nplus</code>	$\oslash$	<code>\varogreaterthan</code>
$\boxbox$	<code>\boxbox</code>	$\oplus$	<code>\obar</code>	$\oslash$	<code>\varolessthan</code>
$\boxbslash$	<code>\boxbslash</code>	$\square$	<code>\oblong</code>	$\ominus$	<code>\varominus</code>
$\boxcircle$	<code>\boxcircle</code>	$\oslash$	<code>\obslash</code>	$\oplus$	<code>\varoplus</code>
$\boxdot$	<code>\boxdot</code>	$\oslash$	<code>\ogreaterthan</code>	$\oslash$	<code>\varoslash</code>
$\boxempty$	<code>\boxempty</code>	$\oslash$	<code>\olessthan</code>	$\otimes$	<code>\varotimes</code>
$\boxslash$	<code>\boxslash</code>	$\oslash$	<code>\ovee</code>	$\oslash$	<code>\varovee</code>
$\curlyveedownarrow$	<code>\curlyveedownarrow</code>	$\oslash$	<code>\owedge</code>	$\oslash$	<code>\varowedge</code>
$\curlyveeuparrow$	<code>\curlyveeuparrow</code>	$\triangleright$	<code>\rightslice</code>	$\times$	<code>\vartimes</code>
$\curlywedgedownarrow$	<code>\curlywedgedownarrow</code>	$\parallel$	<code>\sslash</code>	$\Uparrow$	<code>\Ydown</code>
$\curlywedgeuparrow$	<code>\curlywedgeuparrow</code>	$\parallel$	<code>\talloblong</code>	$\leftarrow$	<code>\Yleft</code>
$\fatbslash$	<code>\fatbslash</code>	$\bigcirc$	<code>\varbigcirc</code>	$\rightarrow$	<code>\Yright</code>
$\fatsemi$	<code>\fatsemi</code>	$\curlyvee$	<code>\varcurlyvee</code>	$\curlywedge$	<code>\Yup</code>
$\fatslash$	<code>\fatslash</code>	$\curlywedge$	<code>\varcurlywedge</code>		

TABLE 56: `wasysym` Binary Operators

$\triangleleft$	<code>\lhd</code>	$\bigcirc$	<code>\ocircle</code>	$\blacktriangleright$	<code>\RHD</code>	$\supseteq$	<code>\unrhd</code>
$\blacktriangleleft$	<code>\LHD</code>	$\triangleright$	<code>\rhd</code>	$\trianglelefteq$	<code>\unlhd</code>		

TABLE 57: txfonts/pxfonts Binary Operators

⊖	<code>\circledbar</code>	⊖	<code>\circledwedge</code>	○	<code>\medcirc</code>
⊘	<code>\circledbslash</code>	⌘	<code>\invamp</code>	⊞	<code>\sqcapplus</code>
⊕	<code>\circledvee</code>	●	<code>\medbullet</code>	⊞	<code>\sqcupplus</code>

TABLE 58: mathabx Binary Operators

*	<code>\ast</code>	^	<code>\curlywedge</code>	□	<code>\sqcap</code>
*	<code>\Asterisk</code>	÷	<code>\divdot</code>	□	<code>\sqcup</code>
⌘	<code>\barwedge</code>	*	<code>\divideontimes</code>	⊞	<code>\sqdoublecap</code>
★	<code>\bigstar</code>	÷	<code>\dotdiv</code>	⊞	<code>\sqdoublecup</code>
★	<code>\bigvarstar</code>	+	<code>\dotplus</code>	□	<code>\square</code>
◆	<code>\blackdiamond</code>	×	<code>\dottimes</code>	⊞	<code>\squplus</code>
∩	<code>\cap</code>	⌘	<code>\doublebarwedge</code>	·	<code>\udot</code>
⊕	<code>\circplus</code>	⊞	<code>\doublecap</code>	⊞	<code>\uplus</code>
*	<code>\coasterisk</code>	⊞	<code>\doublecup</code>	*	<code>\varstar</code>
*	<code>\coAsterisk</code>	×	<code>\ltimes</code>	∨	<code>\vee</code>
*	<code>\convolution</code>	⊞	<code>\pluscirc</code>	∨	<code>\veebar</code>
∪	<code>\cup</code>	×	<code>\rtimes</code>	∨	<code>\veedoublebar</code>
∨	<code>\curlyvee</code>	■	<code>\sqbullet</code>	^	<code>\wedge</code>

Many of the preceding glyphs go by multiple names. `\centerdot` is equivalent to `\sqbullet`, and `\ast` is equivalent to `*`. `\asterisk` produces the same glyph as `\ast`, but as an ordinary symbol, not a binary operator. Similarly, `\bigast` produces a large-operator version of the `\Asterisk` binary operator, and `\bigcoast` produces a large-operator version of the `\coAsterisk` binary operator.

TABLE 59: MnSymbol Binary Operators

⊞	<code>\amalg</code>	⊞	<code>\doublesqcup</code>	∴	<code>\righttherefore</code>
*	<code>\ast</code>	∨	<code>\doublevee</code>	×	<code>\rightthreetimes</code>
×	<code>\backslashslashdiv</code>	⌘	<code>\doublewedge</code>	⌘	<code>\rightY</code>
⌘	<code>\bowtie</code>	∴	<code>\downtherefore</code>	×	<code>\rtimes</code>
●	<code>\bullet</code>	∨	<code>\downY</code>	×	<code>\slashdiv</code>
∩	<code>\cap</code>	×	<code>\dtimes</code>	⊞	<code>\smallprod</code>
⊞	<code>\capdot</code>	∴	<code>\fivedots</code>	□	<code>\sqcap</code>
⊞	<code>\capplus</code>	∞	<code>\hbipto</code>	⊞	<code>\sqcapdot</code>
·	<code>\cdot</code>	∴	<code>\hdotdot</code>	⊞	<code>\sqcapplus</code>
○	<code>\circ</code>	⊞	<code>\lefthalfcap</code>	□	<code>\sqcup</code>

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$\curlyvee$	<code>\closedcurlyvee</code>	$\leftthreetimes$	<code>\leftthreetimes</code>	$\sqcup\cdot$	<code>\sqcupdot</code>
$\curlywedge$	<code>\closedcurlywedge</code>	$\lefttherefore$	<code>\lefttherefore</code>	$\sqcupplus$	<code>\sqcupplus</code>
$\cup$	<code>\cup</code>	$\leftY$	<code>\leftY</code>	$\times$	<code>\times</code>
$\cup\cdot$	<code>\cupdot</code>	$\ltimes$	<code>\ltimes</code>	$\cdot$	<code>\cdot</code>
$\cupplus$	<code>\cupplus</code>	$\medbackslash$	<code>\medbackslash</code>	$\cdot$	<code>\cdot</code>
$\vee$	<code>\curlyvee</code>	$\medcircle$	<code>\medcircle</code>	$\cdot$	<code>\cdot</code>
$\vee\cdot$	<code>\curlyveedot</code>	$\medslash$	<code>\medslash</code>	$\cdot$	<code>\cdot</code>
$\wedge$	<code>\curlywedge</code>	$\medvert$	<code>\medvert</code>	$\cdot$	<code>\cdot</code>
$\wedge\cdot$	<code>\curlywedgedot</code>	$\cdot$	<code>\cdot</code>	$\cdot$	<code>\cdot</code>
$\cdot$	<code>\ddotdotdot</code>	$\cdot$	<code>\cdot</code>	$\cdot$	<code>\cdot</code>
$\cdot\cdot$	<code>\diamondddots</code>	$\cdot$	<code>\cdot</code>	$\cdot$	<code>\cdot</code>
$\div$	<code>\div</code>	$\cdot$	<code>\cdot</code>	$\cdot$	<code>\cdot</code>
$\cdot$	<code>\dotmedvert</code>	$\cdot$	<code>\cdot</code>	$\cdot$	<code>\cdot</code>
$\cdot$	<code>\dotminus</code>	$\cdot$	<code>\cdot</code>	$\cdot$	<code>\cdot</code>
$\cap$	<code>\doublecap</code>	$\cdot$	<code>\cdot</code>	$\cdot$	<code>\cdot</code>
$\cup$	<code>\doublecup</code>	$\cdot$	<code>\cdot</code>	$\cdot$	<code>\cdot</code>
$\curlyvee$	<code>\doublecurlyvee</code>	$\cdot$	<code>\cdot</code>	$\cdot$	<code>\cdot</code>
$\curlywedge$	<code>\doublecurlywedge</code>	$\cdot$	<code>\cdot</code>	$\cdot$	<code>\cdot</code>
$\sqcup$	<code>\doublesqcup</code>	$\cdot$	<code>\cdot</code>	$\cdot$	<code>\cdot</code>

MnSymbol defines `\setminus` and `\smallsetminus` as synonyms for `\medbackslash`; `\Join` as a synonym for `\bowtie`; `\wr` as a synonym for `\wreath`; `\shortmid` as a synonym for `\medvert`; `\Cap` as a synonym for `\doublecap`; `\Cup` as a synonym for `\doublecup`; and, `\uplus` as a synonym for `\cupplus`.

TABLE 60: fdsymbol Binary Operators

$\amalg$	<code>\amalg</code>	$\doublesqcup$	<code>\doublesqcup</code>	$\rightY$	<code>\rightY</code>
$\ast$	<code>\ast</code>	$\doublevee$	<code>\doublevee</code>	$\rtimes$	<code>\rtimes</code>
$\bar{\wedge}$	<code>\barwedge</code>	$\doublewedge$	<code>\doublewedge</code>	$\setminus$	<code>\setminus</code>
$\bowtie$	<code>\bowtie</code>	$\downY$	<code>\downY</code>	$\sqcap$	<code>\sqcap</code>
$\cap$	<code>\cap</code>	$\dimes$	<code>\dimes</code>	$\sqcap\cdot$	<code>\sqcapdot</code>
$\cap\cdot$	<code>\capdot</code>	$\cdot$	<code>\cdot</code>	$\sqcapplus$	<code>\sqcapplus</code>
$\capplus$	<code>\capplus</code>	$\intercal$	<code>\intercal</code>	$\sqcup$	<code>\sqcup</code>
$\cdot$	<code>\cdot</code>	$\intprod$	<code>\intprod</code>	$\sqcup\cdot$	<code>\sqcupdot</code>
$\cdot$	<code>\centerdot</code>	$\intprodr$	<code>\intprodr</code>	$\sqcupplus$	<code>\sqcupplus</code>
$\cup$	<code>\cup</code>	$\leftthreetimes$	<code>\leftthreetimes</code>	$\times$	<code>\times</code>
$\cup\cdot$	<code>\cupdot</code>	$\leftY$	<code>\leftY</code>	$\times$	<code>\times</code>

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$\cupplus$	$\ltimes$	$\cdot$	$\udotdot$
$\curlyvee$	$\backslash$	$\bowtie$	$\upbowtie$
$\curlywedge$	$/$	$\upY$	
$\ddot{\cdot}$	$-$	$\times$	$\utimes$
$\div$	$\dot{-}$	$\amalg$	$\varamalg$
$\divideontimes$	$\dot{-}$	$:$	$\vdotdot$
$\divslash$	$\dot{-}$	$:$	$\vdots$
$\dot{-}$	$\mp$	$\vee$	$\vee$
$\dot{+}$	$+$	$\underline{\vee}$	$\veebar$
$\dot{\times}$	$+$	$\vee\dot{\cdot}$	$\veedot$
$\overline{\wedge}$	$\pm$	$\underline{\vee}$	$\veedoublebar$
$\doublecap$	$\lrcorner$	$\wedge$	$\wedge$
$\doublecup$	$\lrcorner$	$\wedge\dot{\cdot}$	$\wedgedot$
$\doublesqcap$	$\ltimes$	$\wr$	$\wreath$

fdsymbol defines $\backslash\text{btimes}$ as a synonym for $\backslash\text{dtimes}$; $\backslash\text{Cap}$ as a synonym for $\backslash\text{doublecap}$; $\backslash\text{Cup}$ as a synonym for $\backslash\text{doublecup}$; $\backslash\text{hookupminus}$ as a synonym for $\backslash\text{intprodr}$; $\backslash\text{hourglass}$ as a synonym for $\backslash\text{upbowtie}$; $\backslash\text{land}$ as a synonym for $\backslash\text{wedge}$; $\backslash\text{lor}$ as a synonym for $\backslash\text{vee}$; $\backslash\text{minushookup}$ as a synonym for $\backslash\text{intprod}$; $\backslash\text{smalldivslash}$ as a synonym for $\backslash\text{medslash}$; $\backslash\text{smallsetminus}$ as a synonym for $\backslash\text{medbackslash}$; $\backslash\text{Sqcap}$ as a synonym for $\backslash\text{doublesqcap}$; $\backslash\text{Sqcup}$ as a synonym for $\backslash\text{doublesqcup}$; $\backslash\text{ttimes}$ as a synonym for $\backslash\text{utimes}$; $\backslash\text{lJoin}$ as a synonym for $\backslash\text{ltimes}$; $\backslash\text{rJoin}$ as a synonym for $\backslash\text{rtimes}$; $\backslash\text{Join}$ and $\backslash\text{lrimes}$ as synonyms for $\backslash\text{bowtie}$; $\backslash\text{uplus}$ as a synonym for $\backslash\text{cupplus}$; $\backslash\text{veeonvee}$ as a synonym for $\backslash\text{doublevee}$; $\backslash\text{wedgeonwedge}$ as a synonym for $\backslash\text{doublewedge}$; and $\backslash\text{wr}$ as a synonym for $\backslash\text{wreath}$.

TABLE 61: boisik Binary Operators

$*$	$\backslash\text{ast}$	$\times$	$\backslash\text{dottimes}$	$\rtimes$	$\backslash\text{rtimesblack}$
ϕ	$\backslash\text{baro}$	$\overline{\wedge}$	$\backslash\text{doublebarwedge}$	$\smallsetminus$	$\backslash\text{smallsetminus}$
$\overline{\wedge}$	$\backslash\text{barwedge}$	$;$	$\backslash\text{fatsemi}$	$\otimes$	$\backslash\text{smashtimes}$
$\parallel$	$\backslash\text{bbslash}$	$>$	$\backslash\text{gtrdot}$	$\boxplus$	$\backslash\text{sqplus}$
$\&$	$\backslash\text{binampersand}$	$\top$	$\backslash\text{intercal}$	$\parallel$	$\backslash\text{sslash}$
$\otimes$	$\backslash\text{bindnasrepma}$	$\wr$	$\backslash\text{lbag}$	$\times$	$\backslash\text{times}$
$\blackbowtie$	$\backslash\text{blackbowtie}$	$\blackbowtie$	$\backslash\text{blackbowtie}$	$\cupplus$	$\backslash\text{uplus}$
$\bowtie$	$\backslash\text{bowtie}$	$\lhd$	$\backslash\text{leftslice}$	$\cap$	$\backslash\text{varcap}$
$\cap$	$\backslash\text{cap}$	λ	$\backslash\text{leftthreetimes}$	$\cup$	$\backslash\text{varcup}$
$\Cap$	$\backslash\text{Cap}$	$\leq$	$\backslash\text{lessdot}$	$\top$	$\backslash\text{varintercal}$

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$\cdot$	<code>\cdot</code>	$\ltimes$	<code>\ltimes</code>	$\sqcap$	<code>\varsqcap</code>
$\cdot$	<code>\centerdot</code>	$\ltimes$	<code>\ltimesblack</code>	$\sqcup$	<code>\varsqcup</code>
$\dagger$	<code>\circplus</code>	$\M$	<code>\merge</code>	$\times$	<code>\vartimes</code>
$*$	<code>\coAsterisk</code>	$\ominus$	<code>\minuso</code>	$\vee$	<code>\vee</code>
$*$	<code>\convolution</code>	$\pm$	<code>\moo</code>	$\vee$	<code>\Vee</code>
$\cup$	<code>\cup</code>	$\mp$	<code>\mp</code>	$\vee$	<code>\veebar</code>
$\cup$	<code>\Cup</code>	$\nplus$	<code>\nplus</code>	$\vee$	<code>\veeonvee</code>
$\cup$	<code>\cupleftarrow</code>	$\oplus$	<code>\pluscirc</code>	$\wedge$	<code>\wedge</code>
$\curlyvee$	<code>\curlyvee</code>	$\oplus$	<code>\plustrif</code>	$\Wedge$	<code>\Wedge</code>
$\curlywedge$	<code>\curlywedge</code>	$\pm$	<code>\pm</code>	$\Uparrow$	<code>\Ydown</code>
$\dagger$	<code>\dagger</code>	$\int$	<code>\rbag</code>	$\lessgtr$	<code>\Yleft</code>
$\ddagger$	<code>\ddagger</code>	$\blackbowtie$	<code>\rblackbowtie</code>	$\gtrless$	<code>\Yright</code>
$\div$	<code>\div</code>	$\triangleright$	<code>\rightslice</code>	$\Uparrow$	<code>\Yup</code>
$\divideontimes$	<code>\divideontimes</code>	$\times$	<code>\rightthreetimes</code>		
$\dot{+}$	<code>\dotplus</code>	$\rtimes$	<code>\rtimes</code>		

TABLE 62: stix Binary Operators

$\amalg$	<code>\amalg</code>	$\fcmp$	<code>\fcmp</code>	$\sqcup$	<code>\sqcup</code>
$*$	<code>\ast</code>	$\frac{\!}{\!}$	<code>\frac{slash}</code>	$\sqcup$	<code>\Sqcup</code>
$\bar{\cap}$	<code>\barcap</code>	$\intercal$	<code>\intercal</code>	$\parallel$	<code>\sslash</code>
$\bar{\cup}$	<code>\barcup</code>	$\interleave$	<code>\interleave</code>	$:$	<code>\threedotcolon</code>
$\bar{\vee}$	<code>\barvee</code>	$\intprod$	<code>\intprod</code>	$\times$	<code>\times</code>
$\bar{\wedge}$	<code>\barwedge</code>	$\intprodr$	<code>\intprodr</code>	$\times$	<code>\timesbar</code>
$\bigvee$	<code>\bigvee</code>	$\invlazys$	<code>\invlazys</code>	$-$	<code>\tminus</code>
$\bigwedge$	<code>\bigwedge</code>	$\leftthreetimes$	<code>\leftthreetimes</code>	$+$	<code>\tplus</code>
$\btimes$	<code>\btimes</code>	$\llhd$	<code>\llhd</code>	$\#$	<code>\tripleplus</code>
$\cap$	<code>\cap</code>	$\ltimes$	<code>\ltimes</code>	$\parallel$	<code>\trslash</code>
$\Cap$	<code>\Cap</code>	$\midbarvee$	<code>\midbarvee</code>	$\cap$	<code>\twocaps</code>
$\capbarcup$	<code>\capbarcup</code>	$\midbarwedge$	<code>\midbarwedge</code>	$\cup$	<code>\twocups</code>
$\capdot$	<code>\capdot</code>	$\minusdot$	<code>\minusdot</code>	$:$	<code>\typecolon</code>
$\capovercup$	<code>\capovercup</code>	$\minusdots$	<code>\minusdots</code>	$\ominus$	<code>\uminus</code>
$\capwedge$	<code>\capwedge</code>	$\minusdots$	<code>\minusdots</code>	$\triangleleft$	<code>\unlhd</code>
$\closedvarcap$	<code>\closedvarcap</code>	$\mp$	<code>\mp</code>	$\triangleleft$	<code>\unrhd</code>
$\closedvarcup$	<code>\closedvarcup</code>	$\nhVvert$	<code>\nhVvert</code>	$\upand$	<code>\upand</code>
$\closedvarcupsmashprod$	<code>\closedvarcupsmashprod</code>	$\opluslhrim$	<code>\opluslhrim</code>	$\oplus$	<code>\uplus</code>
$\commaminus$	<code>\commaminus</code>	$\oplusrhrim$	<code>\oplusrhrim</code>	$\varbarwedge$	<code>\varbarwedge</code>

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$\cup$	<code>\cup</code>	$\otimes$	<code>\otimeslhrim</code>	$\overline{\wedge}$	<code>\vardoublebarwedge</code>
$\Cup$	<code>\Cup</code>	$\otimes$	<code>\otimesrhrim</code>	$\varveebar$	<code>\varveebar</code>
$\cupbarcap$	<code>\cupbarcap</code>	$\dot{+}$	<code>\plusdot</code>	$\times$	<code>\vectimes</code>
$\cupdot$	<code>\cupdot</code>	$\pm$	<code>\pluseqq</code>	$\vee$	<code>\Vee</code>
$\cupleftarrow$	<code>\cupleftarrow</code>	$\hat{+}$	<code>\plushat</code>	$\vee$	<code>\vee</code>
$\cupovercap$	<code>\cupovercap</code>	$\pm$	<code>\plussim</code>	$\veebar$	<code>\veebar</code>
$\cupvee$	<code>\cupvee</code>	$\pm$	<code>\plussubtwo</code>	$\veedot$	<code>\veedot</code>
$\curlyvee$	<code>\curlyvee</code>	$\pm$	<code>\plustrif</code>	$\veedoublebar$	<code>\veedoublebar</code>
$\curlywedge$	<code>\curlywedge</code>	$\pm$	<code>\pm</code>	$\veemidvert$	<code>\veemidvert</code>
$\dagger$	<code>\dagger</code>	$\triangleright$	<code>\rhd</code>	$\veeodot$	<code>\veeodot</code>
$\ddagger$	<code>\ddagger</code>	$\times$	<code>\rightthreetimes</code>	$\veeonvee$	<code>\veeonvee</code>
$\div$	<code>\div</code>	$\oplus$	<code>\ringplus</code>	$\wedge$	<code>\Wedge</code>
$\divideontimes$	<code>\divideontimes</code>	$\bar{\vee}$	<code>\rsolbar</code>	$\wedge$	<code>\wedge</code>
$\dot{-}$	<code>\dotminus</code>	$\rtimes$	<code>\rtimes</code>	$\wedgedot$	<code>\wedgedot</code>
$\dot{+}$	<code>\dotplus</code>	$\setminus$	<code>\setminus</code>	$\wedgedoublebar$	<code>\wedgedoublebar</code>
$\dot{\times}$	<code>\dottimes</code>	$\shuf$	<code>\shuffle</code>	$\wedgemidvert$	<code>\wedgemidvert</code>
$\doublebarvee$	<code>\doublebarvee</code>	$\sim$	<code>\simplus</code>	$\wedge$	<code>\wedge</code>
$\doublebarwedge$	<code>\doublebarwedge</code>	$\smallsetminus$	<code>\smallsetminus</code>	$\wedgeodot$	<code>\wedgeodot</code>
$\doubleplus$	<code>\doubleplus</code>	$\smash$	<code>\smashtimes</code>	$\wedgedonwedge$	<code>\wedgedonwedge</code>
$\dsol$	<code>\dsol</code>	$\sqcap$	<code>\sqcap</code>	$\wr$	<code>\wr</code>
$\eqqplus$	<code>\eqqplus</code>	$\sqcap$	<code>\Sqcap</code>		

stix defines `\land` as a synonym for `\wedge`, `\lor` as a synonym for `\vee`, `\doublecap` as a synonym for `\Cap`, and `\doublecup` as a synonym for `\Cup`.

TABLE 63: mathdesign Binary Operators

$\times$	<code>\dtimes</code>	$\times$	<code>\udtimes</code>	$\times$	<code>\utimes</code>
----------	----------------------	----------	-----------------------	----------	----------------------

The `mathdesign` package additionally provides versions of each of the binary operators shown in Table 54.

TABLE 64: pdfMsym Binary Operators

$\circ$	<code>\circwedge</code>	$\div$	<code>\divs</code>	$\div$	<code>\ndivs</code>
$\cup$	<code>\dcup</code>	$\wedge$	<code>\dwedge</code>		

`pdfMsym` symbols are implemented with PDF literals instead of (or sometimes in conjunction) with a font. All symbols can be rendered by `pdfLATEX` and `LuaLATEX`, some by `XYLATEX`, and none by most other `TEX` backends.

TABLE 65: cml Binary Operators

 $\P$ `\parr*` $\&$ `\with†`

* `cml` defines `\invamp` as a synonym for `\parr`.

† `\with` differs from `\&` in terms of its math-mode spacing: `$A \& B$` produces “ $A \& B$ ”, for example, while `$A \with B$` produces “ $A \& B$ ”.

TABLE 66: shuffle Binary Operators

 $\sqcup$ `\cshuffle` $\sqcup$ `\shuffle`

TABLE 67: resmes Binary Operators

 $\lfloor$ `\resmes`

This symbol notates the restriction of a measure to a set, as in $\phi \lfloor Y$.

TABLE 68: logix Logical Operators

$\ominus$	<code>\CircInvNt</code>	$\oplus$	<code>\CircXor</code>	$\bar{\wedge}$	<code>\Nand</code>	∇	<code>\SbNd</code>
$\oslash$	<code>\CircNand</code>	$\hat{\wedge}$	<code>\Dnd</code>	$\wedge$	<code>\Nd</code>	$\bar{\vee}$	<code>\SbNor</code>
$\oslash$	<code>\CircNd</code>	$\neg$	<code>\Dnt</code>	$\sim$	<code>\Ngt</code>	$\vee$	<code>\SbOr</code>
$\oslash$	<code>\CircNgt</code>	$\dot{\vee}$	<code>\Dor</code>	∇	<code>\Nor</code>	$\underline{\vee}$	<code>\SbXor</code>
$\oslash$	<code>\CircNor</code>	$\neg$	<code>\InvNt</code>	$\neg$	<code>\Nt</code>	$ $	<code>\Shfr</code>
$\ominus$	<code>\CircNt</code>	$\uparrow$	<code>\Lnand</code>	$\vee$	<code>\Or</code>	$\underline{\vee}$	<code>\Xor</code>
$\oslash$	<code>\CircOr</code>	$\downarrow$	<code>\Lnor</code>	$\bar{\wedge}$	<code>\SbNand</code>		

logix requires either `Lua $\LaTeX$` or `X $\LaTeX$` .

TABLE 69: ulsy Geometric Binary Operators

 $\oplus$ `\odplus`

TABLE 70: mathabx Geometric Binary Operators

▼	\blacktriangledown	⊠	\boxright	⊖	\ominus
◄	\blacktriangleleft	⊡	\boxslash	⊕	\oplus
►	\blacktriangleright	⊞	\boxtimes	⊗	\otimes
▲	\blacktriangleup	⊤	\boxtop	⊘	\oslash
⊛	\boxasterisk	⊴	\boxtriangleup	⊗	\otimes
⊞	\boxbackslash	□	\boxvoid	⊕	\otop
⊠	\boxbot	⊛	\oasterisk	⊴	\otriangleup
⊙	\boxcirc	⊘	\obackslash	○	\ovoid
⊛	\boxcoasterisk	⊕	\obot	▼	\smalltriangledown
⊘	\boxdiv	⊙	\ocirc	◄	\smalltriangleleft
⊙	\boxdot	⊛	\ocoasterisk	►	\smalltriangleright
⊠	\boxleft	⊘	\odiv	▲	\smalltriangleup
⊠	\boxminus	⊙	\odot		
⊠	\boxplus	⊕	\oleft		

TABLE 71: MnSymbol Geometric Binary Operators

⊞	\boxbackslash	▼	\filledmedtriangledown	⊙	\ocirc
⊠	\boxbox	◄	\filledmedtriangleleft	⊙	\odot
⊠	\boxdot	►	\filledmedtriangleright	⊖	\ominus
⊠	\boxminus	▲	\filledmedtriangleup	⊕	\oplus
⊠	\boxplus	■	\filledsquare	⊘	\oslash
⊡	\boxslash	★	\filledstar	⊗	\otimes
⊞	\boxtimes	▼	\filledtriangledown	⊗	\otimes
⊠	\boxvert	◄	\filledtriangleleft	⊗	\otimes
⊠	\diamondbackslash	►	\filledtriangleright	⊕	\overline
⊠	\diamondddiamond	▲	\filledtriangleup	★	\pentagram
⊠	\diamondddot	◇	\meddiamond	◇	\smalldiamond
⊠	\diamonddminus	□	\medsquare	□	\smallsquare
⊠	\diamonddplus	☆	\medstar	★	\smallstar
⊠	\diamonddslash	▽	\medtriangledown	▼	\smalltriangledown
⊠	\diamonddtimes	◄	\medtriangleleft	◄	\smalltriangleleft
⊠	\diamonddvert	►	\medtriangleright	►	\smalltriangleright
▽	\downslice	△	\medtriangleup	▲	\smalltriangleup
◆	\filleddiamond	⊗	\oast	★	\thinstar
■	\filledmedsquare	⊘	\obackslash	△	\upslice

MnSymbol defines \blacksquare as a synonym for \filledmedsquare; \square and \Box as synonyms for \medsquare; \diamond as a synonym for \smalldiamond; \Diamond as a synonym for \meddiamond; \star as a synonym for \thinstar; \circledast as a synonym for \oast; \circledcirc as a synonym for \ocirc; and, \circleddash as a synonym for \ominus.

TABLE 72: fdsymbol Geometric Binary Operators

$\boxslash$	<code>\boxbackslash</code>	$\blacktriangledown$	<code>\medblacktriangledown</code>	$\oplus$	<code>\oplus</code>
$\boxbox$	<code>\boxbox</code>	$\blacktriangleleft$	<code>\medblacktriangleleft</code>	$\oslash$	<code>\oslash</code>
$\boxdot$	<code>\boxdot</code>	$\blacktriangleright$	<code>\medblacktriangleright</code>	$\otimes$	<code>\otimes</code>
$\boxminus$	<code>\boxminus</code>	$\blacktriangleup$	<code>\medblacktriangleup</code>	$\oslash$	<code>\overt</code>
$\boxplus$	<code>\boxplus</code>	$\bigcirc$	<code>\medcircle</code>	$\bullet$	<code>\smallblackcircle</code>
$\boxslash$	<code>\boxslash</code>	$\diamond$	<code>\meddiamond</code>	$\blacklozenge$	<code>\smallblackdiamond</code>
$\boxtimes$	<code>\boxtimes</code>	$/$	<code>\medslash</code>	$\blacksquare$	<code>\smallblacksquare</code>
$\boxvert$	<code>\boxvert</code>	$\square$	<code>\medsquare</code>	$\star$	<code>\smallblackstar</code>
$\diamondbackslash$	<code>\diamondbackslash</code>	∇	<code>\medtriangledown</code>	$\blacktriangledown$	<code>\smallblacktriangledown</code>
$\diamondddiamond$	<code>\diamondddiamond</code>	$\triangleleft$	<code>\medtriangleleft</code>	$\blacktriangleleft$	<code>\smallblacktriangleleft</code>
$\diamondddot$	<code>\diamondddot</code>	$\triangleright$	<code>\medtriangleright</code>	$\blacktriangleright$	<code>\smallblacktriangleright</code>
$\diamondminus$	<code>\diamondminus</code>	$\triangleup$	<code>\medtriangleup</code>	$\blacktriangleup$	<code>\smallblacktriangleup</code>
$\diamondplus$	<code>\diamondplus</code>	$\star$	<code>\medwhitestar</code>	$\circ$	<code>\smallcircle</code>
$\diamondslash$	<code>\diamondslash</code>	$\otimes$	<code>\oast</code>	$\diamond$	<code>\smalldiamond</code>
$\diamondtimes$	<code>\diamondtimes</code>	$\oslash$	<code>\obackslash</code>	$\square$	<code>\smallsquare</code>
$\diamondvert$	<code>\diamondvert</code>	$\odot$	<code>\ocirc</code>	∇	<code>\smalltriangledown</code>
$\medblackcircle$	<code>\medblackcircle</code>	$\ominus$	<code>\odash</code>	$\triangleleft$	<code>\smalltriangleleft</code>
$\medblackdiamond$	<code>\medblackdiamond</code>	$\odot$	<code>\odot</code>	$\triangleright$	<code>\smalltriangleright</code>
$\medblacksquare$	<code>\medblacksquare</code>	$\ominus$	<code>\oequal</code>	$\triangleup$	<code>\smalltriangleup</code>
$\medblackstar$	<code>\medblackstar</code>	$\ominus$	<code>\ominus</code>	$\star$	<code>\smallwhitestar</code>

`fdsymbol` defines synonyms for most of the preceding symbols:

$\blacklozenge$	<code>\blackdiamond</code>	$\diamond$	<code>\diamond</code>	$\bullet$	<code>\smbkcircle</code>
$\blacktriangle$	<code>\blacktriangle</code>	$\Diamond$	<code>\Diamond</code>	$\blacklozenge$	<code>\smbkdiamond</code>
$\blacktriangledown$	<code>\blacktriangledown</code>	$\diamondbackslash$	<code>\diamondbackslash</code>	$\blacksquare$	<code>\smbklsquare</code>
$\blacktriangleleft$	<code>\blacktriangleleft</code>	$\diamondcdot$	<code>\diamondcdot</code>	$\star$	<code>\smwhitestar</code>
$\blacktriangleright$	<code>\blacktriangleright</code>	$\mdblkdiamond$	<code>\mdblkdiamond</code>	$\circ$	<code>\smwhtcircle</code>
$\Box$	<code>\Box</code>	$\mdblksquare$	<code>\mdblksquare</code>	$\diamond$	<code>\smwhtdiamond</code>
$\boxbar$	<code>\boxbar</code>	$\mdlgblkcircle$	<code>\mdlgblkcircle</code>	$\square$	<code>\smwhtsquare</code>
$\boxbslash$	<code>\boxbslash</code>	$\mdlgblkdiamond$	<code>\mdlgblkdiamond</code>	$\square$	<code>\square</code>
$\boxdiag$	<code>\boxdiag</code>	$\mdlgblksquare$	<code>\mdlgblksquare</code>	$\star$	<code>\star</code>
$\bullet$	<code>\bullet</code>	$\mdlgwhtcircle$	<code>\mdlgwhtcircle</code>	$\triangle$	<code>\triangle</code>
$\circ$	<code>\circ</code>	$\mdlgwhtdiamond$	<code>\mdlgwhtdiamond</code>	∇	<code>\triangledown</code>
$\circledast$	<code>\circledast</code>	$\mdlgwhtsquare$	<code>\mdlgwhtsquare</code>	$\triangleleft$	<code>\triangleleft</code>
$\circledcirc$	<code>\circledcirc</code>	$\mdwhtdiamond$	<code>\mdwhtdiamond</code>	$\triangleright$	<code>\triangleright</code>
$\circleddash$	<code>\circleddash</code>	$\mdwhtsquare$	<code>\mdwhtsquare</code>	$\triangleup$	<code>\vartriangleup</code>
$\circleddequal$	<code>\circleddequal</code>	$\star$	<code>\medstar</code>		
$\circledvert$	<code>\circledvert</code>	$\oslash$	<code>\obslash</code>		

TABLE 73: boisik Geometric Binary Operators

◆	\blacklozenge	▢	\boxright	□	\oblong
■	\blacksquare	▤	\boxslash	⊕	\obot
▲	\blacktriangle	⊠	\boxtimes	⊗	\obslash
▼	\blacktriangledown	▤	\boxtop	⊗	\ogreaterthan
◀	\blacktriangleleft	▤	\boxtriangle	⊕	\oleft
▶	\blacktriangleright	⊗	\circledast	⊗	\olessthan
⊠	\boxast	⊗	\circledcirc	⊖	\ominus
▢	\boxbar	⊖	\circleddash	⊕	\oplus
▤	\boxbot	◇	\diamond	⊕	\oright
⊠	\boxbox	⬆	\diamondbar	⊗	\oslash
▤	\boxbslash	⊗	\diamondcircle	⊗	\otimes
⊠	\boxcircle	⬆	\diamondminus	⊕	\otop
⊠	\boxdivision	◇	\diamondop	⊗	\otriangle
□	\boxdot	⊕	\diamondplus	⊗	\ovee
▢	\boxleft	⊗	\diamondtimes	⊗	\owedge
▤	\boxminus	⊗	\diamondtriangle	*	\star
▢	\boxplus	⊕	\obar	⏐	\talloblong

TABLE 74: stix Geometric Binary Operators

⌘	\blackhourglass	⬠	\concavediamondtickleft	⊕	\oplus
⊠	\boxast	⬠	\concavediamondtickright	⊗	\oslash
▢	\boxbar	◇	\diamond	⊗	\otimes
⊠	\boxbox	⬠	\dsub	⊗	\Otimes
▤	\boxbslash	⌚	\hourglass	⊗	\otimeshat
⊠	\boxcircle	⬠	\lozengeminus	⬠	\rsub
▤	\boxdiag	◆	\mdlgbkllozenge	•	\smblkcircle
□	\boxdot	○	\mdlgwhtcircle	★	\star
▤	\boxminus	⊕	\obar	⏐	\talloblong
▢	\boxplus	⊕	\obot*	△	\triangle
⊠	\boxtimes	⊗	\obslash	△	\triangleminus
⊗	\circledast	⊕	\odiv	△	\triangleplus
⊗	\circledcirc	⊗	\odot	△	\triangleserifs
⊖	\circleddash	⊗	\odotslashdot*	△	\trianglerighttimes
⊖	\circledequal	⊗	\ogreaterthan	•	\vysmbkcicle†

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Ⓢ	<code>\circledparallel</code>	⊗	<code>\olcross*</code>	◦	<code>\vysmwhtcircle</code>
⓪	<code>\circledvert</code>	⊗	<code>\olessthan</code>	◻	<code>\whitesquaretickleft</code>
⊖	<code>\circlehbar</code>	⊖	<code>\ominus</code>	◻	<code>\whitesquaretickright</code>
◊	<code>\concavediamond</code>	⊥	<code>\operp</code>		

* Defined as an ordinary character, not as a binary relation. However, these symbols more closely resemble the other symbols in this table than they do the geometric shapes presented in Table 440, which is why they are included here.

† stix defines `\bullet` as a synonym for `\vysmblkcircle`.

TABLE 75: logix Geometric Binary Operators

●	<code>\BlackCircle</code>	◄	<code>\LogPast</code>
•	<code>\BlackCircleA</code>	◊	<code>\LogPos</code>
•	<code>\BlackCircleB</code>	○	<code>\LWhiteCircle</code>
•	<code>\BlackCircleC</code>	◊	<code>\LWhiteCurvedDiamond</code>
•	<code>\BlackCircleD</code>	◊	<code>\LWhiteDiamond</code>
•	<code>\BlackCircleE</code>	▽	<code>\LWhiteDownTriangle</code>
•	<code>\BlackCircleF</code>	◄	<code>\LWhiteLeftArrowHead</code>
●	<code>\BlackCircleG</code>	◄	<code>\LWhiteLeftTriangle</code>
●	<code>\BlackCircleH</code>	◻	<code>\LWhiteLozenge</code>
●	<code>\BlackCircleI</code>	▷	<code>\LWhiteRightArrowHead</code>
◆	<code>\BlackCurvedDiamond</code>	▷	<code>\LWhiteRightCurvedArrowHead</code>
◆	<code>\BlackDiamond</code>	▷	<code>\LWhiteRightTriangle</code>
•	<code>\BlackDiamondA</code>	◦	<code>\LWhiteSmallCircle</code>
•	<code>\BlackDiamondB</code>	◻	<code>\LWhiteSquare</code>
•	<code>\BlackDiamondC</code>	◻	<code>\LWhiteSquareRoundCorners</code>
•	<code>\BlackDiamondD</code>	△	<code>\LWhiteUpTriangle</code>
•	<code>\BlackDiamondE</code>	◦	<code>\LWhiteVerySmallCircle</code>
•	<code>\BlackDiamondF</code>	◻	<code>\LWhiteVerySmallSquare</code>
•	<code>\BlackDiamondG</code>	■	<code>\Nec</code>
•	<code>\BlackDiamondH</code>	●	<code>\Next</code>
•	<code>\BlackDiamondI</code>	▲	<code>\NonCont</code>
▼	<code>\BlackDownTriangle</code>	○	<code>\OutlineCircle</code>
▼	<code>\BlackDownTriangleA</code>	◊	<code>\OutlineCurvedDiamond</code>
▼	<code>\BlackDownTriangleB</code>	◊	<code>\OutlineDiamond</code>
▼	<code>\BlackDownTriangleC</code>	▽	<code>\OutlineDownTriangle</code>
▼	<code>\BlackDownTriangleD</code>	◄	<code>\OutlineLeftArrowHead</code>

(continued on next page)

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▼	\BlackDownTriangleE	◄	\OutlineLeftTriangle
▼	\BlackDownTriangleF	▣	\OutlineLozenge
▼	\BlackDownTriangleG	▷	\OutlineRightArrowHead
▼	\BlackDownTriangleH	▷	\OutlineRightCurvedArrowHead
▼	\BlackDownTriangleI	▷	\OutlineRightTriangle
◄	\BlackLeftArrowHead	○	\OutlineSmallCircle
◄	\BlackLeftTriangle	□	\OutlineSquare
◄	\BlackLeftTriangleA	◻	\OutlineSquareRoundCorners
◄	\BlackLeftTriangleB	△	\OutlineUpTriangle
◄	\BlackLeftTriangleC	◦	\OutlineVerySmallCircle
◄	\BlackLeftTriangleD	◻	\OutlineVerySmallSquare
◄	\BlackLeftTriangleE	◄	\Past
◄	\BlackLeftTriangleF	◆	\Pos
◄	\BlackLeftTriangleG	▣	\QuartedLozenge
◄	\BlackLeftTriangleH	⊕	\QuarteredCircle
◄	\BlackLeftTriangleI	⋈	\QuarteredCurvedDiamond
▪	\BlackLozenge	⋈	\QuarteredDiamond
•	\BlackReallySmallCircle	▽	\QuarteredDownTriangle
♦	\BlackReallySmallDiamond	◄	\QuarteredLeftTriangle
▪	\BlackReallySmallSquare	▷	\QuarteredRightTriangle
▷	\BlackRightArrowHead	⊕	\QuarteredSmallCircle
▷	\BlackRightCurvedArrowHead	⊞	\QuarteredSquare
▷	\BlackRightTriangle	⊞	\QuarteredSquareRoundCorners
▷	\BlackRightTriangleA	△	\QuarteredUpTriangle
▷	\BlackRightTriangleB	◦	\QuarteredVerySmallCircle
▷	\BlackRightTriangleC	▣	\QuarteredVerySmallSquare
▷	\BlackRightTriangleD	▽	\TmpCont
▷	\BlackRightTriangleE	▷	\TmpFutr
▷	\BlackRightTriangleF	⊞	\TmpNec
▷	\BlackRightTriangleG	⊖	\TmpNext
▷	\BlackRightTriangleH	△	\TmpNonCont
▷	\BlackRightTriangleI	◄	\TmpPast
•	\BlackSmallCircle	⋈	\TmpPos
■	\BlackSquare	◻	\UpSlahsedSquareRoundCorners
▪	\BlackSquareA	○	\UpSlashedCircle
▪	\BlackSquareB	⋈	\UpSlashedCurvedDiamond
▪	\BlackSquareC	⋈	\UpSlashedDiamond
■	\BlackSquareD	▽	\UpSlashedDownTriangle
■	\BlackSquareE	◄	\UpSlashedLeftTriangle
■	\BlackSquareF	▣	\UpSlashedLozenge
■	\BlackSquareG	▷	\UpSlashedRightTriangle
■	\BlackSquareH	◦	\UpSlashedSmallCircle
■	\BlackSquareI	◻	\UpSlashedSquare
■	\BlackSquareRoundCorners	△	\UpSlashedUpTriangle

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▲	\BlackUpTriangle	◦	\UpSlashedVerySmallCircle
▲	\BlackUpTriangleA	◻	\UpSlashedVerySmallSquare
▲	\BlackUpTriangleB	⊕	\VerticallyDividedCircle
▲	\BlackUpTriangleC	⋈	\VerticallyDividedCurvedDiamond
▲	\BlackUpTriangleD	⋈	\VerticallyDividedDiamond
▲	\BlackUpTriangleE	▽	\VerticallyDividedDownTriangle
▲	\BlackUpTriangleF	◁	\VerticallyDividedLeftTriangle
▲	\BlackUpTriangleG	▤	\VerticallyDividedLozenge
▲	\BlackUpTriangleH	▷	\VerticallyDividedRightTriangle
▲	\BlackUpTriangleI	⊙	\VerticallyDividedSmallCircle
•	\BlackVerySmallCircle	▣	\VerticallyDividedSquare
■	\BlackVerySmallSquare	⊞	\VerticallyDividedSquareRoundCorners
▼	\Cont	△	\VerticallyDividedUpTriangle
⊗	\CrossedCircle	◦	\VerticallyDividedVerySmallCircle
⋈	\CrossedCurvedDiamond	▣	\VerticallyDividedVerySmallSquare
⋈	\CrossedDiamond	○	\WhiteCircle
▽	\CrossedDownTriangle	◦	\WhiteCircleA
◁	\CrossedLeftTriangle	◦	\WhiteCircleB
▤	\CrossedLozenge	◦	\WhiteCircleC
▷	\CrossedRightTriangle	⊙	\WhiteCircleContainingBlackCircle
◦	\CrossedSmallCircle	○	\WhiteCircleD
▣	\CrossedSquare	○	\WhiteCircleE
⊞	\CrossedSquareRoundCorners	○	\WhiteCircleF
△	\CrossedUpTriangle	○	\WhiteCircleG
◦	\CrossedVerySmallCircle	○	\WhiteCircleH
▣	\CrossedVerySmallSquare	○	\WhiteCircleI
▼	\DeoCont	◇	\WhiteCurvedDiamond
▷	\DeoFutr	⋈	\WhiteCurvedDiamondContainingBlackDiamond
□	\DeoNec	◇	\WhiteDiamond
○	\DeoNext	◊	\WhiteDiamondA
△	\DeoNonCont	◊	\WhiteDiamondB
◁	\DeoPast	◊	\WhiteDiamondC
◇	\DeoPos	⋈	\WhiteDiamondContainingBlackDiamond
○	\DottedCirc1	◊	\WhiteDiamondD
⋈	\DottedCurvedDiamond	◊	\WhiteDiamondE
◊	\DottedDiamond	◊	\WhiteDiamondF
▽	\DottedDownTriangle	◊	\WhiteDiamondG
◁	\DottedLeftArrowHead	◊	\WhiteDiamondH
◁	\DottedLeftTriangle	◊	\WhiteDiamondI
▤	\DottedLozenge	▽	\WhiteDownTriangle
▷	\DottedRightArrowHead	▽	\WhiteDownTriangleA
▷	\DottedRightCurvedArrowHead	▽	\WhiteDownTriangleB
▷	\DottedRightTriangle	▽	\WhiteDownTriangleC
◦	\DottedSmallCircle	▽	\WhiteDownTriangleContainingBlackDownTriangle

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	<code>\DottedSquare</code>		<code>\WhiteDownTriangleD</code>
	<code>\DottedSquareRoundCorners</code>		<code>\WhiteDownTriangleE</code>
	<code>\DottedUpTriangle</code>		<code>\WhiteDownTriangleF</code>
	<code>\DottedVerySmallCircle</code>		<code>\WhiteDownTriangleG</code>
	<code>\DottedVerySmallSquare</code>		<code>\WhiteDownTriangleH</code>
	<code>\DownSlashedCircle</code>		<code>\WhiteDownTriangleI</code>
	<code>\DownSlashedCurvedDiamond</code>		<code>\WhiteLeftArrowHead</code>
	<code>\DownSlashedDiamond</code>		<code>\WhiteLeftTriangle</code>
	<code>\DownSlashedDownTriangle</code>		<code>\WhiteLeftTriangleA</code>
	<code>\DownSlashedLeftTriangle</code>		<code>\WhiteLeftTriangleB</code>
	<code>\DownSlashedLozenge</code>		<code>\WhiteLeftTriangleC</code>
	<code>\DownSlashedRightTriangle</code>		<code>\WhiteLeftTriangleContainingBlackLeftTriangle</code>
	<code>\DownSlashedSmallCircle</code>		<code>\WhiteLeftTriangleD</code>
	<code>\DownSlashedSquare</code>		<code>\WhiteLeftTriangleE</code>
	<code>\DownSlashedSquareRoundCorners</code>		<code>\WhiteLeftTriangleF</code>
	<code>\DownSlashedUpTriangle</code>		<code>\WhiteLeftTriangleG</code>
	<code>\DownSlashedVerySmallCircle</code>		<code>\WhiteLeftTriangleH</code>
	<code>\DownSlashedVerySmallSquare</code>		<code>\WhiteLeftTriangleI</code>
	<code>\DoxCont</code>		<code>\WhiteLozenge</code>
	<code>\DoxFutr</code>		<code>\WhiteLozengeContainingBlackLozenge</code>
	<code>\DoxNec</code>		<code>\WhiteReallySmallCircle</code>
	<code>\DoxNext</code>		<code>\WhiteReallySmallDiamond</code>
	<code>\DoxNonCont</code>		<code>\WhiteReallySmallSquare</code>
	<code>\DoxPast</code>		<code>\WhiteRightArrowHead</code>
	<code>\DoxPos</code>		<code>\WhiteRightCurvedArrowHead</code>
	<code>\FacCont</code>		<code>\WhiteRightTriangle</code>
	<code>\FacFutr</code>		<code>\WhiteRightTriangleA</code>
	<code>\FacNec</code>		<code>\WhiteRightTriangleB</code>
	<code>\FacNext</code>		<code>\WhiteRightTriangleC</code>
	<code>\FacNonCont</code>		<code>\WhiteRightTriangleContainingBlackRightTriangle</code>
	<code>\FacPast</code>		<code>\WhiteRightTriangleD</code>
	<code>\FacPos</code>		<code>\WhiteRightTriangleE</code>
	<code>\Futr</code>		<code>\WhiteRightTriangleF</code>
	<code>\HorizontallyDividedCircle</code>		<code>\WhiteRightTriangleG</code>
	<code>\HorizontallyDividedCurvedDiamond</code>		<code>\WhiteRightTriangleH</code>
	<code>\HorizontallyDividedDiamond</code>		<code>\WhiteRightTriangleI</code>
	<code>\HorizontallyDividedDownTriangle</code>		<code>\WhiteSmallCircle</code>
	<code>\HorizontallyDividedLeftTriangle</code>		<code>\WhiteSmallCircleContainingBlackCircle</code>
	<code>\HorizontallyDividedLozenge</code>		<code>\WhiteSquare</code>
	<code>\HorizontallyDividedRightTriangle</code>		<code>\WhiteSquareA</code>
	<code>\HorizontallyDividedSmallCircle</code>		<code>\WhiteSquareB</code>
	<code>\HorizontallyDividedSquare</code>		<code>\WhiteSquareC</code>
	<code>\HorizontallyDividedSquareRoundCorners</code>		<code>\WhiteSquareContainingBlackSquare</code>
	<code>\HorizontallyDividedUpTriangle</code>		<code>\WhiteSquareD</code>

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◦	<code>\HorizontallyDividedVerySmallCircle</code>	□	<code>\WhiteSquareE</code>
▣	<code>\HorizontallyDividedVerySmallSquare</code>	□	<code>\WhiteSquareF</code>
●	<code>\LBlackCircle</code>	□	<code>\WhiteSquareG</code>
◆	<code>\LBlackCurvedDiamond</code>	□	<code>\WhiteSquareH</code>
◆	<code>\LBlackDiamond</code>	□	<code>\WhiteSquareI</code>
▼	<code>\LBlackDownTriangle</code>	○	<code>\WhiteSquareRoundCorners</code>
◄	<code>\LBlackLeftArrowHead</code>	◉	<code>\WhiteSquareRoundCornersContainingBlackSquare</code>
◄	<code>\LBlackLeftTriangle</code>	△	<code>\WhiteUpTriangle</code>
■	<code>\LBlackLozenge</code>	^	<code>\WhiteUpTriangleA</code>
►	<code>\LBlackRightArrowHead</code>	^	<code>\WhiteUpTriangleB</code>
►	<code>\LBlackRightCurvedArrowHead</code>	△	<code>\WhiteUpTriangleC</code>
►	<code>\LBlackRightTriangle</code>	△	<code>\WhiteUpTriangleContainingBlackUpTriangle</code>
●	<code>\LBlackSmallCircle</code>	△	<code>\WhiteUpTriangleD</code>
■	<code>\LBlackSquare</code>	△	<code>\WhiteUpTriangleE</code>
■	<code>\LBlackSquareRoundCorners</code>	△	<code>\WhiteUpTriangleF</code>
▲	<code>\LBlackUpTriangle</code>	△	<code>\WhiteUpTriangleG</code>
•	<code>\LBlackVerySmallCircle</code>	△	<code>\WhiteUpTriangleH</code>
■	<code>\LBlackVerySmallSquare</code>	△	<code>\WhiteUpTriangleI</code>
▽	<code>\LogCont</code>	◦	<code>\WhiteVerySmallCircle</code>
▷	<code>\LogFutr</code>	◦	<code>\WhiteVerySmallCircleContainingBlackCircle</code>
◻	<code>\LogNec</code>	◻	<code>\WhiteVerySmallSquare</code>
⊙	<code>\LogNext</code>	◻	<code>\WhiteVerySmallSquareContainingBlackSquare</code>
△	<code>\LogNonCont</code>		

logix requires either Lua^LTeX or X_YTeX.

TABLE 76: halloweenmath Halloween-Themed Math Operators

🎃	<code>\bigpumpkin[†]</code>	👻	<code>\mathleftghost</code>	☁	<code>\reversemathcloud</code>
💀	<code>\bigskull</code>	🦇	<code>\mathrightbat</code>	🧛	<code>\reversemathwitch[†]</code>
🦇	<code>\mathbat</code>	👻	<code>\mathrightghost</code>	🧛	<code>\reversemathwitch*[†]</code>
☁	<code>\mathcloud</code>	🧛	<code>\mathwitch*[†]</code>	💀	<code>\skull</code>
👻	<code>\mathghost</code>	🧛	<code>\mathwitch[†]</code>		
🦇	<code>\mathleftbat</code>	🎃	<code>\pumpkin</code>		

[†] These symbols accept limits. For example, `\mathwitch*_{i=0}^{\infty} f(x)` produces “ $\sum_{i=0}^{\infty} f(x)$ ” in text mode and

$$\sum_{i=0}^{\infty} f(x)$$

in display mode.

[‡] `\greatpumpkin` is a synonym for `\bigpumpkin`.

TABLE 77: stix Small Integrals

$\int$	<code>\smallawint</code>	$\oint$	<code>\smallintcap</code>	$\oint$	<code>\smalloint</code>
$\int$	<code>\smallcirfnint</code>	$\int$	<code>\smallintclockwise</code>	$\oint$	<code>\smallointctrackwise</code>
$\int$	<code>\smallfint</code>	$\oint$	<code>\smallintcup</code>	$\oint$	<code>\smallpointint</code>
$\iiint$	<code>\smalliiint</code>	$\oint$	<code>\smallintlarhk</code>	$\int$	<code>\smallrppointint</code>
$\iiint$	<code>\smalliiint</code>	$\oint$	<code>\smallintx</code>	$\int$	<code>\smallscpointint</code>
$\iint$	<code>\smalliint</code>	$\int$	<code>\smallllowint</code>	$\oint$	<code>\smallsqint</code>
$\int$	<code>\smallint</code>	$\int$	<code>\smallnpointint</code>	$\oint$	<code>\smallsumint</code>
$\int$	<code>\smallintbar</code>	$\iiint$	<code>\smalloiint</code>	$\int$	<code>\smallupint</code>
$\int$	<code>\smallintBar</code>	$\iint$	<code>\smalloiint</code>	$\oint$	<code>\smallvarointclockwise</code>

By default, each of the preceding commands points to a slanted version of the glyph, as shown. The `upint` package option typesets each integral instead as an upright version. Slanted and upright integrals can be mixed, however, by explicitly using the commands shown in Table 78.

TABLE 78: stix Small Integrals with Explicit Slant

$\int$	<code>\smallawintsl</code>	$\int$	<code>\smallawintup</code>
$\int$	<code>\smallcirfnintsl</code>	$\int$	<code>\smallcirfnintup</code>
$\int$	<code>\smallfintsl</code>	$\int$	<code>\smallfintup</code>
$\iiint$	<code>\smalliiintsl</code>	$\iiint$	<code>\smalliiintup</code>
$\iiint$	<code>\smalliiintsl</code>	$\iiint$	<code>\smalliiintup</code>
$\iint$	<code>\smalliintsl</code>	$\iint$	<code>\smalliintup</code>
$\int$	<code>\smallintbarsl</code>	$\int$	<code>\smallintBarup</code>
$\int$	<code>\smallintBarsl</code>	$\int$	<code>\smallintbarup</code>
$\oint$	<code>\smallintcapsl</code>	$\oint$	<code>\smallintcapup</code>
$\int$	<code>\smallintclockwisel</code>	$\int$	<code>\smallintclockwiseup</code>
$\oint$	<code>\smallintcupsl</code>	$\oint$	<code>\smallintcupup</code>
$\oint$	<code>\smallintlarhksl</code>	$\oint$	<code>\smallintlarhkup</code>
$\int$	<code>\smallintsl</code>	$\int$	<code>\smallintup</code>
$\oint$	<code>\smallintxsl</code>	$\oint$	<code>\smallintxup</code>
$\int$	<code>\smallllowintsl</code>	$\int$	<code>\smallllowintup</code>
$\int$	<code>\smallnpointsl</code>	$\int$	<code>\smallnpointup</code>
$\iiint$	<code>\smalloiintsl</code>	$\iiint$	<code>\smalloiintup</code>
$\iint$	<code>\smalloiintsl</code>	$\iint$	<code>\smalloiintup</code>
$\oint$	<code>\smallointctrackwisel</code>	$\oint$	<code>\smallointctrackwiseup</code>
$\oint$	<code>\smallointsl</code>	$\oint$	<code>\smallointup</code>
$\oint$	<code>\smallpointintsl</code>	$\oint$	<code>\smallpointintup</code>
$\int$	<code>\smallrppointintsl</code>	$\int$	<code>\smallrppointintup</code>
$\int$	<code>\smallscpointintsl</code>	$\int$	<code>\smallscpointintup</code>

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$\int$	<code>\smallsqintsl</code>	$\int$	<code>\smallsqintup</code>
$\sum$	<code>\smallsumintsl</code>	$\sum$	<code>\smallsumintup</code>
$\int$	<code>\smallupintsl</code>	$\int$	<code>\smallupintup</code>
$\oint$	<code>\smallvarointclockwise</code>	$\oint$	<code>\smallvarointclockwiseup</code>

Instead of using the preceding symbols directly, it is generally preferable to use the symbols listed in Table 77 either with or without the `upint` package option. Specifying `upint` selects each integral's upright (`up`) variant, while omitting `upint` selects each integral's slanted (`sl`) variant. Use the symbols shown in Table 78 only when you need to include both upright and slanted variations of a symbol in the same document.

TABLE 79: Variable-sized Math Operators

$\cap$	<code>\bigcap</code>	$\otimes$	<code>\bigotimes</code>	$\wedge$	<code>\bigwedge</code>	$\prod$	<code>\prod</code>	<code>\prod</code>	<code>\prod</code>
$\cup$	<code>\bigcup</code>	$\sqcup$	<code>\bigsqcup</code>	$\coprod$	<code>\coprod</code>	$\sum$	<code>\sum</code>	$\sum$	<code>\sum</code>
$\odot$	<code>\bigodot</code>	$\oplus$	<code>\bigoplus</code>	$\int$	<code>\int</code>	$\int$	<code>\int</code>	$\int$	<code>\int</code>
$\oplus$	<code>\bigoplus</code>	$\vee$	<code>\bigvee</code>	$\oint$	<code>\oint</code>	$\oint$	<code>\oint</code>	$\oint$	<code>\oint</code>

TABLE 80: $\mathcal{AMS}$ Variable-sized Math Operators

$\iint$	<code>\iint</code>	$\iiint$	<code>\iiint</code>
$\iiint$	<code>\iiint</code>	$\int \dots \int$	<code>\int \dots \int</code>

TABLE 81: `stmaryrd` Variable-sized Math Operators

$\square$	<code>\bigbox</code>	$\parallel$	<code>\biginterleave</code>	$\square$	<code>\bigsqcap</code>
$\curlyvee$	<code>\bigcurlyvee</code>	$\bigplus$	<code>\bignplus</code>	∇	<code>\bigtriangledown</code>
$\curlywedge$	<code>\bigcurlywedge</code>	$\parallel$	<code>\bigparallel</code>	$\triangle$	<code>\bigtriangleup</code>

TABLE 82: wasysym Variable-sized Math Operators

$\int \int$	<code>\int</code>	$\iint \iiint$	<code>\iint</code>	$\iiint \iiint$	<code>\iiint</code>
$\oint \oint$	<code>\oint</code>	$\oiint \oiint$	<code>\oiint</code>		

If `wasysym` is loaded without package options then none of the preceding symbols are defined. However, `\varint` produces `wasysym`'s `\int` glyph, and `\varoint` produces `wasysym`'s `\oint` glyph.

If `wasysym` is loaded with the `integrals` option then all of the preceding symbols are defined, but `\varint` and `\varoint` are left undefined.

If `wasysym` is loaded with the `nointegrals` option then none of the preceding symbols, `\varint`, or `\varoint` are defined.

TABLE 83: mathabx Variable-sized Math Operators

$\mathcal{I} \mathfrak{I}$	<code>\bigcurlyvee</code>	$\mathcal{Y} \mathfrak{Y}$	<code>\bigboxslash</code>	$\mathcal{E} \mathfrak{E}$	<code>\bigoright</code>
$\mathcal{U} \mathfrak{U}$	<code>\bigsqcap</code>	$\mathcal{O} \mathfrak{O}$	<code>\bigboxtimes</code>	$\mathcal{I} \mathfrak{I}$	<code>\bigoslash</code>
$\mathcal{Z} \mathfrak{Z}$	<code>\bigcurlywedge</code>	$\mathcal{U} \mathfrak{U}$	<code>\bigboxtop</code>	$\mathcal{E} \mathfrak{E}$	<code>\bigotop</code>
$\mathcal{O} \mathfrak{O}$	<code>\bigboxasterisk</code>	$\mathcal{B} \mathfrak{B}$	<code>\bigboxtriangleup</code>	$\mathcal{I} \mathfrak{I}$	<code>\bigotriangleup</code>
$\mathcal{P} \mathfrak{P}$	<code>\bigboxbackslash</code>	$\mathcal{U} \mathfrak{U}$	<code>\bigboxvoid</code>	$\mathcal{I} \mathfrak{I}$	<code>\bigovoid</code>
$\mathcal{U} \mathfrak{U}$	<code>\bigboxbot</code>	$\mathcal{S} \mathfrak{S}$	<code>\bigcomplementtop</code>	$\mathcal{R} \mathfrak{R}$	<code>\bigplus</code>
$\mathcal{O} \mathfrak{O}$	<code>\bigboxcirc</code>	$\mathcal{A} \mathfrak{A}$	<code>\bigasterisk</code>	$\mathcal{Y} \mathfrak{Y}$	<code>\bigsqplus</code>
$\mathcal{A} \mathfrak{A}$	<code>\bigboxcoasterisk</code>	$\mathcal{I} \mathfrak{I}$	<code>\bigobackslash</code>	$\mathcal{S} \mathfrak{S}$	<code>\bigtimes</code>

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Ó ó	<code>\bigboxdiv</code>	Ë ë	<code>\bigobot</code>	‡ †	<code>\iiint</code>
Ô ô	<code>\bigboxdot</code>	Å å	<code>\bigocirc</code>	† ‡	<code>\iint</code>
Ø ø	<code>\bigboxleft</code>	Ç ç	<code>\bigocoasterisk</code>	§ ¤	<code>\int</code>
Ñ ñ	<code>\bigboxminus</code>	Ã ã	<code>\bigodiv</code>	ℳ	<code>\oint</code>
Ð ð	<code>\bigboxplus</code>	È è	<code>\bigoleft</code>	ℳ	<code>\oint</code>
Ù ù	<code>\bigboxright</code>	Á á	<code>\bigominus</code>		

TABLE 84: txfonts/pxfonts Variable-sized Math Operators

⊕ ⊕	<code>\bigsqcapplus</code>	∮ ∮	<code>\ointclockwise</code>
⊞ ⊞	<code>\bigsqcupplus</code>	∮ ∮	<code>\ointctrclockwise</code>
f f	<code>\fint</code>	∯ ∯	<code>\sqiiint</code>
∫ ∫ ∫ ∫	<code>\idotsint</code>	∯ ∯	<code>\sqiint</code>
∯ ∯ ∯ ∯	<code>\iiiint</code>	∮ ∮	<code>\sqint</code>
∯ ∯	<code>\iiint</code>	∯ ∯ ∯ ∯	<code>\varoiintclockwise</code>

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$\iint$	$\iint$	<code>\iint</code>	$\iiint$	$\iiint$	<code>\varoiintctrackwise</code>
$\iiint$	$\iiint$	<code>\oiintclockwise</code>	$\iint$	$\iint$	<code>\varoiintclockwise</code>
$\iiint$	$\iiint$	<code>\oiintctrackwise</code>	$\iint$	$\iint$	<code>\varoiintctrackwise</code>
$\iiint$	$\iiint$	<code>\oiint</code>	$\oint$	$\oint$	<code>\varointclockwise</code>
$\iint$	$\iint$	<code>\ointclockwise</code>	$\oint$	$\oint$	<code>\varointctrackwise</code>
$\iint$	$\iint$	<code>\ointctrackwise</code>	$\times$	$\times$	<code>\varprod</code>
$\oint$	$\oint$	<code>\oint</code>			

TABLE 85: esint Variable-sized Math Operators

$\int \dots \int$	$\int \dots \int$	<code>\dotsint</code>	$\oint$	$\oint$	<code>\ointclockwise</code>
$\int$	$\int$	<code>\fint</code>	$\oint$	$\oint$	<code>\ointctrackwise</code>
$\iiint$	$\iiint$	<code>\iiiint</code>	$\iiint$	$\iiint$	<code>\sqint</code>
$\iint$	$\iint$	<code>\iint</code>	$\iint$	$\iint$	<code>\sqint</code>
$\iint$	$\iint$	<code>\iint</code>	$\iint$	$\iint$	<code>\varoiint</code>
$\int$	$\int$	<code>\landdownint</code>	$\oint$	$\oint$	<code>\varointclockwise</code>
$\int$	$\int$	<code>\landupint</code>	$\oint$	$\oint$	<code>\varointctrackwise</code>
$\iint$	$\iint$	<code>\oint</code>			

TABLE 86: bigints Variable-sized Math Operators

$\int$	$\int$	<code>\bigint</code>	$\oint$	$\oint$	<code>\bigoint</code>
$\int$	$\int$	<code>\bigints</code>	$\oint$	$\oint$	<code>\bigoints</code>
$\int$	$\int$	<code>\bigintss</code>	$\oint$	$\oint$	<code>\bigointss</code>
$\int$	$\int$	<code>\bigintsss</code>	$\oint$	$\oint$	<code>\bigintsss</code>
$\int$	$\int$	<code>\bigintssss</code>	$\oint$	$\oint$	<code>\bigintssss</code>

TABLE 87: MnSymbol Variable-sized Math Operators

$\cap$	$\cap$	<code>\bigcap</code>	$\ominus$	$\ominus$	<code>\bigominus</code>	$\complement$	$\complement$	<code>\complement</code>
$\cap$	$\cap$	<code>\bigcapdot</code>	$\oplus$	$\oplus$	<code>\bigoplus</code>	$\coprod$	$\coprod$	<code>\coprod</code>
$\cap$	$\cap$	<code>\bigcapplus</code>	$\oslash$	$\oslash$	<code>\bigoslash</code>	$\int \cdots \int$	$\int \cdots \int$	<code>\idotsint</code>
$\bigcirc$	$\bigcirc$	<code>\bigcircle</code>	$\bigotimes$	$\bigotimes$	<code>\bigotimes</code>	$\iiint$	$\iiint$	<code>\iiint</code>
$\bigcup$	$\bigcup$	<code>\bigcup</code>	$\bigotimes$	$\bigotimes$	<code>\bigotimes</code>	$\iiint$	$\iiint$	<code>\iiint</code>
$\bigcup$	$\bigcup$	<code>\bigcupdot</code>	$\bigtriangleup$	$\bigtriangleup$	<code>\bigtriangleup</code>	$\iint$	$\iint$	<code>\iint</code>
$\bigcup$	$\bigcup$	<code>\bigcupplus*</code>	$\bigcirc$	$\bigcirc$	<code>\bigcirc</code>	$\int$	$\int$	<code>\int</code>
$\curlyvee$	$\curlyvee$	<code>\bigcurlyvee</code>	$+$	$+$	<code>\bigplus</code>	$\int$	$\int$	<code>\landdownint</code>
$\curlyvee$	$\curlyvee$	<code>\bigcurlyveedot</code>	$\sqcap$	$\sqcap$	<code>\bigsqcap</code>	$\int$	$\int$	<code>\landupint</code>
$\curlywedge$	$\curlywedge$	<code>\bigcurlywedge</code>	$\sqcap$	$\sqcap$	<code>\bigsqcapdot</code>	$\oint$	$\oint$	<code>\lrcircleleftint</code>
$\curlywedge$	$\curlywedge$	<code>\bigcurlywedgedot</code>	$\sqcap$	$\sqcap$	<code>\bigsqcapplus</code>	$\oint$	$\oint$	<code>\lrcirclerightint</code>

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$\mathbb{W}$	$\mathbb{V}$	<code>\bigdoublecurlyvee</code>	$\sqcup$	$\sqcup$	<code>\bigsqcup</code>	$\oint$	$\oint$	<code>\oiint</code>
$\mathbb{A}$	$\mathbb{A}$	<code>\bigdoublecurlywedge</code>	$\sqcup$	$\sqcup$	<code>\bigsqcupdot</code>	$\oint$	$\oint$	<code>\oint</code>
$\mathbb{W}$	$\mathbb{V}$	<code>\bigdoublevee</code>	$\sqcup$	$\sqcup$	<code>\bigsqcupplus</code>	$\prod$	$\prod$	<code>\prod</code>
$\mathbb{A}$	$\mathbb{A}$	<code>\bigdoublewedge</code>	$\times$	$\times$	<code>\bigtimes</code>	$\oint$	$\oint$	<code>\rcircleleftint</code>
$\oplus$	$\oplus$	<code>\bigoplus</code>	$\vee$	$\vee$	<code>\bigvee</code>	$\oint$	$\oint$	<code>\rcirclerightint</code>
$\oslash$	$\oslash$	<code>\bigobackslash</code>	$\vee$	$\vee$	<code>\bigveedot</code>	f	f	<code>\strokedint</code>
$\odot$	$\odot$	<code>\bigocirc</code>	$\wedge$	$\wedge$	<code>\bigwedge</code>	Σ	Σ	<code>\sum</code>
$\odot$	$\odot$	<code>\bigodot</code>	$\wedge$	$\wedge$	<code>\bigwedgedot</code>	$\oint$	$\oint$	<code>\sumint</code>

* MnSymbol defines `\biguplus` as a synonym for `\bigcupplus`.

TABLE 88: fdsymbol Variable-sized Math Operators

$\cap$	$\cap$	<code>\bigcap</code>	$\sqcup$	$\sqcup$	<code>\bigsqcup</code>	$\oint$	$\oint$	<code>\landupint</code>
$\cap$	$\cap$	<code>\bigcapdot</code>	$\sqcup$	$\sqcup$	<code>\bigsqcupdot</code>	$\oint$	$\oint$	<code>\lcircleleftint</code>
$\cap$	$\cap$	<code>\bigcapplus</code>	$\sqcup$	$\sqcup$	<code>\bigsqcupplus</code>	$\oint$	$\oint$	<code>\lclirightint</code>
$\cup$	$\cup$	<code>\bigcup</code>	$\times$	$\times$	<code>\bigtimes</code>	$\oint$	$\oint$	<code>\oiint</code>
$\cup$	$\cup$	<code>\bigcupdot</code>	$\vee$	$\vee$	<code>\bigvee</code>	$\oint$	$\oint$	<code>\oiint</code>
$\cup$	$\cup$	<code>\bigcupplus</code>	$\vee$	$\vee$	<code>\bigveedot</code>	$\oint$	$\oint$	<code>\oint</code>
$\curlyvee$	$\curlyvee$	<code>\bigcurlyvee</code>	$\wedge$	$\wedge$	<code>\bigwedge</code>	Σ	Σ	<code>\osum</code>
$\curlywedge$	$\curlywedge$	<code>\bigcurlywedge</code>	$\wedge$	$\wedge$	<code>\bigwedgedot</code>	$\prod$	$\prod$	<code>\prod</code>
$\mathbb{W}$	$\mathbb{V}$	<code>\bigdoublevee</code>	$\sqcup$	$\sqcup$	<code>\coprod</code>	$\oint$	$\oint$	<code>\rcircleleftint</code>

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$\bigwedge$	$\bigwedge$	<code>\bigdoublewedge</code>	$\int$	$\int$	<code>\fint</code>	$\oint$	$\oint$	<code>\rcirclearightint</code>
$\bigotimes$	$\bigotimes$	<code>\bigotimes</code>	$\int\cdots\int$	$\int\cdots\int$	<code>\idotsint</code>	Σ	Σ	<code>\sum</code>
$\bigodot$	$\bigodot$	<code>\bigodot</code>	$\iiint$	$\iiint$	<code>\iiiint</code>	$\oint$	$\oint$	<code>\sumint</code>
$\bigoplus$	$\bigoplus$	<code>\bigoplus</code>	$\iiint$	$\iiint$	<code>\iiint</code>	$\sqcup$	$\sqcup$	<code>\varcoprod</code>
$\bigotimes$	$\bigotimes$	<code>\bigotimes</code>	$\iint$	$\iint$	<code>\iint</code>	$\sum$	$\sum$	<code>\varosum</code>
$\bigplus$	$\bigplus$	<code>\bigplus</code>	$\int$	$\int$	<code>\int</code>	$\prod$	$\prod$	<code>\varprod</code>
$\bigsqcap$	$\bigsqcap$	<code>\bigsqcap</code>	$\int$	$\int$	<code>\intbar</code>	Σ	Σ	<code>\varsum</code>
$\bigsqcapdot$	$\bigsqcapdot$	<code>\bigsqcapdot</code>	$\int$	$\int$	<code>\intBar</code>	$\oint$	$\oint$	<code>\varsumint</code>
$\bigsqcapplus$	$\bigsqcapplus$	<code>\bigsqcapplus</code>	$\int$	$\int$	<code>\landdownint</code>			

* fdsymbol defines \awint as a synonym for \landdownint, \biguplus as a synonym for \bigcupplus, \conjquant as a synonym for \bigdoublewedge, \disjquant as a synonym for \bigdoublevee, \dotsint as a synonym for \idotsint, \intclockwise as a synonym for \landupint, \intctrcclockwise as a synonym for \landdownint, \modtwosum as a synonym for \osum, \ointclockwise as a synonym for \lcircleleftint, \ointctrcclockwise as a synonym for \rcircleleftint, \varmodtwosum as a synonym for \varosum, \varointclockwise as a synonym for \lcircleleftint, and \varointctrcclockwise as a synonym for \rcircleleftint.

TABLE 89: **boisik** Variable-sized Math Operators

$$\int \int \backslash \text{intup}$$

boisik additionally provides all of the symbols in Table 79.

TABLE 90: stix Variable-sized Math Operators

$\int$	$\int$	<code>\awint</code>	$\amalg$	$\amalg$	<code>\coprod</code>	$\iiint$	$\iiint$	<code>\oiint</code>
$\sum$	$\sum$	<code>\Bbbsum</code>	$\mathbb{W}$	$\mathbb{W}$	<code>\disjquant</code>	$\oint$	$\oint$	<code>\oint</code>
$\cap$	$\cap$	<code>\bigcap</code>	$\int$	$\int$	<code>\fint</code>	$\oint$	$\oint$	<code>\oint</code>
$\cup$	$\cup$	<code>\bigcup</code>	$\iiint$	$\iiint$	<code>\iiiint</code>	$\oint$	$\oint$	<code>\ointclockwise</code>
$\dot{\cup}$	$\dot{\cup}$	<code>\bigcupdot</code>	$\iiint$	$\iiint$	<code>\iiint</code>	$\oint$	$\oint$	<code>\ointint</code>
$\odot$	$\odot$	<code>\bigodot</code>	$\iint$	$\iint$	<code>\iint</code>	$\prod$	$\prod$	<code>\prod</code>
$\oplus$	$\oplus$	<code>\bigoplus</code>	$\int$	$\int$	<code>\int</code>	$\int$	$\int$	<code>\rppoint</code>
$\otimes$	$\otimes$	<code>\bigotimes</code>	$\int$	$\int$	<code>\intbar</code>	$\int$	$\int$	<code>\scpoint</code>
$\sqcap$	$\sqcap$	<code>\bigsqcap</code>	$\neq$	$\neq$	<code>\intBar</code>	$\oint$	$\oint$	<code>\sqint</code>
$\sqcup$	$\sqcup$	<code>\bigsqcup</code>	$\oint$	$\oint$	<code>\intcap</code>	$\sum$	$\sum$	<code>\sum</code>
$\llcorner$	$\llcorner$	<code>\bigtalloblong</code>	$\int$	$\int$	<code>\intclockwise</code>	$\sum$	$\sum$	<code>\sumint</code>
$\times$	$\times$	<code>\bigtimes</code>	ψ	ψ	<code>\intcup</code>	$\int$	$\int$	<code>\upoint</code>
$\uplus$	$\uplus$	<code>\biguplus</code>	$\int$	$\int$	<code>\intlarhk</code>	$\oint$	$\oint$	<code>\varointclockwise</code>
$\vee$	$\vee$	<code>\bigvee</code>	$\int$	$\int$	<code>\intx</code>	$\backslash$	$\backslash$	<code>\xbsol</code>
$\wedge$	$\wedge$	<code>\bigwedge</code>	$\int$	$\int$	<code>\lowint</code>	$/$	$/$	<code>\xsol</code>
$\oint$	$\oint$	<code>\cirfnint</code>	$\sum$	$\sum$	<code>\modtwosum</code>			

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$\mathbb{A}$ $\mathbb{A}$ `\conjquant` $\int$ $\int$ `\npolint`

By default, each of the integral-producing commands in Table 90 points to a slanted version of the glyph, as shown. The `upint` package option typesets each integral instead as an upright version. Slanted and upright integrals can be mixed, however, by explicitly using the commands shown in Table 91.

TABLE 91: `stix` Integrals with Explicit Slant

$\int$	$\int$	<code>\intsl</code>	$\int$	$\int$	<code>\intup</code>
$\iint$	$\iint$	<code>\iintsl</code>	$\iint$	$\iint$	<code>\iintup</code>
$\iiint$	$\iiint$	<code>\iiintsl</code>	$\iiint$	$\iiint$	<code>\iiintup</code>
$\oint$	$\oint$	<code>\ointsl</code>	$\oint$	$\oint$	<code>\ointup</code>
$\oiint$	$\oiint$	<code>\oiintsl</code>	$\oiint$	$\oiint$	<code>\oiintup</code>
$\oiiint$	$\oiiint$	<code>\oiiintsl</code>	$\oiiint$	$\oiiint$	<code>\oiiintup</code>
$\int\!\!\!\int$	$\int\!\!\!\int$	<code>\intclockwiselsl</code>	$\int\!\!\!\int$	$\int\!\!\!\int$	<code>\intclockwiseup</code>
$\oint$	$\oint$	<code>\varointclockwiselsl</code>	$\oint$	$\oint$	<code>\varointclockwiseup</code>
$\oint$	$\oint$	<code>\ointctrclkwiselsl</code>	$\oint$	$\oint$	<code>\ointctrclkwiseup</code>
$\sum\!\!\!\int$	$\sum\!\!\!\int$	<code>\sumintsl</code>	$\sum\!\!\!\int$	$\sum\!\!\!\int$	<code>\sumintup</code>

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$\int\int\int$	$\int\int\int$	<code>\iiintsl</code>	$\int\int\int$	$\int\int\int$	<code>\iiintup</code>
$\int$	$\int$	<code>\intbarsl</code>	$\int$	$\int$	<code>\intbarup</code>
$\neq$	$\neq$	<code>\intBarsl</code>	$\neq$	$\neq$	<code>\intBarup</code>
$\int$	$\int$	<code>\fintsl</code>	$\int$	$\int$	<code>\fintup</code>
$\oint$	$\oint$	<code>\cirfnintsl</code>	$\oint$	$\oint$	<code>\cirfnintup</code>
$\int$	$\int$	<code>\awintsl</code>	$\int$	$\int$	<code>\awintup</code>
$\int$	$\int$	<code>\rppolintsl</code>	$\int$	$\int$	<code>\rppolintup</code>
$\int$	$\int$	<code>\scpolintsl</code>	$\int$	$\int$	<code>\scpolintup</code>
$\int$	$\int$	<code>\npolintsl</code>	$\int$	$\int$	<code>\npolintup</code>
$\oint$	$\oint$	<code>\pointintsl</code>	$\oint$	$\oint$	<code>\pointintup</code>
$\int$	$\int$	<code>\sqintsl</code>	$\int$	$\int$	<code>\sqintup</code>
$\int$	$\int$	<code>\intlarhksl</code>	$\int$	$\int$	<code>\intlarhkup</code>
$\int$	$\int$	<code>\intxsl</code>	$\int$	$\int$	<code>\intxup</code>
$\int$	$\int$	<code>\intcapsl</code>	$\int$	$\int$	<code>\intcapup</code>
$\int$	$\int$	<code>\intcupsl</code>	$\int$	$\int$	<code>\intcupup</code>
$\int$	$\int$	<code>\upintsl</code>	$\int$	$\int$	<code>\upintup</code>

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$$\int \quad \int \quad \backslash\text{lowintsl} \qquad \int \quad \int \quad \backslash\text{lowintup}$$

Instead of using the preceding symbols directly, it is generally preferable to use the symbols listed in Table 90 either with or without the `upint` package option. Specifying `upint` selects each integral’s upright (`up`) variant, while omitting `upint` selects each integral’s slanted (`sl`) variant. Use the symbols shown in Table 91 only when you need to include both upright and slanted variations of a symbol in the same document.

TABLE 92: `cmupint` Variable-sized Upright Integrals

$\oint$	$\oint$	<code>\awint</code>	$\oint$	$\oint$	<code>\npolint</code>
$\int$	$\int$	<code>\barint</code>	$\iiint$	$\iiint$	<code>\oiint</code>
$\oint$	$\oint$	<code>\cirfnint</code>	$\oint$	$\oint$	<code>\oiint</code>
$\int$	$\int$	<code>\doublebarint</code>	$\oint$	$\oint$	<code>\oint</code>
$\int$	$\int$	<code>\downint</code>	$\oint$	$\oint$	<code>\ointclockwise</code>
$\int$	$\int$	<code>\fint</code>	$\oint$	$\oint$	<code>\ointctrackwise</code>
$\int \cdots \int$	$\int \cdots \int$	<code>\idotsint*</code>	$\oint$	$\oint$	<code>\pointint</code>
$\iiint$	$\iiint$	<code>\iiint</code>	$\oint$	$\oint$	<code>\rppolint</code>
$\iiint$	$\iiint$	<code>\iiint</code>	$\oint$	$\oint$	<code>\scpolint</code>

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$\iint$	$\iint$	<code>\iint</code>	$\sqcup$	$\sqcup$	<code>\sqcupint</code>
$\int$	$\int$	<code>\int</code>	$\oint$	$\oint$	<code>\sqint</code>
$\oint$	$\oint$	<code>\intcap</code>	$\sum$	$\sum$	<code>\sumint</code>
$\oint$	$\oint$	<code>\intclockwise</code>	$\int$	$\int$	<code>\upint</code>
$\oint$	$\oint$	<code>\intcup</code>	$\int \dots \int$	$\int \dots \int$	<code>\varidotsint*</code>
$\oint$	$\oint$	<code>\intlarhk</code>	$\oint$	$\oint$	<code>\varointclockwise</code>
$\oint$	$\oint$	<code>\landdownint</code>	$\oint$	$\oint$	<code>\varointctrackwise</code>
$\oint$	$\oint$	<code>\landupint</code>	$\oint$	$\oint$	<code>\xint</code>

`cmupint` additionally provides `\longint`, `\longiint`, `\longoint`, and `\longoint` commands that stretch arbitrarily tall. See the `cmupint` documentation for more information.

* `\varidotsint` is always drawn as is. `\idotsint` is drawn identically to `\varidotsint` when `amsmath` is not loaded or with more space surrounding each dot when `amsmath` is loaded.

TABLE 93: `mathdesign` Variable-sized Math Operators

$\oint$	$\oint$	<code>\intclockwise</code>	$\oint$	$\oint$	<code>\ointclockwise</code>
$\iiint$	$\iiint$	<code>\oiint</code>	$\oint$	$\oint$	<code>\ointctrackwise</code>
$\iint$	$\iint$	<code>\oiint</code>			

The `mathdesign` package provides three versions of each integral—in fact, of every symbol—to accompany different text fonts: Utopia ($\int$), Garamond ($\int$), and Charter ($\int$).

TABLE 94: pdfMsym Variable-sized Math Operators

$\int$	$\int$	<code>\aint</code>	$\forall$	$\forall$	<code>\bigforall</code>
$\bigwedge$	$\bigwedge$	<code>\bigcircwedge</code>	$\prod$	$\prod$	<code>\biNint{5}</code> *
$\bigcup$	$\bigcup$	<code>\bigdcup</code>	$\prod$	$\prod$	<code>\iNint{5}</code> *
$\bigwedge$	$\bigwedge$	<code>\bigdwedge</code>	$\prod$	$\prod$	<code>\oiNint{5}</code> *
$\exists$	$\exists$	<code>\bigexists</code>			

pdfMsym symbols are implemented with PDF literals instead of (or sometimes in conjunction) with a font. All symbols can be rendered by pdfL^AT_EX and LuaL^AT_EX, some by X_YL^AT_EX, and none by most other T_EX backends.

* These commands have a required argument, which specifies the number of integrals. For example, `\oiNint{7}` produces the symbol

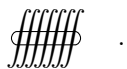


TABLE 95: prodint Variable-sized Math Operators

$\prod$	<code>\prodi</code>	$\prod$	<code>\Prodi</code>	$\prod$	<code>\PRODI</code>
---------	---------------------	---------	---------------------	---------	---------------------

prodint currently requires the author to manually specify `\prodi` for inlined expressions (`$. . . $`), `\Prodi` for displayed math (`\[. . . \]`), and `\PRODI` for displayed math involving tall integrands. The package does not define a product integral command that scales automatically akin to the symbols in Table 79.

TABLE 96: pdfMsym Extensible Math Operators

$$\prod \quad \backslash\mathrm{prood} \quad \sum \quad \backslash\mathrm{suum}$$

These symbols extend horizontally to fit their lower and upper limits. Hence,

`\suum_{i=\lfloor\sqrt{a^2+b^2+c^2}\rfloor}^{\max(5N-3, 11N-8)}`

produces

$$\sum_{i=\lfloor\sqrt{a^2+b^2+c^2}\rfloor}^{\max(5N-3, 11N-8)}.$$

pdfMsym symbols are implemented with PDF literals instead of (or sometimes in conjunction) with a font. All symbols can be rendered by pdfL^AT_EX and LuaL^AT_EX, some by X_YL^AT_EX, and none by most other T_EX backends.

TABLE 97: cmll Large Math Operators

$$\mathfrak{X} \quad \backslash\mathrm{bigparr}^* \quad \& \quad \backslash\mathrm{bigwith}$$

* cmll defines `\beginvamp` as a synonym for `\bigparr`.

TABLE 98: Binary Relations

$\approx$	<code>\approx</code>	$\equiv$	<code>\equiv</code>	$\perp$	<code>\perp</code>	$\smile$	<code>\smile</code>
$\asymp$	<code>\asymp</code>	$\frown$	<code>\frown</code>	$\prec$	<code>\prec</code>	$\succ$	<code>\succ</code>
$\bowtie$	<code>\bowtie</code>	$\Join^*$	<code>\Join^*</code>	$\preceq$	<code>\preceq</code>	$\succeq$	<code>\succeq</code>
$\cong$	<code>\cong</code>	$\mid^\dagger$	<code>\mid^\dagger</code>	$\propto$	<code>\propto</code>	$\vdash$	<code>\vdash</code>
$\dashv$	<code>\dashv</code>	$\models$	<code>\models</code>	$\sim$	<code>\sim</code>		
$\doteq$	<code>\doteq</code>	$\parallel$	<code>\parallel</code>	$\simeq$	<code>\simeq</code>		

* Not predefined by the L^AT_EX 2_ε core. Use the `latexsym` package to expose this symbol.

[†] The difference between `\mid` and `|` is that the former is a binary relation while the latter is a math ordinal. Consequently, L^AT_EX typesets the two with different surrounding spacing. Contrast “ $P(A \mid B)$ ” $\mapsto$ “ $P(A|B)$ ” with “ $P(A \mid B)$ ” $\mapsto$ “ $P(A \mid B)$ ”.

TABLE 99: $\mathcal{AMS}$ Binary Relations

$\approx$	<code>\approx</code>	$\equiv$	<code>\eqcirc</code>	$\succsim$	<code>\succapprox</code>
$\backepsilon$	<code>\backepsilon</code>	$\fallingdotseq$	<code>\fallingdotseq</code>	$\succcurlyeq$	<code>\succcurlyeq</code>
$\backsimeq$	<code>\backsimeq</code>	$\multimap$	<code>\multimap</code>	$\succsim$	<code>\succsim</code>
$\backsimeq$	<code>\backsimeq</code>	$\pitchfork$	<code>\pitchfork</code>	$\therefore$	<code>\therefore</code>
$\because$	<code>\because</code>	$\precapprox$	<code>\precapprox</code>	$\thickapprox$	<code>\thickapprox</code>
$\between$	<code>\between</code>	$\preccurlyeq$	<code>\preccurlyeq</code>	$\thicksim$	<code>\thicksim</code>
$\bumpeq$	<code>\bumpeq</code>	$\precsim$	<code>\precsim</code>	$\varpropto$	<code>\varpropto</code>
$\bumpeq$	<code>\bumpeq</code>	$\risingdotseq$	<code>\risingdotseq</code>	$\Vdash$	<code>\Vdash</code>
$\circeq$	<code>\circeq</code>	$\shortmid$	<code>\shortmid</code>	$\vdash$	<code>\vdash</code>
$\curlyeqprec$	<code>\curlyeqprec</code>	$\shortparallel$	<code>\shortparallel</code>	$\Vdash$	<code>\Vdash</code>
$\curlyeqsucc$	<code>\curlyeqsucc</code>	$\smallfrown$	<code>\smallfrown</code>		
$\doteqdot$	<code>\doteqdot</code>	$\smallsmile$	<code>\smallsmile</code>		

TABLE 100: $\mathcal{AMS}$ Negated Binary Relations

$\ncong$	<code>\ncong</code>	$\nshortparallel$	<code>\nshortparallel</code>	$\nVDash$	<code>\nVDash</code>
$\nmid$	<code>\nmid</code>	$\nsim$	<code>\nsim</code>	$\precnapprox$	<code>\precnapprox</code>
$\nparallel$	<code>\nparallel</code>	$\nsucc$	<code>\nsucc</code>	$\precnsim$	<code>\precnsim</code>
$\nprec$	<code>\nprec</code>	$\nsucceq$	<code>\nsucceq</code>	$\succnapprox$	<code>\succnapprox</code>
$\npreceq$	<code>\npreceq</code>	$\nvDash$	<code>\nvDash</code>	$\succnsim$	<code>\succnsim</code>
$\nshortmid$	<code>\nshortmid</code>	$\nvdash$	<code>\nvdash</code>		

TABLE 101: `stmaryrd` Binary Relations

$\inplus$	<code>\inplus</code>	$\niplus$	<code>\niplus</code>
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TABLE 102: `wasysym` Binary Relations

$\invneg$	<code>\invneg</code>	$\leadsto$	<code>\leadsto</code>	$\asymp$	<code>\asymp</code>
$\Join$	<code>\Join</code>	$\logof$	<code>\logof</code>		

TABLE 103: txfonts/pxfonts Binary Relations

$\bigcirc$	<code>\circledgtr</code>	$\ltimes$	<code>\lJoin</code>	$\times$	<code>\opentimes</code>
$\bigcirc$	<code>\circledless</code>	$\rtimes$	<code>\lrtimes</code>	$\perp$	<code>\Perp</code>
$\approx$	<code>\colonapprox</code>	$\multimap$	<code>\multimap</code>	$\preceq$	<code>\preceqq</code>
$\approx$	<code>\Colonapprox</code>	$\multimap$	<code>\multimapboth</code>	$\preceq$	<code>\precneqq</code>
$\vdash$	<code>\coloneq</code>	$\multimap$	<code>\multimapbothvert</code>	$\Join$	<code>\rJoin</code>
$\vdash$	<code>\Coloneq</code>	$\multimap$	<code>\multimapdot</code>	$\strictfi$	<code>\strictfi</code>
$\vdash$	<code>\Coloneqq</code>	$\multimap$	<code>\multimapdotboth</code>	$\strictif$	<code>\strictif</code>
$\vdash$	<code>\Coloneqq*</code>	$\multimap$	<code>\multimapdotbothA</code>	$\strictiff$	<code>\strictiff</code>
$\sim$	<code>\Colonsim</code>	$\multimap$	<code>\multimapdotbothAvert</code>	$\succeq$	<code>\succeqq</code>
$\sim$	<code>\colonsim</code>	$\multimap$	<code>\multimapdotbothB</code>	$\succeq$	<code>\succneqq</code>
$\equiv$	<code>\Eqcolon</code>	$\multimap$	<code>\multimapdotbothBvert</code>	$\parallel$	<code>\varparallel</code>
$\equiv$	<code>\eqcolon</code>	$\multimap$	<code>\multimapdotbothvert</code>	$\parallel$	<code>\varparallelinv</code>
$\equiv$	<code>\eqqcolon</code>	$\multimap$	<code>\multimapdotinv</code>	$\Vdash$	<code>\Vdash</code>
$\equiv$	<code>\Eqqqcolon</code>	$\multimap$	<code>\multimapinv</code>		
$\sim$	<code>\eqsim</code>	$\times$	<code>\openJoin</code>		

* As an alternative to using txfonts/pxfonts, a “:=” symbol can be constructed with “`\mathrel{\mathop:}=`”.

TABLE 104: txfonts/pxfonts Negated Binary Relations

$\napprox$	<code>\napprox</code>	$\npreccurlyeq$	<code>\npreccurlyeq</code>	$\nthickapprox$	<code>\nthickapprox</code>
$\nasymp$	<code>\nasymp</code>	$\npreceq$	<code>\npreceq</code>	$\nrightarrow$	<code>\nrightarrow</code>
$\nbacksim$	<code>\nbacksim</code>	$\nprec$	<code>\nprec</code>	$\nrightarrow$	<code>\nrightarrow</code>
$\nbacksimeq$	<code>\nbacksimeq</code>	$\nsimeq$	<code>\nsimeq</code>	$\nparallel$	<code>\nparallel</code>
$\nbumpeq$	<code>\nbumpeq</code>	$\nsuccapprox$	<code>\nsuccapprox</code>	$\nvarparallel$	<code>\nvarparallel</code>
$\nbumpeq$	<code>\nbumpeq</code>	$\nsucccurlyeq$	<code>\nsucccurlyeq</code>	$\nVdash$	<code>\nVdash</code>
$\nequiv$	<code>\nequiv</code>	$\nsucceq$	<code>\nsucceq</code>		
$\nprecapprox$	<code>\nprecapprox</code>	$\nsuccsim$	<code>\nsuccsim</code>		

TABLE 105: mathabx Binary Relations

$\between$	<code>\between</code>	$\divides$	<code>\divides</code>	$\risingdotseq$	<code>\risingdotseq</code>
$\botdoteq$	<code>\botdoteq</code>	$\dotseq$	<code>\dotseq</code>	$\succapprox$	<code>\succapprox</code>
$\bumpedeq$	<code>\bumpedeq</code>	$\eqbumped$	<code>\eqbumped</code>	$\succcurlyeq$	<code>\succcurlyeq</code>
$\bumpedeq$	<code>\bumpedeq</code>	$\eqcirc$	<code>\eqcirc</code>	$\succdot$	<code>\succdot</code>
$\circeq$	<code>\circeq</code>	$\eqcolon$	<code>\eqcolon</code>	$\succsim$	<code>\succsim</code>
$\coloneq$	<code>\coloneq</code>	$\fallingdotseq$	<code>\fallingdotseq</code>	$\therefore$	<code>\therefore</code>
$\corresponds$	<code>\corresponds</code>	$\ggcurly$	<code>\ggcurly</code>	$\topdoteq$	<code>\topdoteq</code>
$\curlyeqprec$	<code>\curlyeqprec</code>	$\llcurly$	<code>\llcurly</code>	$\vdash$	<code>\vdash</code>
$\curlyeqsucc$	<code>\curlyeqsucc</code>	$\precapprox$	<code>\precapprox</code>	$\Vdash$	<code>\Vdash</code>
$\DashV$	<code>\DashV</code>	$\preccurlyeq$	<code>\preccurlyeq</code>	$\VDash$	<code>\VDash</code>
$\Dashv$	<code>\Dashv</code>	$\precdot$	<code>\precdot</code>	$\Vdash$	<code>\Vdash</code>
$\dashVv$	<code>\dashVv</code>	$\prec$	<code>\prec</code>		

TABLE 106: mathabx Negated Binary Relations

$\napprox$	<code>\napprox</code>	$\nperp$	<code>\notperp</code>	$\nVDash$	<code>\nvDash</code>
$\ncong$	<code>\ncong</code>	$\nprec$	<code>\nprec</code>	$\nVDash$	<code>\nVDash</code>
$\ncurlyeqprec$	<code>\ncurlyeqprec</code>	$\nprecapprox$	<code>\nprecapprox</code>	$\nVdash$	<code>\nVdash</code>
$\ncurlyeqsucc$	<code>\ncurlyeqsucc</code>	$\npreccurlyeq$	<code>\npreccurlyeq</code>	$\nvDash$	<code>\nvDash</code>
$\nDashv$	<code>\nDashv</code>	$\npreceq$	<code>\npreceq</code>	$\nVdash$	<code>\nVdash</code>
$\ndashV$	<code>\ndashV</code>	$\nprecsim$	<code>\nprecsim</code>	$\precnapprox$	<code>\precnapprox</code>
$\ndashv$	<code>\ndashv</code>	$\nsim$	<code>\nsim</code>	$\precneq$	<code>\precneq</code>
$\nDashV$	<code>\nDashV</code>	$\nsimeq$	<code>\nsimeq</code>	$\precnsim$	<code>\precnsim</code>
$\ndashVv$	<code>\ndashVv</code>	$\nsucc$	<code>\nsucc</code>	$\succnapprox$	<code>\succnapprox</code>
$\neq$	<code>\neq</code>	$\nsuccapprox$	<code>\nsuccapprox</code>	$\succneq$	<code>\succneq</code>
$\notasymp$	<code>\notasymp</code>	$\nsucccurlyeq$	<code>\nsucccurlyeq</code>	$\succnsim$	<code>\succnsim</code>
$\notdivides$	<code>\notdivides</code>	$\nsucceq$	<code>\nsucceq</code>		
$\notequiv$	<code>\notequiv</code>	$\succsim$	<code>\succsim</code>		

The `\changenotsign` command toggles the behavior of `\not` to produce either a vertical or a diagonal slash through a binary operator. Thus, “`$a \not= b$`” can be made to produce either “ $a \nmid b$ ” or “ $a \neq b$ ”.

TABLE 107: MnSymbol Binary Relations

$\approx$	<code>\approx</code>	$\hat{=}$	<code>\hateq</code>	∞	<code>\rightpropto</code>
$\approxeq$	<code>\approxeq</code>	$\times$	<code>\hcrossing</code>	$\triangleright$	<code>\rightslice</code>
$\backapprox$	<code>\backapprox</code>	$\vdash$	<code>\leftfootline</code>	$\Vdash$	<code>\rightVdash</code>
$\backapproxeq$	<code>\backapproxeq</code>	$\leftarrow$	<code>\leftfree</code>	$\vdash$	<code>\rightvdash</code>
$\backcong$	<code>\backcong</code>	$\models$	<code>\leftmodels</code>	$\dot{=}$	<code>\risingdotseq</code>
$\backeqsim$	<code>\backeqsim</code>	$\models$	<code>\leftModels</code>	$\searrow$	<code>\sefootline</code>
$\backsim$	<code>\backsim</code>	$\propto$	<code>\leftpropto</code>	$\searrow$	<code>\sefree</code>
$\backsimeq$	<code>\backsimeq</code>	$\dashv$	<code>\leftrightline</code>	$\ll$	<code>\seModels</code>
$\backtriplesim$	<code>\backtriplesim</code>	$=$	<code>\Leftrightarrow</code>	$\ll$	<code>\semodels</code>
$\between$	<code>\between</code>	$\triangleleft$	<code>\leftslice</code>	$\rangle$	<code>\separated</code>
$\bumpeq$	<code>\bumpeq</code>	$\Vdash$	<code>\leftVdash</code>	$\curvearrowright$	<code>\seVdash</code>
$\Bumpeq$	<code>\Bumpeq</code>	$\vdash$	<code>\leftvdash</code>	$\curvearrowleft$	<code>\sevdash</code>
$\circeq$	<code>\circeq</code>	$\succ$	<code>\nefootline</code>	$\parallel$	<code>\shortparallel</code>
$\closedequal$	<code>\closedequal</code>	$\succ$	<code>\nefree</code>	$\sim$	<code>\sim</code>
$\closedprec$	<code>\closedprec</code>	$\ll$	<code>\neModels</code>	$\simeq$	<code>\simeq</code>
$\closedsucc$	<code>\closedsucc</code>	$\ll$	<code>\nemodels</code>	$>$	<code>\succ</code>
$\coloneq$	<code>\coloneq</code>	$/$	<code>\neswline</code>	$\gtrapprox$	<code>\succapprox</code>
$\cong$	<code>\cong</code>	$\parallel$	<code>\Neswline</code>	$\gtrsim$	<code>\succcurlyeq</code>
$\curlyeqprec$	<code>\curlyeqprec</code>	$\ll$	<code>\neVdash</code>	$\geq$	<code>\succeq</code>
$\curlyeqsucc$	<code>\curlyeqsucc</code>	$\ll$	<code>\nevDash</code>	$\gtrsim$	<code>\succsim</code>

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$\dot{=}$	<code>\Doteq</code>	$\nwarrow$	<code>\nwfootline</code>	$\swarrow$	<code>\swfootline</code>
$\doteq$	<code>\doteq</code>	$\nearrow$	<code>\nwfree</code>	$\swarrow$	<code>\swfree</code>
$\downarrow$	<code>\downfootline</code>	$\Rightarrow$	<code>\nwmodels</code>	$\Rightarrow$	<code>\swModels</code>
$\downarrow$	<code>\downfree</code>	$\Rightarrow$	<code>\nwModels</code>	$\Rightarrow$	<code>\swmodels</code>
Π	<code>\downmodels</code>	$\times$	<code>\nwsecrossing</code>	$\times$	<code>\swVdash</code>
$\overline{\Pi}$	<code>\downModels</code>	$\parallel$	<code>\Nwseline</code>	$\nearrow$	<code>\swvdash</code>
$\propto$	<code>\downpropto</code>	$\searrow$	<code>\nwseline</code>	$\approx$	<code>\triplesim</code>
$\dashv$	<code>\downvdash</code>	$\searrow$	<code>\nwvdash</code>	$ $	<code>\updownline</code>
$\overline{\dashv}$	<code>\downVdash</code>	$\searrow$	<code>\nwVdash</code>	$\parallel$	<code>\Updownline</code>
$\bumpeq$	<code>\eqbump</code>	$<$	<code>\prec</code>	$\vdash$	<code>\upfootline</code>
$\eqcirc$	<code>\eqcirc</code>	$\approx$	<code>\precapprox</code>	$\Uparrow$	<code>\upfree</code>
$\dot{=}$	<code>\eqdot</code>	$\approx$	<code>\preccurlyeq</code>	$\parallel$	<code>\upModels</code>
$\sim$	<code>\eqsim</code>	$\leq$	<code>\preceq</code>	$\parallel$	<code>\upmodels</code>
$=$	<code>\equal</code>	$\approx$	<code>\precsim</code>	$\propto$	<code>\uppropto</code>
$\square$	<code>\equalclosed</code>	$\dashv$	<code>\rightfootline</code>	$\perp$	<code>\upvdash</code>
$\equiv$	<code>\equiv</code>	$\rightarrow$	<code>\rightfree</code>	$\perp$	<code>\upVdash</code>
$\boxplus$	<code>\equivclosed</code>	$\models$	<code>\rightmodels</code>	$\times$	<code>\vcrossing</code>
$\fallingdotseq$	<code>\fallingdotseq</code>	$\models$	<code>\rightModels</code>	$\Vdash$	<code>\Vdash</code>

MnSymbol additionally defines synonyms for some of the preceding symbols:

$\dashv$	<code>\dashv</code>	(same as <code>\leftvdash</code>)
$\searrow$	<code>\diagdown</code>	(same as <code>\nwseline</code>)
$\swarrow$	<code>\diagup</code>	(same as <code>\neswline</code>)
$ $	<code>\divides</code>	(same as <code>\updownline</code>)
$\dot{=}$	<code>\doteqdot</code>	(same as <code>\Doteq</code>)
$\models$	<code>\models</code>	(same as <code>\rightmodels</code>)
$\parallel$	<code>\parallel</code>	(same as <code>\Updownline</code>)
$\perp$	<code>\perp</code>	(same as <code>\upvdash</code>)
$\propto$	<code>\propto</code>	(same as <code>\leftpropto</code>)
---	<code>\relbar</code>	(same as <code>\leftrightline</code>)
=	<code>\Relbar</code>	(same as <code>\Leftrightarrow</code>)
$\propto$	<code>\varpropto</code>	(same as <code>\leftpropto</code>)
$\models$	<code>\vDash</code>	(same as <code>\rightmodels</code>)
$\models$	<code>\VDash</code>	(same as <code>\rightModels</code>)
$\vdash$	<code>\vdash</code>	(same as <code>\rightvdash</code>)
$\Vdash$	<code>\Vdash</code>	(same as <code>\rightVdash</code>)

TABLE 108: MnSymbol Negated Binary Relations

$\napprox$	<code>\napprox</code>	$\nleftfootline$	<code>\nleftfootline</code>	$\nrisingdotseq$	<code>\nrisingdotseq</code>
$\napproxeq$	<code>\napproxeq</code>	$\nleftfree$	<code>\nleftfree</code>	$\nsefootline$	<code>\nsefootline</code>
$\nbackapprox$	<code>\nbackapprox</code>	$\nleftmodels$	<code>\nleftmodels</code>	$\nsefree$	<code>\nsefree</code>
$\nbackapproxeq$	<code>\nbackapproxeq</code>	$\nleftModels$	<code>\nleftModels</code>	$\nseModels$	<code>\nseModels</code>
$\nbackcong$	<code>\nbackcong</code>	$\nleftrightline$	<code>\nleftrightline</code>	$\nsemodels$	<code>\nsemodels</code>
$\nbackeqsim$	<code>\nbackeqsim</code>	$\nLeftrightarrow$	<code>\nLeftrightarrow</code>	$\nsevdash$	<code>\nsevdash</code>
$\nbacksim$	<code>\nbacksim</code>	$\nleftvdash$	<code>\nleftvdash</code>	$\nseVdash$	<code>\nseVdash</code>
$\nbacksimeq$	<code>\nbacksimeq</code>	$\nleftVdash$	<code>\nleftVdash</code>	$\nshortmid$	<code>\nshortmid</code>
$\nbacktriple sim$	<code>\nbacktriple sim</code>	$\nnefootline$	<code>\nnefootline</code>	$\nshortparallel$	<code>\nshortparallel</code>
$\nbump eq$	<code>\nbump eq</code>	$\nnefree$	<code>\nnefree</code>	$\nsim$	<code>\nsim</code>
$\nBump eq$	<code>\nBump eq</code>	$\nnemodels$	<code>\nnemodels</code>	$\nsimeq$	<code>\nsimeq</code>
$\ncirc eq$	<code>\ncirc eq</code>	$\nneModels$	<code>\nneModels</code>	$\nsucc$	<code>\nsucc</code>
$\nclosedequal$	<code>\nclosedequal</code>	$\nneswline$	<code>\nneswline</code>	$\nsuccapprox$	<code>\nsuccapprox</code>
$\ncong$	<code>\ncong</code>	$\nNeswline$	<code>\nNeswline</code>	$\nsucccurlyeq$	<code>\nsucccurlyeq</code>
$\ncurlyeqprec$	<code>\ncurlyeqprec</code>	$\nneVdash$	<code>\nneVdash</code>	$\nsucceq$	<code>\nsucceq</code>
$\ncurlyeqsucc$	<code>\ncurlyeqsucc</code>	$\nnevDash$	<code>\nnevDash</code>	$\nsuccsim$	<code>\nsuccsim</code>
$\ndoteq$	<code>\ndoteq</code>	$\nnwfootline$	<code>\nnwfootline</code>	$\nswfootline$	<code>\nswfootline</code>
$\nDoteq$	<code>\nDoteq</code>	$\nnwfree$	<code>\nnwfree</code>	$\nswfree$	<code>\nswfree</code>
$\ndownfootline$	<code>\ndownfootline</code>	$\nnwmodels$	<code>\nnwmodels</code>	$\nswModels$	<code>\nswModels</code>
$\ndownfree$	<code>\ndownfree</code>	$\nnwModels$	<code>\nnwModels</code>	$\nswmodels$	<code>\nswmodels</code>
$\ndownModels$	<code>\ndownModels</code>	$\nNwseline$	<code>\nNwseline</code>	$\nswvdash$	<code>\nswvdash</code>
$\ndownmodels$	<code>\ndownmodels</code>	$\nnwseline$	<code>\nnwseline</code>	$\nswVdash$	<code>\nswVdash</code>
$\ndownVdash$	<code>\ndownVdash</code>	$\nnwvdash$	<code>\nnwvdash</code>	$\ntriple sim$	<code>\ntriple sim</code>
$\ndownvdash$	<code>\ndownvdash</code>	$\nnwVdash$	<code>\nnwVdash</code>	$\nUpdownline$	<code>\nUpdownline</code>
$\neqbump$	<code>\neqbump</code>	$\nprec$	<code>\nprec</code>	$\nupdownline$	<code>\nupdownline</code>
$\neqcirc$	<code>\neqcirc</code>	$\nprecapprox$	<code>\nprecapprox</code>	$\nupfootline$	<code>\nupfootline</code>
$\neqdot$	<code>\neqdot</code>	$\npreccurlyeq$	<code>\npreccurlyeq</code>	$\nupfree$	<code>\nupfree</code>
$\neqsim$	<code>\neqsim</code>	$\npreceq$	<code>\npreceq</code>	$\nupModels$	<code>\nupModels</code>
$\nequal$	<code>\nequal</code>	$\nprec sim$	<code>\nprec sim</code>	$\nupmodels$	<code>\nupmodels</code>
$\nequalclosed$	<code>\nequalclosed</code>	$\nrightfootline$	<code>\nrightfootline</code>	$\nupVdash$	<code>\nupVdash</code>
$\nequiv$	<code>\nequiv</code>	$\nrightfree$	<code>\nrightfree</code>	$\nupvdash$	<code>\nupvdash</code>
$\nequivclosed$	<code>\nequivclosed</code>	$\nrightModels$	<code>\nrightModels</code>	$\precnapprox$	<code>\precnapprox</code>
$\neswcrossing$	<code>\neswcrossing</code>	$\nrightmodels$	<code>\nrightmodels</code>	$\precn sim$	<code>\precn sim</code>
$\nfallingdotseq$	<code>\nfallingdotseq</code>	$\nrightvdash$	<code>\nrightvdash</code>	$\succnapprox$	<code>\succnapprox</code>
$\nhateq$	<code>\nhateq</code>	$\nrightVdash$	<code>\nrightVdash</code>	$\succn sim$	<code>\succn sim</code>

MnSymbol additionally defines synonyms for some of the preceding symbols:

$\dashv$	<code>\ndashv</code>	(same as <code>\nleftvdash</code>)
$\searrow$	<code>\ndiagdown</code>	(same as <code>\nnwseline</code>)
$\nearrow$	<code>\ndiagup</code>	(same as <code>\nneswline</code>)
$\dagger$	<code>\ndivides</code>	(same as <code>\nupdownline</code>)
$\neq$	<code>\ne</code>	(same as <code>\nequal</code>)
$\neq$	<code>\neq</code>	(same as <code>\nequal</code>)
$\dagger$	<code>\nmid</code>	(same as <code>\nupdownline</code>)
$\models$	<code>\nmodels</code>	(same as <code>\nrightmodels</code>)
$\parallel$	<code>\nparallel</code>	(same as <code>\nUpdownline</code>)
$\perp$	<code>\nperp</code>	(same as <code>\nupvdash</code>)
$\overline{\neq}$	<code>\nrelbar</code>	(same as <code>\nleftrightline</code>)
$\neq$	<code>\nRelbar</code>	(same as <code>\nLeftrightarrow</code>)
$\models$	<code>\nvDash</code>	(same as <code>\nrightmodels</code>)
$\dashv$	<code>\nvDash</code>	(same as <code>\nrightvdash</code>)
$\Vdash$	<code>\nVDash</code>	(same as <code>\nrightVDash</code>)
$\Vdash$	<code>\nVDash</code>	(same as <code>\nrightModels</code>)

TABLE 109: fdsymbol Binary Relations

$\approx$	<code>\approx</code>	$\equiv$	<code>\equiv</code>	$\models$	<code>\rightmodels</code>
$\approx$	<code>\approxeq</code>	$\dot{=}$	<code>\fallingdotseq</code>	$\Vdash$	<code>\rightVDash</code>
$\cong$	<code>\backcong</code>	$\frown$	<code>\frown</code>	$\Vdash$	<code>\rightVDash</code>
$\propto$	<code>\backpropto</code>	$\frown$	<code>\frown</code>	$\vdash$	<code>\rightvdash</code>
$\sim$	<code>\backsim</code>	$\frown$	<code>\frown</code>	$\vdash$	<code>\rightvdash</code>
$\simeq$	<code>\backsimeq</code>	$\in$	<code>\in</code>	$\dot{=}$	<code>\risingdotseq</code>
$\between$	<code>\between</code>	$\dashv$	<code>\leftassert</code>	$\mid$	<code>\shortmid</code>
$\bowtie$	<code>\bowtie</code>	$\dashv$	<code>\leftAssert</code>	$\parallel$	<code>\shortparallel</code>
$\bumpeq$	<code>\bumpeq</code>	$\vdash$	<code>\leftfootline</code>	$\sim$	<code>\sim</code>
$\Bumpeq$	<code>\Bumpeq</code>	$\dashv$	<code>\leftmodels</code>	$\simeq$	<code>\simeq</code>
$\bumpeq$	<code>\bumpeq</code>	$\vdash$	<code>\leftvdash</code>	$\smile$	<code>\smile</code>
$\circeq$	<code>\circeq</code>	$\dashv$	<code>\leftvDash</code>	$\smile$	<code>\smileeq</code>
$\coloneq$	<code>\coloneq</code>	$\dashv$	<code>\leftVDash</code>	$\smile$	<code>\smilefrown</code>
$\cong$	<code>\cong</code>	$\dashv$	<code>\leftVDash</code>	$\stareq$	<code>\stareq</code>
$\times$	<code>\crossing</code>	$\vdash$	<code>\longleftfootline</code>	$\succ$	<code>\succ</code>
$\curlyeqprec$	<code>\curlyeqprec</code>	$\Leftarrow$	<code>\Longmapsfrom</code>	$\approx$	<code>\succapprox</code>
$\curlyeqsucc$	<code>\curlyeqsucc</code>	$\rightarrow$	<code>\longmapsfrom</code>	$\succ$	<code>\succcurlyeq</code>
$\dashv$	<code>\dashv</code>	$\vdash$	<code>\longrightfootline</code>	$\succeq$	<code>\succeq</code>
$\dashv$	<code>\Ddashv</code>	$\mid$	<code>\mid</code>	$\succeq$	<code>\succeq</code>
$\dot{=}$	<code>\dotcong</code>	$\owns$	<code>\owns</code>	$\succsim$	<code>\succsim</code>
$\doteq$	<code>\doteq</code>	$\parallel$	<code>\parallel</code>	$\approx$	<code>\thickapprox</code>
$\dot{=}$	<code>\Doteq</code>	$\prec$	<code>\prec</code>	$\sim$	<code>\thicksim</code>
$\dot{=}$	<code>\dotsminusdots</code>	$\approx$	<code>\precapprox</code>	$\approx$	<code>\triplesim</code>
$\dashv$	<code>\downAssert</code>	$\approx$	<code>\preccurlyeq</code>	$\perp$	<code>\upassert</code>

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$\top$	<code>\downassert</code>	$\preceq$	<code>\preceq</code>	$\perp$	<code>\upAssert</code>
π	<code>\downmodels</code>	$\preceqq$	<code>\preceqq</code>	$\perp$	<code>\upmodels</code>
$\overline{\pi}$	<code>\downvDash</code>	$\preccurlyeq$	<code>\preccurlyeq</code>	$\perp$	<code>\upvdash</code>
$\overline{\top}$	<code>\downVdash</code>	$\precneq$	<code>\precneq</code>	$\perp$	<code>\upvDash</code>
$\overline{\top}$	<code>\downvdash</code>	$\precneqq$	<code>\precneqq</code>	$\perp$	<code>\upVdash</code>
$\overline{\pi}$	<code>\downVDash</code>	$\precnsim$	<code>\precnsim</code>	$\perp$	<code>\upVDash</code>
$\equiv$	<code>\eqcirc</code>	$\precapprox$	<code>\precapprox</code>	$\equiv$	<code>\vDash</code>
$\equiv$	<code>\eqcolon</code>	$\propto$	<code>\propto</code>	$\equiv$	<code>\veeeq</code>
$\dot{=}$	<code>\eqdot</code>	$\vdash$	<code>\rightassert</code>	$\vdash$	<code>\Vdash</code>
$\sim$	<code>\eqsim</code>	$\Vdash$	<code>\rightAssert</code>	$\triangleq$	<code>\wedg eq</code>
$=$	<code>\equal</code>	$\dashv$	<code>\rightfootline</code>		

fdsymbol defines synonyms for many of the preceding symbols:

$\approx$	<code>\approxident</code>	$\dashv$	<code>\dashv</code>	$\vdash$	<code>\shortrighttack</code>
$\equiv$	<code>\arceq</code>	$\dot{=}$	<code>\doteqdot</code>	$\perp$	<code>\shortuptack</code>
$\Vdash$	<code>\Assert</code>	$\equiv$	<code>\eqqcolon</code>	$\frown$	<code>\smallfrown</code>
$\vdash$	<code>\assert</code>	$\triangleq$	<code>\hateq</code>	$\smile$	<code>\smallsmile</code>
$\asymp$	<code>\asymp</code>	$\Join$	<code>\Join</code>	$\propto$	<code>\varpropto</code>
$\overline{\top}$	<code>\Barv</code>	$\longdashv$	<code>\longdashv</code>	$\perp$	<code>\vBar</code>
$\overline{\pi}$	<code>\barV</code>	$\models$	<code>\models</code>	$\perp$	<code>\Vbar</code>
$\subset$	<code>\closure</code>	$\ni$	<code>\ni</code>	$\models$	<code>\vDash</code>
$\coloneqq$	<code>\coloneqq</code>	$\perp$	<code>\perp</code>	$\models$	<code>\VDash</code>
$\dashv$	<code>\dashv</code>	$\propto$	<code>\propfrom</code>	$\vdash$	<code>\Vdash</code>
$\DashV$	<code>\DashV</code>	$\top$	<code>\shortdowntack</code>	$\vdash$	<code>\vdash</code>
$\Dashv$	<code>\Dashv</code>	$\dashv$	<code>\shortlefttack</code>	$\longdashv$	<code>\vlongdash</code>

TABLE 110: fdsymbol Negated Binary Relations

$\napprox$	<code>\backsimneqq</code>	$\napprox$	<code>\nin</code>	$\nsim$	<code>\nsim</code>
$\napprox$	<code>\napprox</code>	$\nleftassert$	<code>\nleftAssert</code>	$\nsimeq$	<code>\nsimeq</code>
$\napprox$	<code>\napprox eq</code>	$\nleftassert$	<code>\nleftassert</code>	$\nsmile$	<code>\nsmile</code>
$\napprox$	<code>\nbackcong</code>	$\nleftfootline$	<code>\nleftfootline</code>	$\nsmileeq$	<code>\nsmileeq</code>
$\napprox$	<code>\nbacksim</code>	$\nleftmodels$	<code>\nleftmodels</code>	$\nsmilefrown$	<code>\nsmilefrown</code>
$\napprox$	<code>\nbacksimeq</code>	$\nleftvDash$	<code>\nleftvDash</code>	$\nstareq$	<code>\nstareq</code>
$\napprox$	<code>\nbumpeq</code>	$\nleftvdash$	<code>\nleftvdash</code>	$\nsucc$	<code>\nsucc</code>
$\napprox$	<code>\nBumpeq</code>	$\nleftVdash$	<code>\nleftVdash</code>	$\nsuccapprox$	<code>\nsuccapprox</code>
$\napprox$	<code>\nbumpeq q</code>	$\nleftVDash$	<code>\nleftVDash</code>	$\nsucccurlyeq$	<code>\nsucccurlyeq</code>
$\napprox$	<code>\ncirceq</code>	$\nlongleftfootline$	<code>\nlongleftfootline</code>	$\nsucceq$	<code>\nsucceq</code>

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$\ncong$	<code>\ncong</code>	$\nlongmapsfrom$	<code>\nLongmapsfrom</code>	$\nsucceqq$	<code>\nsucceqq</code>
$\ncurlyeqprec$	<code>\ncurlyeqprec</code>	$\nlongmapsfrom$	<code>\nlongmapsfrom</code>	$\nsuccsim$	<code>\nsuccsim</code>
$\ncurlyeqsucc$	<code>\ncurlyeqsucc</code>	$\nlongrightfootline$	<code>\nlongrightfootline</code>	$\ntriplesim$	<code>\ntriplesim</code>
$\ndashVv$	<code>\ndashVv</code>	$\nmid$	<code>\nmid</code>	$\nupassert$	<code>\nupassert</code>
$\ndashv$	<code>\ndashv</code>	$\nowns$	<code>\nowns</code>	$\nupAssert$	<code>\nupAssert</code>
$\ndoteq$	<code>\ndoteq</code>	$\nparallel$	<code>\nparallel</code>	$\nupmodels$	<code>\nupmodels</code>
$\nDoteq$	<code>\nDoteq</code>	$\nprec$	<code>\nprec</code>	$\nupVDash$	<code>\nupVDash</code>
$\ndownassert$	<code>\ndownassert</code>	$\nprecapprox$	<code>\nprecapprox</code>	$\nupvDash$	<code>\nupvDash</code>
$\ndownAssert$	<code>\ndownAssert</code>	$\nprec curlyeq$	<code>\nprec curlyeq</code>	$\nupVdash$	<code>\nupVdash</code>
$\ndownmodels$	<code>\ndownmodels</code>	$\npreceq$	<code>\npreceq</code>	$\nupvdash$	<code>\nupvdash</code>
$\ndownvdash$	<code>\ndownvdash</code>	$\npreceqq$	<code>\npreceqq</code>	$\nvDash$	<code>\nvDash</code>
$\ndownVdash$	<code>\ndownVdash</code>	$\nprec sim$	<code>\nprec sim</code>	$\nvveeq$	<code>\nvveeq</code>
$\ndownvDash$	<code>\ndownvDash</code>	$\nrighthassert$	<code>\nrighthassert</code>	$\nvvdash$	<code>\nvvdash</code>
$\neqcirc$	<code>\neqcirc</code>	$\nrighthAssert$	<code>\nrighthAssert</code>	$\nwedgeq$	<code>\nwedgeq</code>
$\neqdot$	<code>\neqdot</code>	$\nrighthfootline$	<code>\nrighthfootline</code>	$\precneq$	<code>\precneq</code>
$\neqsim$	<code>\neqsim</code>	$\nrighthmodels$	<code>\nrighthmodels</code>	$\precneqq$	<code>\precneqq</code>
$\nequal$	<code>\nequal</code>	$\nrighthvdash$	<code>\nrighthvdash</code>	$\simneqq$	<code>\simneqq</code>
$\nequiv$	<code>\nequiv</code>	$\nrighthVdash$	<code>\nrighthVdash</code>	$\succnapprox$	<code>\succnapprox</code>
$\nfallingdotseq$	<code>\nfallingdotseq</code>	$\nrighthVDash$	<code>\nrighthVDash</code>	$\succneq$	<code>\succneq</code>
$\nfrown$	<code>\nfrown</code>	$\nrisingdotseq$	<code>\nrisingdotseq</code>	$\succneqq$	<code>\succneqq</code>
$\nfrown eq$	<code>\nfrown eq</code>	$\nshortmid$	<code>\nshortmid</code>	$\succnsim$	<code>\succnsim</code>
$\nfrown smile$	<code>\nfrown smile</code>	$\nshortparallel$	<code>\nshortparallel</code>		

`fdsymbol` defines synonyms for many of the preceding symbols:

$\napproxident$	<code>\napproxident</code>	$\ndashV$	<code>\ndashV</code>	$\nshorttrighthtack$	<code>\nshorttrighthtack</code>
$\narceq$	<code>\narceq</code>	$\ne$	<code>\ne</code>	$\nshortuptack$	<code>\nshortuptack</code>
$\nAssert$	<code>\nAssert</code>	$\neq$	<code>\neq</code>	$\nsime$	<code>\nsime</code>
$\nassert$	<code>\nassert</code>	$\nhateq$	<code>\nhateq</code>	$\nvBar$	<code>\nvBar</code>
$\nasymp$	<code>\nasymp</code>	$\nlongdashv$	<code>\nlongdashv</code>	$\nVbar$	<code>\nVbar</code>
$\nBarv$	<code>\nBarv</code>	$\nmodels$	<code>\nmodels</code>	$\nVdash$	<code>\nVdash</code>
$\nbarV$	<code>\nbarV</code>	$\nni$	<code>\nni</code>	$\nvDash$	<code>\nvDash</code>
$\nclosure$	<code>\nclosure</code>	$\notin$	<code>\notin</code>	$\nVDash$	<code>\nVDash</code>
$\nDashV$	<code>\nDashV</code>	$\nperp$	<code>\nperp</code>	$\nvdash$	<code>\nvdash</code>
$\nDashv$	<code>\nDashv</code>	$\nshortdowntack$	<code>\nshortdowntack</code>	$\nvlongdash$	<code>\nvlongdash</code>
$\ndashv$	<code>\ndashv</code>	$\nshortlefttack$	<code>\nshortlefttack</code>		

TABLE 111: boisik Binary Relations

$\approx$	<code>\ac</code>	$\parallel$	<code>\fatslash</code>	$\curvearrowright$	<code>\scurel</code>
$\approx$	<code>\approxeq</code>	$\ni$	<code>\forkv</code>	$\mid$	<code>\shortmid</code>
$\arceq$	<code>\arceq</code>	$)$	<code>\frown</code>	$\parallel$	<code>\shortparallel</code>
$\backsimeq$	<code>\backsim</code>	$\ggcurly$	<code>\ggcurly</code>	$\sim$	<code>\simrdots</code>
$\backsimeq$	<code>\backsimeq</code>	$\#$	<code>\hash</code>	$)$	<code>\smallfrown</code>
$\in$	<code>\bagmember</code>	$\in$	<code>\inplus</code>	$($	<code>\smallsmile</code>
$\because$	<code>\because</code>	$\curvearrowleft$	<code>\kernelcontraction</code>	$)$	<code>\smile</code>
$\between$	<code>\between</code>	$\llcurly$	<code>\llcurly</code>	$\vdash$	<code>\strictfi</code>
$\bumpeq$	<code>\bumpeq</code>	$\vdash$	<code>\multimap</code>	$\vdash$	<code>\strictif</code>
$\Bumpeq$	<code>\Bumpeq</code>	$\circ$	<code>\multimapboth</code>	$\approx$	<code>\succapprox</code>
$\circeq$	<code>\circeq</code>	$\circ$	<code>\multimapbothvert</code>	$\approx$	<code>\succcurlyeq</code>
$\CircledEq$	<code>\CircledEq</code>	$\dashv$	<code>\multimapdot</code>	$\approx$	<code>\succnapprox</code>
$\cong$	<code>\cong</code>	$\bullet$	<code>\multimapdotboth</code>	$\approx$	<code>\succneqq</code>
$\corresponds$	<code>\corresponds</code>	$\circ$	<code>\multimapdotbothA</code>	$\approx$	<code>\succnsim</code>
$\curlyeqprec$	<code>\curlyeqprec</code>	$\circ$	<code>\multimapdotbothAvert</code>	$\approx$	<code>\succsim</code>
$\curlyeqsucc$	<code>\curlyeqsucc</code>	$\circ$	<code>\multimapdotbothB</code>	$\therefore$	<code>\therefore</code>
$\dashV$	<code>\dashV</code>	$\circ$	<code>\multimapdotbothBvert</code>	$\approx$	<code>\thickapprox</code>
$\DashV$	<code>\DashV</code>	$\bullet$	<code>\multimapdotbothvert</code>	$\sim$	<code>\thicksim</code>
$\dashVv$	<code>\dashVv</code>	$\dashv$	<code>\multimapdotinv</code>	$\pitchfork$	<code>\topfork</code>
$\dfourier$	<code>\dfourier</code>	$\vdash$	<code>\multimapinv</code>	$\trianglelefteq$	<code>\trianglelefteq</code>
$\Dfourier$	<code>\Dfourier</code>	$\niplus$	<code>\niplus</code>	$\#$	<code>\varhash</code>
$\disin$	<code>\disin</code>	$\ni$	<code>\nisd</code>	$\in$	<code>\varisins</code>
$\doteq$	<code>\doteq</code>	$\perp$	<code>\Perp</code>	$\ni$	<code>\varnis</code>
$\doteqdot$	<code>\doteqdot</code>	$\pitchfork$	<code>\pitchfork</code>	$\propto$	<code>\varpropto</code>
$\dotminus$	<code>\dotminus</code>	$\approx$	<code>\precapprox</code>	$\Vdash$	<code>\VDash</code>
$\dotsim$	<code>\dotsim</code>	$\approx$	<code>\preccurlyeq</code>	$\Vdash$	<code>\vDash</code>
$\eqbumped$	<code>\eqbumped</code>	$\approx$	<code>\precnapprox</code>	$\Vdash$	<code>\VDash</code>
$\eqcirc$	<code>\eqcirc</code>	$\approx$	<code>\precneqq</code>	$\leq$	<code>\veeeq</code>
$\eqsim$	<code>\eqsim</code>	$\approx$	<code>\precnsim</code>	$\Vdash$	<code>\Vvdash</code>
$\equalparallel$	<code>\equalparallel</code>	$\approx$	<code>\precsim</code>	$\circ$	<code>\ztransf</code>
$\fallingdotseq$	<code>\fallingdotseq</code>	$\curvearrowright$	<code>\prurel</code>	$\circ$	<code>\Ztransf</code>
$\fatbslash$	<code>\fatbslash</code>	$\parallel$	<code>\risingdotseq</code>		

TABLE 112: boisik Negated Binary Relations

$\ncong$	<code>\ncong</code>	$\npreceq$	<code>\npreceq</code>	$\nVDash$	<code>\nVDash</code>
$\neq$	<code>\neq</code>	$\nshortmid$	<code>\nshortmid</code>	$\nVdash$	<code>\nVdash</code>
$\nequiv$	<code>\nequiv</code>	$\nshortparallel$	<code>\nshortparallel</code>	$\nvDash$	<code>\nvDash</code>
$\nmid$	<code>\nmid</code>	$\nsim$	<code>\nsim</code>	$\nvDash$	<code>\nvDash</code>
$\nparallel$	<code>\nparallel</code>	$\nsucc$	<code>\nsucc</code>		
$\nprec$	<code>\nprec</code>	$\nsucceq$	<code>\nsucceq</code>		

TABLE 113: stix Binary Relations

$\approx$	<code>\approx</code>	$\#$	<code>\eqvparsl</code>	$\rightarrow$	<code>\rightfishtail</code>
$\approx\approx$	<code>\approxeq</code>	$\equiv$	<code>\fallingdotseq</code>	$\Rightarrow$	<code>\rightimply</code>
$\approx\approx\approx$	<code>\approxeqq</code>	$\bowtie$	<code>\fbowtie</code>	$\rhd$	<code>\righttail</code>
$\approx\approx\approx\approx$	<code>\approxident</code>	$\downarrow$	<code>\forksnot</code>	$\risingdotseq$	<code>\risingdotseq</code>
$\approx\approx\approx\approx\approx$	<code>\arceq</code>	$\oslash$	<code>\forkv</code>	$\sqcup$	<code>\rsqhook</code>
$\vdash$	<code>\assert</code>	$\frown$	<code>\frown</code>	$\rightarrowtail$	<code>\ruledelayed</code>
$\vDash$	<code>\asteq</code>	$\H$	<code>\gleichstark</code>	$\scurel$	<code>\scurel</code>
$\asymp$	<code>\asymp</code>	$\hat{\approx}$	<code>\hatapprox</code>	$\dashv$	<code>\shortdowntack</code>
$\backcong$	<code>\backcong</code>	$\bullet\circ$	<code>\imageof</code>	$\dashv$	<code>\shortlefttack</code>
$\backsimeq$	<code>\backsimeq</code>	$\in$	<code>\in</code>	$\mid$	<code>\shortmid</code>
$\backsimeqq$	<code>\backsimeqq</code>	$\in\dot{}$	<code>\isindot</code>	$\parallel$	<code>\shortparallel</code>
$\bagmember$	<code>\bagmember</code>	$\in$	<code>\isinE</code>	$\vdash$	<code>\shortuptack</code>
$\Barv$	<code>\Barv</code>	$\in$	<code>\isinobar</code>	$\sim$	<code>\sim</code>
$\bar{V}$	<code>\barV</code>	$\in$	<code>\isins</code>	$\simeq$	<code>\simeq</code>
$\between$	<code>\between</code>	$\in$	<code>\isinvb</code>	$\sim\sim$	<code>\simminussim</code>
$\bNot$	<code>\bNot</code>	$\sim$	<code>\kernelcontraction</code>	$\sim\sim\sim$	<code>\simneqq</code>
$\bowtie$	<code>\bowtie</code>	$\leftarrowtail$	<code>\leftdbltail</code>	$\sim\sim\sim\sim$	<code>\simrdots</code>
$\bumpeq$	<code>\bumpeq</code>	$\rightarrowtail$	<code>\leftfishtail</code>	$\smile$	<code>\smallfrown</code>
$\bumpeq$	<code>\bumpeq</code>	$\rightarrowtail$	<code>\lefttail</code>	$\smallin$	<code>\smallin</code>
$\bumpeq\approx$	<code>\bumpeq\approx</code>	$\bowtie$	<code>\lfbowtie</code>	$\smallni$	<code>\smallni</code>
$\cirbot$	<code>\cirbot</code>	$\times$	<code>\lftimes</code>	$\smile$	<code>\smallsmile</code>
$\circeq$	<code>\circeq</code>	$\longdashv$	<code>\longdashv</code>	$\smeparsl$	<code>\smeparsl</code>
$\cirmid$	<code>\cirmid</code>	$\sqcup$	<code>\lsqhook</code>	$\smile$	<code>\smile</code>
$\closure$	<code>\closure</code>	$\measeq$	<code>\measeq</code>	$\stareq$	<code>\stareq</code>
$\Coloneq$	<code>\Coloneq</code>	$\mid$	<code>\mid</code>	$\succ$	<code>\succ</code>
$\coloneq$	<code>\coloneq</code>	$\mid$	<code>\midcir</code>	$\Succ$	<code>\Succ</code>
$\cong$	<code>\cong</code>	$\multimap$	<code>\mlcp</code>	$\succapprox$	<code>\succapprox</code>
$\cong\dot{}$	<code>\cong\dot{}</code>	$\models$	<code>\models</code>	$\succcurlyeq$	<code>\succcurlyeq</code>
$\curlyeqprec$	<code>\curlyeqprec</code>	$\multimap$	<code>\multimap</code>	$\succeq$	<code>\succeq</code>
$\curlyeqsucc$	<code>\curlyeqsucc</code>	$\multimap$	<code>\multimapinv</code>	$\succeqq$	<code>\succeqq</code>
$\dashcolon$	<code>\dashcolon</code>	$\ni$	<code>\ni</code>	$\succnapprox$	<code>\succnapprox</code>
$\dashv$	<code>\dashv</code>	$\niobar$	<code>\niobar</code>	$\succneq$	<code>\succneq</code>
$\dashV$	<code>\dashV</code>	$\ni$	<code>\ni</code>	$\succneqq$	<code>\succneqq</code>
$\Dashv$	<code>\Dashv</code>	$\nisd$	<code>\nisd</code>	$\succnsim$	<code>\succnsim</code>
$\DashV$	<code>\DashV</code>	$\Not$	<code>\Not</code>	$\succsim$	<code>\succsim</code>
$\DashVDash$	<code>\DashVDash</code>	$/$	<code>\notchar</code>	$\thickapprox$	<code>\thickapprox</code>
$\dashVdash$	<code>\dashVdash</code>	$\circ\bullet$	<code>\origof</code>	$\thicksim$	<code>\thicksim</code>
$\ddot{}$	<code>\ddotseq</code>	$\parallel$	<code>\parallel</code>	$\topfork$	<code>\topfork</code>
$\disin$	<code>\disin</code>	$\parsim$	<code>\parsim</code>	$\upfishtail$	<code>\upfishtail</code>
$\Doteq$	<code>\Doteq</code>	$\perp$	<code>\perp</code>	$\upin$	<code>\upin</code>
$\doteq$	<code>\doteq</code>	$\pitchfork$	<code>\pitchfork</code>	$\varisinobar$	<code>\varisinobar</code>
$\dotequiv$	<code>\dotequiv</code>	$\prec$	<code>\prec</code>	$\varisins$	<code>\varisins</code>

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$\sim$	<code>\dotsim</code>	$\preccurlyeq$	<code>\Prec</code>	$\varinjlim$	<code>\varniobar</code>
$\dotso$	<code>\dotsminusdots</code>	$\approx$	<code>\precapprox</code>	$\varprojlim$	<code>\varnis</code>
$\downarrow$	<code>\downfishtail</code>	$\preccurlyeq$	<code>\preccurlyeqeq</code>	$\propto$	<code>\varpropto</code>
$\circlearrowleft$	<code>\dualmap</code>	$\preceq$	<code>\preceq</code>	$\dashv$	<code>\varVdash</code>
$\#$	<code>\eparsl</code>	$\preceq$	<code>\preceqq</code>	$\pm$	<code>\vBar</code>
$\#$	<code>\eqcirc</code>	$\preccurlyeq$	<code>\precnapprox</code>	$\mathbb{1}$	<code>\Vbar</code>
$\equiv$	<code>\eqcolon</code>	$\precneq$	<code>\precneq</code>	$\dagger$	<code>\vBarv</code>
$\equiv$	<code>\eqdef</code>	$\precneqq$	<code>\precneqq</code>	$\vdash$	<code>\Vdash</code>
$\cdot$	<code>\eqdot</code>	$\precnsim$	<code>\precnsim</code>	$\vdash$	<code>\vdash</code>
$\equiv$	<code>\eqeq</code>	$\precsim$	<code>\precsim</code>	$\dashv$	<code>\vDash</code>
$\equiv$	<code>\eqeqeq</code>	$\propto$	<code>\propto</code>	$\dashv$	<code>\VDash</code>
$\approx$	<code>\eqqsim</code>	$\curvearrowright$	<code>\prurel</code>	$\dashv$	<code>\vDdash</code>
$\approx$	<code>\eqsim</code>	$\lrcorner$	<code>\pullback</code>	$\vdots$	<code>\vdots</code>
$\#$	<code>\equalparallel</code>	$\sqsupset$	<code>\pushout</code>	$\leq$	<code>\veeeq</code>
$\equiv$	<code>\equiv</code>	$\dashv$	<code>\questeq</code>	$\wedge$	<code>\veeonwedge</code>
$\equiv$	<code>\Equiv</code>	$\vdash$	<code>\revnmid</code>	$\mid$	<code>\vertoverlay</code>
$\equiv$	<code>\equivDD</code>	$\bowtie$	<code>\rftimes</code>	$\longdash$	<code>\vlongdash</code>
$\#$	<code>\equivVert</code>	$\rtimes$	<code>\rftimes</code>	$\dashv$	<code>\Vvdash</code>
$\#$	<code>\equivVvert</code>	$\rightharpoonup$	<code>\rightdbltail</code>	$\triangleq$	<code>\wedseq</code>

stix defines `\owns` as a synonym for `\ni` and `\doteqdot` as a synonym for `\Doteq`.

TABLE 114: stix Negated Binary Relations

$\nexists$	<code>\forks</code>	$\nparallel$	<code>\nhpar</code>	$\nsimeq$	<code>\nsime</code>
$\approx$	<code>\napprox</code>	$\nmid$	<code>\nmid</code>	$\nsucc$	<code>\nsucc</code>
$\approx$	<code>\napproxeqq</code>	$\nsubseteq$	<code>\nni</code>	$\nsucccurlyeq$	<code>\nsucccurlyeq</code>
$\asymp$	<code>\nasymp</code>	$\notin$	<code>\notin</code>	$\nsucceq$	<code>\nsucceq</code>
$\nbumpeq$	<code>\nbumpeq</code>	$\nparallel$	<code>\nparallel</code>	$\nvarisinobar$	<code>\nvarisinobar</code>
$\nbumpeq$	<code>\nbumpeq</code>	$\nprec$	<code>\nprec</code>	$\nvarniobar$	<code>\nvarniobar</code>
$\ncong$	<code>\ncong</code>	$\npreccurlyeq$	<code>\npreccurlyeq</code>	$\nvDash$	<code>\nvDash</code>
$\ncongdot$	<code>\ncongdot</code>	$\npreceq$	<code>\npreceq</code>	$\nvDash$	<code>\nvDash</code>
$\neq$	<code>\neq</code>	$\nshortmid$	<code>\nshortmid</code>	$\nVDash$	<code>\nVDash</code>
$\neqsim$	<code>\neqsim</code>	$\nshortparallel$	<code>\nshortparallel</code>	$\nVdash$	<code>\nVdash</code>
$\nequiv$	<code>\nequiv</code>	$\nsim$	<code>\nsim</code>		

stix defines `\neq` as a synonym for `\neq`, `\nsimeq` as a synonym for `\nsime`, and `\nforksnot` as a synonym for `\forks`.

TABLE 115: mathtools Binary Relations

$::\approx$	<code>\Colonapprox</code>	$:-$	<code>\coloneq</code>	$-::$	<code>\Eqcolon</code>
$\approx$	<code>\colonapprox</code>	$\sim$	<code>\colonsim</code>	$=:$	<code>\eqqcolon</code>
$:=$	<code>\coloneqq</code>	$::\sim$	<code>\Colonsim</code>	$=::$	<code>\Eqqcolon</code>
$::=$	<code>\Coloneqq</code>	$::$	<code>\dblcolon</code>		
$::-$	<code>\Coloneq</code>	$-:$	<code>\eqcolon</code>		

Similar symbols can be defined using `mathtools`'s `\vcentcolon`, which produces a colon centered on the font's math axis:

$$\begin{array}{ccc} \text{==} \text{.} \text{==} & \text{vs.} & \text{==} \text{.} \text{==} \\ \text{"=:="} & & \text{"=\vcentcolon="} \end{array}$$

TABLE 116: turnstile Binary Relations

$\frac{\frac{def}{abc}}{abc}$	<code>\dddtstile{abc}{def}</code>	$\frac{def}{abc}$	<code>\nntstile{abc}{def}</code>	$\frac{def}{abc}$	<code>\stdtstile{abc}{def}</code>
$\frac{\frac{def}{abc}}{abc}$	<code>\ddststile{abc}{def}</code>	$\frac{def}{abc} $	<code>\nnttstile{abc}{def}</code>	$\frac{def}{abc}$	<code>\sttstile{abc}{def}</code>
$\frac{\frac{def}{abc}}{abc}$	<code>\ddtstile{abc}{def}</code>	$\frac{def}{abc} $	<code>\nsdtstile{abc}{def}</code>	$\frac{def}{abc}$	<code>\sttstile{abc}{def}</code>
$\frac{\frac{def}{abc}}{abc} $	<code>\ddttstile{abc}{def}</code>	$\frac{def}{abc} $	<code>\nsststile{abc}{def}</code>	$\frac{def}{abc} $	<code>\stttstile{abc}{def}</code>
$\frac{\frac{def}{abc}}{abc} $	<code>\dndtstile{abc}{def}</code>	$\frac{def}{abc}$	<code>\nststile{abc}{def}</code>	$\frac{\frac{def}{abc}}{abc} $	<code>\tddtstile{abc}{def}</code>
$\frac{\frac{def}{abc}}{abc} $	<code>\dnststile{abc}{def}</code>	$\frac{def}{abc} $	<code>\nsttstile{abc}{def}</code>	$\frac{\frac{def}{abc}}{abc}$	<code>\tdststile{abc}{def}</code>
$\frac{\frac{def}{abc}}{abc}$	<code>\dntstile{abc}{def}</code>	$\frac{\frac{def}{abc}}{abc} $	<code>\ntdtstile{abc}{def}</code>	$\frac{\frac{def}{abc}}{abc}$	<code>\tdtstile{abc}{def}</code>
$\frac{\frac{def}{abc}}{abc} $	<code>\dnttstile{abc}{def}</code>	$\frac{\frac{def}{abc}}{abc}$	<code>\ntststile{abc}{def}</code>	$\frac{\frac{def}{abc}}{abc} $	<code>\tdttstile{abc}{def}</code>
$\frac{\frac{def}{abc}}{abc} $	<code>\dsdtstile{abc}{def}</code>	$\frac{\frac{def}{abc}}{abc}$	<code>\nttstile{abc}{def}</code>	$\frac{\frac{def}{abc}}{abc} $	<code>\tndtstile{abc}{def}</code>
$\frac{\frac{def}{abc}}{abc} $	<code>\dsststile{abc}{def}</code>	$\frac{\frac{def}{abc}}{abc} $	<code>\ntttstile{abc}{def}</code>	$\frac{\frac{def}{abc}}{abc} $	<code>\tnststile{abc}{def}</code>
$\frac{\frac{def}{abc}}{abc}$	<code>\dststile{abc}{def}</code>	$\frac{\frac{def}{abc}}{abc} $	<code>\sddtstile{abc}{def}</code>	$\frac{\frac{def}{abc}}{abc}$	<code>\tntstile{abc}{def}</code>
$\frac{\frac{def}{abc}}{abc} $	<code>\dsttstile{abc}{def}</code>	$\frac{\frac{def}{abc}}{abc} $	<code>\sdststile{abc}{def}</code>	$\frac{\frac{def}{abc}}{abc} $	<code>\tnttstile{abc}{def}</code>

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$\frac{def}{abc}$	<code>\dtdtstile{abc}{def}</code>	$\frac{def}{abc}$	<code>\sdtstile{abc}{def}</code>	$\frac{def}{abc}$	<code>\tsdtstile{abc}{def}</code>
$\frac{def}{abc}$	<code>\dtststile{abc}{def}</code>	$\frac{def}{abc}$	<code>\sdtstile{abc}{def}</code>	$\frac{def}{abc}$	<code>\tsststile{abc}{def}</code>
$\frac{def}{abc}$	<code>\dttstile{abc}{def}</code>	$\frac{def}{abc}$	<code>\sntdstile{abc}{def}</code>	$\frac{def}{abc}$	<code>\tststile{abc}{def}</code>
$\frac{def}{abc}$	<code>\dtttstile{abc}{def}</code>	$\frac{def}{abc}$	<code>\snststile{abc}{def}</code>	$\frac{def}{abc}$	<code>\tsttstile{abc}{def}</code>
$\frac{def}{abc}$	<code>\nddtstile{abc}{def}</code>	$\frac{def}{abc}$	<code>\sntstile{abc}{def}</code>	$\frac{def}{abc}$	<code>\ttdtstile{abc}{def}</code>
$\frac{def}{abc}$	<code>\ndststile{abc}{def}</code>	$\frac{def}{abc}$	<code>\snttstile{abc}{def}</code>	$\frac{def}{abc}$	<code>\tttstile{abc}{def}</code>
$\frac{def}{abc}$	<code>\ndtstile{abc}{def}</code>	$\frac{def}{abc}$	<code>\ssdtstile{abc}{def}</code>	$\frac{def}{abc}$	<code>\tttstile{abc}{def}</code>
$\frac{def}{abc}$	<code>\ndttstile{abc}{def}</code>	$\frac{def}{abc}$	<code>\ssststile{abc}{def}</code>	$\frac{def}{abc}$	<code>\ttttstile{abc}{def}</code>
$\frac{def}{abc}$	<code>\nndtstile{abc}{def}</code>	$\frac{def}{abc}$	<code>\sststile{abc}{def}</code>		
$\frac{def}{abc}$	<code>\nnststile{abc}{def}</code>	$\frac{def}{abc}$	<code>\ssttstile{abc}{def}</code>		

Each of the above takes an optional argument that controls the size of the upper and lower expressions. See the turnstile documentation for more information.

TABLE 117: trsym Binary Relations

$\bullet \circ$	<code>\InversTransformHoriz</code>	$\circ \bullet$	<code>\TransformHoriz</code>
$\bullet \circ$	<code>\InversTransformVert</code>	$\circ \bullet$	<code>\TransformVert</code>

TABLE 118: trfsigns Binary Relations

$\circ \diagup$	<code>\dfourier</code>	$\diagdown \circ$	<code>\Dfourier</code>
$\circ \text{---}$	<code>\fourier</code>	$\text{---} \circ$	<code>\Fourier</code>
$\circ \text{---} \bullet$	<code>\laplace</code>	$\bullet \text{---} \circ$	<code>\Laplace</code>
$\circ \diagup \bullet$	<code>\ztransf</code>	$\bullet \diagdown \circ$	<code>\Ztransf</code>

TABLE 119: pdfMsym Binary Relations

$\Leftarrow$	<code>\leftPP</code>	$\Rightarrow$	<code>\longroundedarrow</code>	$\Rrightarrow$	<code>\roundedarrow</code>
$\Lleftarrow$	<code>\longleftPP</code>	$\Rightarrow$	<code>\longsquaredarrow</code>	$\Rrightarrow$	<code>\squaredarrow</code>
$\Rrightarrow$	<code>\longrightPP</code>	$\Leftarrow$	<code>\rightPP</code>		

pdfMsym symbols are implemented with PDF literals instead of (or sometimes in conjunction) with a font. All symbols can be rendered by pdfL^AT_EX and LuaL^AT_EX, some by X_YL^AT_EX, and none by most other T_EX backends.

TABLE 120: cml Binary Relations

$\subset$	<code>\coh</code>	$\supset$	<code>\scoh</code>
$\supsetneq$	<code>\incoh</code>	$\subsetneq$	<code>\sincoh</code>
$\perp$	<code>\Perp</code>	$\perp$	<code>\simperp</code>
$\multimap$	<code>\multimapboth</code>		

TABLE 121: colonequals Binary Relations

$\approx$	<code>\approxcolon</code>	$\colonminus$	<code>\coloncolonminus</code>	$\equiv$	<code>\equalscoloncolon</code>
$\approx\colon$	<code>\approxcoloncolon</code>	$\colon\sim$	<code>\coloncolonsim</code>	$\minuscolon$	<code>\minuscolon</code>
$\colon\approx$	<code>\colonapprox</code>	$\colon=$	<code>\colonequals</code>	$\minuscoloncolon$	<code>\minuscoloncolon</code>
$\colon$	<code>\coloncolon</code>	$\colonminus$	<code>\colonminus</code>	$\colon$	<code>\ratio</code>
$\colon\approx$	<code>\coloncolonapprox</code>	$\colon\sim$	<code>\colonsim</code>	$\sim\colon$	<code>\simcolon</code>
$\colon=$	<code>\coloncolonequals</code>	$\colon=$	<code>\equalscolon</code>	$\sim\colon$	<code>\simcoloncolon</code>

TABLE 122: fourier Binary Relations

$\nparallel$	<code>\nparallelslant</code>	$\parallel$	<code>\parallelslant</code>
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TABLE 123: logix Binary Relations

$\equiv$	<code>\ClsEquiv</code>	$\not\equiv$	<code>\NotClsEquiv</code>	$\nrightarrow$	<code>\NotPre</code>	$\prec$	<code>\Pre</code>
$\supset$	<code>\ClsImpl</code>	$\not\supset$	<code>\NotClsImpl</code>	$\nrightarrow$	<code>\NotPreq</code>	$\preceq$	<code>\Preq</code>
$\models$	<code>\Conseq</code>	$\not\models$	<code>\NotConseq</code>	$\nrightarrow$	<code>\NotRule</code>	$\vdash$	<code>\Rule</code>
$\models$	<code>\DTrpTurn</code>	$\not\models$	<code>\NotDTrpTurn</code>	$\nrightarrow$	<code>\NotSeq</code>	$\succ$	<code>\Seq</code>
$\models$	<code>\DTurnDWavy</code>	$\not\models$	<code>\NotDTurnDWavy</code>	$\nrightarrow$	<code>\NotSuc</code>	$\succ$	<code>\Suc</code>
$\models$	<code>\DTurnWavy</code>	$\not\models$	<code>\NotDTurnWavy</code>	$\nrightarrow$	<code>\NotSucq</code>	$\succeq$	<code>\Sucq</code>
$\models$	<code>\Model</code>	$\not\models$	<code>\NotModel</code>	$\nrightarrow$	<code>\NotTrpTurn</code>	$\models$	<code>\TrpTurn</code>
$\multimap$	<code>\MulMap</code>	$\not\multimap$	<code>\NotMulMap</code>	$\nrightarrow$	<code>\NotTurn</code>	$\models$	<code>\Turn</code>
$\multimap$	<code>\MulMapDual</code>	$\not\multimap$	<code>\NotMulMapDual</code>	$\nrightarrow$	<code>\NotTurnDWavy</code>	$\models$	<code>\TurnDWavy</code>
$\multimap$	<code>\MulMapInv</code>	$\not\multimap$	<code>\NotMulMapInv</code>	$\nrightarrow$	<code>\NotTurnWavy</code>	$\models$	<code>\TurnWavy</code>

logix requires either LuaL^AT_EX or X_YL^AT_EX.

TABLE 124: logix Set Symbols

$\in$	<code>\In</code>	$\notin$	<code>\NotOwns</code>	$:$	<code>\Of</code>	$\emptyset$	<code>\VoidBunch</code>
$\notin$	<code>\NotIn</code>	$\emptyset$	<code>\NullSet</code>	$\ni$	<code>\Owns</code>		

logix requires either Lua $\text{\LaTeX}$ or X $\text{\LaTeX}$.

TABLE 125: Subset and Superset Relations

$\sqsubset$	<code>\sqsubset*</code>	$\sqsupseteq$	<code>\sqsupseteq</code>	$\supset$	<code>\supset</code>
$\sqsubseteq$	<code>\sqsubseteq</code>	$\subset$	<code>\subset</code>	$\supseteq$	<code>\supseteq</code>
$\sqsupset$	<code>\sqsupset*</code>	$\subseteq$	<code>\subseteq</code>		

* Not predefined by the $\text{\LaTeX} 2_{\epsilon}$ core. Use the `latexsym` package to expose this symbol.

TABLE 126: $\mathcal{A}\mathcal{M}\mathcal{S}$ Subset and Superset Relations

$\not\subseteq$	<code>\nsubseteq</code>	$\subseteq$	<code>\subseteq</code>	$\not\supseteq$	<code>\nsupseteq</code>
$\not\supseteq$	<code>\nsupseteq</code>	$\subsetneq$	<code>\subsetneq</code>	$\varsubsetneq$	<code>\varsubsetneq</code>
$\not\supseteqq$	<code>\nsupseteqq</code>	$\subseteqq$	<code>\subseteqq</code>	$\varsubseteqq$	<code>\varsubseteqq</code>
$\sqsubset$	<code>\sqsubset</code>	$\supset$	<code>\Supset</code>	$\varsupset$	<code>\varsupset</code>
$\sqsupset$	<code>\sqsupset</code>	$\supseteq$	<code>\supseteqq</code>	$\varsupseteq$	<code>\varsupseteqq</code>
$\Subset$	<code>\Subset</code>	$\supsetneq$	<code>\supsetneq</code>		

TABLE 127: stmaryd Subset and Superset Relations

$\Subset$	<code>\subsetplus</code>	$\supset$	<code>\supsetplus</code>
$\sqsubseteq$	<code>\subsetpluseq</code>	$\supseteq$	<code>\supsetpluseq</code>

TABLE 128: wasysym Subset and Superset Relations

$\sqsubset$	<code>\sqsubset</code>	$\sqsupset$	<code>\sqsupset</code>
-------------	------------------------	-------------	------------------------

TABLE 129: txfonts/pxfonts Subset and Superset Relations

$\not\subseteq$	<code>\nqsubset</code>	$\not\supseteq$	<code>\nqsupseteq</code>	$\not\supset$	<code>\nSupset</code>
$\not\subseteqq$	<code>\nqsubseteq</code>	$\not\subseteq$	<code>\nSubset</code>		
$\not\supseteq$	<code>\nqsupseteq</code>	$\not\supseteqq$	<code>\nsubseteqq</code>		

TABLE 130: mathabx Subset and Superset Relations

$\subsetneq$	<code>\nssubset</code>	$\supsetneq$	<code>\nsupset</code>	$\sqsupseteq$	<code>\sqsupseteq</code>	$\supseteq$	<code>\supseteq</code>
$\subseteq$	<code>\nsqSubset</code>	$\supseteq$	<code>\nSupset</code>	$\sqsupseteqq$	<code>\sqsupseteqq</code>	$\supseteqq$	<code>\supseteqq</code>
$\subsetneqq$	<code>\nssubseteq</code>	$\supsetneqq$	<code>\nsupseteq</code>	$\sqsupsetneq$	<code>\sqsupsetneq</code>	$\supsetneq$	<code>\supsetneq</code>
$\subseteqq$	<code>\nssubseteqq</code>	$\supseteqq$	<code>\nsupseteqq</code>	$\sqsupsetneqq$	<code>\sqsupsetneqq</code>	$\supsetneqq$	<code>\supsetneqq</code>
$\supsetneq$	<code>\nssupset</code>	$\sqsubset$	<code>\sqsubset</code>	$\subset$	<code>\subset</code>	$\varsubsetneq$	<code>\varsubsetneq</code>
$\supseteq$	<code>\nsqSupset</code>	$\sqsubseteq$	<code>\sqSubset</code>	$\Subset$	<code>\Subset</code>	$\varsubsetneqq$	<code>\varsubsetneqq</code>
$\supseteqq$	<code>\nssupseteq</code>	$\sqsubseteq$	<code>\sqsubseteq</code>	$\subseteq$	<code>\subseteq</code>	$\varsupsetneq$	<code>\varsupsetneq</code>
$\supseteqq$	<code>\nssupseteqq</code>	$\sqsubseteqq$	<code>\sqsubseteqq</code>	$\subseteqq$	<code>\subseteqq</code>	$\varsupsetneqq$	<code>\varsupsetneqq</code>
$\subsetneq$	<code>\nsubset</code>	$\sqsubsetneq$	<code>\sqsubsetneq</code>	$\subsetneq$	<code>\subsetneq</code>	$\varsubsetneq$	<code>\varsubsetneq</code>
$\subseteq$	<code>\nSubset</code>	$\sqsubseteqq$	<code>\sqsubsetneqq</code>	$\subsetneqq$	<code>\subsetneqq</code>	$\varsubsetneqq$	<code>\varsubsetneqq</code>
$\subseteqq$	<code>\nsubteq</code>	$\supseteq$	<code>\sqSupset</code>	$\supseteq$	<code>\supseteq</code>	$\varsupsetneq$	<code>\varsupsetneq</code>
$\subseteqq$	<code>\nsubteqq</code>	$\supseteqq$	<code>\sqsupseteq</code>	$\supseteqq$	<code>\supseteqq</code>	$\varsupsetneqq$	<code>\varsupsetneqq</code>

TABLE 131: MnSymbol Subset and Superset Relations

$\sqsubset$	<code>\nSqsubset</code>	$\subsetneq$	<code>\nsubsetneq</code>	$\sqsubsetneq$	<code>\sqsubsetneq</code>	$\subseteq$	<code>\subseteq</code>
$\subsetneq$	<code>\nssqsubset</code>	$\subsetneqq$	<code>\nsubsetneqq</code>	$\sqsubsetneqq$	<code>\sqsubsetneqq</code>	$\subseteqq$	<code>\subseteqq</code>
$\supsetneq$	<code>\nssqsubseteq</code>	$\supseteq$	<code>\nSupset</code>	$\sqsupseteq$	<code>\sqsupseteq</code>	$\varsubsetneq$	<code>\varsubsetneq</code>
$\supseteqq$	<code>\nssqsubseteqq</code>	$\supseteq$	<code>\nSupset</code>	$\sqsupseteq$	<code>\sqsupseteq</code>	$\varsubsetneqq$	<code>\varsubsetneqq</code>
$\supseteq$	<code>\nSqsupset</code>	$\supseteq$	<code>\nSupseteq</code>	$\sqsupseteq$	<code>\sqsupseteq</code>	$\supseteq$	<code>\supseteq</code>
$\supseteqq$	<code>\nssqsupset</code>	$\supseteqq$	<code>\nSupseteqq</code>	$\sqsupseteqq$	<code>\sqsupseteqq</code>	$\supseteq$	<code>\supseteq</code>
$\supseteqq$	<code>\nssqsupseteq</code>	$\sqsupseteq$	<code>\Sqsubset</code>	$\sqsupsetneq$	<code>\sqsupsetneq</code>	$\supseteq$	<code>\supseteq</code>
$\supseteqq$	<code>\nssqsupseteqq</code>	$\subset$	<code>\sqsubset</code>	$\sqsupsetneqq$	<code>\sqsupsetneqq</code>	$\supseteqq$	<code>\supseteqq</code>
$\subseteq$	<code>\nSubset</code>	$\sqsubseteq$	<code>\sqsubseteq</code>	$\Subset$	<code>\Subset</code>	$\supsetneq$	<code>\supsetneq</code>
$\subseteqq$	<code>\nsubset</code>	$\sqsubseteqq$	<code>\sqsubseteqq</code>	$\subset$	<code>\subset</code>	$\supsetneqq$	<code>\supsetneqq</code>

MnSymbol additionally defines `\varsubsetneq` as a synonym for `\subsetneq`, `\varsubsetneqq` as a synonym for `\subsetneqq`, `\varsupsetneq` as a synonym for `\supsetneq`, and `\varsupsetneqq` as a synonym for `\supsetneqq`.

$\nsubseteq$	<code>\nsqsubset</code>	$\notin$	<code>\nsubseteqq</code>	$\sqsubsetneq$	$\subsetneq$
$\nsubseteqq$	<code>\Nsqsubset</code>	$\nsubseteqq$	<code>\nsubseteqqq</code>	$\sqsubsetneqq$	$\subsetneqq$
$\supsetneq$	<code>\nsqsupseteq</code>	$\supset$	<code>\sqsupset</code>	$\supsetneq$	$\supsetneq$
$\supsetneqq$	<code>\nsqsupseteqq</code>	$\supset$	<code>\Sqsupset</code>	$\supsetneqq$	$\supsetneqq$
$\supseteq$	<code>\nsqsupset</code>	$\supseteq$	<code>\sqsupseteq</code>	$\supseteq$	$\supseteq$
$\supseteqq$	<code>\Nsqsupset</code>	$\supseteqq$	<code>\sqsupseteqq</code>	$\supseteq$	$\supseteq$
$\supseteq$	<code>\nsqsupseteq</code>	$\supseteq$	<code>\sqsupseteqneq</code>	$\supseteq$	$\supseteq$
$\supseteqq$	<code>\nsqsupseteqq</code>	$\supseteqq$	<code>\sqsupseteqneqq</code>	$\supseteqq$	$\supseteqq$
$\subset$	<code>\nsubset</code>	$\subsetneq$	<code>\subset</code>	$\subsetneq$	$\subsetneq$
$\subsetneq$	<code>\nSubset</code>	$\subsetneqq$	<code>\Subset</code>	$\subsetneqq$	$\subsetneqq$

$\subsetneq$	$\sqsubset$	$\sqsubsetset$	$\subsetplus$	$\supsetplusseq$
$\subseteqq$	$\sqsupset$	$\subseteqplusseq$	$\varsubsetneq$	
$\subseteqqq$	$\sqsupseteq$	$\Supset$	$\varsubsetneqq$	
$\supseteq$	$\Subset$	$\supseteqqq$	$\varsupsetneq$	
$\supseteqq$	$\subsetseteqqq$	$\supsetneq$	$\varsupsetneqq$	
$\supseteqqq$	$\subsetneqq$	$\supsetneqq$		
$\sqsubsetset$	$\subsetneqq$	$\supsetplus$		

$\backslash$	$\backslash$ bsolhsub	$\sqsubset$	$\backslash$ sqsupseteq	$\supset$	$\backslash$ suphsub
$\subset$	$\backslash$ sub	$\sqsupsetneq$	$\backslash$ sqsupsetneq	$\supsetneq$	$\backslash$ suplarr
$\subseteq$	$\backslash$ sube	$\cdot$	$\backslash$ subedot	$\multimap$	$\backslash$ supmult
$\supset$	$\backslash$ sup	$\otimes$	$\backslash$ submult	$\supseteq$	$\backslash$ Supset
$\supseteq$	$\backslash$ csupe	$\supset$	$\backslash$ subrarr	$\supset$	$\backslash$ supset
$\leftarrow$	$\backslash$ leftarrowsubset	$\Subset$	$\backslash$ Subset	$\approx$	$\backslash$ supsetapprox
$\nsubseteq$	$\backslash$ nsqsubset	$\subset$	$\backslash$ subset	$\circ$	$\backslash$ supsetcirc*
$\nsubseteqeq$	$\backslash$ nsqsubseteq	$\approx$	$\backslash$ subsetapprox	$\cdot$	$\backslash$ supsetdot
$\supsetneq$	$\backslash$ nsqsupset	$\circ$	$\backslash$ subsetcirc*	$\supseteq$	$\backslash$ supseteq
$\supsetneqq$	$\backslash$ nsqsupseteq	$\cdot$	$\backslash$ subsetdot	$\supseteq$	$\backslash$ supseteqq
$\subsetneq$	$\backslash$ nsupset	$\supseteq$	$\backslash$ subseteq	$\supsetneq$	$\backslash$ supsetneq

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$\not\subseteq$	<code>\nsubseteq</code>	$\subseteq$	<code>\subseteq</code>	$\supsetneq$	<code>\supsetneq</code>
$\nsubseteqq$	<code>\nsubseteqq</code>	$\subsetneq$	<code>\subsetneq</code>	$\supsetplus$	<code>\supsetplus</code>
$\not\supset$	<code>\nsupset</code>	$\not\subseteqq$	<code>\notsubseteqq</code>	$\supsim$	<code>\supsim</code>
$\not\supseteq$	<code>\nsupseteq</code>	$\subsetplus$	<code>\subsetplus</code>	$\supsub$	<code>\supsub</code>
$\supsetneqq$	<code>\supsetneqq</code>	$\subsim$	<code>\subsim</code>	$\supsup$	<code>\supsup</code>
$\Rightarrow$	<code>\rightarrowsupset</code>	$\subsub$	<code>\subsub</code>	$\varsubsetneq$	<code>\varsubsetneq</code>
$\sqsubset$	<code>\sqsubset</code>	$\subsup$	<code>\subsup</code>	$\varsubsetneqq$	<code>\varsubsetneqq</code>
$\sqsubseteq$	<code>\sqsubseteq</code>	$\supdsub$	<code>\supdsub</code>	$\varsupsetneq$	<code>\varsupsetneq</code>
$\sqsubsetneq$	<code>\sqsubsetneq</code>	$\supedot$	<code>\supedot</code>	$\varsupsetneqq$	<code>\varsupsetneqq</code>
$\sqsupset$	<code>\sqsupset</code>	$\supsol$	<code>\supsol</code>		

* Defined as an ordinary character, not as a binary relation.

TABLE 135: logix Subset and Superset Relations

$\sqsubseteq$	<code>\FntSbset</code>	$\not\sqsubseteq$	<code>\NotStrctFntSbset</code>	$\not\sqsupset$	<code>\NotWkSbnch</code>	$\sqsubset$	<code>\StrctSbmap</code>
$\not\sqsubseteq$	<code>\NotFntSbset</code>	$\not\sqsupset$	<code>\NotStrctSbmap</code>	$\sqsubseteq$	<code>\Sbmap</code>	$\sqsubset$	<code>\StrctSbnch</code>
$\not\sqsupset$	<code>\NotSbmap</code>	$\not\sqsupseteq$	<code>\NotStrctSbnch</code>	$\sqsubseteq$	<code>\Sbnch</code>	$\sqsubset$	<code>\StrctSbset</code>
$\not\sqsupseteq$	<code>\NotSbnch</code>	$\not\sqsupseteq$	<code>\NotStrctSbset</code>	$\sqsubseteq$	<code>\Sbset</code>	$\sqsubseteq$	<code>\StrctWkSbnch</code>
$\not\sqsupseteq$	<code>\NotSbset</code>	$\not\sqsupseteq$	<code>\NotStrctWkSbnch</code>	$\sqsubseteq$	<code>\StrctFntSbset</code>	$\sqsubseteq$	<code>\WkSbnch</code>

logix requires either Lua $\text{\LaTeX}$ or X $\text{\LaTeX}$.

TABLE 136: Inequalities

$\geq$	<code>\geq</code>	$\gg$	<code>\gg</code>	$\leq$	<code>\leq</code>	$\ll$	<code>\ll</code>	$\neq$	<code>\neq</code>
--------	-------------------	-------	------------------	--------	-------------------	-------	------------------	--------	-------------------

TABLE 137: $\mathcal{AMS}$ Inequalities

$\gtrsim$	<code>\eqslantgtr</code>	$\gtrdot$	<code>\gtrdot</code>	$\lesseqgtr$	<code>\lesseqgtr</code>	$\ngeq$	<code>\ngeq</code>
$\lessgtr$	<code>\eqslantless</code>	$\gtreqless$	<code>\gtreqless</code>	$\lesseqqgtr$	<code>\lesseqqgtr</code>	$\ngeqq$	<code>\ngeqq</code>
$\geqq$	<code>\geqq</code>	$\gtreqqless$	<code>\gtreqqless</code>	$\lessgtr$	<code>\lessgtr</code>	$\ngeqslant$	<code>\ngeqslant</code>
$\geqslant$	<code>\geqslant</code>	$\gtrless$	<code>\gtrless</code>	$\lesssim$	<code>\lesssim</code>	$\ngtr$	<code>\ngtr</code>
$\ggg$	<code>\ggg</code>	$\gtrsim$	<code>\gtrsim</code>	$\lll$	<code>\lll</code>	$\nleq$	<code>\nleq</code>
$\gtrapprox$	<code>\gnapprox</code>	$\gvertneqq$	<code>\gvertneqq</code>	$\lnapprox$	<code>\lnapprox</code>	$\nleqq$	<code>\nleqq</code>
$\gneq$	<code>\gneq</code>	$\leqq$	<code>\leqq</code>	$\lneq$	<code>\lneq</code>	$\nleqslant$	<code>\nleqslant</code>
$\gneqq$	<code>\gneqq</code>	$\leqslant$	<code>\leqslant</code>	$\lneqq$	<code>\lneqq</code>	$\nless$	<code>\nless</code>
$\gnsim$	<code>\gnsim</code>	$\lessapprox$	<code>\lessapprox</code>	$\lnsim$	<code>\lnsim</code>		
$\gtrapprox$	<code>\gtrapprox</code>	$\lessdot$	<code>\lessdot</code>	$\lvertneqq$	<code>\lvertneqq</code>		

TABLE 138: wasysym Inequalities

$$\gtrsim \backslash apprge \lesssim \backslash apprle$$

TABLE 139: txfonts/pxfonts Inequalities

$$\begin{array}{llll} \nlessgtr & \backslash ngg & \nlessgtrsim & \nlessssim \\ \nlessgtrapprox & \backslash ngtrapprox & \nlessapprox & \nll \\ \nlessgtrless & \backslash ngtrless & \nlessgtr & \end{array}$$

TABLE 140: mathabx Inequalities

$$\begin{array}{llll} \gtrsim & \backslash eqslantgtr & \gtrless & \backslash gtreqless & \lesssim & \nlesssim & \ngtr & \\ \lessgtr & \backslash eqslantless & \lessgtr & \backslash gtreqless & \ll & \nlessapprox & \ngtrapprox & \\ \geq & \backslash geq & \gtrless & \lll & \ngtrsim & \nless & \ngtrsim & \\ \geq & \backslash geqq & \gtrsim & \lnapprox & \nleq & \nless & \ngtrsim & \\ \gg & \backslash gg & \gvertneqq & \lneq & \nleqq & \nless & \ngtrsim & \\ \ggg & \backslash ggg & \leq & \lneqq & \nless & \nless & \ngtrsim & \\ \gapprox & \backslash gnapprox & \leqq & \lnsim & \nlessapprox & \nlessapprox & \ngtrsim & \\ \gneq & \backslash gneq & \lessapprox & \lvertneqq & \nlesssim & \nlesssim & \ngtrsim & \\ \gneqq & \backslash gneqq & \lessdot & \neqslantgtr & \nvargtr & \nvargtr & \ngtrsim & \\ \gnsim & \backslash gnsim & \lesseqgtr & \neqslantless & \nvarleq & \nvarleq & \ngtrsim & \\ \gtrapprox & \backslash gtrapprox & \lesseqqgtr & \ngeq & \vargtr & \vargtr & \ngtrsim & \\ \gtrdot & \backslash gtrdot & \lessgtr & \ngeqq & \varleq & \varleq & \ngtrsim & \end{array}$$

`mathabx` defines `\leqslant` and `\le` as synonyms for `\leq`, `\geqslant` and `\ge` as synonyms for `\geq`, `\nleqslant` as a synonym for `\nleq`, and `\ngeqslant` as a synonym for `\ngeq`.

TABLE 141: MnSymbol Inequalities

$\gg$	<code>\eqslantgtr</code>	$\gtrless$	<code>\gtreqqless</code>	$\lesssim$	<code>\lesssim</code>	$\ngtrless$	<code>\ngtreqless</code>
$\lessgtr$	<code>\eqslantless</code>	$\gtrless$	<code>\gtrless</code>	$\ll$	<code>\ll</code>	$\ngtreqless$	<code>\ngtreqlessslant</code>
$\geq$	<code>\geq</code>	$\gtrneqqless$	<code>\gtrneqqless</code>	$\lll$	<code>\lll</code>	$\ngtreqqless$	<code>\ngtreqqless</code>
$\geqslant$	<code>\geqclosed</code>	$\gtrsim$	<code>\gtrsim</code>	$\lnapprox$	<code>\lnapprox</code>	$\ngtrless$	<code>\ngtrless</code>
$\geqdot$	<code>\geqdot</code>	$\leq$	<code>\leq</code>	$\lneqq$	<code>\lneqq</code>	$\nleq$	<code>\nleq</code>
$\geqq$	<code>\geqq</code>	$\leqslant$	<code>\leqclosed</code>	$\lnsim$	<code>\lnsim</code>	$\nleqclosed$	<code>\nleqclosed</code>
$\geqslant$	<code>\geqslant</code>	$\leqdot$	<code>\leqdot</code>	$\neqslantgtr$	<code>\neqslantgtr</code>	$\nleqdot$	<code>\nleqdot</code>
$\geqslantdot$	<code>\geqslantdot</code>	$\leqq$	<code>\leqq</code>	$\neqslantless$	<code>\neqslantless</code>	$\nleqq$	<code>\nleqq</code>
$\gg$	<code>\gg</code>	$\leqslant$	<code>\leqslant</code>	$\ngeq$	<code>\ngeq</code>	$\nleqslant$	<code>\nleqslant</code>
$\ggg$	<code>\ggg</code>	$\leqslantdot$	<code>\leqslantdot</code>	$\ngeqclosed$	<code>\ngeqclosed</code>	$\nleqslantdot$	<code>\nleqslantdot</code>
$\gapprox$	<code>\gapprox</code>	$<$	<code>\less</code>	$\ngeqdot$	<code>\ngeqdot</code>	$\nless$	<code>\nless</code>
$\gneqq$	<code>\gneqq</code>	$\lessapprox$	<code>\lessapprox</code>	$\ngeqq$	<code>\ngeqq</code>	$\nlessclosed$	<code>\nlessclosed</code>
$\gnsim$	<code>\gnsim</code>	$\lessclosed$	<code>\lessclosed</code>	$\ngeqslant$	<code>\ngeqslant</code>	$\nlessdot$	<code>\nlessdot</code>
$>$	<code>\gtr</code>	$\lessdot$	<code>\lessdot</code>	$\ngeqslantdot$	<code>\ngeqslantdot</code>	$\nlesseqgtr$	<code>\nlesseqgtr</code>
$\gtrapprox$	<code>\gtrapprox</code>	$\lesseqgtr$	<code>\lesseqgtr</code>	$\ngg$	<code>\ngg</code>	$\nlesseqgtrslant$	<code>\nlesseqgtrslant</code>
$\gtrclosed$	<code>\gtrclosed</code>	$\lesseqgtrslant$	<code>\lesseqgtrslant</code>	$\nggg$	<code>\nggg</code>	$\nlesseqqgtr$	<code>\nlesseqqgtr</code>
$>$	<code>\gtrdot</code>	$\lesseqqgtr$	<code>\lesseqqgtr</code>	$\ngtr$	<code>\ngtr</code>	$\nlessgtr$	<code>\nlessgtr</code>
$\gtreqless$	<code>\gtreqless</code>	$\lessgtr$	<code>\lessgtr</code>	$\ngtrclosed$	<code>\ngtrclosed</code>	$\nll$	<code>\nll</code>
$\gtreqlessslant$	<code>\gtreqlessslant</code>	$\lessneqqgtr$	<code>\lessneqqgtr</code>	$\ngtrdot$	<code>\ngtrdot</code>	$\nlll$	<code>\nlll</code>

MnSymbol additionally defines synonyms for some of the preceding symbols:

$\gggtr$	<code>\gggtr</code>	(same as <code>\ggg</code>)
$\gvertneqq$	<code>\gvertneqq</code>	(same as <code>\gneqq</code>)
$\lhd$	<code>\lhd</code>	(same as <code>\lessclosed</code>)
$\lllless$	<code>\lllless</code>	(same as <code>\lll</code>)
$\lvertneqq$	<code>\lvertneqq</code>	(same as <code>\lneqq</code>)
$\ntrianglelefteq$	<code>\ntrianglelefteq</code>	(same as <code>\nleqclosed</code>)
$\ntriangleleft$	<code>\ntriangleleft</code>	(same as <code>\nlessclosed</code>)
$\ntrianglerighteq$	<code>\ntrianglerighteq</code>	(same as <code>\ngeqclosed</code>)
$\ntriangleright$	<code>\ntriangleright</code>	(same as <code>\ngtrclosed</code>)
$\rhd$	<code>\rhd</code>	(same as <code>\gtrclosed</code>)
$\trianglelefteq$	<code>\trianglelefteq</code>	(same as <code>\leqclosed</code>)
$\trianglerighteq$	<code>\trianglerighteq</code>	(same as <code>\geqclosed</code>)
$\unlhd$	<code>\unlhd</code>	(same as <code>\leqclosed</code>)
$\unrhd$	<code>\unrhd</code>	(same as <code>\geqclosed</code>)
$\vartriangleleft$	<code>\vartriangleleft</code>	(same as <code>\lessclosed</code>)
$\vartriangleright$	<code>\vartriangleright</code>	(same as <code>\gtrclosed</code>)

TABLE 142: fdsymbol Inequalities

$\geq$	<code>\eqslantgtr</code>	$\leq$	<code>\leqslantdot</code>	$\napprox$	<code>\ngtrapprox</code>
$\leq$	<code>\eqslantless</code>	$\leq$	<code>\leqslcc</code>	$\nless$	<code>\ngtrcc</code>
$\geq$	<code>\geq</code>	$<$	<code>\less</code>	$\nless$	<code>\ngtrclosed</code>
$\geq$	<code>\geqclosed</code>	$\approx$	<code>\lessapprox</code>	$\nless$	<code>\ngtrdot</code>
$\geq$	<code>\geqdot</code>	$\triangleleft$	<code>\lesscc</code>	$\nless$	<code>\ngtreqlless</code>
$\geq$	<code>\geqq</code>	$\triangleleft$	<code>\lessclosed</code>	$\nless$	<code>\ngtreqqless</code>
$\geq$	<code>\geqslant</code>	$<$	<code>\lessdot</code>	$\nless$	<code>\ngtreqslantless</code>
$\geq$	<code>\geqslantdot</code>	$\leq$	<code>\lesseqgtr</code>	$\nless$	<code>\ngtrless</code>
$\geq$	<code>\geqslcc</code>	$\leq$	<code>\lesseqqgtr</code>	$\nless$	<code>\ngtrsim</code>
$\gg$	<code>\gg</code>	$\leq$	<code>\lesseqslantgtr</code>	$\nless$	<code>\nleq</code>
$\ggg$	<code>\ggg</code>	$\leq$	<code>\lessgtr</code>	$\nless$	<code>\nleqclosed</code>
$\napprox$	<code>\gnapprox</code>	$\less$	<code>\lesssim</code>	$\nless$	<code>\nleqdot</code>
$\nless$	<code>\gneq</code>	$\ll$	<code>\ll</code>	$\nless$	<code>\nleqq</code>
$\nless$	<code>\gneqq</code>	$\lll$	<code>\lll</code>	$\nless$	<code>\nleqslant</code>
$\nless$	<code>\gnsim</code>	$\nless$	<code>\lnapprox</code>	$\nless$	<code>\nleqslantdot</code>
$>$	<code>\gtr</code>	$\nless$	<code>\lneq</code>	$\nless$	<code>\nleqslcc</code>
$\approx$	<code>\gtrapprox</code>	$\nless$	<code>\lneqq</code>	$\nless$	<code>\nless</code>
$\triangleright$	<code>\gtrcc</code>	$\nless$	<code>\lnsim</code>	$\nless$	<code>\nlessapprox</code>
$\triangleright$	<code>\gtrclosed</code>	$\nless$	<code>\neqslantgtr</code>	$\nless$	<code>\nlesscc</code>
$>$	<code>\gtrdot</code>	$\nless$	<code>\neqslantless</code>	$\nless$	<code>\nlessclosed</code>
$\approx$	<code>\gtreqlless</code>	$\nless$	<code>\ngeq</code>	$\nless$	<code>\nlessdot</code>
$\approx$	<code>\gtreqqless</code>	$\nless$	<code>\ngeqclosed</code>	$\nless$	<code>\nlesseqgtr</code>
$\approx$	<code>\gtreqslantless</code>	$\nless$	<code>\ngeqdot</code>	$\nless$	<code>\nlesseqqgtr</code>
$\approx$	<code>\gtrless</code>	$\nless$	<code>\ngeqq</code>	$\nless$	<code>\nlesseqslantgtr</code>
$\approx$	<code>\gtrsim</code>	$\nless$	<code>\ngeqslant</code>	$\nless$	<code>\nlessgtr</code>
$\leq$	<code>\leq</code>	$\nless$	<code>\ngeqslantdot</code>	$\nless$	<code>\nlesssim</code>
$\leq$	<code>\leqclosed</code>	$\nless$	<code>\ngeqslcc</code>	$\nless$	<code>\nll</code>
$\leq$	<code>\leqdot</code>	$\nless$	<code>\ngg</code>	$\nless$	<code>\nlll</code>
$\leq$	<code>\leqq</code>	$\ggg$	<code>\nggg</code>		
$\leq$	<code>\leqslant</code>	$\nless$	<code>\ngtr</code>		

`fdsymbol` defines synonyms for some of the preceding symbols:

$\geq$	<code>\ge</code>	$\leq$	<code>\lesdot</code>	$\nless$	<code>\ngtcc</code>
$\geq$	<code>\gescc</code>	$\leq$	<code>\lesg</code>	$\nless$	<code>\ngtreqllesslant</code>

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$\gg$	<code>\gesdot</code>	$\lesseqgtrslant$	<code>\lesseqgtrslant</code>	$\nlescc$	<code>\nlescc</code>
$\ggesl$	<code>\gesl</code>	$\lhd$	<code>\lhd</code>	$\nlesdot$	<code>\nlesdot</code>
$\gggtr$	<code>\gggtr</code>	$\llless$	<code>\llless</code>	$\nlesg$	<code>\nlesg</code>
$\gtcc$	<code>\gtcc</code>	$\ltcc$	<code>\ltcc</code>	$\nlesseqgtrslant$	<code>\nlesseqgtrslant</code>
$\gtreqlessslant$	<code>\gtreqlessslant</code>	$\lvertneqq$	<code>\lvertneqq</code>	$\nltcc$	<code>\nltcc</code>
$\gvertneqq$	<code>\gvertneqq</code>	$\ngescc$	<code>\ngescc</code>	$\rhd$	<code>\rhd</code>
$\le$	<code>\le</code>	$\ngesdot$	<code>\ngesdot</code>	$\unlhd$	<code>\unlhd</code>
$\lescc$	<code>\lescc</code>	$\ngesl$	<code>\ngesl</code>	$\unrhd$	<code>\unrhd</code>

TABLE 143: boisik Inequalities

$\geqslant$	<code>\eqslantgtr</code>	$\gtcir$	<code>\gtcir</code>	$\lesseqqgtr$	<code>\lesseqqgtr</code>	$\ngeq$	<code>\ngeq</code>
$\leqslant$	<code>\eqslantless</code>	$\gtrapprox$	<code>\gtrapprox</code>	$\lessgtr$	<code>\lessgtr</code>	$\ngeqq$	<code>\ngeqq</code>
$\geqq$	<code>\geqq</code>	$\gtreqless$	<code>\gtreqless</code>	$\lesssim$	<code>\lesssim</code>	$\ngeqslant$	<code>\ngeqslant</code>
$\geqslant$	<code>\geqslant</code>	$\gtreqqless$	<code>\gtreqqless</code>	$\lll$	<code>\lll</code>	$\ngtr$	<code>\ngtr</code>
$\ggg$	<code>\ggg</code>	$\gtrless$	<code>\gtrless</code>	$\lnapprox$	<code>\lnapprox</code>	$\nleq$	<code>\nleq</code>
$\glj$	<code>\glj</code>	$\gtrsim$	<code>\gtrsim</code>	$\lneq$	<code>\lneq</code>	$\nleqq$	<code>\nleqq</code>
$\gnapprox$	<code>\gnapprox</code>	$\gvertneqq$	<code>\gvertneqq</code>	$\lneqq$	<code>\lneqq</code>	$\nleqslant$	<code>\nleqslant</code>
$\gneq$	<code>\gneq</code>	$\leqq$	<code>\leqq</code>	$\lnsim$	<code>\lnsim</code>	$\nless$	<code>\nless</code>
$\gneqq$	<code>\gneqq</code>	$\leqslant$	<code>\leqslant</code>	$\Lt$	<code>\Lt</code>		
$\gnsim$	<code>\gnsim</code>	$\lessapprox$	<code>\lessapprox</code>	$\ltcir$	<code>\ltcir</code>		
$\Gt$	<code>\Gt</code>	$\lesseqgtr$	<code>\lesseqgtr</code>	$\lvertneqq$	<code>\lvertneqq</code>		

TABLE 144: stix Inequalities

$\geq$	<code>\egsdot</code>	$\gtquest$	<code>\gtquest</code>	$\lnsim$	<code>\lnsim</code>
$\leq$	<code>\elsdot</code>	$\gtrapprox$	<code>\gtrapprox</code>	$\lsime$	<code>\lsime</code>
$\geq$	<code>\eqgtr</code>	$\gtrarr$	<code>\gtrarr</code>	$\lsimg$	<code>\lsimg</code>
$\leq$	<code>\eqless</code>	$\gtrdot$	<code>\gtrdot</code>	$\Lt$	<code>\Lt</code>
$\geq$	<code>\eqqgtr</code>	$\gtreqless$	<code>\gtreqless</code>	$\ltcc$	<code>\ltcc</code>

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$\leqslant$	<code>\eqqless</code>	$\gtrless$	<code>\gtreqqless</code>	$\lrcorner$	<code>\ltcir</code>
$\gtrless$	<code>\eqqslantgtr</code>	$\gtrless$	<code>\gtrless</code>	$\lrcorner$	<code>\ltlarr</code>
$\leqslant$	<code>\eqqslantless</code>	$\gtrsim$	<code>\gtrsim</code>	$\lrcorner$	<code>\ltquest</code>
$\gtrless$	<code>\eqslantgtr</code>	$\ncong$	<code>\gvertneqq</code>	$\ncong$	<code>\lvertneqq</code>
$\leqslant$	<code>\eqslantless</code>	$\gtrsim$	<code>\lat</code>	$\ncong$	<code>\neqslantgtr</code>
$\geq$	<code>\geq</code>	$\gtrsim$	<code>\late</code>	$\ncong$	<code>\neqslantless</code>
$\geq$	<code>\geqq</code>	$\leftarrow$	<code>\leftarrowless</code>	$\ncong$	<code>\ngeq</code>
$\geq$	<code>\geqqslant</code>	$\leq$	<code>\leq</code>	$\ncong$	<code>\ngeqq</code>
$\geq$	<code>\geqslant</code>	$\leq$	<code>\leqq</code>	$\ncong$	<code>\ngeqslant</code>
$\geq$	<code>\gescc</code>	$\leq$	<code>\leqqslant</code>	$\ncong$	<code>\ngg</code>
$\geq$	<code>\gesdot</code>	$\leq$	<code>\leqslant</code>	$\ncong$	<code>\ngtr</code>
$\geq$	<code>\gesdoto</code>	$\leq$	<code>\lescc</code>	$\ncong$	<code>\ngtrless</code>
$\geq$	<code>\gesdoto1</code>	$\leq$	<code>\lesdot</code>	$\ncong$	<code>\ngtrsim</code>
$\geq$	<code>\gesles</code>	$\leq$	<code>\lesdoto</code>	$\ncong$	<code>\nleq</code>
$\geq$	<code>\gg</code>	$\leq$	<code>\lesdotor</code>	$\ncong$	<code>\nleqq</code>
$\geq$	<code>\ggg</code>	$\leq$	<code>\lesges</code>	$\ncong$	<code>\nleqslant</code>
$\geq$	<code>\gggnest</code>	$\lesssim$	<code>\lessapprox</code>	$\ncong$	<code>\nless</code>
$\times$	<code>\gla</code>	$\lessdot$	<code>\lessdot</code>	$\ncong$	<code>\nlessgtr</code>
$\geq$	<code>\glE</code>	$\lesseqgtr$	<code>\lesseqgtr</code>	$\ncong$	<code>\nlesssim</code>
$\times$	<code>\glj</code>	$\lesseqqgtr$	<code>\lesseqqgtr</code>	$\ncong$	<code>\nll</code>
$\gtrsim$	<code>\gnapprox</code>	$\lessgtr$	<code>\lessgtr</code>	$\leq$	<code>\partialmeetcontraction</code>
$\gtrsim$	<code>\gneq</code>	$\lessssim$	<code>\lessssim</code>	$\gtrsim$	<code>\rightarrowgtr</code>
$\gtrsim$	<code>\gneqq</code>	$\lgE$	<code>\lgE</code>	$\geq$	<code>\simE</code>
$\gtrsim$	<code>\gnsim</code>	$\ll$	<code>\ll</code>	$\gtrsim$	<code>\simgtr</code>
$\gtrsim$	<code>\gsime</code>	$\lll$	<code>\lll</code>	$\geq$	<code>\simlE</code>
$\gtrsim$	<code>\gsiml</code>	$\lll$	<code>\lll</code>	$\gtrsim$	<code>\simless</code>
$\gtrsim$	<code>\Gt</code>	$\lnapprox$	<code>\lnapprox</code>	$\lessdot$	<code>\smt</code>
$\gtrsim$	<code>\gtcc</code>	$\lneq$	<code>\lneq</code>	$\leq$	<code>\smte</code>
$\gtrsim$	<code>\gtcir</code>	$\lneqq$	<code>\lneqq</code>		

stix defines `\le` as a synonym for `\leq`, `\ge` as a synonym for `\geq`, `\llless` as a synonym for `\lll`, `\gggtr` as a synonym for `\ggg`, `\nle` as a synonym for `\nleq`, and `\nge` as a synonym for `\ngeq`.

TABLE 145: logix Inequalities and Equalities

$\odot$	<code>\CircEq</code>	$>$	<code>\Gr</code>	$\nless$	<code>\NotLs</code>	$>$	<code>\SbGr</code>
$\oslash$	<code>\CircGr</code>	$\geq$	<code>\Gre</code>	$\nless$	<code>\NotLse</code>	$\geq$	<code>\SbGre</code>
$\oslash$	<code>\CircGre</code>	$<$	<code>\Ls</code>	$\nless$	<code>\NotSbGr</code>	$<$	<code>\SbLs</code>
$\oslash$	<code>\CircLs</code>	$\leq$	<code>\Lse</code>	$\nless$	<code>\NotSbGre</code>	$\leq$	<code>\SbLse</code>
$\oslash$	<code>\CircLse</code>	$\neq$	<code>\NotEq</code>	$\nless$	<code>\NotSbLs</code>	$\approx$	<code>\Sm</code>
$\oslash$	<code>\CircSm</code>	$\nless$	<code>\NotGr</code>	$\nless$	<code>\NotSbLse</code>		
$=$	<code>\Eq</code>	$\nless$	<code>\NotGre</code>	$\nless$	<code>\NotSm</code>		

logix requires either Lua $\text{\LaTeX}$ or X $\text{\LaTeX}$.

TABLE 146: $\mathcal{AMS}$ Triangle Relations

$\blacktriangleleft$	<code>\blacktriangleleft</code>	$\nless$	<code>\ntriangleright</code>	$\supseteq$	<code>\trianglerighteq</code>
$\blacktriangleright$	<code>\blacktriangleright</code>	$\nless$	<code>\ntrianglerighteq</code>	$\triangleleft$	<code>\vartriangleleft</code>
$\nless$	<code>\ntriangleleft</code>	$\trianglelefteq$	<code>\trianglelefteq</code>	$\triangleright$	<code>\vartriangleright</code>
$\nless$	<code>\ntrianglelefteq</code>	$\trianglelefteq$	<code>\trianglelefteq</code>		

TABLE 147: stmaryrd Triangle Relations

$\trianglelefteq$	<code>\trianglelefteqslant</code>	$\trianglerighteq$	<code>\trianglerighteqslant</code>
$\nless$	<code>\ntrianglelefteqslant</code>	$\nless$	<code>\ntrianglerighteqslant</code>

TABLE 148: mathabx Triangle Relations

$\nless$	<code>\ntriangleleft</code>	$\triangleleft$	<code>\triangleleft</code>	$\triangleleft$	<code>\vartriangleleft</code>
$\nless$	<code>\ntrianglelefteq</code>	$\trianglelefteq$	<code>\trianglelefteq</code>	$\triangleright$	<code>\vartriangleright</code>
$\nless$	<code>\ntriangleright</code>	$\triangleright$	<code>\triangleright</code>		
$\nless$	<code>\ntrianglerighteq</code>	$\trianglerighteq$	<code>\trianglerighteq</code>		

TABLE 149: MnSymbol Triangle Relations

▼	<code>\filledmedtriangledown</code>	△	<code>\largetriangleup</code>	▽	<code>\smalltriangledown</code>
◄	<code>\filledmedtriangleleft</code>	▽	<code>\medtriangledown</code>	◄	<code>\smalltriangleleft</code>
►	<code>\filledmedtriangleright</code>	◄	<code>\medtriangleleft</code>	►	<code>\smalltriangleright</code>
▲	<code>\filledmedtriangleup</code>	▷	<code>\medtriangleright</code>	▲	<code>\smalltriangleup</code>
▼	<code>\filledtriangledown</code>	△	<code>\medtriangleup</code>	≐	<code>\triangleeq</code>
◄	<code>\filledtriangleleft</code>	≠	<code>\ntriangleeq</code>	◄	<code>\trianglelefteq</code>
►	<code>\filledtriangleright</code>	≠	<code>\ntriangleleft</code>	►	<code>\trianglerighteq</code>
▲	<code>\filledtriangleup</code>	≠	<code>\ntrianglelefteq</code>	◄	<code>\vartriangleleft</code>
▽	<code>\largetriangledown</code>	≠	<code>\ntriangleright</code>	►	<code>\vartriangleright</code>
◄	<code>\largetriangleleft</code>	≠	<code>\ntrianglerighteq</code>		
►	<code>\largetriangleright</code>	⊗	<code>\otriangle</code>		

MnSymbol additionally defines synonyms for many of the preceding symbols: `\triangleeq` is a synonym for `\triangleeq`; `\lhd` and `\lessclosed` are synonyms for `\vartriangleleft`; `\rhd` and `\gtrclosed` are synonyms for `\vartriangleright`; `\unlhd` and `\leqclosed` are synonyms for `\trianglelefteq`; `\unrhd` and `\geqclosed` are synonyms for `\trianglerighteq`; `\blacktriangledown`, `\blacktriangleleft`, `\blacktriangleright`, and `\blacktriangle` [*sic*] are synonyms for, respectively, `\filledmedtriangledown`, `\filledmedtriangleleft`, `\filledmedtriangleright`, and `\filledmedtriangleup`; `\triangleright` is a synonym for `\medtriangleright`; `\triangle`, `\vartriangle`, and `\bigtriangleup` are synonyms for `\medtriangleup`; `\triangleleft` is a synonym for `\medtriangleleft`; `\triangledown` and `\bigtriangledown` are synonyms for `\medtriangledown`; `\nlessclosed` is a synonym for `\ntriangleleft`; `\ngtrclosed` is a synonym for `\ntriangleright`; `\nleqclosed` is a synonym for `\ntrianglelefteq`; and `\ngeqclosed` is a synonym for `\ntrianglerighteq`.

The title “Triangle Relations” is a bit of a misnomer here as only `\triangleeq` and `\ntriangleeq` are defined as T_EX relations (class 3 symbols). The `\largetriangle...` symbols are defined as T_EX “ordinary” characters (class 0) and all of the remaining characters are defined as T_EX binary operators (class 2).

TABLE 150: fdsymbol Triangle Relations

$\rhd$	<code>\geqclosed</code>	∇	<code>\medtriangledown</code>	$\blacktriangleleft$	<code>\smallblacktriangleleft</code>
$\triangleright$	<code>\gtrclosed</code>	$\triangleleft$	<code>\medtriangleleft</code>	$\blacktriangleright$	<code>\smallblacktriangleright</code>
$\bigtriangledown$	<code>\largetriangledown</code>	$\triangleright$	<code>\medtriangleright</code>	$\blacktriangleup$	<code>\smallblacktriangleup</code>
$\bigtriangleup$	<code>\largetriangleup</code>	$\triangleup$	<code>\medtriangleup</code>	$\smalltriangledown$	<code>\smalltriangledown</code>
$\sqsubseteq$	<code>\leqclosed</code>	$\nsubseteq$	<code>\ngeqclosed</code>	$\smalltriangleleft$	<code>\smalltriangleleft</code>
$\triangleleft$	<code>\lessclosed</code>	$\ntriangleright$	<code>\ngtrclosed</code>	$\smalltriangleright$	<code>\smalltriangleright</code>
$\blacktriangledown$	<code>\medblacktriangledown</code>	$\nleqclosed$	<code>\nleqclosed</code>	$\smalltriangleup$	<code>\smalltriangleup</code>
$\blacktriangleleft$	<code>\medblacktriangleleft</code>	$\nlessclosed$	<code>\nlessclosed</code>	$\trianglelefteq$	<code>\trianglelefteq</code>
$\blacktriangleright$	<code>\medblacktriangleright</code>	$\ntrianglelefteq$	<code>\ntrianglelefteq</code>		
$\blacktriangleup$	<code>\medblacktriangleup</code>	$\smallblacktriangledown$	<code>\smallblacktriangledown</code>		

fdsymbol defines synonyms for almost all of the preceding symbols:

∇	<code>\bigtriangledown</code>	$\ntriangleleft$	<code>\ntriangleleft</code>	$\trianglelefteq$	<code>\trianglelefteq</code>
$\triangle$	<code>\bigtriangleup</code>	$\ntriangleright$	<code>\ntriangleright</code>	$\triangleright$	<code>\triangleright</code>
$\blacktriangle$	<code>\blacktriangle</code>	$\ntrianglerighteq$	<code>\ntrianglerighteq</code>	$\trianglerighteq$	<code>\trianglerighteq</code>
$\blacktriangledown$	<code>\blacktriangledown</code>	$\triangle$	<code>\triangle</code>	$\vartriangle$	<code>\vartriangle</code>
$\blacktriangleleft$	<code>\blacktriangleleft</code>	$\triangledown$	<code>\triangledown</code>	$\vartriangleleft$	<code>\vartriangleleft</code>
$\blacktriangleright$	<code>\blacktriangleright</code>	$\triangleleft$	<code>\triangleleft</code>	$\vartriangleright$	<code>\vartriangleright</code>
$\triangleleft$	<code>\triangleleft</code>	$\trianglelefteq$	<code>\trianglelefteq</code>		

The title “Triangle Relations” is a bit of a misnomer here as only `\trianglelefteq` and `\ntrianglelefteq` are defined as T_EX relations (class 3 symbols). The `\largetrianglerighteq` symbols are defined as T_EX “ordinary” characters (class 0) and all of the remaining characters are defined as T_EX binary operators (class 2).

TABLE 151: boisik Triangle Relations

$\triangleleft$	<code>\ntriangleleft</code>	$\trianglelefteq$	<code>\trianglelefteq</code>	$\vartriangleleft$	<code>\varlrtrtriangle</code>
$\trianglelefteq$	<code>\ntrianglelefteq</code>	$\trianglelefteqslant$	<code>\trianglelefteqslant</code>	$\triangle$	<code>\vartriangle</code>
$\triangleright$	<code>\ntriangleright</code>	$\trianglerighteq$	<code>\trianglerighteq</code>	$\triangleleft$	<code>\vartriangleleft</code>
$\trianglerighteq$	<code>\ntrianglerighteq</code>	$\trianglerighteqslant$	<code>\trianglerighteqslant</code>	$\triangleright$	<code>\vartriangleright</code>
$\triangleleft$	<code>\triangleleft</code>	$\trianglerighteqslant$	<code>\trianglerighteqslant</code>		

TABLE 152: stix Triangle Relations

$\leq$	<code>\ltriangleeq</code>	$\nlessgtr$	<code>\nvartriangleright</code>	$\triangle$	<code>\vartriangle</code>
$\triangleleft$	<code>\ltrivb</code>	$\nlessgtr$	<code>\rtriltri</code>	$\triangleleft$	<code>\vartriangleleft</code>
$\nlessgtr$	<code>\ntrianglelefteq</code>	$\triangleleft$	<code>\trianglelefteq</code>	$\triangleright$	<code>\vartriangleright</code>
$\nlessgtr$	<code>\ntrianglerighteq</code>	$\trianglelefteq$	<code>\trianglelefteq</code>	$\nlessgtr$	<code>\vbrtri</code>
$\nlessgtr$	<code>\nvartriangleleft</code>	$\triangleright$	<code>\trianglerighteq</code>		

TABLE 153: Arrows

$\Downarrow$	<code>\Downarrow</code>	$\longleftarrow$	<code>\longleftarrow</code>	$\nwarrow$	<code>\nwarrow</code>
$\downarrow$	<code>\downarrow</code>	$\Longleftarrow$	<code>\Longleftarrow</code>	$\Rightarrow$	<code>\Rightarrow</code>
$\hookleftarrow$	<code>\hookleftarrow</code>	$\longleftrightarrow$	<code>\longleftrightarrow</code>	$\rightarrow$	<code>\rightarrow</code>
$\hookrightarrow$	<code>\hookrightarrow</code>	$\Longleftrightarrow$	<code>\Longleftrightarrow</code>	$\searrow$	<code>\searrow</code>
$\leadsto$	<code>\leadsto*</code>	$\mapsto$	<code>\mapsto</code>	$\swarrow$	<code>\swarrow</code>
$\leftarrow$	<code>\leftarrow</code>	$\Longrightarrow$	<code>\Longrightarrow</code>	$\Uparrow$	<code>\Uparrow</code>
$\Leftarrow$	<code>\Leftarrow</code>	$\longrightarrow$	<code>\longrightarrow</code>	$\Uparrow$	<code>\Uparrow</code>
$\Leftrightarrow$	<code>\Leftrightarrow</code>	$\mapsto$	<code>\mapsto</code>	$\updownarrow$	<code>\updownarrow</code>
$\leftrightarrow$	<code>\leftrightarrow</code>	$\nearrow$	<code>\nearrow†</code>	$\Updownarrow$	<code>\Updownarrow</code>

* Not predefined by the $\text{\LaTeX} 2_{\epsilon}$ core. Use the `latexsym` package to expose this symbol.

† See the note beneath Table 270 for information about how to put a diagonal arrow across a mathematical expression (as in “ $\nabla \cdot \vec{B}$ ”).

TABLE 154: Harpoons

$\leftharpoonup$	<code>\leftharpoonup</code>	$\rightharpoonup$	<code>\rightharpoonup</code>	$\leftharpoonup$	<code>\leftharpoonup</code>
$\leftharpoonup$	<code>\leftharpoonup</code>	$\rightharpoonup$	<code>\rightharpoonup</code>	$\leftharpoonup$	<code>\leftharpoonup</code>

TABLE 155: textcomp Text-mode Arrows

$\downarrow$	<code>\textdownarrow</code>	$\rightarrow$	<code>\textrightarrow</code>
$\leftarrow$	<code>\textleftarrow</code>	$\uparrow$	<code>\textuparrow</code>

TABLE 156: $\mathcal{AMS}$ Arrows

$\circlearrowleft$	<code>\circlearrowleft</code>	$\leftrightsquigarrow$	<code>\leftrightsquigarrow</code>	$\rightleftarrows$	<code>\rightleftarrows</code>
$\circlearrowright$	<code>\circlearrowright</code>	$\leftrightsquigarrow$	<code>\leftrightsquigarrow</code>	$\rightleftarrows$	<code>\rightleftarrows</code>
$\curvearrowleft$	<code>\curvearrowleft</code>	$\Lleftarrow$	<code>\Lleftarrow</code>	$\Rrightarrow$	<code>\Rrightarrow</code>
$\curvearrowright$	<code>\curvearrowright</code>	$\Lleftarrow$	<code>\Lleftarrow</code>	$\Rrightarrow$	<code>\Rrightarrow</code>
$\dashleftarrow$	<code>\dashleftarrow</code>	$\Lleftarrow$	<code>\Lleftarrow</code>	$\Rrightarrow$	<code>\Rrightarrow</code>
$\dashrightarrow$	<code>\dashrightarrow</code>	$\Lleftarrow$	<code>\Lleftarrow</code>	$\Rrightarrow$	<code>\Rrightarrow</code>
$\downdownarrows$	<code>\downdownarrows</code>	$\Lleftarrow$	<code>\Lleftarrow</code>	$\Rrightarrow$	<code>\Rrightarrow</code>
$\leftarrowtail$	<code>\leftarrowtail</code>	$\Lleftarrow$	<code>\Lleftarrow</code>	$\Rrightarrow$	<code>\Rrightarrow</code>

TABLE 157: $\mathcal{AMS}$ Negated Arrows

$\nleftarrow$	<code>\nleftarrow</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\nrightarrow$	<code>\nrightarrow</code>
$\nleftarrow$	<code>\nleftarrow</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\nrightarrow$	<code>\nrightarrow</code>

$\downharpoonleft$	$\Leftrightarrow$	$\leftrightharpoons$	$\upharpoonleft$
$\downharpoonright$	$\Leftrightarrow$	$\rightleftharpoons$	$\upharpoonright$

$\leftarrow$	<code>\leftarrowtriangle</code>	$\Leftrightarrow$	<code>\Mapsfrom</code>	$\leftarrow$	<code>\shortleftarrow</code>
$\Leftrightarrow$	<code>\leftrightharpoonup</code>	$\mapsto$	<code>\mapsfrom</code>	$\rightarrow$	<code>\shortrightarrow</code>
$\Leftrightarrow$	<code>\leftrightharpoonuptriangle</code>	$\mapsto$	<code>\Mapsto</code>	$\uparrow$	<code>\shortuparrow</code>
$\lightning$	<code>\lightning</code>	$\nearrow$	<code>\nnearrow</code>	$\searrow$	<code>\sssearrow</code>
$\Longmapsfrom$	<code>\Longmapsfrom</code>	$\nwarrow$	<code>\nnwarrow</code>	$\swarrow$	<code>\sswarrow</code>
$\longmapsfrom$	<code>\longmapsfrom</code>	$\rightarrowtriangle$	<code>\rightarrowtriangle</code>		
$\Longmapsto$	<code>\Longmapsto</code>	$\shortdownarrow$	<code>\shortdownarrow</code>		

$\boxdotleft$	$\circrightarrow$	$\circleddotright$	$\diamondleft$	$\Diamondleft$
$\boxdotleft$	$\circleftarrow$	$\circleleft$	$\diamondrightarrow$	$\Diamondright$
$\boxdotright$	$\circrightarrow$	$\circangleright$	$\diamondRightarrow$	$\DiamondRight$
$\boxdotright$	$\leftrightarrow$	$\dashleftarrow{\rightarrow}$	$\leftrightsquigarrow$	$\leftsquigarrow$
$\boxleftarrow$	$\Leftrightarrow$	$\Diamonddotleft$	$\nearrow$	$\Nearrow$
$\boxleftarrow$	$\Leftrightarrow$	$\Diamonddotleft$	$\nwarrow$	$\Nwarrow$
$\boxrightarrow$	$\Rrightarrow$	$\Diamonddotright$	$\Rightarrow$	$\Rightarrow$
$\boxrightarrow$	$\Rrightarrow$	$\Diamonddotright$	$\searrow$	$\Searrow$
$\circleftarrow$	$\LLeftarrow$	$\DiamondLeft$	$\swarrow$	$\Swarrow$

	$\circlearrowleft$	$\leftarrow$	$\leftarrow$	$\nearrow$	$\nrightarrow$
	$\circlearrowright$	$\Leftrightarrow$	$\leftleftarrows$	$\upharpoonright$	$\restriction$
	$\curvearrowleft$	$\leftrightarrow$	$\leftrightarrow$	$\rightarrow$	$\rightarrow$
	$\curvearrowright$	$\Leftrightarrow$	$\leftrightarrows$	$\Leftrightarrow$	$\rightleftarrows$
	$\curvearrowleft$	$\rightsquigarrow$	$\leftrightsquigarrow$	$\Rightarrow$	$\rightrightarrows$
	$\curvearrowright$	$\rightsquigarrow$	$\leftsquigarrow$	$\rightsquigarrow$	$\rightsquigarrow$
	$\curvearrowleft$	$\curvearrowright$	$\lefttorightarrow$	$\curvearrowright$	$\righttoleftarrow$
	$\curvearrowright$	$\curvearrowleft$	$\looparrowleft$	$\curvearrowright$	$\Rsh$
	$\dlsq$	$\curvearrowright$	$\looparrowright$	$\searrow$	$\searrow$
	$\downarrow$	$\curvearrowleft$	$\looparrowleft$	$\swarrow$	$\swarrow$
	$\uparrow$	$\curvearrowright$	$\looparrowright$	$\Uparrow$	$\Uparrow$
	$\downarrow$	$\curvearrowleft$	$\Lsh$	$\Downarrow$	$\Downarrow$
	$\uparrow$	$\curvearrowright$	$\nearrow$	$\Uparrow$	$\Uparrow$

$\nLeftarrow$	<code>\nLeftarrow</code>	$\Leftrightarrow$	<code>\leftrightharrow</code>	$\rrightarrow$	<code>\rightarrow</code>
$\nrightarrow$	<code>\nrightarrow</code>	$\Leftrightarrow$	<code>\Leftrightharrow</code>	$\Rightarrow$	<code>\rightarrow</code>

$\leftharpoonup$	$\bar{\leftarrow}$	$\leftharpoonupup$	$\rightharpoonupleft$
$\rightharpoonup$	$\bar{\leftarrow}$	$\leftrightharpoonup$	$\rightharpoonupright$
$\Downarrow$	$\bar{\leftarrow}$	$\leftrightharpoonup$	$\Updownarrow$
$\downharpoonleft$	$\leftrightharpoonup$	$\upharpoonleft$	
$\downharpoonright$	$\rightharpoonupbar$	$\upharpoonright$	
$\Downupharpoon$	$\rightarrow$	$\rightharpoonupdown$	$\Upupharpoon$
$\leftharpoonupbar$	$\rightarrow$	$\rightharpoonupup$	
$\leftharpoonupdown$	$\rightarrow$	$\rightharpoonupleft$	

	<code>\curvearrowdownup</code>		<code>\longleftarrow</code>		<code>\rhookswarrow</code>
	<code>\curvearrowlefttright</code>		<code>\Longleftarrow</code>		<code>\rhookuparrow</code>
	<code>\curvearrownesw</code>		<code>\longlefttrightarrow</code>		<code>\rightarrow</code>
	<code>\curvearrownwse</code>		<code>\Longlefttrightarrow</code>		<code>\Rightarrow</code>
	<code>\curvearrowrightleft</code>		<code>\longmapsto</code>		<code>\rightarrowtail</code>
	<code>\curvearrowrowsew</code>		<code>\longrightarrow</code>		<code>\rightleftarrows</code>
	<code>\curvearrowrowswne</code>		<code>\Longrightarrow</code>		<code>\rightlsquigarrow</code>
	<code>\curvearrowrowupdown</code>		<code>\looparrowleft</code>		<code>\rightarrowmapsto</code>
	<code>\dasheddownarrow</code>		<code>\looparrowright</code>		<code>\rightrightarrows</code>
	<code>\dashedleftarrow</code>		<code>\Lsh</code>		<code>\right rsquigarrow</code>
	<code>\dashednearrow</code>		<code>\nearrow</code>		<code>\Rrightarrow</code>
	<code>\dashednwarrow</code>		<code>\Nearrow</code>		<code>\Rsh</code>
	<code>\dashedrightarrow</code>		<code>\nearrowtail</code>		<code>\searrow</code>
	<code>\dashedsearrow</code>		<code>\nelsquigarrow</code>		<code>\Searrow</code>
	<code>\dashedswarrow</code>		<code>\nemapsto</code>		<code>\searrowtail</code>
	<code>\dasheduparrow</code>		<code>\nenearrows</code>		<code>\selsquigarrow</code>
	<code>\Downarrow</code>		<code>\nersquigarrow</code>		<code>\semapsto</code>
	<code>\downarrow</code>		<code>\neswarrow</code>		<code>\senwarrows</code>
	<code>\downarrowtail</code>		<code>\Neswarrow</code>		<code>\sersquigarrow</code>
	<code>\downdownarrows</code>		<code>\neswarrows</code>		<code>\sesearrows</code>
	<code>\downlsquigarrow</code>		<code>\nwarrow</code>		<code>\squigarrowdownup</code>
	<code>\downmapsto</code>		<code>\Nwarrow</code>		<code>\squigarrowleftright</code>

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	<code>\downrsquigarrow</code>		<code>\narrowtail</code>		<code>\squigarrownesw</code>
	<code>\downuparrows</code>		<code>\nwlsquigarrow</code>		<code>\squigarrownwse</code>
	<code>\lcirclearrowdown</code>		<code>\nwmapsto</code>		<code>\squigarrowrightleft</code>
	<code>\lcirclearrowleft</code>		<code>\nwnwarrows</code>		<code>\squigarrowsenw</code>
	<code>\lcirclearrowright</code>		<code>\nwrsquigarrow</code>		<code>\squigarrowswne</code>
	<code>\lcirclearrowup</code>		<code>\nwsearrow</code>		<code>\squigarrowupdown</code>
	<code>\lcurvearrowdown</code>		<code>\Nwsearrow</code>		<code>\swarrow</code>
	<code>\lcurvearrowleft</code>		<code>\nwsearrows</code>		<code>\Sswarrow</code>
	<code>\lcurvearrowne</code>		<code>\partialvarldlcircleleftint*</code>		<code>\swarrowtail</code>
	<code>\lcurvearrownw</code>		<code>\partialvarldlcirclerightint*</code>		<code>\swlsquigarrow</code>
	<code>\lcurvearrowright</code>		<code>\partialvarldrcircleleftint*</code>		<code>\swmapsto</code>
	<code>\lcurvearrowse</code>		<code>\partialvarldrcirclerightint*</code>		<code>\swnearrows</code>
	<code>\lcurvearrowsw</code>		<code>\partialvartlcircleleftint*</code>		<code>\swrsquigarrow</code>
	<code>\lcurvearrowup</code>		<code>\partialvartlcirclerightint*</code>		<code>\swswarrows</code>
	<code>\Leftarrow</code>		<code>\partialvartrcircleleftint*</code>		<code>\twoheaddownarrow</code>
	<code>\leftarrow</code>		<code>\partialvartrcirclerightint*</code>		<code>\twoheadleftarrow</code>
	<code>\leftarrowtail</code>		<code>\rcirclearrowdown</code>		<code>\twoheadnearrow</code>
	<code>\leftleftarrows</code>		<code>\rcirclearrowleft</code>		<code>\twoheadnarrow</code>
	<code>\leftlsquigarrow</code>		<code>\rcirclearrowright</code>		<code>\twoheadrightarrow</code>
	<code>\leftmapsto</code>		<code>\rcirclearrowup</code>		<code>\twoheadsearrow</code>
	<code>\leftrightarrow</code>		<code>\rcurvearrowdown</code>		<code>\twoheadswarrow</code>
	<code>\Leftrightarrow</code>		<code>\rcurvearrowleft</code>		<code>\twoheaduparrow</code>
	<code>\leftrightharrows</code>		<code>\rcurvearrowne</code>		<code>\uparrow</code>
	<code>\lefttrsquigarrow</code>		<code>\rcurvearrownw</code>		<code>\Uparrow</code>
	<code>\lhookdownarrow</code>		<code>\rcurvearrowright</code>		<code>\uparrowtail</code>
	<code>\lhookleftarrow</code>		<code>\rcurvearrowse</code>		<code>\updownarrow</code>
	<code>\lhooknearrow</code>		<code>\rcurvearrowsw</code>		<code>\Updownarrow</code>
	<code>\lhooknarrow</code>		<code>\rcurvearrowup</code>		<code>\updownarrows</code>
	<code>\lhookrightarrow</code>		<code>\rhookdownarrow</code>		<code>\uplsquigarrow</code>
	<code>\lhooksearrow</code>		<code>\rhookleftarrow</code>		<code>\upmapsto</code>
	<code>\lhookswarrow</code>		<code>\rhooknearrow</code>		<code>\uprsquigarrow</code>
	<code>\lhookuparrow</code>		<code>\rhooknarrow</code>		<code>\upuparrows</code>
	<code>\lightning</code>		<code>\rhookrightarrow</code>		
	<code>\Lleftarrow</code>		<code>\rhooksearrow</code>		

MnSymbol additionally defines synonyms for some of the preceding symbols:

	<code>\ccirclearrowleft</code>	(same as <code>\rcirclearrowup</code>)
	<code>\ccirclearrowright</code>	(same as <code>\lcirclearrowup</code>)
	<code>\rcurvearrowleft</code>	(same as <code>\rcurvearrowleft</code>)
	<code>\lcurvearrowright</code>	(same as <code>\lcurvearrowright</code>)
	<code>\dashleftarrow</code>	(same as <code>\dashedleftarrow</code>)
	<code>\dashrightarrow</code>	(same as <code>\dashedrightarrow</code>)
	<code>\hookleftarrow</code>	(same as <code>\rhookleftarrow</code>)
	<code>\hookrightarrow</code>	(same as <code>\lhookrightarrow</code>)
	<code>\leadsto</code>	(same as <code>\rightlsquigarrow</code>)
	<code>\leftrightsquigarrow</code>	(same as <code>\squigarrowleftright</code>)
	<code>\mapsto</code>	(same as <code>\rightmapsto</code>)
	<code>\rightsquigarrow</code>	(same as <code>\rightlsquigarrow</code>)

* The `\partialvar...int` macros are intended to be used internally by MnSymbol to produce various types of integrals.

TABLE 165: MnSymbol Negated Arrows

	<code>\ncurvearrowdownup</code>		<code>\nlhooknwarrow</code>		<code>\nrightleftarrows</code>
	<code>\ncurvearrowleftright</code>		<code>\nlhookrightarrow</code>		<code>\nrightlsquigarrow</code>
	<code>\ncurvearrownesw</code>		<code>\nlhooksearrow</code>		<code>\nrightmapsto</code>
	<code>\ncurvearrownwse</code>		<code>\nlhookswarrow</code>		<code>\nrightrightarrow</code>
	<code>\ncurvearrowrightleft</code>		<code>\nlhookuparrow</code>		<code>\nrighttrsquigarrow</code>
	<code>\ncurvearrowsenw</code>		<code>\nLleftarrow</code>		<code>\nRrightarrow</code>
	<code>\ncurvearrowswne</code>		<code>\nnearrow</code>		<code>\nSearrow</code>
	<code>\ncurvearrowupdown</code>		<code>\nNarrow</code>		<code>\nsearrow</code>
	<code>\ndasheddownarrow</code>		<code>\nnearrowtail</code>		<code>\nsearrowtail</code>
	<code>\ndashedleftarrow</code>		<code>\nnelsquigarrow</code>		<code>\nselsquigarrow</code>
	<code>\ndashednearrow</code>		<code>\nnemapsto</code>		<code>\nsemapsto</code>
	<code>\ndashednwarrow</code>		<code>\nnearrows</code>		<code>\nsenwarrows</code>
	<code>\ndashedrightarrow</code>		<code>\nnersquigarrow</code>		<code>\nsersquigarrow</code>
	<code>\ndashedsearrow</code>		<code>\nNeswarrow</code>		<code>\nsesearrows</code>
	<code>\ndashedswarrow</code>		<code>\nneswarrow</code>		<code>\nsquigarrowdownup</code>
	<code>\ndasheduparrow</code>		<code>\nneswarrows</code>		<code>\nsquigarrowleftright</code>
	<code>\ndownarrow</code>		<code>\nNwarrow</code>		<code>\nsquigarrownesw</code>
	<code>\nDownarrow</code>		<code>\nnwarrow</code>		<code>\nsquigarrownwse</code>
	<code>\ndownarrowtail</code>		<code>\nnwarrowtail</code>		<code>\nsquigarrowrightleft</code>
	<code>\ndowndownarrows</code>		<code>\nnwlsquigarrow</code>		<code>\nsquigarrowsenw</code>
	<code>\ndownlsquigarrow</code>		<code>\nnwmapsto</code>		<code>\nsquigarrowswne</code>
	<code>\ndownmapsto</code>		<code>\nnwnwarrows</code>		<code>\nsquigarrowupdown</code>
	<code>\ndownrsquigarrow</code>		<code>\nnwrsquigarrow</code>		<code>\nswarrow</code>
	<code>\ndownuparrows</code>		<code>\nnwsearrow</code>		<code>\nSwarrow</code>
	<code>\nlcirclearrowdown</code>		<code>\nNwsearrow</code>		<code>\nswarrowtail</code>
	<code>\nlcirclearrowleft</code>		<code>\nnwsearrows</code>		<code>\nswlsquigarrow</code>
	<code>\nlcirclearrowright</code>		<code>\nrcirclearrowdown</code>		<code>\nswmapsto</code>
	<code>\nlcirclearrowup</code>		<code>\nrcirclearrowleft</code>		<code>\nswnearrows</code>
	<code>\nlcurvearrowdown</code>		<code>\nrcirclearrowright</code>		<code>\nswrsquigarrow</code>
	<code>\nlcurvearrowleft</code>		<code>\nrcirclearrowup</code>		<code>\nswswarrows</code>
	<code>\nlcurvearrowne</code>		<code>\nrcurvearrowdown</code>		<code>\ntwoheaddownarrow</code>
	<code>\nlcurvearrownw</code>		<code>\nrcurvearrowleft</code>		<code>\ntwoheadleftarrow</code>
	<code>\nlcurvearrowright</code>		<code>\nrcurvearrowne</code>		<code>\ntwoheadnearrow</code>
	<code>\nlcurvearrowse</code>		<code>\nrcurvearrownw</code>		<code>\ntwoheadnwarrow</code>
	<code>\nlcurvearrowsw</code>		<code>\nrcurvearrowright</code>		<code>\ntwoheadrightarrow</code>
	<code>\nlcurvearrowup</code>		<code>\nrcurvearrowse</code>		<code>\ntwoheadsearrow</code>
	<code>\nLeftarrow</code>		<code>\nrcurvearrowsw</code>		<code>\ntwoheadswarrow</code>
	<code>\nrightarrow</code>		<code>\nrcurvearrowup</code>		<code>\ntwoheaduparrow</code>

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$\leftarrowtail$	<code>\leftarrowtail</code>	$\downharpoonright$	<code>\nrhookdownarrow</code>	$\Uparrow$	<code>\nuparrow</code>
$\Lleftarrow$	<code>\leftleftarrows</code>	$\leftharpoonup$	<code>\nrhookleftarrow</code>	$\Updownarrow$	<code>\nUpdownarrow</code>
$\leftleftarrows$	<code>\leftleftarrows</code>	$\nearrow$	<code>\nrhooknearrow</code>	$\uparrows$	<code>\nuparrows</code>
$\leftmapsto$	<code>\leftmapsto</code>	$\nwarrow$	<code>\nrhooknwarrow</code>	$\updownarrow$	<code>\nupdownarrow</code>
$\leftrightarrows$	<code>\leftrightarrows</code>	$\rightarrow$	<code>\nrhookrightarrow</code>	$\updownarrows$	<code>\nupdownarrows</code>
$\Leftrightarrow$	<code>\Leftrightarrow</code>	$\searrow$	<code>\nrhooksearrow</code>	$\upmapsto$	<code>\nupmapsto</code>
$\leftrightsquigarrow$	<code>\leftrightsquigarrow</code>	$\swarrow$	<code>\nrhookswarrow</code>	$\uprightsquigarrow$	<code>\nuprightsquigarrow</code>
$\leftrightsquigarrow$	<code>\leftrightsquigarrow</code>	$\uparrow$	<code>\nrhookuparrow</code>	$\uprightsquigarrow$	<code>\nuprightsquigarrow</code>
$\downharpoonright$	<code>\nlhookdownarrow</code>	$\rightarrow$	<code>\nrhookrightarrow</code>	$\uprightsquigarrow$	<code>\nuprightsquigarrow</code>
$\hookleftarrow$	<code>\nlhookleftarrow</code>	$\rightarrow$	<code>\nrhookrightarrow</code>	$\uprightsquigarrow$	<code>\nuprightsquigarrow</code>
$\hookrightarrow$	<code>\nlhookrightarrow</code>	$\rightarrow$	<code>\nrhookrightarrow</code>	$\uprightsquigarrow$	<code>\nuprightsquigarrow</code>

MnSymbol additionally defines synonyms for some of the preceding symbols:

$\circlearrowleft$	<code>\ncirclearrowleft</code>	(same as <code>\nrcirclearrowup</code>)
$\circlearrowright$	<code>\ncirclearrowright</code>	(same as <code>\nlcirclearrowup</code>)
$\curvearrowleft$	<code>\ncurvearrowleft</code>	(same as <code>\nrcurvearrowleft</code>)
$\curvearrowright$	<code>\ncurvearrowright</code>	(same as <code>\nlcurvearrowright</code>)
$\dashrightarrow$	<code>\ndashrightarrow</code>	(same as <code>\ndashedrightarrow</code>)
$\dashleftarrow$	<code>\ndashleftarrow</code>	(same as <code>\ndashedleftarrow</code>)
$\dashrightarrow$	<code>\ndashrightarrow</code>	(same as <code>\ndashedrightarrow</code>)
$\ngets$	<code>\ngets</code>	(same as <code>\nleftarrow</code>)
$\nhookleftarrow$	<code>\nhookleftarrow</code>	(same as <code>\nrhookleftarrow</code>)
$\nhookrightarrow$	<code>\nhookrightarrow</code>	(same as <code>\nlhookrightarrow</code>)
$\nleadsto$	<code>\nleadsto</code>	(same as <code>\nrighttsquigarrow</code>)
$\nleftrightsquigarrow$	<code>\nleftrightsquigarrow</code>	(same as <code>\nsquigarrowleftright</code>)
$\nmapsto$	<code>\nmapsto</code>	(same as <code>\nrightmapsto</code>)
$\nrightsquigarrow$	<code>\nrightsquigarrow</code>	(same as <code>\nrighttsquigarrow</code>)
$\nto$	<code>\nto</code>	(same as <code>\nrightarrow</code>)

TABLE 166: MnSymbol Harpoons

$\downharpoonccw^*$	<code>\downharpoonccw^*</code>	$\swarrow$	<code>\neswharpoons</code>	$\searrow$	<code>\seharpooncw</code>
$\downharpooncw^*$	<code>\downharpooncw^*</code>	$\swarrow$	<code>\neswharpoonsenw</code>	$\searrow$	<code>\senwharpoons</code>
$\downupharpoons$	<code>\downupharpoons</code>	$\swarrow$	<code>\nwharpoonccw</code>	$\searrow$	<code>\swharpoonccw</code>
$\leftharpoonccw^*$	<code>\leftharpoonccw^*</code>	$\swarrow$	<code>\nwharpooncw</code>	$\searrow$	<code>\swharpooncw</code>
$\leftharpooncw^*$	<code>\leftharpooncw^*</code>	$\swarrow$	<code>\nwseharpoonnesw</code>	$\searrow$	<code>\swneharpoons</code>
$\leftrightharpoondownup$	<code>\leftrightharpoondownup</code>	$\swarrow$	<code>\nwseharpoons</code>	$\updownharpoonleftright$	<code>\updownharpoonleftright</code>
$\leftrightharpoons$	<code>\leftrightharpoons</code>	$\swarrow$	<code>\nwseharpoonswne</code>	$\updownharpoonrightleft$	<code>\updownharpoonrightleft</code>
$\leftrightharpoonupdown$	<code>\leftrightharpoonupdown</code>	$\rightarrow$	<code>\rightharpoonccw^*</code>	$\updownharpoons$	<code>\updownharpoons</code>
$\rightharpoonccw$	<code>\rightharpoonccw</code>	$\rightarrow$	<code>\rightharpooncw^*</code>	$\upharpoonccw^*$	<code>\upharpoonccw^*</code>
$\rightharpooncw$	<code>\rightharpooncw</code>	$\rightarrow$	<code>\rightleftharpoons</code>	$\upharpooncw^*$	<code>\upharpooncw^*</code>
$\neswharpoonnwse$	<code>\neswharpoonnwse</code>	$\searrow$	<code>\seharpoonccw</code>		

* Where marked, the “ccw” suffix can be replaced with “up” and the “cw” suffix can be replaced with “down”. (In addition, `\upharpooncw` can be written as `\restriction`.)

TABLE 167: MnSymbol Negated Harpoons

$\dagger$	<code>\ndownharpoonccw*</code>	$\nrightarrow$	<code>\nneswharpoons</code>	$\nwarrow$	<code>\nseharpooncw</code>
$\dagger$	<code>\ndownharpooncw*</code>	$\nrightarrow$	<code>\nneswharpoonsenw</code>	$\nwarrow$	<code>\nsenwharpoons</code>
$\dagger$	<code>\ndownupharpoons</code>	$\nwarrow$	<code>\nnwharpoonccw</code>	$\nwarrow$	<code>\nswharpoonccw</code>
$\nrightarrow$	<code>\nleftharpoonccw*</code>	$\nwarrow$	<code>\nnwharpooncw</code>	$\nwarrow$	<code>\nswharpooncw</code>
$\nrightarrow$	<code>\nleftharpooncw*</code>	$\nwarrow$	<code>\nnwseharpoonnesw</code>	$\nwarrow$	<code>\nswneharpoons</code>
$\nrightarrow$	<code>\nleftrightharpoondownup</code>	$\nwarrow$	<code>\nnwseharpoons</code>	$\nwarrow$	<code>\nupdownharpoonleftright</code>
$\nrightarrow$	<code>\nleftrightharpoons</code>	$\nwarrow$	<code>\nnwseharpoonswne</code>	$\nwarrow$	<code>\nupdownharpoonrightleft</code>
$\nrightarrow$	<code>\nleftrightharpoonupdown</code>	$\nrightarrow$	<code>\nrightharpoonccw*</code>	$\nwarrow$	<code>\nupdownharpoons</code>
$\nwarrow$	<code>\nneharpoonccw</code>	$\nrightarrow$	<code>\nrightharpooncw*</code>	$\nwarrow$	<code>\nupharpoonccw*</code>
$\nwarrow$	<code>\nneharpooncw</code>	$\nrightarrow$	<code>\nrightharpoons</code>	$\nwarrow$	<code>\nupharpooncw*</code>
$\nwarrow$	<code>\nneswharpoonnwse</code>	$\nwarrow$	<code>\nseharpoonccw</code>		

* Where marked, the “ccw” suffix can be replaced with “up” and the “cw” suffix can be replaced with “down”. (In addition, `\nupharpooncw` can be written as `\nrestriction`.)

TABLE 168: fdsymbol Arrows

$\circlearrowleft$	<code>\acwcirculararrowdown</code>	$\leftarrow$	<code>\leftarrow</code>	$\Rightarrow$	<code>\rightrightarrows</code>
$\circlearrowleft$	<code>\acwcirculararrowleft</code>	$\leftarrow$	<code>\leftarrowtail</code>	$\rightsquigarrow$	<code>\rightwvearrow</code>
$\circlearrowleft$	<code>\acwcirculararrowright</code>	$\leftarrow$	<code>\leftbkarrow</code>	$\Rightarrow$	<code>\Rrightarrow</code>
$\circlearrowleft$	<code>\acwcirculararrowup</code>	$\Leftarrow$	<code>\leftleftarrows</code>	$\rightarrow$	<code>\Rsh</code>
$\curvearrowleft$	<code>\acwleftarcarrow</code>	$\leftarrow$	<code>\leftmapsto</code>	$\searrow$	<code>\searrow</code>
$\curvearrowleft$	<code>\acwnearcarrow</code>	$\Leftarrow$	<code>\Leftmapsto</code>	$\searrow$	<code>\searrow</code>
$\curvearrowleft$	<code>\acwnwarcarrow</code>	$\Leftrightarrow$	<code>\Leftrightarrow</code>	$\searrow$	<code>\searrowtail</code>
$\curvearrowleft$	<code>\acwoverarcarrow</code>	$\leftrightarrow$	<code>\leftrightharpoon</code>	$\searrow$	<code>\sebkarrow</code>
$\curvearrowright$	<code>\acwrightarcarrow</code>	$\Leftrightarrow$	<code>\leftrightharrows</code>	$\searrow$	<code>\senwarrows</code>
$\curvearrowright$	<code>\acwsearcarrow</code>	$\rightsquigarrow$	<code>\leftrighthwvearrow</code>	$\searrow$	<code>\sesearrows</code>
$\curvearrowright$	<code>\acwswarcarrow</code>	$\rightsquigarrow$	<code>\leftwvearrow</code>	$\searrow$	<code>\Swarrow</code>
$\curvearrowright$	<code>\acwunderarcarrow</code>	$\lightning$	<code>\lightning</code>	$\swarrow$	<code>\swarrow</code>
$\curvearrowright$	<code>\bdleftarcarrow</code>	$\Leftarrow$	<code>\Lleftarrow</code>	$\swarrow$	<code>\swarrowtail</code>
$\curvearrowright$	<code>\bdnearcarrow</code>	$\Longleftarrow$	<code>\Longleftarrow</code>	$\swarrow$	<code>\swbkarrow</code>
$\curvearrowright$	<code>\bdnwarcarrow</code>	$\longleftarrow$	<code>\longleftarrow</code>	$\swarrow$	<code>\swnearrows</code>
$\curvearrowright$	<code>\bdoverarcarrow</code>	$\longleftrightarrow$	<code>\longleftarrowrightarrow</code>	$\swarrow$	<code>\swswarrows</code>
$\curvearrowright$	<code>\bdrightarcarrow</code>	$\Longleftrightarrow$	<code>\Longleftrightarrow</code>	$\downarrow$	<code>\twoheaddownarrow</code>
$\curvearrowright$	<code>\bdsearcarrow</code>	$\rightsquigarrow$	<code>\longleftarrowwvearrow</code>	$\leftarrow$	<code>\twoheadleftarrow</code>
$\curvearrowright$	<code>\bdswarcarrow</code>	$\Longmapsto$	<code>\Longmapsto</code>	$\rightarrow$	<code>\twoheadnearrow</code>
$\curvearrowright$	<code>\bdunderarcarrow</code>	$\longmapsto$	<code>\longmapsto</code>	$\rightarrow$	<code>\twoheadnarrow</code>
$\circlearrowright$	<code>\cwcirculararrowdown</code>	$\Rightarrow$	<code>\Longmapsto</code>	$\rightarrow$	<code>\twoheadrightarrow</code>
$\circlearrowright$	<code>\cwcirculararrowleft</code>	$\rightarrow$	<code>\longmapsto</code>	$\rightarrow$	<code>\twoheadsearrow</code>

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	<code>\cwcirclearrowright</code>	$\rightarrow$	<code>\longrightarrow</code>		<code>\twoheadstarward</code>
	<code>\cwcirclearrowup</code>	$\Rightarrow$	<code>\Longrightarrow</code>		<code>\twoheaduparrow</code>
	<code>\cwleftarcarrow</code>	$\rightsquigarrow$	<code>\longrightwavearrow</code>		<code>\uparrow</code>
	<code>\cwnearcarrow</code>	$\looparrowleft$	<code>\looparrowleft</code>		<code>\Uparrow</code>
	<code>\cwnwarcarrow</code>	$\looparrowright$	<code>\looparrowright</code>		<code>\uparrowtail</code>
	<code>\cwoverarcarrow</code>	$\lsh$	<code>\Lsh</code>		<code>\upbkarrow</code>
	<code>\cwrightarcarrow</code>	$\nearrow$	<code>\nearrow</code>		<code>\Updownarrow</code>
	<code>\cwsearcarrow</code>	$\nearrow$	<code>\Nearrow</code>		<code>\updownarrow</code>
	<code>\cswwarcarrow</code>	$\nearrow$	<code>\nearrowtail</code>		<code>\updownarrows</code>
	<code>\cwunderarcarrow</code>	$\nearrow$	<code>\nebkarrow</code>		<code>\updownwavearrow</code>
	<code>\Ddownarrow</code>	$\nearrow$	<code>\nenearrows</code>		<code>\upmapsto</code>
	<code>\Downarrow</code>	$\nearrow$	<code>\Neswarrow</code>		<code>\Upmapsto</code>
	<code>\downarrow</code>	$\nearrow$	<code>\neswarrow</code>		<code>\upuparrows</code>
	<code>\downarrowtail</code>	$\nearrow$	<code>\neswarrows</code>		<code>\upwavearrow</code>
	<code>\downbkarrow</code>	$\nearrow$	<code>\Nwarrow</code>		<code>\Uuparrow</code>
	<code>\downdownarrows</code>	$\nearrow$	<code>\nwarrow</code>		<code>\vardownwavearrow</code>
	<code>\Downmapsto</code>	$\nearrow$	<code>\nwarrowtail</code>		<code>\varhookdownarrow</code>
	<code>\downmapsto</code>	$\nearrow$	<code>\nwbkarrow</code>		<code>\varhookleftarrow</code>
	<code>\downuparrows</code>	$\nearrow$	<code>\nwnwarrows</code>		<code>\varhooknearrow</code>
	<code>\downwavearrow</code>	$\nearrow$	<code>\Nwsearrow</code>		<code>\varhookknwarrow</code>
	<code>\hookdownarrow</code>	$\nearrow$	<code>\nwsearrow</code>		<code>\varhookrightarrow</code>
	<code>\hookleftarrow</code>	$\nearrow$	<code>\nwsearrows</code>		<code>\varhooksearrow</code>
	<code>\hooknearrow</code>	$\lsh$	<code>\Rdsh</code>		<code>\varhookswarrow</code>
	<code>\hookknwarrow</code>	$\Rightarrow$	<code>\Rightarrow</code>		<code>\varhookuparrow</code>
	<code>\hookrightarrow</code>	$\rightarrow$	<code>\rightarrow</code>		<code>\varleftrightwavearrow</code>
	<code>\hooksearrow</code>	$\rightarrow$	<code>\rightarrowtail</code>		<code>\varleftwavearrow</code>
	<code>\hookswarrow</code>	$\rightarrow$	<code>\rightbkarrow</code>		<code>\varrightwavearrow</code>
	<code>\hookuparrow</code>	$\rightleftarrows$	<code>\rightleftarrows</code>		<code>\varupdownwavearrow</code>
	<code>\Ldsh</code>	$\Rightarrow$	<code>\Rightmapsto</code>		<code>\varupwavearrow</code>
	<code>\Leftarrow</code>	$\rightarrow$	<code>\rightmapsto</code>		

	$\leftrightarrow$	$\leftrightsquigarrow$	$\curvearrowright$	$\rhooknarrow$
	$\leftarrow$	$\lefttrsquigarrow$	$\rightarrow$	$\rhookrightarrow$
	$\leftarrow$	$\lefttsquigarrow$	$\curvearrowright$	$\rhooksearrow$
	$\rightarrow$	$\leftupcurvedarrow$	$\curvearrowleft$	$\rhookswarrow$
	$\downarrow$	$\lhookdownarrow$	$\uparrow$	$\rhookuparrow$
	$\leftarrow$	$\lhookleftarrow$	$\curvearrowright$	$\rightarrowcurvedarrow$
	$\nearrow$	$\lhooknearrow$	$\searrow$	$\rightarrowdowncurvedarrow$
	$\rightarrow$	$\lhooknarrow$	$\curvearrowright$	$\rightarrowlcurvedarrow$
$\dashrightarrow$	$\rightarrow$	$\lhookrightarrow$	$\curvearrowleft$	$\rightarrowleftcurvedarrow$
$\dashleftarrow$	$\searrow$	$\lhooksearrow$	$\leftrightarrow$	$\rightarrowleftsquigarrow$
$\dashrightarrow$	$\nearrow$	$\lhookswarrow$	$\curvearrowright$	$\rightarrowltsquigarrow$
$\downlcurvedarrow$	$\uparrow$	$\lhookuparrow$	$\curvearrowleft$	$\rightarrowrcurvedarrow$
$\downleftcurvedarrow$	$\rightsquigarrow$	$\longleadsto$	$\curvearrowright$	$\rightarrowrtsquigarrow$

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$\Downarrow$	<code>\downlsquigarrow</code>	$\rightsquigarrow$	<code>\longleftsquigarrow</code>	$\rightsquigarrow$	<code>\rightsquigarrow</code>
$\curvearrowright$	<code>\downrcurvearrow</code>	$\rightsquigarrow$	<code>\longrightsquigarrow</code>	$\curvearrowleft$	<code>\rightupcurvedarrow</code>
$\curvearrowright$	<code>\downrightcurvedarrow</code>	$\Downarrow$	<code>\mapsdown</code>	$\curvearrowright$	<code>\selcurvearrow</code>
$\Downarrow$	<code>\downrsquigarrow</code>	$\Downarrow$	<code>\Mapsdown</code>	$\curvearrowleft$	<code>\senwcurvearrow</code>
$\Uparrow$	<code>\downupcurvearrow</code>	$\Leftarrow$	<code>\mapsfrom</code>	$\curvearrowright$	<code>\sercurvearrow</code>
$\Downarrow$	<code>\downupsquigarrow</code>	$\Leftarrow$	<code>\Mapsfrom</code>	$\curvearrowleft$	<code>\swlcurvearrow</code>
$\zigzag$	<code>\downzigzagarrow</code>	$\mapsto$	<code>\mapsto</code>	$\curvearrowright$	<code>\swnecurvearrow</code>
$\leftarrow$	<code>\gets</code>	$\mapsto$	<code>\Mapsto</code>	$\curvearrowleft$	<code>\swrcurvearrow</code>
$\nearrow$	<code>\hknearrow</code>	$\Uparrow$	<code>\mapsup</code>	$\rightarrow$	<code>\to</code>
$\nearrow$	<code>\hknwarrow</code>	$\Uparrow$	<code>\Mapsup</code>	$\Updownarrow$	<code>\updowncurvearrow</code>
$\searrow$	<code>\hksearrow</code>	$\nearrow$	<code>\nelcurvearrow</code>	$\Downarrow$	<code>\updownsquigarrow</code>
$\searrow$	<code>\hkswarrow</code>	$\nearrow$	<code>\nercurvearrow</code>	$\nearrow$	<code>\uplcurvearrow</code>
$\rightsquigarrow$	<code>\leadsto</code>	$\curvearrowright$	<code>\neswcurvearrow</code>	$\nearrow$	<code>\upleftcurvedarrow</code>
$\curvearrowleft$	<code>\leftcurvedarrow</code>	$\nearrow$	<code>\nwlcurvearrow</code>	$\nearrow$	<code>\uplsquigarrow</code>
$\curvearrowleft$	<code>\leftdowncurvedarrow</code>	$\nearrow$	<code>\nwrcurvearrow</code>	$\nearrow$	<code>\uprcurvearrow</code>
$\curvearrowleft$	<code>\lefttlcurvearrow</code>	$\nearrow$	<code>\nwsecurvearrow</code>	$\nearrow$	<code>\uprightcurvearrow</code>
$\rightsquigarrow$	<code>\leftlsquigarrow</code>	$\Downarrow$	<code>\rhookdownarrow</code>	$\nearrow$	<code>\uprsquigarrow</code>
$\curvearrowleft$	<code>\leftrcurvearrow</code>	$\Leftarrow$	<code>\rhookleftarrow</code>		
$\curvearrowleft$	<code>\leftrightcurvearrow</code>	$\nearrow$	<code>\rhooknearrow</code>		

TABLE 169: fdsymbol Negated Arrows

$\nrightarrow$	<code>\nacwcirclearrowdown</code>	$\nrightarrow$	<code>\nleftarrow</code>	$\nrightarrow$	<code>\nRrightarrow</code>
$\nrightarrow$	<code>\nacwcirclearrowleft</code>	$\nrightarrow$	<code>\nLeftarrow</code>	$\nrightarrow$	<code>\nsearrow</code>
$\nrightarrow$	<code>\nacwcirclearrowright</code>	$\nrightarrow$	<code>\nleftarrowtail</code>	$\nrightarrow$	<code>\nsearrowtail</code>
$\nrightarrow$	<code>\nacwcirclearrowup</code>	$\nrightarrow$	<code>\nlefttbkarrow</code>	$\nrightarrow$	<code>\nsearrowtail</code>
$\nrightarrow$	<code>\nacwleftarcarrow</code>	$\nrightarrow$	<code>\nleftleftarrows</code>	$\nrightarrow$	<code>\nsebkarrow</code>
$\nrightarrow$	<code>\nacwnearcarrow</code>	$\nrightarrow$	<code>\nleftmapsto</code>	$\nrightarrow$	<code>\nsenwarrows</code>
$\nrightarrow$	<code>\nacwnwarcarrow</code>	$\nrightarrow$	<code>\nLeftmapsto</code>	$\nrightarrow$	<code>\nsesearrows</code>
$\nrightarrow$	<code>\nacwoverarcarrow</code>	$\nrightarrow$	<code>\nleftrightarrow</code>	$\nrightarrow$	<code>\nswarrow</code>
$\nrightarrow$	<code>\nacwrightarcarrow</code>	$\nrightarrow$	<code>\nLeftrightarrow</code>	$\nrightarrow$	<code>\nswarrowtail</code>
$\nrightarrow$	<code>\nacwsearcarrow</code>	$\nrightarrow$	<code>\nleftrightharpoons</code>	$\nrightarrow$	<code>\nswbkarrow</code>
$\nrightarrow$	<code>\nacwswarcarrow</code>	$\nrightarrow$	<code>\nleftrighthwavearrow</code>	$\nrightarrow$	<code>\nswnearrows</code>
$\nrightarrow$	<code>\nacwunderarcarrow</code>	$\nrightarrow$	<code>\nleftwvearrow</code>	$\nrightarrow$	<code>\nswswarrows</code>
$\nrightarrow$	<code>\nbdleftarcarrow</code>	$\nrightarrow$	<code>\nLleftarrow</code>	$\nrightarrow$	<code>\ntwoheaddownarrow</code>
$\nrightarrow$	<code>\nbdnearcarrow</code>	$\nrightarrow$	<code>\nlongleftarrow</code>	$\nrightarrow$	<code>\ntwoheadleftarrow</code>
$\nrightarrow$	<code>\nbdnwarcarrow</code>	$\nrightarrow$	<code>\nLongleftarrow</code>	$\nrightarrow$	<code>\ntwoheadnearrow</code>
$\nrightarrow$	<code>\nbdoverarcarrow</code>	$\nrightarrow$	<code>\nlongleftrightharrow</code>	$\nrightarrow$	<code>\ntwoheadnwarrow</code>
$\nrightarrow$	<code>\nbdrightarcarrow</code>	$\nrightarrow$	<code>\nLongleftrightharrow</code>	$\nrightarrow$	

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	<code>\nbdsearrow</code>		<code>\nlongleftwvearrow</code>		<code>\ntwoheadrightarrow</code>
	<code>\nbdswarrow</code>		<code>\nlongmapsfrom</code>		<code>\ntwoheadsearrow</code>
	<code>\nbdunderarcarrow</code>		<code>\nLongmapsfrom</code>		<code>\ntwoheadswarrow</code>
	<code>\ncwcircularrowdown</code>		<code>\nlongmapsto</code>		<code>\ntwoheaduparrow</code>
	<code>\ncwcircularrowleft</code>		<code>\nLongmapsto</code>		<code>\nuparrow</code>
	<code>\ncwcircularrowright</code>		<code>\nlongrightarrow</code>		<code>\nUparrow</code>
	<code>\ncwcircularrowup</code>		<code>\nLongrightarrow</code>		<code>\nuparrowtail</code>
	<code>\ncwleftarcarrow</code>		<code>\nlongrightwvearrow</code>		<code>\nupbkarrow</code>
	<code>\ncwnearcarrow</code>		<code>\nnearrow</code>		<code>\nupdownarrow</code>
	<code>\ncwnwarcarrow</code>		<code>\nNearrow</code>		<code>\nUpdownarrow</code>
	<code>\ncwoverarcarrow</code>		<code>\nnearrowtail</code>		<code>\nupdownarrows</code>
	<code>\ncwrightarcarrow</code>		<code>\nnbkarrow</code>		<code>\nupdownwvearrow</code>
	<code>\ncwsearrow</code>		<code>\nnenearrows</code>		<code>\nupmapsto</code>
	<code>\ncwswarcarrow</code>		<code>\nneswarrow</code>		<code>\nUpmapsto</code>
	<code>\ncwunderarcarrow</code>		<code>\nNeswarrow</code>		<code>\nupuparrows</code>
	<code>\nDdownarrow</code>		<code>\nneswarrows</code>		<code>\nupwvearrow</code>
	<code>\ndownarrow</code>		<code>\nnwarrow</code>		<code>\nUparrow</code>
	<code>\nDownarrow</code>		<code>\nNwarrow</code>		<code>\nvardownwvearrow</code>
	<code>\ndownarrowtail</code>		<code>\nnwarrowtail</code>		<code>\nvarhookdownarrow</code>
	<code>\ndownbkarrow</code>		<code>\nnwbkarrow</code>		<code>\nvarhookleftarrow</code>
	<code>\ndowndownarrows</code>		<code>\nnwnwarrows</code>		<code>\nvarhooknearrow</code>
	<code>\ndownmapsto</code>		<code>\nnwsearrow</code>		<code>\nvarhooknwarrow</code>
	<code>\nDownmapsto</code>		<code>\nNwsearrow</code>		<code>\nvarhookrightarrow</code>
	<code>\ndownuparrows</code>		<code>\nnwsearrows</code>		<code>\nvarhooksearrow</code>
	<code>\ndownwvearrow</code>		<code>\nrightarrow</code>		<code>\nvarhookswarrow</code>
	<code>\nhookdownarrow</code>		<code>\nRightarrow</code>		<code>\nvarhookuparrow</code>
	<code>\nhookleftarrow</code>		<code>\nrightarrowtail</code>		<code>\nvarlefttrighwvearrow</code>
	<code>\nhooknearrow</code>		<code>\nrightbkarrow</code>		<code>\nvarleftwvearrow</code>
	<code>\nhooknwarrow</code>		<code>\nrightleftarrows</code>		<code>\nvarrightwvearrow</code>
	<code>\nhookrightarrow</code>		<code>\nrightmapsto</code>		<code>\nvarupdownwvearrow</code>
	<code>\nhooksearrow</code>		<code>\nRightmapsto</code>		<code>\nvarupwvearrow</code>
	<code>\nhookswarrow</code>		<code>\nrightrightarrow</code>		
	<code>\nhookuparrow</code>		<code>\nrightwvearrow</code>		

fdsymbol defines synonyms for most of the preceding symbols:

	<code>\nacwgapcircularrow</code>		<code>\nleftdowncurvedarrow</code>		<code>\nrightcurvedarrow</code>
	<code>\nacwopencircularrow</code>		<code>\nleftlcurvearrow</code>		<code>\nrightdowncurvedarrow</code>
	<code>\ncircularrowleft</code>		<code>\nleftlsquigarrow</code>		<code>\nrightlcurvearrow</code>
	<code>\ncircularrowright</code>		<code>\nlefttrcurvearrow</code>		<code>\nrightleftcurvearrow</code>
	<code>\ncurvearrowleft</code>		<code>\nleftrighcurvearrow</code>		<code>\nrightleftsquigarrow</code>
	<code>\ncurvearrowright</code>		<code>\nleftrightsquigarrow</code>		<code>\nrightlsquigarrow</code>
	<code>\ncwgapcircularrow</code>		<code>\nlefttrsquigarrow</code>		<code>\nrighttrcurvearrow</code>
	<code>\ncwopencircularrow</code>		<code>\nleftsquigarrow</code>		<code>\nrighttrsquigarrow</code>
	<code>\ndasharrow</code>		<code>\nleftupcurvedarrow</code>		<code>\nrightsquigarrow</code>

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$\dashleftarrow$	<code>\ndashleftarrow</code>	$\leadsto$	<code>\nlongleadsto</code>	$\curvearrowright$	<code>\nrightharpoonup</code>
$\dashrightarrow$	<code>\ndashrightarrow</code>	$\rightsquigarrow$	<code>\nlongleftsquigarrow</code>	$\curvearrowleft$	<code>\nsecurvearrow</code>
$\downarrow$	<code>\ndownlcurvearrow</code>	$\rightsquigarrow$	<code>\nlongrightsquigarrow</code>	$\curvearrowright$	<code>\nsenwcurvearrow</code>
$\curvearrowleft$	<code>\ndownleftcurvedarrow</code>	$\Downarrow$	<code>\nmapsdown</code>	$\curvearrowleft$	<code>\nsercurvearrow</code>
$\rightsquigarrow$	<code>\ndownlsquigarrow</code>	$\Downarrow$	<code>\nMapsdown</code>	$\curvearrowleft$	<code>\nswlcurvearrow</code>
$\curvearrowright$	<code>\ndownrcurvearrow</code>	$\Leftarrow$	<code>\nmapsfrom</code>	$\curvearrowright$	<code>\nswnecurvearrow</code>
$\curvearrowright$	<code>\ndownrightcurvedarrow</code>	$\Leftarrow$	<code>\nMapsfrom</code>	$\curvearrowright$	<code>\nswrcurvearrow</code>
$\rightsquigarrow$	<code>\ndownrsquigarrow</code>	$\mapsto$	<code>\nmapsto</code>	$\rightarrow$	<code>\nto</code>
$\Updownarrow$	<code>\ndownupcurvearrow</code>	$\mapsto$	<code>\nMapsto</code>	$\Updownarrow$	<code>\nupdowncurvearrow</code>
$\rightsquigarrow$	<code>\ndownupsquigarrow</code>	$\Uparrow$	<code>\nmapsup</code>	$\Updownarrow$	<code>\nupdownsquigarrow</code>
$\Leftarrow$	<code>\ngets</code>	$\Uparrow$	<code>\nMapsup</code>	$\Uparrow$	<code>\nuplcurvearrow</code>
$\nearrow$	<code>\nhknearrow</code>	$\curvearrowleft$	<code>\nnelcurvearrow</code>	$\curvearrowleft$	<code>\nupleftcurvedarrow</code>
$\nwarrow$	<code>\nhknwarrow</code>	$\curvearrowright$	<code>\nnercurvearrow</code>	$\curvearrowright$	<code>\nuplsquigarrow</code>
$\nwarrow$	<code>\nhksearrow</code>	$\curvearrowright$	<code>\nneswcurvearrow</code>	$\curvearrowright$	<code>\nuprcurvearrow</code>
$\nwarrow$	<code>\nhkswarrow</code>	$\curvearrowright$	<code>\nnwlcurvearrow</code>	$\curvearrowright$	<code>\nuprightcurvearrow</code>
$\leadsto$	<code>\nleadsto</code>	$\curvearrowright$	<code>\nnwrcurvearrow</code>	$\curvearrowright$	<code>\nuprsquigarrow</code>
$\leftarrow$	<code>\nleftcurvedarrow</code>	$\curvearrowright$	<code>\nnwsecurvearrow</code>		

TABLE 170: fdsymbol Harpoons

$\Downarrow$	<code>\downharpoonleft</code>	$\nearrow$	<code>\neswharpoons</code>	$\searrow$	<code>\seharpoonsw</code>
$\Downarrow$	<code>\downharpoonright</code>	$\nearrow$	<code>\neswharpoonsenw</code>	$\searrow$	<code>\senwharpoons</code>
$\Updownarrow$	<code>\downupharpoons</code>	$\nwarrow$	<code>\nwharpoonne</code>	$\swarrow$	<code>\swharpoonnw</code>
$\leftarrow$	<code>\leftharpoondown</code>	$\nwarrow$	<code>\nwharpoonsw</code>	$\swarrow$	<code>\swharpoonse</code>
$\leftarrow$	<code>\leftharpoonup</code>	$\nwarrow$	<code>\nwseharpoonesw</code>	$\swarrow$	<code>\swneharpoons</code>
$\rightleftarrows$	<code>\leftrightharpoondownup</code>	$\nwarrow$	<code>\nwseharpoons</code>	$\Updownarrow$	<code>\updownharpoonleftright</code>
$\rightleftarrows$	<code>\leftrightharpoons</code>	$\nwarrow$	<code>\nwseharpoonswne</code>	$\Downarrow$	<code>\updownharpoonrightleft</code>
$\rightleftarrows$	<code>\leftrightharpoonupdown</code>	$\rightarrow$	<code>\rightharpoondown</code>	$\Updownarrow$	<code>\updownharpoons</code>
$\nearrow$	<code>\neharpoonnw</code>	$\rightarrow$	<code>\rightharpoonup</code>	$\Uparrow$	<code>\upharpoonleft</code>
$\nearrow$	<code>\neharpoonse</code>	$\rightleftarrows$	<code>\rightleftharpoons</code>	$\Uparrow$	<code>\upharpoonright</code>
$\nearrow$	<code>\neswharpoonnwse</code>	$\searrow$	<code>\seharpoonne</code>		

`fdsymbol` defines `\restriction` as a synonym for `\upharpoonright`, `\updownharpoonsleftright` as a synonym for `\updownharpoons`, and `\downupharpoonsleftright` as a synonym for `\downupharpoons`.

TABLE 171: fdsymbol Negated Harpoons

$\dagger$	<code>\downharpoonleft</code>	$\nrightarrow$	<code>\nneswharpoons</code>	$\nwarrow$	<code>\nseharpoonsw</code>
$\dagger$	<code>\downharpoonright</code>	$\nrightarrow$	<code>\nneswharpoonsenw</code>	$\nwarrow$	<code>\nsenwharpoons</code>
$\#$	<code>\downupharpoons</code>	$\nwarrow$	<code>\nnwharpoonne</code>	$\nwarrow$	<code>\nswharpoonnw</code>
$\nrightarrow$	<code>\nleftharpoondown</code>	$\nwarrow$	<code>\nnwharpoonsw</code>	$\nwarrow$	<code>\nswharpoonse</code>
$\nrightarrow$	<code>\nleftharpoonup</code>	$\nwarrow$	<code>\nnwseharpoonnesw</code>	$\nwarrow$	<code>\nswneharpoons</code>
$\nrightarrow$	<code>\nleftrightharpoondownup</code>	$\nrightarrow$	<code>\nnwseharpoons</code>	$\dagger$	<code>\nupdownharpoonleftright</code>
$\nrightarrow$	<code>\nleftrightharpoons</code>	$\nwarrow$	<code>\nnwseharpoonswne</code>	$\dagger$	<code>\nupdownharpoonrightleft</code>
$\nrightarrow$	<code>\nleftrightharpoonupdown</code>	$\nrightarrow$	<code>\nrightharpoondown</code>	$\#$	<code>\nupdownharpoons</code>
$\nwarrow$	<code>\nneharpoonnw</code>	$\nrightarrow$	<code>\nrightharpoonup</code>	$\dagger$	<code>\nupharpoonleft</code>
$\nwarrow$	<code>\nneharpoonse</code>	$\nrightarrow$	<code>\nrightharpoonright</code>	$\dagger$	<code>\nupharpoonright</code>
$\nwarrow$	<code>\nneswharpoonnwse</code>	$\nwarrow$	<code>\nseharpoonne</code>		

`fdsymbol` defines `\nrestriction` as a synonym for `\nupharpoonright`,
`\downupharpoonsleftright` as a synonym for `\downupharpoons`, and
`\nupdownharpoonsleftright` as a synonym for `\nupdownharpoons`.

TABLE 172: boisik Arrows

$\leftarrow$	<code>\barleftarrow</code>	$\Uparrow$	<code>\Lsh</code>
$\leftrightarrow$	<code>\barleftarrowrightarrowbar</code>	$\Downarrow$	<code>\mapsdown</code>
$\nwarrow$	<code>\barovernorthwestarrow</code>	$\Leftarrow$	<code>\Mapsfrom</code>
$\leftarrow$	<code>\carriagereturn</code>	$\Leftarrow$	<code>\mapsfrom</code>
$\circlearrowleft$	<code>\circlearrowleft</code>	$\mapsto$	<code>\Mapsto</code>
$\circlearrowright$	<code>\circlearrowright</code>	$\mapsto$	<code>\mapsto</code>
$\cupleftarrow$	<code>\cupleftarrow</code>	$\Uparrow$	<code>\mapsup</code>
$\curlyvee\downarrow$	<code>\curlyveedownarrow</code>	$\nearrow$	<code>\Nearrow</code>
$\curlyvee\uparrow$	<code>\curlyveeuparrow</code>	$\nearrow$	<code>\nearrowcorner</code>
$\curlywedge\downarrow$	<code>\curlywedgedownarrow</code>	$\nearrow$	<code>\nnearrow</code>
$\curlywedge\uparrow$	<code>\curlywedgeuparrow</code>	$\nearrow$	<code>\nnwarrow</code>
$\curvearrowleft$	<code>\curvearrowbotleft</code>	$\nearrow$	<code>\Nwarrow</code>
$\curvearrowright$	<code>\curvearrowbotleftright</code>	$\nearrow$	<code>\nwarrowcorner</code>
$\curvearrowright$	<code>\curvearrowbotright</code>	$\rightarrow$	<code>\rightarrowbar</code>
$\curvearrowleft$	<code>\curvearrowleft</code>	$\rightarrow$	<code>\rightarrowcircle</code>
$\curvearrowright$	<code>\curvearrowleftright</code>	$\rightarrow$	<code>\rightarrowtail</code>
$\curvearrowright$	<code>\curvearrowright</code>	$\rightarrow$	<code>\rightarrowTriangle</code>
$\dls$	<code>\dls</code>	$\rightarrow$	<code>\rightarrowtriangle</code>
$\blackarrow$	<code>\downblackarrow</code>	$\rightarrow$	<code>\rightblackarrow</code>
$\dashrightarrow$	<code>\downdasharrow</code>	$\rightarrow$	<code>\righddasharrow</code>
$\Downarrow$	<code>\downdownarrows</code>	$\rightleftarrows$	<code>\rightleftarrows</code>
$\Downarrow$	<code>\downtoupward</code>	$\rightarrow$	<code>\rightrightarrows</code>
$\Downarrow$	<code>\downwhitearrow</code>	$\rightsquigarrow$	<code>\rightsquigarrow</code>

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	<code>\downzigzagarrow</code>		<code>\rightthreearrows</code>
	<code>\drsh</code>		<code>\righttleftarrow</code>
	<code>\eqleftrightarrow</code>		<code>\rightwhitearrow</code>
	<code>\hookleftarrow</code>		<code>\rightwhiteroundarrow</code>
	<code>\hookrightarrow</code>		<code>\Rrightarrow</code>
	<code>\leftarrowtail</code>		<code>\Rsh</code>
	<code>\leftarrowTriangle</code>		<code>\Searrow</code>
	<code>\leftarrowtriangle</code>		<code>\ssearrow</code>
	<code>\leftblackarrow</code>		<code>\sswarrow</code>
	<code>\leftdasharrow</code>		<code>\Svarrow</code>
	<code>\leftleftarrows</code>		<code>\twoheaddownarrow</code>
	<code>\leftrightarrows</code>		<code>\twoheadleftarrow</code>
	<code>\leftrightharrows</code>		<code>\twoheadrightarrow</code>
	<code>\leftrightharrowsTriangle</code>		<code>\twoheaduparrow</code>
	<code>\leftrightharrowstriangle</code>		<code>\twoheadwhiteuparrow</code>
	<code>\lefttrightblackarrow</code>		<code>\twoheadwhiteuparrowpedestal</code>
	<code>\leftrightsquigarrow</code>		<code>\upblackarrow</code>
	<code>\leftsquigarrow</code>		<code>\updasharrow</code>
	<code>\lefttorightarrow</code>		<code>\updownarrowbar</code>
	<code>\leftwhitearrow</code>		<code>\updownblackarrow</code>
	<code>\leftwhiteroundarrow</code>		<code>\updownwhitearrow</code>
	<code>\leftzigzagarrow</code>		<code>\uptodownarrow</code>
	<code>\linefeed</code>		<code>\upuparrows</code>
	<code>\Lleftarrow</code>		<code>\upwhitearrow</code>
	<code>\looparrowdownleft</code>		<code>\whitearrowupfrombar</code>
	<code>\looparrowdownright</code>		<code>\whitearrowuppedestal</code>
	<code>\looparrowleft</code>		<code>\whitearrowuppedestalthbar</code>
	<code>\looparrowright</code>		<code>\whitearrowuppedestallvbar</code>

Many of these symbols are defined only if the `arrows` package option is specified.

TABLE 173: boisik Negated Arrows

	<code>\nHdownarrow</code>		<code>\nLeftrightarrow</code>		<code>\nRightarrow</code>
	<code>\nHuparrow</code>		<code>\nleftrightarrow</code>		<code>\nVleftarrow</code>
	<code>\nLeftarrow</code>		<code>\nLeftrightarrow</code>		<code>\nVrightarrow</code>
	<code>\nleftarrow</code>		<code>\nrightarrow</code>		

Many of these symbols are defined only if the `arrows` package option is specified.

TABLE 174: boisik Harpoons

$\downarrow$	<code>\downharpoonleft</code>	$\Leftrightarrow$	<code>\leftrightharpoons</code>	$\uparrow$	<code>\upharpoonleft</code>
$\searrow$	<code>\downharpoonright</code>	$\rightarrow$	<code>\rightharpoondown</code>	$\uparrow$	<code>\upharpoonright</code>
$\leftarrow$	<code>\leftharpoondown</code>	$\rightarrow$	<code>\rightharpoonup</code>		
$\nwarrow$	<code>\leftharpoonup</code>	$\Leftrightarrow$	<code>\rightleftharpoons</code>		

TABLE 175: stix Arrows

$\circlearrowleft$	<code>\acwcirculararrow</code>	$\mapsto$	<code>\longmapsto</code>
$\circlearrowright$	<code>\acwgapcirculararrow</code>	$\Longmapsto$	<code>\Longmapsto</code>
$\curvearrowleft$	<code>\acwleftarcarrow</code>	$\longrightarrow$	<code>\longrightarrow</code>
$\curvearrowright$	<code>\acwoverarcarrow</code>	$\Longrightarrow$	<code>\Longrightarrow</code>
$\underarcarrow$	<code>\acwunderarcarrow</code>	$\rightsquigarrow$	<code>\longrightsquigarrow</code>
$\bar{\leftarrow}$	<code>\barleftarrow</code>	$\looparrowleft$	<code>\looparrowleft</code>
$\bar{\leftarrow\rightarrow}$	<code>\barleftarrowrightarrowbar*</code>	$\looparrowright$	<code>\looparrowright</code>
$\bar{\rightarrow}$	<code>\barrightarrowdiamond</code>	$\Lsh$	<code>\Lsh</code>
$\bar{\uparrow}$	<code>\baruparrow</code>	$\mapsto$	<code>\mapsdown</code>
$\bsimilarrowleft$	<code>\bsimilarleftarrow</code>	$\Mapsfrom$	<code>\Mapsfrom</code>
$\bsimilarrowright$	<code>\bsimilarrightarrow</code>	$\mapsto$	<code>\mapsfrom</code>
$\lleftarrow$	<code>\carriagereturn*</code>	$\mapsto$	<code>\mapsto</code>
$\ccwundercurvearrow$	<code>\ccwundercurvearrow</code>	$\Mapsto$	<code>\Mapsto</code>
$\circlearrowleft$	<code>\circlearrowleft</code>	$\mapsto$	<code>\mapsto</code>
$\circlearrowright$	<code>\circlearrowright</code>	$\nearrow$	<code>\nearrow</code>
$\circlearrowleft$	<code>\circleonleftarrow</code>	$\nearrow$	<code>\nearrow</code>
$\circlearrowright$	<code>\circleonrightarrow</code>	$\nearrow$	<code>\nearrow</code>
$\curvearrowleft$	<code>\curvearrowleft</code>	$\nearrow$	<code>\nearrow</code>
$\curvearrowleftplus$	<code>\curvearrowleftplus</code>	$\nearrow$	<code>\nearrow</code>
$\curvearrowright$	<code>\curvearrowright</code>	$\nearrow$	<code>\nearrow</code>
$\curvearrowrightminus$	<code>\curvearrowrightminus</code>	$\nearrow$	<code>\nearrow</code>
$\cwccirculararrow$	<code>\cwccirculararrow</code>	$\nearrow$	<code>\nearrow</code>
$\cwgapcirculararrow$	<code>\cwgapcirculararrow</code>	$\nearrow$	<code>\nearrow</code>
$\cwrightarcarrow$	<code>\cwrightarcarrow</code>	$\nearrow$	<code>\nearrow</code>
$\cwundercurvearrow$	<code>\cwundercurvearrow</code>	$\nearrow$	<code>\nearrow</code>
$\dbkarow$	<code>\dbkarow</code>	$\nearrow$	<code>\nearrow</code>
$\Downarrow$	<code>\Downarrow</code>	$\nearrow$	<code>\nearrow</code>
$\Downarrow$	<code>\Downarrow</code>	$\nearrow$	<code>\nearrow</code>
$\diamondleftarrow$	<code>\diamondleftarrow</code>	$\nearrow$	<code>\nearrow</code>
$\diamondleftarrowbar$	<code>\diamondleftarrowbar</code>	$\nearrow$	<code>\nearrow</code>
$\downarrow$	<code>\downarrow</code>	$\nearrow$	<code>\nearrow</code>
$\Downarrow$	<code>\Downarrow</code>	$\nearrow$	<code>\nearrow</code>
$\downarrowbar$	<code>\downarrowbar</code>	$\nearrow$	<code>\nearrow</code>

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$\downarrow$	<code>\downarrowbarred</code>	$\rightarrow$	<code>\rightarrowplus</code>
$\dashrightarrow$	<code>\downdasharrow*</code>	$\rightleftarrows$	<code>\rightarrowshortleftarrow</code>
$\Downarrow$	<code>\downdownarrows</code>	$\rightsquigarrow$	<code>\rightarrowsimilar</code>
$\curvearrowright$	<code>\downrightcurvedarrow*</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\Uparrow$	<code>\downuparrows</code>	$\rightarrowtriangle$	<code>\rightarrowtriangle</code>
$\Downarrow$	<code>\downwhitearrow*</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\zigzagarrow$	<code>\downzigzagarrow</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\draftingarrow*</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\drbkarow</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\equalleftarrow</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\equalrightarrow</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\fdiagovnearrow*</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\hknearrow</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\hknwarrow</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\hksearrow</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\hkswarrow</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\hookleftarrow</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\hookrightarrow</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\ldsh</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\leftarrow</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\Leftarrow</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\leftarrowapprox</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\leftarrowbackapprox</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\leftarrowbsimilar</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\leftarrowonoplus</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\leftarrowplus</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\leftarrowshortrightarrow</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\leftarrowssimilar</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\leftarrowtail</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\leftarrowtriangle</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\leftarrowx</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\leftbkarow</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\leftcurvedarrow</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\leftdasharrow*</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\leftdbkarow</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\leftdotarrow</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\leftdowncurvedarrow</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\leftleftarrows</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\Leftrightarrow</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\leftrightarrow</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\leftrightarrowcircle</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\leftrightarrows</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\leftrightarrowtriangle</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\leftrightsquigarrow</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\leftsquigarrow</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\rightarrowtail$	<code>\leftthreearrows</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
		$\rightarrowtail$	<code>\rightarrowtail</code>

(continued on next page)

TABLE 177: stix Harpoons

$\bar{\downarrow}$	<code>\bardownharpoonleft</code>	$\Leftrightarrow$	<code>\leftrightharpoons</code>
$\bar{\downarrow}$	<code>\bardownharpoonright</code>	$\Rightarrow$	<code>\leftrightharpoonsdown</code>
$\bar{\leftarrow}$	<code>\barleftharpoontdown</code>	$\Leftarrow$	<code>\leftrightharpoonsup</code>
$\bar{\leftarrow}$	<code>\barleftharpoonup</code>	$\Leftarrow$	<code>\leftrightharpoonupdown</code>
$\bar{\rightarrow}$	<code>\barrightharpoontdown</code>	$\Leftarrow$	<code>\leftrightharpoonupup</code>
$\bar{\rightarrow}$	<code>\barrightharpoonup</code>	$\rightarrow$	<code>\rightharpoontdown</code>
$\bar{\uparrow}$	<code>\barupharpoonleft</code>	$\rightarrow$	<code>\rightharpoontdownbar</code>
$\bar{\uparrow}$	<code>\barupharpoonright</code>	$\Rightarrow$	<code>\rightharpoonsupdown</code>
$\dashleftarrow$	<code>\dashleftharpoontdown</code>	$\rightarrow$	<code>\rightharpoonup</code>
$\dashrightarrow$	<code>\dashrightharpoontdown</code>	$\rightarrow$	<code>\rightharpoonupbar</code>
$\downarrow$	<code>\downharpoonleft</code>	$\Rightarrow$	<code>\rightharpoonupdash</code>
$\downarrow$	<code>\downharpoonleftbar</code>	$\Rightarrow$	<code>\rightleftharpoons</code>
$\downarrow$	<code>\downharpoonright</code>	$\Rightarrow$	<code>\rightleftharpoonsdown</code>
$\downarrow$	<code>\downharpoonrightbar</code>	$\Rightarrow$	<code>\rightleftharpoonsup</code>
$\Downarrow$	<code>\downharpoonsleftright</code>	$\downarrow$	<code>\updownharpoonleftleft</code>
$\Uparrow$	<code>\downupharpoonsleftright</code>	$\downarrow$	<code>\updownharpoonleftright</code>
$\leftarrow$	<code>\leftharpoontdown</code>	$\downarrow$	<code>\updownharpoonrightleft</code>
$\leftarrow$	<code>\leftharpoontdownbar</code>	$\downarrow$	<code>\updownharpoonrightright</code>
$\Leftarrow$	<code>\leftharpoonsupdown</code>	$\Downarrow$	<code>\updownharpoonsleftright</code>
$\leftarrow$	<code>\leftharpoonup</code>	$\uparrow$	<code>\upharpoonleft</code>
$\leftarrow$	<code>\leftharpoonupbar</code>	$\uparrow$	<code>\upharpoonleftbar</code>
$\Rightarrow$	<code>\leftharpoonupdash</code>	$\uparrow$	<code>\upharpoonright*</code>
$\rightarrow$	<code>\leftrightharpoontdowndown</code>	$\uparrow$	<code>\upharpoonrightbar</code>
$\rightarrow$	<code>\leftrightharpoontdownup</code>	$\Uparrow$	<code>\upharpoonsleftright</code>

* stix defines `\restriction` as a synonym for `\upharpoonright`.

TABLE 178: pdfMsym Arrows

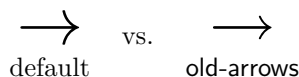
$\lightning$	<code>\lightning</code>		
$\Longleftarrow$	<code>\longvarCircleleftarrow</code>	$\Leftrightarrow$	<code>\varCircleleftarrow</code>
$\Longleftarrow$	<code>\longvarcircleleftarrow</code>	$\Leftarrow$	<code>\varcircleleftarrow</code>
$\Longrightarrow$	<code>\longvarCirclerightarrow</code>	$\Rightarrow$	<code>\varCirclerightarrow</code>
$\Longrightarrow$	<code>\longvarcirclerightarrow</code>	$\rightarrow$	<code>\varcyclerightarrow</code>
$\Longleftarrow$	<code>\longvardoubleleftarrow</code>	$\Leftarrow$	<code>\vardoubleleftarrow</code>
$\Longrightarrow$	<code>\longvardoublerightarrow</code>	$\rightarrow$	<code>\vardoublerightarrow</code>
$\Longleftarrow$	<code>\longvardownhookleftarrow</code>	$\leftarrow$	<code>\vardownhookleftarrow</code>

(continued on next page)

TABLE 182: old-arrows Arrows

$\downarrow$	<code>\downarrow</code>	$\longleftrightarrow$	<code>\longlefttrightarrow</code>	$\nearrow$	<code>\nwarrow</code>
$\hookleftarrow$	<code>\hookleftarrow</code>	$\longleftarrow$	<code>\longmapsfrom*</code>	$\rightarrow$	<code>\rightarrow</code>
$\hookrightarrow$	<code>\hookrightarrow</code>	$\mapsto$	<code>\longmapsto</code>	$\searrow$	<code>\searrow</code>
$\leftarrow$	<code>\leftarrow</code>	$\longrightarrow$	<code>\longrightarrow</code>	$\swarrow$	<code>\swarrow</code>
$\leftrightarrow$	<code>\leftrightarrow</code>	$\mapsto$	<code>\mapsfrom*</code>	$\uparrow$	<code>\uparrow</code>
$\longhookrightarrow$	<code>\longhookrightarrow</code>	$\mapsto$	<code>\mapsto</code>	$\updownarrow$	<code>\updownarrow</code>
$\longleftarrow$	<code>\longleftarrow</code>	$\nearrow$	<code>\nearrow</code>		

The arrows provided by `old-arrows` represent Donald Knuth’s pre-1992 Computer Modern glyphs, which feature smaller arrowheads. Contrast the following:



In addition to the arrows shown above, `old-arrows` also reduces the arrowhead size for $\mathcal{AMS}$ ’s `\overleftarrow`, `\overrightarrow`, `\overleftrightarrow`, `\underleftarrow`, `\underrightarrow`, `\underleftrightarrow`, `\xleftarrow`, `\xrightarrow`, `\varinjlim`, and `\varprojlim` symbols (Table 204 on page 119, Table 270 on page 139, and Table 288 on page 145) and `mathtools`’s `\xleftrightarrow`, `\xhookleftarrow`, `\xhookrightarrow`, and `\xmapsto` symbols (Table 289 on page 145).

With the new package option, `old-arrows` prefixes all of the above with “`var`” (i.e., `\vardownarrow`, `\varhookleftarrow`, etc.) so both old and new glyphs can be used in the same document. See the `old-arrows` documentation for more information.

* Requires `stmaryrd`.

TABLE 183: old-arrows Harpoons

$\longleftarrowharpoonup$	<code>\longleftarrowharpoonup</code>	$\longrightarrowharpoonup$	<code>\longrightarrowharpoonup</code>
$\longleftarrowharpoonright$	<code>\longleftarrowharpoonright</code>	$\longrightarrowharpoonright$	<code>\longrightarrowharpoonright</code>

Unlike the symbols shown in Table 182, the new package option does not define a `\var...` version of the symbols in this table. Also unlike the symbols shown in Table 182, the harpoon arrowheads in this table are not reduced in size (i.e., relative to the size of those shown in Table 154 on page 94).

TABLE 184: logix Arrows

$\dashleftarrow$	<code>\DashArrowLeft</code>	$\Rightarrow$	<code>\LmtImpl</code>	$\leftrightarrow$	<code>\RplcFree</code>
$\dashrightarrow$	<code>\DashArrowRight</code>	$\looparrowleft$	<code>\LoopArrowLeft</code>	$\leftarrow$	<code>\RplcFreeLeft</code>
$\rightarrowtail$	<code>\Entail</code>	$\looparrowright$	<code>\LoopArrowRight</code>	$\rightarrow$	<code>\RplcFreeRight</code>
$\leftrightarrowtail$	<code>\EntailEquiv</code>	$\rightarrowtail$	<code>\LParFunc</code>	$\rightarrowtail$	<code>\SEntail</code>
$\longleftrightarrow$	<code>\Equiv</code>	$\rightarrowtail$	<code>\LWkEntail</code>	$\leftrightarrowtail$	<code>\SEntailEquiv</code>
$\leftrightsquigarrow$	<code>\FishArrowLeft</code>	$\leftrightarrowtail$	<code>\LWkEntailEquiv</code>	$\longleftrightarrow$	<code>\SEquiv</code>
$\rightsquigarrow$	<code>\FishArrowRight</code>	$\xrightarrow{+}$	<code>\MapParInGndMul</code>	$\rightarrow$	<code>\SFunc</code>
$\flatrightarrowleft$	<code>\FlatArrowLeft</code>	$\xrightarrow{+}$	<code>\MapParInGndOne</code>	$\updownarrow$	<code>\ShftAccent</code>
$\flatrightarrowright$	<code>\FlatArrowRight</code>	$\xrightarrow{+}$	<code>\MapParInGndSng</code>	$\downarrow$	<code>\ShftSubscr</code>
$\forkrightarrowleft$	<code>\ForkArrowLeft</code>	$\xrightarrow{+}$	<code>\MapParInMul</code>	$\uparrow$	<code>\ShftSuper</code>
$\forkrightarrowright$	<code>\ForkArrowRight</code>	$\xrightarrow{+}$	<code>\MapParInOne</code>	$\rightarrow$	<code>\SImpl</code>
$\rightarrow$	<code>\Func</code>	$\xrightarrow{+}$	<code>\MapParInSng</code>	$\mapsto$	<code>\SMapTo</code>
$\xrightarrow{+}$	<code>\FunParInGndMul</code>	$\xrightarrow{+}$	<code>\MapParOnGndMul</code>	$\longleftrightarrow$	<code>\SMtEquiv</code>
$\xrightarrow{+}$	<code>\FunParInGndOne</code>	$\xrightarrow{+}$	<code>\MapParOnGndOne</code>	$\Rightarrow$	<code>\SMtImpl</code>
$\xrightarrow{+}$	<code>\FunParInGndSng</code>	$\xrightarrow{+}$	<code>\MapParOnGndSng</code>	$\rightarrowtail$	<code>\SParFunc</code>
$\xrightarrow{+}$	<code>\FunParInMul</code>	$\xrightarrow{+}$	<code>\MapParOnMul</code>	$\rightarrowtail$	<code>\SWkEntail</code>
$\xrightarrow{+}$	<code>\FunParInOne</code>	$\xrightarrow{+}$	<code>\MapParOnOne</code>	$\leftrightarrowtail$	<code>\SWkEntailEquiv</code>
$\xrightarrow{+}$	<code>\FunParInSng</code>	$\xrightarrow{+}$	<code>\MapParOnSng</code>	$\longrightarrow$	<code>\VEntail</code>
$\xrightarrow{+}$	<code>\FunParOnGndMul</code>	$\mapsto$	<code>\MapTo</code>	$\longleftrightarrow$	<code>\VEntailEquiv</code>
$\xrightarrow{+}$	<code>\FunParOnGndOne</code>	$\xrightarrow{+}$	<code>\MapTotInGndMul</code>	$\longleftrightarrow$	<code>\VEquiv</code>
$\xrightarrow{+}$	<code>\FunParOnGndSng</code>	$\xrightarrow{+}$	<code>\MapTotInGndOne</code>	$\longrightarrow$	<code>\VFunc</code>
$\xrightarrow{+}$	<code>\FunParOnMul</code>	$\xrightarrow{+}$	<code>\MapTotInGndSng</code>	$\longrightarrow$	<code>\VImpl</code>
$\xrightarrow{+}$	<code>\FunParOnOne</code>	$\xrightarrow{+}$	<code>\MapTotInMul</code>	$\mapsto$	<code>\VMapTo</code>
$\xrightarrow{+}$	<code>\FunParOnSng</code>	$\xrightarrow{+}$	<code>\MapTotInOne</code>	$\longleftrightarrow$	<code>\VMtEquiv</code>
$\xrightarrow{+}$	<code>\FunTotInGndMul</code>	$\xrightarrow{+}$	<code>\MapTotInSng</code>	$\Rightarrow$	<code>\VMtImpl</code>
$\xrightarrow{+}$	<code>\FunTotInGndOne</code>	$\xrightarrow{+}$	<code>\MapTotOnGndMul</code>	$\rightarrowtail$	<code>\VParFunc</code>
$\xrightarrow{+}$	<code>\FunTotInGndSng</code>	$\xrightarrow{+}$	<code>\MapTotOnGndOne</code>	$\longrightarrow$	<code>\VWkEntail</code>
$\xrightarrow{+}$	<code>\FunTotInMul</code>	$\xrightarrow{+}$	<code>\MapTotOnGndSng</code>	$\longleftrightarrow$	<code>\VWkEntailEquiv</code>
$\xrightarrow{+}$	<code>\FunTotInOne</code>	$\xrightarrow{+}$	<code>\MapTotOnMul</code>	$\rightsquigarrow$	<code>\WavyArrowLeft</code>
$\xrightarrow{+}$	<code>\FunTotInSng</code>	$\xrightarrow{+}$	<code>\MapTotOnOne</code>	$\rightsquigarrow$	<code>\WavyArrowRight</code>
$\xrightarrow{+}$	<code>\FunTotOnGndMul</code>	$\xrightarrow{+}$	<code>\MapTotOnSng</code>	$\rightarrowtail$	<code>\WkEntail</code>
$\xrightarrow{+}$	<code>\FunTotOnGndOne</code>	$\longleftrightarrow$	<code>\MtEquiv</code>	$\leftrightarrowtail$	<code>\WkEntailEquiv</code>
$\xrightarrow{+}$	<code>\FunTotOnGndSng</code>	$\Rightarrow$	<code>\MtImpl</code>	$\rightarrowtail$	<code>\XEntail</code>
$\xrightarrow{+}$	<code>\FunTotOnMul</code>	$\rightarrowtail$	<code>\ParFunc</code>	$\leftrightarrowtail$	<code>\XEntailEquiv</code>
$\xrightarrow{+}$	<code>\FunTotOnOne</code>	$\leftrightarrow$	<code>\RplcAll</code>	$\longleftrightarrow$	<code>\XEquiv</code>
$\xrightarrow{+}$	<code>\FunTotOnSng</code>	$\leftrightarrow$	<code>\RplcAllBnd</code>	$\longrightarrow$	<code>\XFunc</code>
$\hookrightarrow$	<code>\HookArrowLeft</code>	$\leftarrow$	<code>\RplcAllBndLeft</code>	$\longrightarrow$	<code>\XImpl</code>
$\hookrightarrow$	<code>\HookArrowRight</code>	$\rightarrow$	<code>\RplcAllBndRight</code>	$\mapsto$	<code>\XMapTo</code>
$\rightarrow$	<code>\Impl</code>	$\leftarrow$	<code>\RplcAllLeft</code>	$\longleftrightarrow$	<code>\XMtEquiv</code>
$\rightarrow$	<code>\LEntail</code>	$\rightarrow$	<code>\RplcAllRight</code>	$\Rightarrow$	<code>\XMtImpl</code>
$\leftrightarrow$	<code>\LEntailEquiv</code>	$\leftrightarrow$	<code>\RplcAny</code>	$\rightarrowtail$	<code>\XParFunc</code>
$\longleftrightarrow$	<code>\LEquiv</code>	$\leftarrow$	<code>\RplcAnyLeft</code>	$\longrightarrow$	<code>\XWkEntail</code>
$\rightarrow$	<code>\LFunc</code>	$\rightarrow$	<code>\RplcAnyRight</code>	$\longleftrightarrow$	<code>\XWkEntailEquiv</code>

(continued on next page)

(continued from previous page)

$\rightarrow$	<code>\LImpl</code>	$\leftrightarrow$	<code>\RplcEquiv</code>	$\leftrightsquigarrow$	<code>\ZigArrowLeft</code>
$\mapsto$	<code>\LMapTo</code>	$\leftarrow$	<code>\RplcEquivLeft</code>	$\rightsquigarrow$	<code>\ZigArrowRight</code>
$\Leftrightarrow$	<code>\LMtEquiv</code>	$\rightarrow$	<code>\RplcEquivRight</code>		

logix requires either Lua $\LaTeX$ or Xe $\LaTeX$.

TABLE 185: logix Negated Arrows

$\nrightarrow$	<code>\NotEntail</code>	$\nleftrightarrow$	<code>\NotSEntail</code>	$\nrightarrow$	<code>\NotVWkEntail</code>
$\nleftrightarrow$	<code>\NotEntailEquiv</code>	$\nleftrightarrow$	<code>\NotSEntailEquiv</code>	$\nleftrightarrow$	<code>\NotVWkEntailEquiv</code>
$\nleftrightarrow$	<code>\NotEquiv</code>	$\nleftrightarrow$	<code>\NotSEquiv</code>	$\nrightarrow$	<code>\NotWkEntail</code>
$\nrightarrow$	<code>\NotImpl</code>	$\nrightarrow$	<code>\NotSImpl</code>	$\nleftrightarrow$	<code>\NotWkEntailEquiv</code>
$\nrightarrow$	<code>\NotLEntail</code>	$\nleftrightarrow$	<code>\NotSMtEquiv</code>	$\nrightarrow$	<code>\NotXEntail</code>
$\nleftrightarrow$	<code>\NotLEntailEquiv</code>	$\nrightarrow$	<code>\NotSMtImpl</code>	$\nleftrightarrow$	<code>\NotXEntailEquiv</code>
$\nleftrightarrow$	<code>\NotLEquiv</code>	$\nrightarrow$	<code>\NotSWkEntail</code>	$\nleftrightarrow$	<code>\NotXEquiv</code>
$\nrightarrow$	<code>\NotLImpl</code>	$\nleftrightarrow$	<code>\NotSWkEntailEquiv</code>	$\nrightarrow$	<code>\NotXImpl</code>
$\nleftrightarrow$	<code>\NotLMtEquiv</code>	$\nrightarrow$	<code>\NotVEntail</code>	$\nleftrightarrow$	<code>\NotXMtEquiv</code>
$\nrightarrow$	<code>\NotLMtImpl</code>	$\nleftrightarrow$	<code>\NotVEntailEquiv</code>	$\nrightarrow$	<code>\NotXMtImpl</code>
$\nrightarrow$	<code>\NotLWkEntail</code>	$\nleftrightarrow$	<code>\NotVEquiv</code>	$\nrightarrow$	<code>\NotXWkEntail</code>
$\nleftrightarrow$	<code>\NotLWkEntailEquiv</code>	$\nrightarrow$	<code>\NotVImpl</code>	$\nleftrightarrow$	<code>\NotXWkEntailEquiv</code>
$\nleftrightarrow$	<code>\NotMtEquiv</code>	$\nleftrightarrow$	<code>\NotVMtEquiv</code>		
$\nrightarrow$	<code>\NotMtImpl</code>	$\nrightarrow$	<code>\NotVMtImpl</code>		

logix requires either Lua $\LaTeX$ or Xe $\LaTeX$.

TABLE 186: logix Harpoons

$\leftarrow$	<code>\HarpoonDnLeft</code>	$\leftarrow$	<code>\HarpoonUpLeft</code>
$\rightarrow$	<code>\HarpoonDnRight</code>	$\rightarrow$	<code>\HarpoonUpRight</code>

logix requires either Lua $\LaTeX$ or Xe $\LaTeX$.

TABLE 187: logix Implications and Equivalences

$\varepsilon\rightarrow$	<code>\InEquiv</code>	$\varepsilon\rightarrow$	<code>\SInEquiv</code>	$\longleftrightarrow$	<code>\VWkEquiv</code>	$\varepsilon\rightarrow$	<code>\XInEquiv</code>
$\rightarrow$	<code>\InImpl</code>	$\rightarrow$	<code>\SInImpl</code>	$\rightarrow$	<code>\VWkImpl</code>	$\rightarrow$	<code>\XInImpl</code>
$\varepsilon\rightarrow$	<code>\LinEquiv</code>	$\varepsilon\rightarrow$	<code>\SWkEquiv</code>	$\longleftrightarrow$	<code>\VWkMtEquiv</code>	$\varepsilon\rightarrow$	<code>\XWkEquiv</code>
$\rightarrow$	<code>\LinImpl</code>	$\rightarrow$	<code>\SWkImpl</code>	$\Longrightarrow$	<code>\VWkMtImpl</code>	$\rightarrow$	<code>\XWkImpl</code>
$\longleftrightarrow$	<code>\LWkEquiv</code>	$\longleftrightarrow$	<code>\SWkMtEquiv</code>	$\longleftrightarrow$	<code>\WkEquiv</code>	$\longleftrightarrow$	<code>\XWkMtEquiv</code>
$\rightarrow$	<code>\LWkImpl</code>	$\Rightarrow$	<code>\SWkMtImpl</code>	$\rightarrow$	<code>\WkImpl</code>	$\Longrightarrow$	<code>\XWkMtImpl</code>
$\longleftrightarrow$	<code>\LWkMtEquiv</code>	$\varepsilon\rightarrow$	<code>\VInEquiv</code>	$\longleftrightarrow$	<code>\WkMtEquiv</code>		
$\Longrightarrow$	<code>\LWkMtImpl</code>	$\rightarrow$	<code>\VInImpl</code>	$\Rightarrow$	<code>\WkMtImpl</code>		

logix requires either Lua $\LaTeX$ or Xe $\LaTeX$.

TABLE 188: logix Negated Implications and Equivalences

$\nrightarrow$	<code>\NotInEquiv</code>	$\nleftrightarrow$	<code>\NotSwkEquiv</code>	$\nleftrightarrow$	<code>\NotWkEquiv</code>
$\nrightarrow$	<code>\NotInImpl</code>	$\nrightarrow$	<code>\NotSwkImpl</code>	$\nrightarrow$	<code>\NotWkImpl</code>
$\nleftrightarrow$	<code>\NotLinEquiv</code>	$\nleftrightarrow$	<code>\NotSwkMtEquiv</code>	$\nleftrightarrow$	<code>\NotWkMtEquiv</code>
$\nrightarrow$	<code>\NotLinImpl</code>	$\nrightarrow$	<code>\NotSwkMtImpl</code>	$\nrightarrow$	<code>\NotWkMtImpl</code>
$\nleftrightarrow$	<code>\NotLWkEquiv</code>	$\nleftrightarrow$	<code>\NotVinEquiv</code>	$\nleftrightarrow$	<code>\NotXInEquiv</code>
$\nrightarrow$	<code>\NotLWkImpl</code>	$\nrightarrow$	<code>\NotVinImpl</code>	$\nrightarrow$	<code>\NotXInImpl</code>
$\nleftrightarrow$	<code>\NotLWkMtEquiv</code>	$\nleftrightarrow$	<code>\NotVWkEquiv</code>	$\nleftrightarrow$	<code>\NotXWkEquiv</code>
$\nrightarrow$	<code>\NotLWkMtImpl</code>	$\nrightarrow$	<code>\NotVWkImpl</code>	$\nrightarrow$	<code>\NotXWkImpl</code>
$\nleftrightarrow$	<code>\NotSInEquiv</code>	$\nleftrightarrow$	<code>\NotVWkMtEquiv</code>	$\nleftrightarrow$	<code>\NotXWkMtEquiv</code>
$\nrightarrow$	<code>\NotSInImpl</code>	$\nrightarrow$	<code>\NotVWkMtImpl</code>	$\nrightarrow$	<code>\NotXWkMtImpl</code>

logix requires either Lua $\text{\LaTeX}$ or X $\text{\LaTeX}$.

TABLE 189: esrelation Restrictions

$\downarrow$	<code>\restrictbarb</code>	$\downarrow$	<code>\restrictmallet</code>	$\downarrow$	<code>\restrictwand</code>
$\uparrow$	<code>\restrictbarbup</code>	$\uparrow$	<code>\restrictmalletup</code>	$\uparrow$	<code>\restrictwandup</code>

TABLE 190: MnSymbol Spoons

$\downarrow$	<code>\downfilledspoon</code>	$\circ$	<code>\nnespoon</code>	$\nwarrow$	<code>\nwfilledspoon</code>
$\circ$	<code>\downspoon</code>	$\nwarrow$	<code>\nnwfilledspoon</code>	$\nwarrow$	<code>\nwspoon</code>
$\leftarrow$	<code>\leftfilledspoon</code>	$\nwarrow$	<code>\nnwspoon</code>	$\rightarrow$	<code>\rightfilledspoon</code>
$\circ$	<code>\leftspoon</code>	$\rightarrow$	<code>\nrighfilledspoon</code>	$\rightarrow$	<code>\rightspoon*</code>
$\downarrow$	<code>\downfilledspoon</code>	$\rightarrow$	<code>\nrighspoon*</code>	$\searrow$	<code>\sefilledspoon</code>
$\circ$	<code>\downspoon</code>	$\searrow$	<code>\nsefilledspoon</code>	$\searrow$	<code>\sespoon</code>
$\nearrow$	<code>\nefilledspoon</code>	$\searrow$	<code>\nsespoon</code>	$\swarrow$	<code>\swfilledspoon</code>
$\nearrow$	<code>\nespoon</code>	$\swarrow$	<code>\nswfilledspoon</code>	$\swarrow$	<code>\swspoon</code>
$\leftarrow$	<code>\nleftfilledspoon</code>	$\swarrow$	<code>\nswspoon</code>	$\uparrow$	<code>\upfilledspoon</code>
$\circ$	<code>\nleftspoon</code>	$\uparrow$	<code>\nupfilledspoon</code>	$\uparrow$	<code>\upspoon</code>
$\nwarrow$	<code>\nnefilledspoon</code>	$\uparrow$	<code>\nupspoon</code>		

* MnSymbol defines `\multimap` as a synonym for `\rightspoon` and `\nmultimap` as a synonym for `\nrighspoon`.

TABLE 191: MnSymbol Pitchforks

Ψ	<code>\downpitchfork</code>	$\nwpitchfork$	<code>\nnwpitchfork</code>	$\Rightarrow$	<code>\rightpitchfork</code>
$\Leftarrow$	<code>\leftpitchfork</code>	$\nrightpitchfork$	<code>\nrightpitchfork</code>	$\searrow$	<code>\sepitchfork</code>
$\Downarrow$	<code>\ndownpitchfork</code>	$\nsepitchfork$	<code>\nsepitchfork</code>	$\swarrow$	<code>\swpitchfork</code>
$\nearrow$	<code>\nepitchfork</code>	$\nswpitchfork$	<code>\nswpitchfork</code>	$\Uparrow$	<code>\uppitchfork</code>
$\Leftarrow$	<code>\nleftpitchfork</code>	$\nuppitchfork$	<code>\nuppitchfork</code>		
$\nwarrow$	<code>\nnepitchfork</code>	$\nwpitchfork$	<code>\nwpitchfork</code>		

* MnSymbol defines `\pitchfork` as a synonym for `\uppitchfork` and `\npitchfork` as a synonym for `\nuppitchfork`.

TABLE 192: MnSymbol Smiles and Frowns

$\approx$	<code>\doublefrown</code>	$\nsmileeq$	<code>\nsmileeq</code>	$\smileeq$	<code>\smileeq</code>
$\approx$	<code>\doublefrowneq</code>	$\nsmileeqfrown$	<code>\nsmileeqfrown</code>	$\smileeqfrown$	<code>\smileeqfrown</code>
$\smile$	<code>\doublesmile</code>	$\nsmilefrown$	<code>\nsmilefrown</code>	$\smilefrown$	<code>\smilefrown</code>
$\smile$	<code>\doublesmileeq</code>	$\nsmilefrowneq$	<code>\nsmilefrowneq</code>	$\smilefrowneq$	<code>\smilefrowneq</code>
$\frown$	<code>\eqfrown</code>	$\nsqdoublefrown$	<code>\nsqdoublefrown</code>	$\sqdoublefrown$	<code>\sqdoublefrown</code>
$\frown$	<code>\eqsmile</code>	$\nsqdoublefrowneq$	<code>\nsqdoublefrowneq</code>	$\sqdoublefrowneq$	<code>\sqdoublefrowneq</code>
$\frown$	<code>\frown</code>	$\nsqdoublesmile$	<code>\nsqdoublesmile</code>	$\sqdoublesmile$	<code>\sqdoublesmile</code>
$\frown$	<code>\frowneq</code>	$\nsqdoublesmileeq$	<code>\nsqdoublesmileeq</code>	$\sqdoublesmileeq$	<code>\sqdoublesmileeq</code>
$\frown$	<code>\frowneqsmile</code>	$\nsqeqfrown$	<code>\nsqeqfrown</code>	$\sqeqfrown$	<code>\sqeqfrown</code>
$\frown$	<code>\frownsmile</code>	$\nsqeqsmile$	<code>\nsqeqsmile</code>	$\sqeqsmile$	<code>\sqeqsmile</code>
$\frown$	<code>\frownsmileeq</code>	$\nsqfrown$	<code>\nsqfrown</code>	$\sqfrown$	<code>\sqfrown</code>
$\frown$	<code>\ndoublefrown</code>	$\nsqfrowneq$	<code>\nsqfrowneq</code>	$\sqfrowneq$	<code>\sqfrowneq</code>
$\frown$	<code>\ndoublefrowneq</code>	$\nsqfrowneqsmile$	<code>\nsqfrowneqsmile</code>	$\sqfrowneqsmile$	<code>\sqfrowneqsmile</code>
$\frown$	<code>\ndoublesmile</code>	$\nsqfrownsmile$	<code>\nsqfrownsmile</code>	$\sqfrownsmile$	<code>\sqfrownsmile</code>
$\frown$	<code>\ndoublesmileeq</code>	$\nsqsmile$	<code>\nsqsmile</code>	$\sqsmile$	<code>\sqsmile</code>
$\frown$	<code>\neqfrown</code>	$\nsqsmileeq$	<code>\nsqsmileeq</code>	$\sqsmileeq$	<code>\sqsmileeq</code>
$\frown$	<code>\neqsmile</code>	$\nsqsmileeqfrown$	<code>\nsqsmileeqfrown</code>	$\sqsmileeqfrown$	<code>\sqsmileeqfrown</code>
$\frown$	<code>\nfrown</code>	$\nsqsmilefrown$	<code>\nsqsmilefrown</code>	$\sqsmilefrown$	<code>\sqsmilefrown</code>
$\frown$	<code>\nfrowneq</code>	$\nsqtriplefrown$	<code>\nsqtriplefrown</code>	$\sqtriplefrown$	<code>\sqtriplefrown</code>
$\frown$	<code>\nfrowneqsmile</code>	$\nsqtriplesmile$	<code>\nsqtriplesmile</code>	$\sqtriplesmile$	<code>\sqtriplesmile</code>
$\frown$	<code>\nfrownsmile</code>	$\ntriplefrown$	<code>\ntriplefrown</code>	$\triplefrown$	<code>\triplefrown</code>
$\frown$	<code>\nfrownsmileeq</code>	$\ntriplesmile$	<code>\ntriplesmile</code>	$\triplesmile$	<code>\triplesmile</code>
$\frown$	<code>\nsmile</code>	$\smile$	<code>\smile</code>		

* MnSymbol defines `\smallsmile` as a synonym for `\smile`, `\smallfrown` as a synonym for `\frown`, `\asymp` as a synonym for `\smilefrown`, and `\nasymp` as a synonym for `\nsmilefrown`.

TABLE 193: fdsymbol Spoons

	<code>\blackwhitespoon</code>		<code>\downblackspoon</code>		<code>\upblackspoon</code>
	<code>\downblackspoon</code>		<code>\downspoon</code>		<code>\upspoon</code>
	<code>\downspoon</code>		<code>\leftblackspoon</code>		<code>\whiteblackspoon</code>
	<code>\leftblackspoon</code>		<code>\leftrightblackspoon</code>		<code>\rightblackspoon</code>
	<code>\leftrightblackspoon</code>		<code>\leftrightspoon</code>		<code>\rightspoon</code>
	<code>\leftrightspoon</code>		<code>\leftspoon</code>		<code>\upblackspoon</code>
	<code>\leftspoon</code>		<code>\rightblackspoon</code>		<code>\upspoon</code>
	<code>\nblackwhitespoon</code>		<code>\nrightrightspoon</code>		<code>\whiteblackspoon</code>

`fdsymbol` defines synonyms for many of the preceding symbols:

	<code>\cirmid</code>		<code>\multimapinv</code>		<code>\nmultimap</code>
	<code>\dualmap</code>		<code>\ncirmid</code>		<code>\nmultimapinv</code>
	<code>\imageof</code>		<code>\ndualmap</code>		<code>\norigof</code>
	<code>\midcir</code>		<code>\nimageof</code>		<code>\origof</code>
	<code>\multimap</code>		<code>\nmidcir</code>		

TABLE 194: fdsymbol Pitchforks

	<code>\downpitchfork</code>		<code>\leftpitchfork</code>		<code>\rightpitchfork</code>
	<code>\leftpitchfork</code>		<code>\rightpitchfork</code>		<code>\uppitchfork</code>
	<code>\downpitchfork</code>		<code>\uppitchfork</code>		

`fdsymbol` defines `\npitchfork` as a synonym for `\nuppitchfork` and `\pitchfork` as a synonym for `\uppitchfork`.

TABLE 195: fdsymbol Smiles and Frowns

	<code>\frown</code>		<code>\nfrowneq</code>		<code>\nsmilefrown</code>
	<code>\frowneq</code>		<code>\nfrownsmile</code>		<code>\smile</code>
	<code>\frownsmile</code>		<code>\nsmile</code>		<code>\smileeq</code>
	<code>\nfrown</code>		<code>\nsmileeq</code>		<code>\smilefrown</code>

`fdsymbol` defines `\arceq` as a synonym for `\frowneq`, `\asymp` as a synonym for `\smilefrown`, `\closure` as a synonym for `\frownsmile`, `\narceq` as a synonym for `\nfrowneq`, `\nasymp` as a synonym for `\nsmilefrown`, `\nclosure` as a synonym for `\nfrownsmile`, `\smallfrown` as a synonym for `\frown`, and `\smallsmile` as a synonym for `\smile`.

TABLE 196: halloweenmath Brooms and Pitchforks

	<code>\hmleftpitchfork</code>		<code>\leftbroom</code>
	<code>\hmrightpitchfork</code>		<code>\rightbroom</code>

TABLE 197: ulsy Contradiction Symbols

⚡ `\blitza` ⚡ `\blitzb` ⚡ `\blitzc` ⚡ `\blitzd` ⚡ `\blitze`

TABLE 198: Extension Characters

— `\relbar` = `\Relbar`

TABLE 199: stmaryrd Extension Characters

/ `\Arrownot` † `\Mapsfromchar` † `\Mapstochar`
 / `\arrownot` † `\mapsfromchar`

TABLE 200: txfonts/pxfonts Extension Characters

‡ `\Mappedfromchar` # `\Mmappedfromchar` # `\Mmapstochar`
 ‡ `\mappedfromchar` # `\mmappedfromchar` # `\mmapstochar`

TABLE 201: mathabx Extension Characters

‡ `\mapsfromchar` † `\mapstochar`
 † `\Mapsfromchar` † `\Mapstochar`

TABLE 202: stix Extension Characters

⋄ `\lhook` — `\relbar` ≡ `\RRelbar`
 † `\mapsfromchar` = `\Relbar` ≡ `\Rrelbar`
 † `\mapstochar` ⋄ `\rhook`

TABLE 203: Log-like Symbols

`\arccos` `\cos` `\csc` `\exp` `\ker` `\limsup` `\min` `\sinh`
`\arcsin` `\cosh` `\deg` `\gcd` `\lg` `\ln` `\Pr` `\sup`
`\arctan` `\cot` `\det` `\hom` `\lim` `\log` `\sec` `\tan`
`\arg` `\coth` `\dim` `\inf` `\liminf` `\max` `\sin` `\tanh`

Calling the above “symbols” may be a bit misleading.³ Each log-like symbol merely produces the eponymous textual equivalent, but with proper surrounding spacing. See Section 12.4 for more information about log-like symbols. As `\bmod` and `\pmod` arguably are not symbols we refer the reader to the Short Math Guide for L^AT_EX [Dow00] for samples.

TABLE 204: $\mathcal{AMS}$ Log-like Symbols

$\injlim$	<code>\injlim</code>	$\varinjlim$	<code>\varinjlim</code>	$\varinjlim$	<code>\varinjlim</code>
$\projlim$	<code>\projlim</code>	$\varprojlim$	<code>\varprojlim</code>	$\varprojlim$	<code>\varprojlim</code>

Load the `amsmath` package to get these symbols. See Section 12.4 for some additional comments regarding log-like symbols. As `\mod` and `\pmod` arguably are not symbols we refer the reader to the Short Math Guide for L^AT_EX [Dow00] for samples.

TABLE 205: `mismath` Log-like Symbols

adj	<code>\adj</code>	Conv	<code>\Conv</code>	id	<code>\id</code>	sech	<code>\sech</code>
arccot	<code>\arccot</code>	Cov	<code>\Cov</code>	Id	<code>\Id</code>	sgn	<code>\sgn</code>
arcosh	<code>\arcosh</code>	cov	<code>\cov</code>	im	<code>\im</code>	span	<code>\spa</code>
arcoth	<code>\arcoth</code>	csch	<code>\csch</code>	Im	<code>\Im*</code>	tr	<code>\tr</code>
arsch	<code>\arsch</code>	$\overrightarrow{\text{curl}}$	<code>\curl</code>	lb	<code>\lb</code>	Var	<code>\Var</code>
arsech	<code>\arsech</code>	div	<code>\divg</code>	lcm	<code>\lcm</code>	Z	<code>\Zu</code>
arsinh	<code>\arsinh</code>	End	<code>\End</code>	rank	<code>\rank</code>		
artanh	<code>\artanh</code>	erf	<code>\erf</code>	Re	<code>\Re*</code>		
Aut	<code>\Aut</code>	$\overrightarrow{\text{grad}}$	<code>\grad</code>	$\overrightarrow{\text{rot}}$	<code>\rot</code>		

* `mismath` renames L^AT_EX's `\Re` and `\Im` (Table 223) to `\oldRe` and `\oldIm`.

TABLE 206: `mismath` Asymptotic Notation

$\mathcal{O}$	<code>\bigo</code>	$\mathcal{O}$	<code>\bigO</code>	$\mathcal{o}$	<code>\lito</code>
---------------	--------------------	---------------	--------------------	---------------	--------------------

TABLE 207: $\mathcal{GPA2e}$ Number Sets

$\mathbb{C}$	<code>\Complex</code>	$\mathbb{Z}$	<code>\Integer</code>	$\mathbb{N}$	<code>\Natural</code>	$\mathbb{Q}$	<code>\Rational</code>	$\mathbb{R}$	<code>\Real</code>
$\mathbb{C}$	<code>\COMPLEX</code>	$\mathbb{Z}$	<code>\INTEGER</code>	$\mathbb{N}$	<code>\NATURAL</code>	$\mathbb{Q}$	<code>\RATIONAL</code>	$\mathbb{R}$	<code>\REAL</code>

³Michael J. Downes prefers the more general term, “atomic math objects”.

TABLE 208: Greek Letters

α	<code>\alpha</code>	θ	<code>\theta</code>	o	<code>o</code>	τ	<code>\tau</code>
β	<code>\beta</code>	ϑ	<code>\vartheta</code>	π	<code>\pi</code>	υ	<code>\upsilon</code>
γ	<code>\gamma</code>	ι	<code>\iota</code>	ϖ	<code>\varpi</code>	ϕ	<code>\phi</code>
δ	<code>\delta</code>	κ	<code>\kappa</code>	ρ	<code>\rho</code>	φ	<code>\varphi</code>
ϵ	<code>\epsilon</code>	λ	<code>\lambda</code>	ϱ	<code>\varrho</code>	χ	<code>\chi</code>
ε	<code>\varepsilon</code>	μ	<code>\mu</code>	σ	<code>\sigma</code>	ψ	<code>\psi</code>
ζ	<code>\zeta</code>	ν	<code>\nu</code>	ς	<code>\varsigma</code>	ω	<code>\omega</code>
η	<code>\eta</code>	ξ	<code>\xi</code>				
Γ	<code>\Gamma</code>	Λ	<code>\Lambda</code>	Σ	<code>\Sigma</code>	Ψ	<code>\Psi</code>
Δ	<code>\Delta</code>	Ξ	<code>\Xi</code>	Υ	<code>\Upsilon</code>	Ω	<code>\Omega</code>
Θ	<code>\Theta</code>	Π	<code>\Pi</code>	Φ	<code>\Phi</code>		

The remaining Greek majuscules can be produced with ordinary Latin letters. The symbol “M”, for instance, is used for both an uppercase “m” and an uppercase “ μ ”. To make available commands for *all* of the Greek majuscules, either use the `mathspec` package, which requires $\text{X}\text{\LaTeX}$, or copy `mathspec.sty`’s Greek-letter definitions to your document’s preamble:

```

\DeclareMathSymbol{\Alpha}{\mathalpha}{operators}{"41}
\DeclareMathSymbol{\Beta}{\mathalpha}{operators}{"42}
\DeclareMathSymbol{\Epsilon}{\mathalpha}{operators}{"45}
\DeclareMathSymbol{\Zeta}{\mathalpha}{operators}{"5A}
\DeclareMathSymbol{\Eta}{\mathalpha}{operators}{"48}
\DeclareMathSymbol{\Iota}{\mathalpha}{operators}{"49}
\DeclareMathSymbol{\Kappa}{\mathalpha}{operators}{"4B}
\DeclareMathSymbol{\Mu}{\mathalpha}{operators}{"4D}
\DeclareMathSymbol{\Nu}{\mathalpha}{operators}{"4E}
\DeclareMathSymbol{\Omicron}{\mathalpha}{operators}{"4F}
\DeclareMathSymbol{\Rho}{\mathalpha}{operators}{"50}
\DeclareMathSymbol{\Tau}{\mathalpha}{operators}{"54}
\DeclareMathSymbol{\Chi}{\mathalpha}{operators}{"58}
\DeclareMathSymbol{\omicron}{\mathord}{letters}{"6F}

```

See Section 12.5 for examples of how to produce bold Greek letters.

The symbols in this table are intended to be used in mathematical typesetting. Greek body text can be typeset using the `babel` package’s `greek` (or `polutoniko-greek`) option—and, of course, a font that provides the glyphs for the Greek alphabet.

TABLE 209: $\mathcal{AMS}$ Greek Letters

F `\digamma` $\varkappa$ `\varkappa`

TABLE 210: txfonts/pxfonts Upright Greek Letters

α	<code>\alphaup</code>	θ	<code>\thetaup</code>	π	<code>\piup</code>	ϕ	<code>\phiup</code>
β	<code>\betaup</code>	ϑ	<code>\varthetaup</code>	ϖ	<code>\varpiup</code>	φ	<code>\varphiup</code>
γ	<code>\gammaup</code>	ι	<code>\iotaup</code>	ρ	<code>\rhoup</code>	χ	<code>\chiup</code>
δ	<code>\deltaup</code>	κ	<code>\kappaup</code>	ϱ	<code>\varrhoup</code>	ψ	<code>\psiup</code>
ϵ	<code>\epsilonup</code>	λ	<code>\lambdaup</code>	σ	<code>\sigmaup</code>	ω	<code>\omegaup</code>
ε	<code>\varepsilonup</code>	μ	<code>\muup</code>	ς	<code>\varsigmaup</code>		
ζ	<code>\zetaup</code>	ν	<code>\nuup</code>	τ	<code>\tauup</code>		
η	<code>\etaup</code>	ξ	<code>\xiup</code>	υ	<code>\upsilonup</code>		

The symbols in this table are intended to be used sporadically throughout a document (e.g., to represent mathematical units or numerical quantities—“ $\pi \approx 3.14159$ ”). In contrast, Greek body text can be typeset using the `babel` package’s `greek` (or `polutonikogreek`) option—and, of course, a font that provides the glyphs for the Greek alphabet.

TABLE 211: upgreek Upright Greek Letters

α	<code>\upalpha</code>	θ	<code>\uptheta</code>	π	<code>\uppi</code>	ϕ	<code>\upphi</code>
β	<code>\upbeta</code>	ϑ	<code>\upvartheta</code>	ϖ	<code>\upvarpi</code>	φ	<code>\upvarphi</code>
γ	<code>\upgamma</code>	ι	<code>\upiota</code>	ρ	<code>\uprho</code>	χ	<code>\upchi</code>
δ	<code>\updelta</code>	κ	<code>\upkappa</code>	ϱ	<code>\upvarrho</code>	ψ	<code>\uppsi</code>
ϵ	<code>\upepsilon</code>	λ	<code>\uplambda</code>	σ	<code>\upsigma</code>	ω	<code>\upomega</code>
ε	<code>\upvarepsilon</code>	μ	<code>\upmu</code>	ς	<code>\upvarsigma</code>		
ζ	<code>\upzeta</code>	ν	<code>\upnu</code>	τ	<code>\uptau</code>		
η	<code>\upeta</code>	ξ	<code>\upxi</code>	υ	<code>\upupsilon</code>		
Γ	<code>\Upgamma</code>	Λ	<code>\Uplambda</code>	Σ	<code>\Upsilonsigma</code>	Ψ	<code>\Uppsi</code>
Δ	<code>\Updelta</code>	Ξ	<code>\Upxi</code>	Υ	<code>\Upupsilon</code>	Ω	<code>\Upomega</code>
Θ	<code>\Uptheta</code>	Π	<code>\Uppi</code>	Φ	<code>\Upphi</code>		

`upgreek` utilizes upright Greek characters from either Euler Roman (depicted above) or the PostScript Symbol font. As a result, the glyphs may appear slightly different from the above. Contrast, for example, “ $\Gamma\Delta\Theta\alpha\beta\gamma$ ” (Euler) with “ $\Gamma\Delta\Theta\alpha\beta\gamma$ ” (Symbol). Also note that the `\var...` forms do not always produce a distinct glyph.

Unlike `textgreek` (Table 6 on page 20), `upgreek` works in math mode.

The symbols in this table are intended to be used sporadically throughout a document (e.g., to represent mathematical units or numerical quantities—“ $\pi \approx 3.14159$ ”). In contrast, Greek body text can be typeset using the `babel` package’s `greek` (or `polutonikogreek`) option—and, of course, a font that provides the glyphs for the Greek alphabet.

TABLE 212: fourier Variant Greek Letters

π	<code>\pi</code>	ρ	<code>\rho</code>
ϖ	<code>\varpi</code>	ϱ	<code>\varrho</code>
ϖ	<code>\varvarpi</code>	ϱ	<code>\varvarrho</code>

TABLE 213: txfonts/pxfonts Variant Latin Letters

g	<code>\varg</code>	v	<code>\varv</code>	w	<code>\varw</code>	y	<code>\vary</code>
-----	--------------------	-----	--------------------	-----	--------------------	-----	--------------------

Pass the `varg` option to txfonts/pxfonts to replace g , v , w , and y with g , v , w , and y in every mathematical expression in your document.

TABLE 214: boisik Variant Greek Letters

β	<code>\varbeta</code>	κ	<code>\varkappa</code>	ϖ	<code>\varpi</code>	ς	<code>\varsigma</code>
ε	<code>\varepsilon</code>	φ	<code>\varphi</code>	ϱ	<code>\varrho</code>	ϑ	<code>\vartheta</code>

TABLE 215: boisik Variant Latin Letters

g	<code>\varg</code>
-----	--------------------

TABLE 216: stix Variant Greek Letters

ε	<code>\varepsilon</code>	φ	<code>\varphi</code>	ϱ	<code>\varrho</code>	ϑ	<code>\vartheta</code>
κ	<code>\varkappa</code>	ϖ	<code>\varpi</code>	ς	<code>\varsigma</code>		

TABLE 217: stix Transformed Greek Letters

ε	<code>\backepsilon</code>	ι	<code>\turnediota</code>
ϖ	<code>\mho</code>	ε	<code>\upbackepsilon</code>

TABLE 218: $\mathcal{AMS}$ Hebrew Letters

$\beth$	<code>\beth</code>	$\gimel$	<code>\gimel</code>	$\daleth$	<code>\daleth</code>
---------	--------------------	----------	---------------------	-----------	----------------------

$\aleph$ ($\aleph$) appears in Table 334 on page 157.

TABLE 219: MnSymbol Hebrew Letters

$\aleph$	<code>\aleph</code>	$\beth$	<code>\beth</code>	$\gimel$	<code>\gimel</code>	$\daleth$	<code>\daleth</code>
----------	---------------------	---------	--------------------	----------	---------------------	-----------	----------------------

TABLE 220: fdsymbol Hebrew Letters

 $\aleph$ \aleph $\beth$ \beth $\gimel$ \gimel $\daleth$ \daleth

TABLE 221: boisik Hebrew Letters

 $\beth$ \beth $\gimel$ \gimel $\daleth$ \daleth

TABLE 222: stix Hebrew Letters

 $\aleph$ \aleph $\beth$ \beth $\gimel$ \gimel $\daleth$ \daleth

TABLE 223: Letter-like Symbols

$\perp$	\bot	$\forall$	\forall	$\imath$	\imath	$\ni$	\ni	$\top$	\top
ℓ	\ell	$\hbar$	\hbar	$\in$	\in	∂	\partial	$\wp$	\wp
$\exists$	\exists	$\Im$	\Im	j	\jmath	$\Re$	\Re		

TABLE 224: $\mathcal{AMS}$ Letter-like Symbols

$\mathbb{k}$	\Bbbk	$\mathbb{C}$	\complement	$\hbar$	\hbar
$\textcircled{R}$	\circledR	$\Finv$	\Finv	$\hslash$	\hslash
$\textcircled{S}$	\circledS	$\Game$	\Game	$\nexists$	\nexists

TABLE 225: txfonts/pxfonts Letter-like Symbols

 $\mathfrak{C}$ \mathcent $\mathfrak{L}$ \mathsterling* $\mathfrak{E}$ \notin $\mathfrak{N}$ \notni

* It's generally preferable to use the corresponding symbol from Table 3 on page 19 because the symbols in that table work properly in both text mode and math mode.

TABLE 226: mathabx Letter-like Symbols

$\bar{\in}$	\barin	$\in$	\in	$\nottop$	\nottop	$\varnotin$	\varnotin
$\mathbb{C}$	\complement	$\nexists$	\nexists	$\owns$	\owns	$\varnotowner$	\varnotowner
$\exists$	\exists	$\notbot$	\notbot	$\ownsbar$	\ownsbar		
$\Finv$	\Finv	$\notin$	\notin	∂	\partial		
$\Game$	\Game	$\notowner$	\notowner	$\partialslash$	\partialslash		

TABLE 227: MnSymbol Letter-like Symbols

$\perp$	<code>\bot</code>	$\in$	<code>\in</code>	$\notin$	<code>\notin</code>	$\top$	<code>\top</code>
$\exists$	<code>\exists</code>	$\nexists$	<code>\nexists</code>	$\owns$	<code>\owns</code>	$\wp$	<code>\wp</code>
$\forall$	<code>\forall</code>	$\notin$	<code>\notin</code>	$\mathcal{P}$	<code>\powerset</code>		

MnSymbol provides synonyms `\notin` for `\nin`, `\ni` for `\owns`, and `\intercal` for `\top`.

TABLE 228: fdsymbol Letter-like Symbols

$\perp$	<code>\bot</code>	$\forall$	<code>\forall</code>	$\in$	<code>\in</code>	$\exists$	<code>\exists</code>
$\complement$	<code>\complement</code>	$\Game$	<code>\Game</code>	$\nexists$	<code>\nexists</code>	$\top$	<code>\top</code>
$\exists$	<code>\exists</code>	$\hbar$	<code>\hbar</code>	$\notin$	<code>\notin</code>	$\wp$	<code>\wp</code>
$\Finv$	<code>\Finv</code>	$\hslash$	<code>\hslash</code>	$\notin$	<code>\notin</code>		

fdsymbol provides synonyms `\notin` for `\nin`, `\ni` for `\owns`, and `\nni` for `\owns`.

TABLE 229: boisik Letter-like Symbols

$\mathbb{k}$	<code>\Bbbk</code>	$\Game$	<code>\Game</code>	$\imath$	<code>\imath</code>	$\nexists$	<code>\nexists</code>
$\complement$	<code>\complement</code>	$\hbar$	<code>\hbar</code>	$\intercal$	<code>\intercal</code>	$\wp$	<code>\wp</code>
$\Finv$	<code>\Finv</code>	$\hslash$	<code>\hslash</code>	$\jmath$	<code>\jmath</code>		

TABLE 230: stix Letter-like Symbols

$\text{\AA}$	<code>\Angstrom</code>	$\mathcal{E}$	<code>\Eulerconst</code>	$\imath$	<code>\imath</code>	$\top$	<code>\top</code>
$\mathbb{k}$	<code>\Bbbk</code>	$\exists$	<code>\exists</code>	$\intercal$	<code>\intercal</code>	$\topbot$	<code>\topbot</code>
$\perp$	<code>\bot</code>	$\Finv$	<code>\Finv</code>	$\jmath$	<code>\jmath</code>	$\wp$	<code>\wp</code>
$\text{\textcircled{R}}$	<code>\circledR</code>	$\forall$	<code>\forall</code>	$\mathcal{D}$	<code>\mathdollar</code>	Υ	<code>\Upsilon</code>
$\text{\textcircled{S}}$	<code>\circledS</code>	$\Game$	<code>\Game</code>	$\mathcal{P}$	<code>\mathparagraph</code>	$\mathbb{Z}$	<code>\mathbb{Z}</code>
$\complement$	<code>\complement</code>	$\hbar$	<code>\hbar</code>	$\mathcal{L}$	<code>\mathsterling</code>		
$\digamma$	<code>\digamma</code>	$\hslash$	<code>\hslash</code>	$\nexists$	<code>\nexists</code>		
ℓ	<code>\ell</code>	$\Im$	<code>\Im</code>	$\Re$	<code>\Re</code>		

TABLE 231: trfsigns Letter-like Symbols

e	<code>\e</code>	j	<code>\im</code>
-----	-----------------	-----	------------------

TABLE 232: mathdesign Letter-like Symbols

$\in$	<code>\in</code>	$\ni$	<code>\owns</code>
$\notin$	<code>\notin</code>	$\in$	<code>\smallin</code>
$\notin$	<code>\notsmallin</code>	$\ni$	<code>\smallowns</code>
$\not\in$	<code>\notsmallowns</code>		

The `mathdesign` package additionally provides versions of each of the letter-like symbols shown in Table 224.

TABLE 233: fge Letter-like Symbols

$\forall$	<code>\fgeA</code>	$\mathfrak{g}$	<code>\fgeeszett</code>	$\mathfrak{B}$	<code>\fgeleftB</code>	$\mathfrak{f}$	<code>\fges</code>
$\mathfrak{b}$	<code>\fgec</code>	$\mathcal{H}$	<code>\fgeF</code>	$\mathfrak{C}$	<code>\fgeleftC</code>		
$\mathfrak{p}$	<code>\fged</code>	$\mathfrak{f}$	<code>\fgef</code>	$\mathfrak{f}$	<code>\fgemark*</code>		
$\mathfrak{d}$	<code>\fgee</code>	$\mathfrak{p}$	<code>\fgelb*</code>	$\mathfrak{B}$	<code>\fgerightB</code>		

* The `fge` package defines `\fgeeta`, `\fgeN`, and `\fgeoverU` as synonyms for `\fgelb` and `\fgeU` as a synonym for `\fgemark`.

TABLE 234: fourier Letter-like Symbols

∂	<code>\partial</code>	∂	<code>\varpartialdiff</code>
------------	-----------------------	------------	------------------------------

TABLE 235: cml Letter-like Symbols

$\perp$	<code>\Bot</code>	$\perp$	<code>\simbot</code>
---------	-------------------	---------	----------------------

TABLE 236: logix Proof Symbols

$\exists$	<code>\BnchExists</code>	$\perp$	<code>\Bot</code>	$\tilde{\forall}$	<code>\HdnForAll</code>	$\top$	<code>\TFBoth</code>
$\forall$	<code>\BnchForAll</code>	$:=$	<code>\Defn</code>	$\exists$	<code>\NFalse</code>	$\perp$	<code>\TFNone</code>
$\tilde{\exists}$	<code>\BnchHdnExists</code>	$\square$	<code>\End</code>	$\nexists$	<code>\NtExists</code>	$\top$	<code>\Top</code>
$\tilde{\forall}$	<code>\BnchHdnForAll</code>	$\exists$	<code>\Exists</code>	$\perp$	<code>\NTrue</code>	$\top$	<code>\True</code>
$\nexists$	<code>\BnchNtExists</code>	$\mathbf{F}$	<code>\False</code>	$\blacksquare$	<code>\Qed</code>	$\exists!$	<code>\Unique</code>
$\exists!$	<code>\BnchUnique</code>	$\forall$	<code>\ForAll</code>	$\wedge$	<code>\QuantCon</code>		
λ	<code>\BndMap</code>	$\tilde{\exists}$	<code>\HdnExists</code>	$\vee$	<code>\QuantDis</code>		

logix requires either `LuaATEX` or `XYLATEX`.

TABLE 237: endofproofwd End-of-Proof Symbols

 `\wasserdicht`

`\wasserdicht` is implemented as an external PDF graphic. The command in fact typesets the symbol flush right on the page to signify the end of proof. To use the command in inline text, simply load the underlying graphic file directly:

```
\includegraphics[width=10pt]{endofproofwd.pdf}
```

TABLE 238: $\mathcal{AMS}$ Delimiters

<code>\ulcorner</code>	<code>\urcorner</code>
<code>\llcorner</code>	<code>\lrcorner</code>

TABLE 239: stmaryrd Delimiters

<code>\Lbag</code>	<code>\Rbag</code>	<code>\lbag</code>	<code>\rbag</code>
<code>\llceil</code>	<code>\rrceil</code>	<code>\llfloor</code>	<code>\rrfloor</code>
<code>\llparenthesis</code>	<code>\rrparenthesis</code>		

TABLE 240: mathabx Delimiters

<code>\lcorners</code>	<code>\rcorners</code>
<code>\ulcorner</code>	<code>\urcorner</code>
<code>\llcorner</code>	<code>\lrcorner</code>

TABLE 241: boisik Delimiters

<code>\ulcorner</code>	<code>\urcorner</code>
<code>\llcorner</code>	<code>\lrcorner</code>

TABLE 242: stix Delimiters

<code>\langledot</code>	<code>\rangledot</code>	<code>\llangle</code>	<code>\rrangle</code>
<code>\lbag</code>	<code>\rbag</code>	<code>\llcorner</code>	<code>\lrcorner</code>
<code>\lblrbrak</code>	<code>\rblrbrak</code>	<code>\llparenthesis</code>	<code>\rrparenthesis</code>
<code>\lbracklltick</code>	<code>\rbrackurtick</code>	<code>\lparenctr</code>	<code>\rparenless</code>
<code>\lbrackubar</code>	<code>\rbrackubar</code>	<code>\lparenless</code>	<code>\rparenctr</code>
<code>\lbrackultick</code>	<code>\rbracklrtick</code>	<code>\lvzigzag</code>	<code>\rvzigzag</code>
<code>\lbrbrak</code>	<code>\Rbrbrak</code>	<code>\Lvzigzag</code>	<code>\Rvzigzag</code>
<code>\lcurvyangle</code>	<code>\rcurvyangle</code>	<code>\ulcorner</code>	<code>\urcorner</code>

TABLE 243: nath Delimiters

 $\lfloor$ `\niv` $\rfloor$ `\vin`

TABLE 244: Variable-sized Delimiters

$\downarrow$	$\Downarrow$	<code>\downarrow</code>	<code>\Downarrow</code>	$[$	$[$	$[$	$]$	$]$	$]$
$\langle$	$\rangle$	<code>\langle</code>	<code>\rangle</code>	$ $	$ $	$ $	$\ $	$\ $	<code>\ </code>
$\lceil$	$\rceil$	<code>\lceil</code>	<code>\rceil</code>	$\uparrow$	$\uparrow$	<code>\uparrow</code>	$\Uparrow$	$\Uparrow$	<code>\Uparrow</code>
$\lfloor$	$\rfloor$	<code>\lfloor</code>	<code>\rfloor</code>	$\updownarrow$	$\updownarrow$	<code>\updownarrow</code>	$\Updownarrow$	$\Updownarrow$	<code>\Updownarrow</code>
$($	$)$	<code>(</code>	<code>)</code>	$\{$	$\{$	<code>\{</code>	$\}$	$\}$	<code>\}</code>
$/$	$\backslash$	<code>/</code>	<code>\</code>	$\backslash$	$\backslash$	<code>\backslash</code>			

When used with `\left` and `\right`, these symbols expand to the height of the enclosed math expression. Note that `\vert` is a synonym for `|`, and `\Vert` is a synonym for `\|`.

ε -TeX provides a `\middle` analogue to `\left` and `\right`. `\middle` can be used, for example, to make an internal “`|`” expand to the height of the surrounding `\left` and `\right` symbols. (This capability is commonly needed when typesetting adjacent bras and kets in Dirac notation: “ $\langle\phi|\psi\rangle$ ”). This is exactly what the `quantikz` package does (see Table 370 on page 171). A similar effect can be achieved in conventional L^AT_EX using the `braket` package.

TABLE 245: Large, Variable-sized Delimiters

$\int$	$\int$	<code>\lmoustache</code>	$\int$	$\int$	<code>\rmoustache</code>	$($	$($	<code>\lgroup</code>	$)$	$)$	<code>\rgroup</code>
$ $	$ $	<code>\arrowvert</code>	$\ $	$\ $	<code>\Arrowvert</code>	$ $	$ $	<code>\bracevert</code>			

These symbols *must* be used with `\left` and `\right`. The `mathabx` package, however, redefines `\lgroup` and `\rgroup` so that those symbols can work without `\left` and `\right`.

TABLE 246: $\mathcal{AMS}$ Variable-sized Delimiters

		<code>\lvert</code>			<code>\rvert</code>
		<code>\lVert</code>			<code>\rVert</code>

According to the `amsmath` documentation [AMS99], the preceding symbols are intended to be used as delimiters (e.g., as in “ $|-z|$ ”) while the `\vert` and `\Vert` symbols (Table 244) are intended to be used as operators (e.g., as in “ $p|q$ ”).

TABLE 247: `stmaryrd` Variable-sized Delimiters

⌈	⌈	<code>\llbracket</code>	⌋	⌋	<code>\rrbracket</code>
---	---	-------------------------	---	---	-------------------------

TABLE 248: `mathabx` Variable-sized Delimiters

⌈	⌈	<code>\ldbrack</code>	⌋	⌋	<code>\rdbrack</code>
⌈	⌈	<code>\lfilet</code>	⌋	⌋	<code>\rfilet</code>
		<code>\thickvert</code>			<code>\vvvert</code>

TABLE 249: `MnSymbol` Variable-sized Delimiters

		<code>\Arrowvert</code>	{	{	<code>\lbrace</code>	]	]	<code>\rceil</code>
		<code>\arrowvert</code>	[	[	<code>\lceil</code>	]	]	<code>\rfloor</code>

(continued on next page)

(continued from previous page)

$\backslash$	$\backslash$	<code>\backslash</code>	$[$	$\lfloor$	<code>\lfloor</code>	$)$	$\rfloor$	<code>\rceil</code>
$ $	$ $	<code>\bracevert</code>	$($	$\lgroup$	<code>\lgroup</code>	$\)$	$\rmoustache$	<code>\rmoustache</code>
$[$	$[$	$[$	$\ll$	$\llangle$	<code>\llangle</code>	$\gg$	$\rrangle$	<code>\rrangle</code>
$]$	$]$	$]$	$\llcorner$	$\llcorner$	<code>\llcorner</code>	$\lrcorner$	$\lrcorner$	<code>\lrcorner</code>
$($	$($	$($	$\lgroup$	$\lgroup$	<code>\lgroup</code>	$\rmoustache$	$\rmoustache$	<code>\rmoustache</code>
$)$	$)$	$)$	$\lrcorner$	$\lrcorner$	<code>\lrcorner</code>	$\lrcorner$	$\lrcorner$	<code>\lrcorner</code>
$/$	$/$	$/$	$\llcorner$	$\llcorner$	<code>\llcorner</code>	$\lrcorner$	$\lrcorner$	<code>\lrcorner</code>
$\langle$	$\langle$	$\langle$	$\lgroup$	$\lgroup$	<code>\lgroup</code>	$\rmoustache$	$\rmoustache$	<code>\rmoustache</code>
$\rangle$	$\rangle$	$\rangle$	$\lrcorner$	$\lrcorner$	<code>\lrcorner</code>	$\lrcorner$	$\lrcorner$	<code>\lrcorner</code>
$ $	$ $	$ $	$\rangle$	$\rangle$	<code>\rangle</code>	$\rangle$	$\rangle$	<code>\rangle</code>
$\langle$	$\langle$	<code>\langle</code>	$\rangle$	$\rangle$	<code>\rangle</code>	$\rangle$	$\rangle$	<code>\rangle</code>
$\langle$	$\langle$	<code>\langle</code>	$\rangle$	$\rangle$	<code>\rangle</code>	$\rangle$	$\rangle$	<code>\rangle</code>

`\vert` is a synonym for `|`. `\Vert` is a synonym for `\|`. `\mid` and `\mvert` produce the same symbol as `\vert` but designated as math relations instead of ordinals. `\divides` produces the same symbol as `\vert` but designated as a binary operator instead of an ordinal. `\parallel` and `\mVert` produce the same symbol as `\Vert` but designated as math relations instead of ordinals.

TABLE 250: fdsymbol Variable-sized Delimiters

\	\	<code>\backslash</code>	`	`	<code>\lrcorner</code>	)	)	<code>\rparen</code>
↓	↓	<code>\downarrow</code>			<code>\lvert</code>			<code>\rvert</code>
⇓	⇓	<code>\Downarrow</code>			<code>\lVert</code>			<code>\rVert</code>
⟨⟨	⟨⟨	<code>\lAngle</code>			<code>\lVvert</code>			<code>\rVvert</code>
<	<	<code>\angle</code>	/	/	<code>\mathslash</code>	⌞	⌞	<code>\ulcorner</code>
<.	<.	<code>\langedot</code>	>	>	<code>\rangle</code>	[	[	<code>\ullcorner</code>
{	{	<code>\lbrace</code>	⟩	⟩	<code>\rAngle</code>	]	]	<code>\ulrcorner</code>
[	[	<code>\lbrack</code>	}	}	<code>\rangledot</code>	↑	↑	<code>\uparrow</code>
[[	[[	<code>\lBrack</code>	}	}	<code>\rbrace</code>	⇑	⇑	<code>\Uparrow</code>
[	[	<code>\lceil</code>	]]	]]	<code>\rBrack</code>	↕	↕	<code>\updownarrow</code>
[	[	<code>\lfloor</code>	]	]	<code>\rbrack</code>	⇕	⇕	<code>\Updownarrow</code>
{	{	<code>\lgroup</code>	}	}	<code>\rceil</code>	⌟	⌟	<code>\urcorner</code>
⌞	⌞	<code>\llcorner</code>	]`	]`	<code>\rfloor</code>			<code>\vert</code>

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$\int$	$\int$	<code>\lmoustache</code>	$)$	$\}$	<code>\rgroup</code>	$\parallel$	$\parallel\parallel$	<code>\Vert</code>
$($	$($	<code>\lparen</code>	$\{$	$\}$	<code>\rmoustache</code>	$\parallel\parallel\parallel$	$\parallel\parallel\parallel\parallel$	<code>\Vvert</code>

`fdsymbol` defines “(” as a synonym for `\lparen`, “)” as a synonym for `\rparen`, “[” as a synonym for `\lbrack`, “]” as a synonym for `\rbrack`, “{” as a synonym for `\lbrace`, “}” as a synonym for `\rbrace`, “/” as a synonym for `\mathslash`, “|” as a synonym for `\vert`, “\|” as a synonym for `\Vert`, `\lsem` as a synonym for `\lBrack`, and `\rsem` as a synonym for `\rBrack`.

TABLE 251: stix Variable-sized Delimiters

$\uparrow$	$\uparrow\uparrow$	<code>\Arrowvert</code>	$\ll$	$\lll$	<code>\lAngle</code>	$\lceil$	$\rceil$	<code>\rceil</code>
$\downarrow$	$\downarrow$	<code>\arrowvert</code>	$\{$	$\{$	<code>\lbrace</code>	$\rfloor$	$\rfloor$	<code>\rfloor</code>
$\backslash$	$\backslash$	<code>\backslash</code>	$\{\}$	$\{\}$	<code>\lBrace</code>	$)$	$)$	<code>\rgroup</code>
$\Downarrow$	$\Downarrow$	<code>\Ddownarrow</code>	$\parallel$	$\parallel\parallel$	<code>\lBrack</code>	$\{$	$\}$	<code>\rmoustache</code>
$\Downarrow$	$\Downarrow$	<code>\DDownarrow</code>	$\langle$	$\langle$	<code>\lbrbrak</code>	$\rangle$	$\rangle$	<code>\rParen</code>
$\downarrow$	$\downarrow$	<code>\downarrow</code>	$\lceil$	$\lceil$	<code>\lceil</code>	$\uparrow$	$\uparrow$	<code>\uparrow</code>

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$\Downarrow$	$\Downarrow$	<code>\Downarrow</code>	$\lfloor$	$\lfloor$	<code>\lfloor</code>	$\Uparrow$	$\Uparrow$	<code>\Uparrow</code>
$[$	$[$	<code>[</code>	$($	$($	<code>\lgroup</code>	$\Updownarrow$	$\Updownarrow$	<code>\Updownarrow</code>
$]$	$]$	<code>]</code>	$\int$	$\int$	<code>\lmoustache</code>	$\updownarrow$	$\updownarrow$	<code>\updownarrow</code>
$($	$($	<code>(</code>	$($	$($	<code>\lParen</code>	$\Uparrow$	$\Uparrow$	<code>\Uparrow</code>
$)$	$)$	<code>)</code>	$\rangle$	$\rangle$	<code>\rAngle</code>	$\Uparrow$	$\Uparrow$	<code>\Uparrow</code>
$/$	$/$	<code>/</code>	$\rangle$	$\rangle$	<code>\rangle</code>	$\parallel$	$\parallel$	<code>\Vert</code>
$\langle$	$\langle$	<code><</code>	$\}$	$\}$	<code>\rbrace</code>	$ $	$ $	<code>\vert</code>
$\rangle$	$\rangle$	<code>></code>	$\}$	$\}$	<code>\rbrace</code>	$\parallel$	$\parallel$	<code>\Vvert</code>
$ $	$ $	<code> </code>	$\parallel$	$\parallel$	<code>\rBrack</code>			
$\langle$	$\langle$	<code>\langle</code>	$\rangle$	$\rangle$	<code>\rangle</code>			

TABLE 252: `mathdesign` Variable-sized Delimiters

$\left\{$	$\left\{$	<code>\leftwave</code>	$\right\}$	$\right\}$	<code>\rightwave</code>
$\left\{$	$\left\{$	<code>\lefttevaw</code>	$\right\}$	$\right\}$	<code>\righttevaw</code>

The definitions of these symbols include a preceding `\left` or `\right`. It is therefore an error to specify `\left` or `\right` explicitly. The internal, “primitive” versions of these symbols are called `\lwave`, `\rwave`, `\levaw`, and `\revaw`.

TABLE 253: `nath` Variable-sized Delimiters (Double)

$\langle\langle$	$\rangle\rangle$	<code>\lAngle</code>	$\rangle\rangle$	<code>\rAngle</code>
$\llbracket$	$\rrbracket$	<code>\lBrack</code>	$\rrbracket$	<code>\rBrack</code>
$\lceil$	$\rceil$	<code>\lCeil</code>	$\rceil$	<code>\rCeil</code>
$\lfloor$	$\rfloor$	<code>\lFloor</code>	$\rfloor$	<code>\rFloor</code>
$\ $	$\ $	<code>\lVert*</code>	$\ $	<code>\rVert*</code>

* `nath` redefines all of the above to include implicit `\left` and `\right` commands. Hence, separate `\lVert` and `\rVert` commands are needed to disambiguate whether “|” is a left or right delimiter.

All of the symbols in Table 253 can also be expressed using the `\double` macro. See the `nath` documentation for examples and additional information.

TABLE 254: `nath` Variable-sized Delimiters (Triple)

$\langle\langle\langle$	$\rangle\rangle\rangle$	<code>\triple<</code>	$\rangle\rangle\rangle$	<code>\triple></code>
$\lllbracket$	$\rrrbracket$	<code>\triple[</code>	$\rrrbracket$	<code>\triple]</code>
$\lllvert$	$\rrrvert$	<code>\ltriple *</code>	$\rrrvert$	<code>\rtriple *</code>

* Similar to `\lVert` and `\rVert` in Table 253, `\ltriple` and `\rtriple` must be used instead of `\triple` to disambiguate whether “|” is a left or right delimiter.

Note that `\triple`—and the corresponding `\double`—is actually a macro that takes a delimiter as an argument.

TABLE 255: `fourier` Variable-sized Delimiters

$\llbracket$	$\rrbracket$	<code>\llbracket</code>	$\rrbracket$	<code>\rrbracket</code>
$\ $	$\ $	<code>\VERT</code>		

TABLE 256: logix Variable-sized Delimiters

		\BndBar			
<	<	\OpnAngl	>	>	\ClsAngl
<	<	\OpnAnglBar	>	>	\ClsAnglBar
<	<	\OpnArrwBrac	>	>	\ClsArrwBrac
		\OpnBar			\ClsBar
{	{	\OpnBrac	}	}	\ClsBrac
{	{	\OpnBracBar	}	}	\ClsBracBar
{	{	\OpnBrknBrac	}	}	\ClsBrknBrac
{	{	\OpnBrknBracBar	}	}	\ClsBrknBracBar
{	{	\OpnBrknBrkt	}	}	\ClsBrknBrkt
{	{	\OpnBrknBrktBar	}	}	\ClsBrknBrktBar
[	[	\OpnBrkt	]	]	\ClsBrkt
[	[	\OpnBrktBar	]	]	\ClsBrktBar
[	[	\OpnCeil	]	]	\ClsCeil
{	{	\OpnCircBrac	}	}	\ClsCircBrac
{	{	\OpnCircBracBar	}	}	\ClsCircBracBar
{	{	\OpnCircBrkt	}	}	\ClsCircBrkt
{	{	\OpnCircBrktBar	}	}	\ClsCircBrktBar
{	{	\OpnCrlyBrkt	}	}	\ClsCrlyBrkt
{	{	\OpnCrlyBrktBar	}	}	\ClsCrlyBrktBar
<	<	\OpnCurvAngl	>	>	\ClsCurvAngl
<	<	\OpnDblAngl	>	>	\ClsDblAngl
		\OpnDblBar			\ClsDblBar

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{	{	\OpnDb1Brac	}	}	\ClsDb1Brac
\lceil	\lceil	\OpnDb1Ceil	\rceil	\rceil	\ClsDb1Ceil
\lfloor	\lfloor	\OpnDb1Floor	\rfloor	\rfloor	\ClsDb1Floor
\lgroup	\lgroup	\OpnDb1Grp	\rgroup	\rgroup	\ClsDb1Grp
\lpar	\lpar	\OpnDb1Parn	\rpar	\rpar	\ClsDb1Parn
\lfloor	\lfloor	\OpnFloor	\rfloor	\rfloor	\ClsFloor
\lgroup	\lgroup	\OpnGrp	\rgroup	\rgroup	\ClsGrp
\lpar	\lpar	\OpnParn	\rpar	\rpar	\ClsParn
\lpar	\lpar	\OpnParnBar	\rpar	\rpar	\ClsParnBar
\llbracket	\llbracket	\OpnSqrParn	\rrbracket	\rrbracket	\ClsSqrParn
\lshch	\lshch	\OpnTortoise	\rshch	\rshch	\ClsTortoise
\lshch	\lshch	\OpnTortoiseBar	\rshch	\rshch	\ClsTortoiseBar
\lll	\lll	\OpnTrpBar	\rrr	\rrr	\ClsTrpBar
\lturn	\lturn	\OpnTurn	\rturn	\rturn	\ClsTurn

logix requires either Lua $\text{\LaTeX}$ or X $\text{\LaTeX}$.

TABLE 257: textcomp Text-mode Delimiters

<	\textlangle	>	\textrangle
\llbracket	\textlbrackdbl	\rrbracket	\textrbrackdbl
{	\textlquill	}	\textrquill

TABLE 258: metre Text-mode Delimiters

}	\alad	}	\Alad	†	\crux	†	\Crux
{	\alas	{	\Alas	\]	\quadrad	\]	\Quadrad
>	\angud	>	\Angud	\l	\quadras	\l	\Quadras
<	\angus	<	\Angus				

TABLE 259: Math-mode Accents

$\acute{a}$	<code>\acute{a}</code>	$\check{a}$	<code>\check{a}</code>	$\grave{a}$	<code>\grave{a}</code>	$\tilde{a}$	<code>\tilde{a}</code>
$\bar{a}$	<code>\bar{a}</code> *	$\ddot{a}$	<code>\ddot{a}</code>	$\hat{a}$	<code>\hat{a}</code>	$\vec{a}$	<code>\vec{a}</code>
$\breve{a}$	<code>\breve{a}</code>	$\dot{a}$	<code>\dot{a}</code>	$\mathring{a}$	<code>\mathring{a}</code>		

Note also the existence of `\imath` and `\jmath`, which produce dotless versions of “ i ” and “ j ”. (See Table 334 on page 157.) These are useful when the accent is supposed to replace the dot. For example, “`\hat{\imath}`” produces a correct “ $\hat{i}$ ”, while “`\hat{i}`” would yield the rather odd-looking “ $\hat{i}$ ”.

* The `\overline` command (Table 270 on page 139) produces a wider accent than `\bar`: “ $\overline{A}$ ” vs. “ $\bar{A}$ ”. However, unlike adjacent `\bars`, adjacent `\overlines` run together, which is often not desired: “ $\overline{AB}$ ” vs. “ $\bar{A}\bar{B}$ ”. If wider bars than `\bar` are needed, the following code from Enrico Gregorio can be used to add the requisite inter-symbol spacing [Gre09]:

```
\newcommand{\closure}[2][3]{%
  {} \mkern#1mu \overline{\mkern-#1mu#2}}
```

With that definition, “`\closure{A}\closure{B}`” produces “ $\overline{A}\overline{B}$ ”, with a visible gap between the two accents. The optional argument can be used to fine-tune the spacing.

TABLE 260: $\mathcal{AMS}$ Math-mode Accents

$\dddot{a}$	<code>\dddot{a}</code>	$\dddot{a}$	<code>\dddot{a}</code>
-------------	------------------------	-------------	------------------------

These accents are also provided by the `mathabx` and `accents` packages and are redefined by the `mathdots` package if the `amsmath` and `amssymb` packages have previously been loaded. All of the variations except for the original $\mathcal{AMS}$ ones tighten the space between the dots (from $\dddot{a}$ to $\ddot{a}$). The `mathabx` and `mathdots` versions also function properly within subscripts and superscripts ($x^{\ddot{a}}$ instead of $x^{\ddot{a}}$).

TABLE 261: MnSymbol Math-mode Accents

$\vec{a}$	<code>\vec{a}</code>
-----------	----------------------

TABLE 262: fdsymbol Math-mode Accents

$\overline{a}$	<code>\middlebar{a}</code>	$\not{a}$	<code>\strokethrough{a}</code>
$\overline{a}$	<code>\middleslash{a}</code>	$\vec{a}$	<code>\vec{a}</code>

`\middlebar` and `\middleslash` are applied here to “ a ” for consistency with the rest of the document, but they generally look better when applied to taller lowercase characters.

TABLE 263: boisik Math-mode Accents

$\vec{a}$	<code>\vec{a}</code>
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TABLE 264: stix Math-mode Accents

$\acute{a}$	<code>\acute{a}</code>	$\hat{a}$	<code>\hat{a}</code>
$\overline{a}$	<code>\annuity{a}</code>	$\overleftarrow{a}$	<code>\leftarrowaccent{a}</code>
$\ast{a}$	<code>\asteraccent{a}</code>	$\overleftarrow{\hookrightarrow}a$	<code>\leftharpoonaccent{a}</code>
$\bar{a}$	<code>\bar{a}</code>	$\overleftrightarrow{a}$	<code>\leftrightharpoonaccent{a}</code>
$\breve{a}$	<code>\breve{a}</code>	$\mathring{a}$	<code>\mathring{a}</code>
$\candra{a}$	<code>\candra{a}</code>	$\mathring{a}$	<code>\ocommatoprigh{a}</code>
$\check{a}$	<code>\check{a}</code>	$\text{\textcircled{a}}$	<code>\oturnedcomma{a}</code>
$\ddot{a}$	<code>\ddddot{a}</code>	$\text{\textcircled{a}}$	<code>\ovhook{a}</code>
$\ddot{a}$	<code>\dddot{a}</code>	$\overrightarrow{\hookrightarrow}a$	<code>\rightharpoonaccent{a}</code>
$\ddot{a}$	<code>\ddot{a}</code>	$\tilde{a}$	<code>\tilde{a}</code>
$\dot{a}$	<code>\dot{a}</code>	$\vec{a}$	<code>\vec{a}</code>
$\mathring{a}$	<code>\droang{a}</code>	$\overline{\overline{a}}$	<code>\widebridgeabove{a}</code>
$\grave{a}$	<code>\grave{a}</code>		

TABLE 265: fge Math-mode Accents

$\mathring{A}$	<code>\spiritusasper{A}</code>	$\mathring{a}$	<code>\spiritusasper{a}</code>
$\mathring{A}$	<code>\spirituslenis{A}</code>	$\mathring{a}$	<code>\spirituslenis{a}</code>

When `fge` is passed the `crescent` option, these symbols instead uses a crescent accent as in “ $\mathring{a}$ ” and “ $\mathring{a}$ ”.

TABLE 266: yhmath Math-mode Accents

$\mathring{a}$	<code>\ring{a}</code>
----------------	-----------------------

This symbol is largely obsolete, as standard $\text{\LaTeX} 2_{\epsilon}$ has supported `\mathring` (Table 259) since June 1998 [L^AT_EX98].

TABLE 267: pdfMsym Math-mode Accents

$\vec{a}$	<code>\shortlvecc{a}</code>	$\underline{a}$	<code>\shortunderleftrightharp{a}</code>
$\overleftarrow{a}$	<code>\shortoverleftharp{a}</code>	$\overleftarrow{a}$	<code>\shortunderleftrightharp{a}</code>
$\overrightarrow{a}$	<code>\shortoverleftrightharp{a}</code>	$\overrightarrow{a}$	<code>\shortunderlvecc{a}</code>
$\overleftarrow{a}$	<code>\shortoverleftrightharp{a}</code>	$\overleftarrow{a}$	<code>\shortunderrightharp{a}</code>
$\overrightarrow{a}$	<code>\shortoverleftrightharp{a}</code>	$\overrightarrow{a}$	<code>\shortunderrightharp{a}</code>
$\overrightarrow{a}$	<code>\shortoverleftrightharp{a}</code>	$\overrightarrow{a}$	<code>\shortunderrightharp{a}</code>
$\overrightarrow{a}$	<code>\shortoverleftrightharp{a}</code>	$\overrightarrow{a}$	<code>\shortunderrightharp{a}</code>
$\overrightarrow{a}$	<code>\shortoverleftrightharp{a}</code>	$\overrightarrow{a}$	<code>\shortunderrightharp{a}</code>
$\overrightarrow{a}$	<code>\shortoverleftrightharp{a}</code>	$\overrightarrow{a}$	<code>\shortunderrightharp{a}</code>
$\overrightarrow{a}$	<code>\shortoverleftrightharp{a}</code>	$\overrightarrow{a}$	<code>\shortunderrightharp{a}</code>
$\overrightarrow{a}$	<code>\shortoverleftrightharp{a}</code>	$\overrightarrow{a}$	<code>\shortunderrightharp{a}</code>
$\overrightarrow{a}$	<code>\shortoverleftrightharp{a}</code>	$\overrightarrow{a}$	<code>\shortunderrightharp{a}</code>
$\overrightarrow{a}$	<code>\shortoverleftrightharp{a}</code>	$\overrightarrow{a}$	<code>\shortunderrightharp{a}</code>
$\overrightarrow{a}$	<code>\shortoverleftrightharp{a}</code>	$\overrightarrow{a}$	<code>\shortunderrightharp{a}</code>
$\overrightarrow{a}$	<code>\shortoverleftrightharp{a}</code>	$\overrightarrow{a}$	<code>\shortunderrightharp{a}</code>

pdfMsym symbols are implemented with PDF literals instead of (or sometimes in conjunction) with a font. All symbols can be rendered by pdfL^AT_EX and LuaL^AT_EX, some by X_YL^AT_EX, and none by most other T_EX backends.

TABLE 268: halloweenmath Halloween-Themed Math-mode Accents

$\overline{a}$	<code>\overbat{a}</code>	$\underline{a}$	<code>\underbat{a}</code>
$\overline{a}$	<code>\overbat*{a}</code>	$\underline{a}$	<code>\underbat*{a}</code>

TABLE 269: realhats Math-mode Hat Accents

$\hat{a}$	<code>\hat[ash]{a}</code>	$\hat{a}$	<code>\hat[santa]{a}</code>
$\hat{a}$	<code>\hat[beret]{a}</code>	$\hat{a}$	<code>\hat[scottish]{a}</code>
$\hat{a}$	<code>\hat[birthday]{a}</code>	$\hat{a}$	<code>\hat[sombrero]{a}</code>
$\hat{a}$	<code>\hat[cowboy]{a}</code>	$\hat{a}$	<code>\hat[tile-blue]{a}</code>
$\hat{a}$	<code>\hat[crown]{a}</code>	$\hat{a}$	<code>\hat[tile-gray]{a}</code>
$\hat{a}$	<code>\hat[dunce]{a}</code>	$\hat{a}$	<code>\hat[tile-light-blue]{a}</code>
$\hat{a}$	<code>\hat[fez]{a}</code>	$\hat{a}$	<code>\hat[tile-white]{a}</code>
$\hat{a}$	<code>\hat[mortarboard]{a}</code>	$\hat{a}$	<code>\hat[tophat]{a}</code>
$\hat{a}$	<code>\hat[policeman]{a}</code>	$\hat{a}$	<code>\hat[witch]{a}</code>

These hats are drawn by scaling a graphic image and placing it at an appropriate location.

If `\hat` is used with no argument, it selects a hat at random. Alternatively, a hat type can be passed as an option to `realhats` to specify the default hat. See the `realhats` documentation for more information.

TABLE 270: Extensible Accents

$\widetilde{abc}$	<code>\widetilde{abc}</code> *	$\widehat{abc}$	<code>\widehat{abc}</code> *
$\overleftarrow{abc}$	<code>\overleftarrow{abc}</code> †	$\overrightarrow{abc}$	<code>\overrightarrow{abc}</code> †
$\overline{abc}$	<code>\overline{abc}</code>	$\underline{abc}$	<code>\underline{abc}</code>
$\overbrace{abc}$	<code>\overbrace{abc}</code>	$\underbrace{abc}$	<code>\underbrace{abc}</code>
$\sqrt{abc}$	<code>\sqrt{abc}</code> ‡		

As demonstrated in a 1997 TUGboat article about typesetting long-division problems [Gib97], an extensible long-division sign (“ $\overline{abc}$ ”) can be faked by putting a “`\big`” in a `tabular` environment with an `\hline` or `\cline` in the preceding row. The article also presents a piece of code (uploaded to CTAN as `longdiv.tex`) that automatically solves and typesets—by putting an `\overline` atop “`\big`”—long-division problems. More recently, the STIX fonts include a true long-division sign. See `\longdivision` in Table 276 for a sample of this symbol. See also the `polynom` package, which automatically solves and typesets polynomial-division problems in a similar manner.

* These symbols are made more extensible by the `MnSymbol` package (Table 274 on page 140). and even more extensible by the `yhmath` package (Table 272).

† If you’re looking for an extensible *diagonal* line or arrow to be used for canceling or reducing mathematical subexpressions (e.g., “ $x + \cancel{x}$ ” or “ $3 + 2^{\cancel{5}}$ ”) then consider using the `cancel` package.

‡ With an optional argument, `\sqrt` typesets *nth* roots. For example, “`\sqrt[3]{abc}`” produces “ $\sqrt[3]{abc}$ ” and “`\sqrt[n]{abc}`” produces “ $\sqrt[n]{abc}$ ”.

TABLE 271: `overrightarrow` Extensible Accents

$\overrightarrow{abc}$	<code>\overrightarrow{abc}</code>
------------------------	-----------------------------------

TABLE 272: `yhmath` Extensible Accents

$\widehat{abc}$	<code>\widehat{abc}</code>	$\widetilde{abc}$	<code>\widetilde{abc}</code>
$\wideparen{abc}$	<code>\wideparen{abc}</code>	$\widehat{abc}$	<code>\widehat{abc}</code>
$\overset{\circ}{abc}$	<code>\overset{\circ}{abc}</code>	$\widehat{abc}$	<code>\widehat{abc}</code>

TABLE 273: $\mathcal{AMS}$ Extensible Accents

$\overleftrightarrow{abc}$	<code>\overleftrightharrow{abc}</code>	$\overleftarrow{abc}$	<code>\underleftrightharrow{abc}</code>
$\overleftarrow{abc}$	<code>\underleftarrow{abc}</code>	$\overrightarrow{abc}$	<code>\underrightarrow{abc}</code>

TABLE 274: MnSymbol Extensible Accents

$\overbrace{abc}$	<code>\overbrace{abc}</code>	$\underbrace{abc}$	<code>\undergroup{abc}</code>
$\overgroup{abc}$	<code>\overgroup{abc}</code>	$\underline{abc}$	<code>\underlinesegment{abc}</code>
$\overleftharpoonup{abc}$	<code>\overleftharpoonup{abc}</code>	$\widehat{abc}$	<code>\widehat{abc}</code>
$\overlinesegment{abc}$	<code>\overlinesegment{abc}</code>	$\widetilde{abc}$	<code>\wideparen{abc}</code>
$\overrightarrow{abc}$	<code>\overrightarrow{abc}</code>	$\widetilde{abc}$	<code>\widetilde{abc}</code>
$\underbrace{abc}$	<code>\underbrace{abc}</code>		

TABLE 275: fdsymbol Extensible Accents

$\overbrace{abc}$	<code>\overbrace{abc}</code>	$\underbrace{abc}$	<code>\undergroup{abc}</code>
$\overgroup{abc}$	<code>\overgroup{abc}</code>	$\underline{abc}$	<code>\underlinesegment{abc}</code>
$\overleftharpoonup{abc}$	<code>\overleftharpoonup{abc}</code>	$\widehat{abc}$	<code>\widehat{abc}</code>
$\overlinesegment{abc}$	<code>\overlinesegment{abc}</code>	$\widetilde{abc}$	<code>\wideparen{abc}</code>
$\overrightarrow{abc}$	<code>\overrightarrow{abc}</code>	$\widetilde{abc}$	<code>\widetilde{abc}</code>
$\underbrace{abc}$	<code>\underbrace{abc}</code>		

TABLE 276: stix Extensible Accents

$\overline{abc}$	<code>\longdivision{abc}</code>	$\underline{abc}$	<code>\underbracket{abc}</code>
$\overbrace{abc}$	<code>\overbrace{abc}</code>	$\underline{abc}$	<code>\underleftarrow{abc}</code>
$\overbrace{abc}$	<code>\overbracket{abc}</code>	$\underline{abc}$	<code>\underleftharpoon{abc}</code>
$\overleftarrow{abc}$	<code>\overleftarrow{abc}</code>	$\underline{abc}$	<code>\underleftrightharpoon{abc}</code>
$\overleftharpoon{abc}$	<code>\overleftharpoon{abc}</code>	$\underparen{abc}$	<code>\underparen{abc}</code>
$\overleftrightharpoon{abc}$	<code>\overleftrightharpoon{abc}</code>	$\underline{abc}$	<code>\underrightharpoon{abc}</code>
$\overparen{abc}$	<code>\overparen{abc}</code>	$\underline{abc}$	<code>\underrightharpoon{abc}</code>
$\overrightarrow{abc}$	<code>\overrightarrow{abc}</code>	$\widetilde{abc}$	<code>\widecheck{abc}</code>
$\overrightarrow{abc}$	<code>\overrightarrow{abc}</code>	$\widehat{abc}$	<code>\widehat{abc}</code>
$\overrightarrow{abc}$	<code>\overrightarrow{abc}</code>	$\widetilde{abc}$	<code>\widetilde{abc}</code>
$\sqrt{abc}$	<code>\sqrt{abc}</code>		
$\underbrace{abc}$	<code>\underbrace{abc}</code>		

TABLE 277: mathtools Extensible Accents

$\overbrace{abc}$	<code>\overbrace{abc}</code>	$\underbrace{abc}$	<code>\underbrace{abc}</code>
$\overbrace{abc}$	<code>\overbrace{abc}</code>	$\underbrace{abc}$	<code>\underbrace{abc}</code>

* `\overbracket` and `\underbracket` accept optional arguments that specify the bracket height and thickness. See the `mathtools` documentation for more information.

TABLE 278: mathabx Extensible Accents

$\overbrace{abc}$	<code>\overbrace{abc}</code>	$\overline{abc}$	<code>\widebar{abc}</code>
$\overbrace{abc}$	<code>\overgroup{abc}</code>	$\widetilde{abc}$	<code>\widecheck{abc}</code>
$\underbrace{abc}$	<code>\underbrace{abc}</code>	$\widehat{abc}$	<code>\wideparen{abc}</code>
$\underbrace{abc}$	<code>\undergroup{abc}</code>	$\widehat{abc}$	<code>\widering{abc}</code>
$\overrightarrow{abc}$	<code>\widearrow{abc}</code>		

The braces shown for `\overbrace` and `\underbrace` appear in their minimum size. They can expand arbitrarily wide, however.

TABLE 279: fourier Extensible Accents

$\widehat{abc}$	<code>\widearc{abc}</code>	$\widehat{abc}$	<code>\wideparen{abc}</code>
$\widehat{\rightarrow{abc}}$	<code>\wideOarc{abc}</code>	$\widehat{\circ{abc}}$	<code>\widering{abc}</code>

TABLE 280: esvect Extensible Accents

$\overrightarrow{abc}$	<code>\vv{abc}</code> with package option a
$\overrightarrow{abc}$	<code>\vv{abc}</code> with package option b
$\overrightarrow{abc}$	<code>\vv{abc}</code> with package option c
$\overrightarrow{abc}$	<code>\vv{abc}</code> with package option d
$\overrightarrow{abc}$	<code>\vv{abc}</code> with package option e
$\overrightarrow{abc}$	<code>\vv{abc}</code> with package option f
$\overrightarrow{abc}$	<code>\vv{abc}</code> with package option g
$\overrightarrow{abc}$	<code>\vv{abc}</code> with package option h

`esvect` also defines a `\vv*` macro which is used to typeset arrows over vector variables with subscripts. See the `esvect` documentation for more information.

TABLE 281: pdfMsym Extensible Accents

$\overleftarrow{abc}$	<code>\lvecc{abc}</code> *	$\underline{abc}$	<code>\underlvecc{abc}</code>
$\overleftarrow{abc}$	<code>\overleftharp{abc}</code> *	$\underline{abc}$	<code>\underrightharp{abc}</code>
$\overleftrightarrow{abc}$	<code>\overleftrightharp{abc}</code> *	$\underline{abc}$	<code>\underrightleftharp{abc}</code>
$\overleftrightarrow{abc}$	<code>\overleftrightvecc{abc}</code> *	$\underline{abc}$	<code>\understraightlvecc{abc}</code>
$\overrightarrow{abc}$	<code>\overrightharp{abc}</code> *	$\underline{abc}$	<code>\understraightvecc{abc}</code>
$\overrightarrow{abc}$	<code>\overrightleftharp{abc}</code> *	$\underline{abc}$	<code>\undervecc{abc}</code>
$\overleftarrow{abc}$	<code>\straightlvecc{abc}</code> *	$\widetilde{abc}$	<code>\varwidecheck{abc}</code>
$\overrightarrow{abc}$	<code>\straightvecc{abc}</code> *	$\widehat{abc}$	<code>\varwidehat{abc}</code>
$\underline{abc}$	<code>\underleftharp{abc}</code>	$\widetilde{abc}$	<code>\varwidetilde{abc}</code>
$\underline{abc}$	<code>\underleftrightharp{abc}</code>	$\overrightarrow{abc}$	<code>\vecc{abc}</code> *
$\underline{abc}$	<code>\underleftrightvecc{abc}</code>		

pdfMsym symbols are implemented with PDF literals instead of (or sometimes in conjunction) with a font. All symbols can be rendered by pdfL^AT_EX and LuaL^AT_EX, some by X_YL^AT_EX, and none by most other T_EX backends.

* The `\constvec` command takes one of these vector commands and its argument and typesets the accent at x height, truncating everything above it. Hence, while `\overleftharp{abcMxyz}` produces “ $\overleftarrow{abcMxyz}$ ”, `\constvec{\overleftharp}{abcMxyz}` produces “ $\overleftarrow{abcMxyz}$ ”.

TABLE 282: `overarrows` Extensible Accents

$\overline{abc}$	<code>\overbar{abc}</code>	$\underline{abc}$	<code>\underbar{abc}</code>
$\overleftarrow{abc}$	<code>\overleftarrow{abc}</code>	$\underleftarrow{abc}$	<code>\underleftarrow{abc}</code>
$\overleftharpoonup{abc}$	<code>\overleftharpoonup{abc}</code>	$\underleftharpoonup{abc}$	<code>\underleftharpoonup{abc}</code>
$\overrightarrow{abc}$	<code>\overrightarrow{abc}</code>	$\underrightarrow{abc}$	<code>\underrightarrow{abc}</code>
$\overleftrightarrow{abc}$	<code>\overleftrightarrow{abc}</code>	$\underleftrightarrow{abc}$	<code>\underleftrightarrow{abc}</code>
$\overrightarrow{abc}$	<code>\overrightarrow{abc}</code>	$\underrightarrow{abc}$	<code>\underrightarrow{abc}</code>
$\overrightarrow{abc}$	<code>\overrightarrow{abc}</code>	$\underrightarrow{abc}$	<code>\underrightarrow{abc}</code>
$\overrightarrow{abc}$	<code>\overrightarrow{abc}</code>	$\underrightarrow{abc}$	<code>\underrightarrow{abc}</code>

`overarrows` is extremely customizable. Virtually all aspects of arrows—length, thickness, position, scale, arrowhead style, etc.—can be modified, and new extensible arrows can be constructed. See the `overarrows` documentation for more information. For example, the documentation shows how to create extensible arrows like the following:

$\overrightarrow{abc}$	<code>\overarchedleftrightarrow{abc}</code>	$\overrightarrow{abc}$	<code>\overbandedarrow{abc}</code>
------------------------	---	------------------------	------------------------------------

TABLE 283: `abraces` Extensible Accents

$\overbrace{abc}$	<code>\aoverbrace{abc}</code>	$\underbrace{abc}$	<code>\aunderbrace{abc}</code>
-------------------	-------------------------------	--------------------	--------------------------------

`\aoverbrace` and `\aunderbrace` accept optional arguments that provide a great deal of control over the braces' appearance. For example, these commands can produce braces with asymmetric endpoints, braces that span lines, dashed braces, and multicolored braces. See the `abraces` documentation for more information.

TABLE 284: `undertilde` Extensible Accents

$\tilde{abc}$	<code>\utilde{abc}</code>
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Because `\utilde` is based on `\widetilde` it is also made more extensible by the `yhmath` package (Table 272).

TABLE 285: ushort Extensible Accents

$$\underline{abc} \quad \backslash\text{ushortdw}\{abc\} \quad \underline{abc} \quad \backslash\text{ushortw}\{abc\}$$

`\ushortw` and `\ushortdw` are intended to be used with multi-character arguments (“words”) while `\ushortand` and `\ushortd` are intended to be used with single-character arguments.

The underlines produced by the `ushort` commands are shorter than those produced by the `\underline` command. Consider the output from the expression “`\ushort{x}\ushort{y}\underline{x}\underline{y}`”, which looks like “ $\underline{xyxy}$ ”.

TABLE 286: mdwmath Extensible Accents

$$\sqrt{abc} \quad \backslash\text{sqrt*}\{abc\}$$

TABLE 287: actuarialangle Extensible Accents

$$\overline{abc} \quad \backslash\text{actuarialangle}\{abc\}$$

The `actuarialangle` package additionally defines `\angl` as `\actuarialangle` with a small amount of extra space to the right of the accented expression under the $\overline{}$, `\angln` as `\angl{n}`, and `\anglr` as `\angl{r}`.

TABLE 288: $\mathcal{AMS}$ Extensible Arrows
$$\overleftarrow{abc} \quad \backslash\text{xleftarrow}\{abc\} \quad \overrightarrow{abc} \quad \backslash\text{xrightarrow}\{abc\}$$

TABLE 289: mathtools Extensible Arrows

$\overleftarrow{abc}$	<code>\xhookleftarrow{abc}</code>	$\overleftrightarrow{abc}$	<code>\xleftrightharpoons{abc}</code>
$\overrightarrow{abc}$	<code>\xhookrightarrow{abc}</code>	$\mapsto abc$	<code>\xmapsto{abc}</code>
$\overleftarrow{\overleftarrow{abc}}$	<code>\xLeftarrow{abc}</code>	$\overrightarrow{\overrightarrow{abc}}$	<code>\xRightarrow{abc}</code>
$\overleftarrow{\overrightarrow{abc}}$	<code>\xleftharpoonowdown{abc}</code>	$\overrightarrow{\overleftarrow{abc}}$	<code>\xrightharpoonowdown{abc}</code>
$\overrightarrow{\overleftarrow{abc}}$	<code>\xleftharpoonoup{abc}</code>	$\overleftarrow{\overrightarrow{abc}}$	<code>\xrightharpoonoup{abc}</code>
$\overleftrightarrow{\overleftarrow{abc}}$	<code>\xleftrightharpoonow{abc}</code>	$\overleftrightarrow{\overrightarrow{abc}}$	<code>\xrightleftharpoonow{abc}</code>
$\overleftrightarrow{\overrightarrow{abc}}$	<code>\xLeftrightarrow{abc}</code>		

TABLE 290: chemarr Extensible Arrows

$$\xleftarrow{abc} \quad \backslash\mathrm{xrightleftharpoons}\{abc\}$$

TABLE 291: chemarrow Extensible Arrows

$$\begin{array}{ll} \xleftarrow{abc} & \backslash\mathrm{autoleftarrow}\{abc\}\{def\} \qquad \xrightarrow{abc} & \backslash\mathrm{autorightarrow}\{abc\}\{def\} \\ \xleftrightarrow{abc} & \backslash\mathrm{autoleftrightharpoons}\{abc\}\{def\} \qquad \xleftrightarrow{abc} & \backslash\mathrm{autorightleftharpoons}\{abc\}\{def\} \end{array}$$

In addition to the symbols shown above, chemarrow also provides `\larrowfill`, `\rarrowfill`, `\leftrightharpoonsfill`, and `\rightleftharpoonsfill` macros. Each of these takes a length argument and produces an arrow of the specified length.

TABLE 292: extarrows Extensible Arrows

$$\begin{array}{ll} \xleftrightarrow{abc} & \backslash\mathrm{xLeftrightarrow}\{abc\} \qquad \xleftrightarrow{abc} & \backslash\mathrm{xLongleftrightarrow}\{abc\} \\ \xleftarrow{abc} & \backslash\mathrm{xLeftrightarrow}\{abc\} \qquad \xleftarrow{abc} & \backslash\mathrm{xLongleftrightarrow}\{abc\} \\ \xlongequal{abc} & \backslash\mathrm{xLongequal}\{abc\} \qquad \xlongequal{abc} & \backslash\mathrm{xLongrightarrow}\{abc\} \\ \xlongleftarrow{abc} & \backslash\mathrm{xLongleftarrow}\{abc\} \qquad \xrightarrow{abc} & \backslash\mathrm{xLongrightarrow}\{abc\} \\ \xlongleftarrow{abc} & \backslash\mathrm{xLongleftarrow}\{abc\} \end{array}$$

TABLE 293: pdfMsym Extensible Arrows

$\xleftarrow{\circ abc}$	<code>\xvarCircleleftarrow{abc}</code>	$\xleftrightarrow{\circ abc}$	<code>\xvarLleftRrightarrow{abc}</code>
$\xleftarrow{\circ abc}$	<code>\xvarcircleleftarrow{abc}</code>	$\xleftarrow{\circ abc}$	<code>\xvarmapsfrom{abc}</code>
$\xrightarrow{\circ abc}$	<code>\xvarCirclerightarrow{abc}</code>	$\xrightarrow{\circ abc}$	<code>\xvarmapsto{abc}</code>
$\xrightarrow{\circ abc}$	<code>\xvarcirclerightarrow{abc}</code>	$\xleftrightarrow{\circ abc}$	<code>\xvarRibbonleftarrow{abc}</code>
$\xleftarrow{\circ abc}$	<code>\xvardoubleleftarrow{abc}</code>	$\xleftrightarrow{\circ abc}$	<code>\xvarRibbonrightarrow{abc}</code>
$\xrightarrow{\circ abc}$	<code>\xvardoublerightarrow{abc}</code>	$\xrightarrow{\circ abc}$	<code>\xvarRightarrow{abc}</code>
$\xleftarrow{\circ abc}$	<code>\xvardownhookleftarrow{abc}</code>	$\xrightarrow{\circ abc}$	<code>\xvarrightarrow{abc}</code>
$\xrightarrow{\circ abc}$	<code>\xvardownhookrightarrow{abc}</code>	$\xrightarrow{\circ abc}$	<code>\xvarrightarrow{abc}</code>
$\xleftarrow{\circ abc}$	<code>\xvarleftarrow{abc}</code>	$\xleftrightarrow{\circ abc}$	<code>\xvarrightleftarrows{abc}</code>
$\xleftrightarrow{\circ abc}$	<code>\xvarLeftarrow{abc}</code>	$\xrightarrow{\circ abc}$	<code>\xvarRrightarrow{abc}</code>
$\xrightarrow{\circ abc}$	<code>\xvarleftarrows{abc}</code>	$\xleftrightarrow{\circ abc}$	<code>\xvarSquareleftarrow{abc}</code>
$\xleftrightarrow{\circ abc}$	<code>\xvarleftrightarrow{abc}</code>	$\xrightarrow{\circ abc}$	<code>\xvarSquarerightarrow{abc}</code>
$\xleftrightarrow{\circ abc}$	<code>\xvarleftrightarrows{abc}</code>	$\xleftarrow{\circ abc}$	<code>\xvaruphookleftarrow{abc}</code>
$\xleftrightarrow{\circ abc}$	<code>\xvarLleftarrow{abc}</code>	$\xrightarrow{\circ abc}$	<code>\xvaruphookrightarrow{abc}</code>

pdfMsym symbols are implemented with PDF literals instead of (or sometimes in conjunction) with a font. All symbols can be rendered by pdfL^AT_EX and LuaL^AT_EX, some by X_YL^AT_EX, and none by most other T_EX backends.

TABLE 294: extpfeil Extensible Arrows

$\xlongequal{abc}$	<code>\xlongequal{abc}</code>	$\xleftarrow{\circ abc}$	<code>\xtwoheadleftarrow{abc}</code>
$\xmapsto{abc}$	<code>\xmapsto{abc}</code>	$\xrightarrow{\circ abc}$	<code>\xtwoheadrightarrow{abc}</code>
$\xleftrightarrow{\circ abc}$	<code>\xtofrom{abc}</code>		

The extpfeil package also provides a `\newextarrow` command to help you define your own extensible arrow symbols. See the extpfeil documentation for more information.

TABLE 295: DotArrow Extensible Arrows

$\xrightarrow{\circ a}$	<code>\dotarrow{a}</code>
-------------------------	---------------------------

The DotArrow package provides mechanisms for lengthening the arrow, adjusting the distance between the arrow and its symbol, and altering the arrowhead. See the DotArrow documentation for more information.

TABLE 296: halloweenmath Extensible Arrows

$\overleftarrow{abc}$	<code>\overscriptleftarrow{abc}</code>	$\underline{\overleftarrow{abc}}$	<code>\underscriptleftarrow{abc}</code>
$\overleftrightarrow{abc}$	<code>\overscriptleftrightarrow{abc}</code>	$\underline{\overleftrightarrow{abc}}$	<code>\underscriptleftrightarrow{abc}</code>
$\overrightarrow{abc}$	<code>\overscriptrightarrow{abc}</code>	$\underline{\overrightarrow{abc}}$	<code>\underscriptrightarrow{abc}</code>

These commands always typeset the arrow in script (small) style, hence the “script” in their names. Contrast the size of the arrowheads in the following examples (zoomed 3x for clarity):

$$\overrightarrow{abc} \quad \text{vs.} \quad \overscriptrightarrow{abc}$$

`\overrightarrow{abc}` `\overscriptrightarrow{abc}`

TABLE 297: pdfMsym Extensible Harpoons

$\overleftarrow{\hspace{0.5em}abc}$	<code>\xvarleftharp{abc}</code>	$\overrightarrow{\hspace{0.5em}abc}$	<code>\xvarrightharp{abc}</code>
$\overleftarrow{\hspace{0.5em}abc}$	<code>\xvarleftrightharp{abc}</code>	$\overrightarrow{\hspace{0.5em}abc}$	<code>\xvarrightleftharp{abc}</code>

pdfMsym symbols are implemented with PDF literals instead of (or sometimes in conjunction) with a font. All symbols can be rendered by pdfL^AT_EX and LuaL^AT_EX, some by X_YL^AT_EX, and none by most other T_EX backends.

TABLE 298: harpoon Extensible Harpoons

$\overleftarrow{abc}$	<code>\overleftharp{abc}</code>	$\overleftarrow{abc}$	<code>\overrightharpdown{abc}</code>	$\overleftarrow{abc}$	<code>\underrightharp{abc}</code>
$\overleftarrow{abc}$	<code>\overleftharpdown{abc}</code>	$\overleftarrow{abc}$	<code>\underleftharp{abc}</code>	$\overleftarrow{abc}$	<code>\underrightharpdown{abc}</code>
$\overleftarrow{abc}$	<code>\overrightharp{abc}</code>	$\overleftarrow{abc}$	<code>\underleftharpdown{abc}</code>		

All of the harpoon symbols are implemented using the `graphics` package (specifically, `graphics`’s `\resizebox` command). Consequently, only T_EX backends that support graphical transformations (e.g., *not* Xdvi) can properly display these symbols.

TABLE 299: trfsigns Extensible Transform Symbols

$\overline{abc}$	<code>\dft{abc}</code>	$\overline{abc}$	<code>\DFT{abc}</code>
------------------	------------------------	------------------	------------------------

TABLE 300: esrelation Extensible Relations

$\overleftarrow{abc}$	<code>\relationleftproject{abc}</code>	$\overrightarrow{abc}$	<code>\relationrightproject{abc}</code>
$\underline{abc}$	<code>\relationlifting{abc}</code>		

TABLE 301: halloweenmath Extensible Brooms and Pitchforks

$\overleftarrow{abc}$	<code>\overleftbroom{abc}</code>	$\overrightarrow{abc}$	<code>\underrightbroom{abc}</code>
$\overleftarrow{\pitchfork} abc$	<code>\overleftpitchfork{abc}</code>	$\overrightarrow{\pitchfork} abc$	<code>\underrightpitchfork{abc}</code>
$\overrightarrow{abc}$	<code>\overrightbroom{abc}</code>	$\overleftarrow{abc}$	<code>\xleftbroom{abc}</code>
$\overrightarrow{\pitchfork} abc$	<code>\overrightpitchfork{abc}</code>	$\overleftarrow{\pitchfork} abc$	<code>\xleftpitchfork{abc}</code>
$\underline{abc}$	<code>\underleftbroom{abc}</code>	$\underline{abc}$	<code>\xrightbroom{abc}</code>
$\underline{\pitchfork} abc$	<code>\underleftpitchfork{abc}</code>	$\underline{\pitchfork} abc$	<code>\xrightpitchfork{abc}</code>

TABLE 302: halloweenmath Extensible Witches

 abc	<code>\overleftwitchonbroom{abc}</code>	abc 	<code>\underrightwitchonbroom{abc}</code>
 abc	<code>\overleftwitchonbroom*{abc}</code>	abc 	<code>\underrightwitchonbroom*{abc}</code>
 abc	<code>\overleftwitchonpitchfork*{abc}</code>	abc 	<code>\underrightwitchonpitchfork*{abc}</code>
 abc	<code>\overleftwitchonpitchfork{abc}</code>	abc 	<code>\underrightwitchonpitchfork{abc}</code>
 abc	<code>\overrightwitchonbroom*{abc}</code>	 abc	<code>\xleftwitchonbroom*{abc}</code>
 abc	<code>\overrightwitchonbroom{abc}</code>	 abc	<code>\xleftwitchonbroom{abc}</code>
 abc	<code>\overrightwitchonpitchfork*{abc}</code>	 abc	<code>\xleftwitchonpitchfork*{abc}</code>
 abc	<code>\overrightwitchonpitchfork{abc}</code>	 abc	<code>\xleftwitchonpitchfork{abc}</code>
abc  abc	<code>\underleftwitchonbroom{abc}</code>	abc 	<code>\xrightwitchonbroom{abc}</code>
abc  abc	<code>\underleftwitchonbroom*{abc}</code>	abc 	<code>\xrightwitchonbroom*{abc}</code>
abc  abc	<code>\underleftwitchonpitchfork*{abc}</code>	abc 	<code>\xrightwitchonpitchfork{abc}</code>
abc  abc	<code>\underleftwitchonpitchfork{abc}</code>	abc 	<code>\xrightwitchonpitchfork*{abc}</code>

TABLE 303: halloweenmath Extensible Ghosts

 abc	<code>\overleftswishingghost{abc}</code>	abc 	<code>\overrightswishingghost{abc}</code>
 abc	<code>\underleftswishingghost{abc}</code>	abc 	<code>\underrightswishingghost{abc}</code>
 abc	<code>\xleftswishingghost{abc}</code>	abc 	<code>\xrightswishingghost{abc}</code>

TABLE 304: halloweenmath Extensible Bats

 abc	<code>\overleftflutteringbat{abc}</code>	abc 	<code>\overrightflutteringbat{abc}</code>
 abc	<code>\underleftflutteringbat{abc}</code>	abc 	<code>\underrightflutteringbat{abc}</code>
 abc	<code>\xleftflutteringbat{abc}</code>	abc 	<code>\xrightflutteringbat{abc}</code>

TABLE 305: holtpolt Non-commutative Division Symbols

$\left \frac{abc}{def} \right $	<code>\holter{abc}{def}</code>	$\left \frac{abc}{def} \right $	<code>\polter{abc}{def}</code>
----------------------------------	--------------------------------	----------------------------------	--------------------------------

TABLE 306: Dots

$\cdot$	<code>\cdotp</code>	$:$	<code>\colon*</code>	$\cdot$	<code>\ldotp</code>	$\vdots$	<code>\vdots[†]</code>
$\dots$	<code>\cdots</code>	$\ddots$	<code>\ddots[†]</code>	$\dots$	<code>\ldots</code>		

* While “:” is valid in math mode, `\colon` uses different surrounding spacing. See Section 12.4 and the Short Math Guide for L^AT_EX [Dow00] for more information on math-mode spacing.

[†] The `mathdots` package redefines `\ddots` and `\vdots` (Table 312) to make them scale properly with font size. (They normally scale horizontally but not vertically.) `\fixedddots` and `\fixedvdots` provide the original, fixed-height functionality of L^AT_EX 2_ε’s `\ddots` and `\vdots` macros.

TABLE 307: $\mathcal{AMS}$ Dots

$\because$	<code>\because*</code>	$\dots$	<code>\dotsi</code>	$\therefore$	<code>\therefore*</code>
$\dots$	<code>\dotsb</code>	$\dots$	<code>\dotsm</code>		
$\dots$	<code>\dotsc</code>	$\dots$	<code>\dotso</code>		

* `\because` and `\therefore` are defined as binary relations and therefore also appear in Table 99 on page 68.

The $\mathcal{AMS}$ `\dots_` symbols are named according to their intended usage: `\dotsb` between pairs of binary operators/relations, `\dotsc` between pairs of commas, `\dotsi` between pairs of integrals, `\dotsm` between pairs of multiplication signs, and `\dotso` between other symbol pairs.

TABLE 308: wasysym Dots

$\therefore$	<code>\wasytherefore</code>
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TABLE 309: MnSymbol Dots

$\cdot$	<code>\cdot</code>	$\cdots$	<code>\hdotdot</code>	$\therefore$	<code>\udots</code>
$\ddot{\cdot}$	<code>\ddotdotdot</code>	$\cdots$	<code>\hdots</code>	$\therefore$	<code>\uptherefore</code>
$\ddots$	<code>\ddots</code>	$\therefore$	<code>\lefttherefore</code>	$:$	<code>\vdotdot</code>
$\diamond\ddots$	<code>\diamondddots</code>	$\therefore$	<code>\righttherefore</code>	$:$	<code>\vdots</code>
$\downarrow\therefore$	<code>\downtherefore</code>	$::$	<code>\squaredots</code>		
$\ddots$	<code>\fivedots</code>	$\therefore$	<code>\udotdot</code>		

MnSymbol defines `\therefore` as `\uptherefore` and `\because` as `\downtherefore`. Furthermore, `\cdotp` and `\colone` produce the same glyphs as `\cdot` and `\vdotdot` respectively but serve as T_EX math punctuation (class 6 symbols) instead of T_EX binary operators (class 2).

All of the above except `\hdots` and `\vdots` are defined as binary operators and therefore also appear in Table 59 on page 39.

TABLE 310: fdsymbol Dots

$\cdot$	<code>\cdot</code>	$\cdots$	<code>\hdots</code>	$\therefore$	<code>\udots</code>
$\ddot{\cdot}$	<code>\ddotdotdot</code>	$\therefore$	<code>\lefttherefore</code>	$\therefore$	<code>\uptherefore</code>
$\ddots$	<code>\ddots</code>	$\therefore$	<code>\righttherefore</code>	$:$	<code>\vdotdot</code>
$\downarrow\therefore$	<code>\downtherefore</code>	$::$	<code>\squaredots</code>		
$\cdots$	<code>\hdotdot</code>	$\therefore$	<code>\udotdot</code>		

fdsymbol defines `\adots` as a synonym for `\udots`; `\because` as a synonym for `\downtherefore`; `\cdotp` as a synonym for `\cdot`; `\cdots` as a synonym for `\hdots`; `\Colon` as a synonym for `\squaredots`; `\colon`, `\mathcolon`, and `\mathratio` as synonyms for `\vdotdot`; and `\therefore` as a synonym for `\uptherefore`. (Some of these serve different mathematical roles, such as relations versus binary operators.)

TABLE 311: stix Dots

$\therefore$	<code>\adots</code>	$\cdots$	<code>\cdots</code>	$\vdots$	<code>\fourvdots</code>
$\therefore$	<code>\because</code>	$::$	<code>\Colon</code>	$\cdot$	<code>\ldotp</code>
$\cdot$	<code>\cdot</code>	$\ddots$	<code>\ddots</code>	$\cdots$	<code>\mathellipsis</code>
$\cdot$	<code>\cdotp</code>	$\cdots$	<code>\enleadertwodots</code>	$\therefore$	<code>\therefore</code>

stix defines `\centerdot` as a synonym for `\cdotp` and `\dotso` and `\dotsm` as synonyms for `\cdots`.

TABLE 312: `mathdots` Dots
$$\ddots \quad \backslash\ddots \quad \iddots \quad \dotso \quad \vdots \quad \backslash\vdots$$

Unlike the default definitions of the above (Table 306), `mathdots`'s commands are designed to scale properly with the surrounding font size.

TABLE 313: `yhmath` Dots
$$\adots \quad \backslash\adots$$
TABLE 314: `teubner` Dots
$$\colon \quad \backslash\colon \quad \dotso \quad \backslash\dotso \quad \ddots \quad \backslash\ddots \quad \therefore \quad \backslash\antilabe$$
TABLE 315: `logix` Dots
$$\begin{array}{llllll} \cdot & \backslash\text{BndDot} & : & \backslash\text{Cln} & \dots & \backslash\text{LDots} & \therefore & \backslash\text{Thus} \\ \dots & \backslash\text{CDots} & . & \backslash\text{Dt} & \ddots & \backslash\text{Since} & \vdots & \backslash\text{VDots} \end{array}$$

`logix` requires either `LuaATeX` or `XYTeX`.

TABLE 316: `begriff` Begriffsschrift Symbols
$$\begin{array}{llll} \vdash & \backslash\text{BGassert} & - & \backslash\text{BGcontent} & \neg & \backslash\text{BGnot} \\ \begin{array}{l} b \\ \vdash \\ a \end{array} & \backslash\text{BGconditional}\{a\}\{b\} & \underbrace{\quad} & \backslash\text{BGquant}\{a\} \end{array}$$

The `begriff` package contains additional commands for typesetting Frege's Begriffsschrift notation for second-order logic. See the `begriff` documentation for more information.

TABLE 317: frege Begriffsschrift Symbols

$\vdash$	<code>\Facontent</code>	$\vdash$	<code>\Fanncontent</code>	$\vdash$	<code>\Fncontent</code>
$\vdash$	<code>\Fancontent</code>	$\vdash$	<code>\Fcontent</code>	$\vdash$	<code>\Fnncontent</code>
$\vdash$	<code>\Fannquant{a}</code>	$\vdash$	<code>\Faquant{a}</code>	$\vdash$	<code>\Fnquant{a}</code>
$\vdash$	<code>\Fannquantn{a}</code>	$\vdash$	<code>\Faquantn{a}</code>	$\vdash$	<code>\Fnquantn{a}</code>
$\vdash$	<code>\Fannquantnn{a}</code>	$\vdash$	<code>\Faquantnn{a}</code>	$\vdash$	<code>\Fnquantnn{a}</code>
$\vdash$	<code>\Fanquant{a}</code>	$\vdash$	<code>\Fnnquant{a}</code>	$\vdash$	<code>\Fquantn{a}</code>
$\vdash$	<code>\Fanquantn{a}</code>	$\vdash$	<code>\Fnnquantn{a}</code>	$\vdash$	<code>\Fquantnn{a}</code>
$\vdash$	<code>\Fanquantnn{a}</code>	$\vdash$	<code>\Fnnquantnn{a}</code>		

The `frege` package contains additional commands for typesetting Frege's Begriffsschrift notation for second-order logic. See the `frege` documentation for more information.

TABLE 318: mathcomp Math Symbols

$^{\circ}\text{C}$	<code>\tccentigrade</code>	Ω	<code>\tcohm</code>	‰	<code>\tcperthousand</code>
μ	<code>\tcmu</code>	‰‰	<code>\tcpertenthousand</code>		

TABLE 319: marvosym Math Symbols

$\angle$	<code>\AngleSign</code>	$\geq$	<code>\LargerOrEqual</code>	$\times$	<code>\MVMultiplication</code>
$\Rightarrow$	<code>\Conclusion</code>	$\leq$	<code>\LessOrEqual</code>	$\cdot$	<code>\MVPeriod</code>
$\equiv$	<code>\Congruent</code>	$\cdot$	<code>\MultiplicationDot</code>	$+$	<code>\MVPlus</code>
$\cong$	<code>\Corresponds</code>	$,$	<code>\MVComma</code>	$\rightarrow$	<code>\MVRightArrow</code>
$/$	<code>\Divides</code>	$/$	<code>\MVDivision</code>	$)$	<code>\MVRightBracket</code>
$\nmid$	<code>\DividesNot</code>	$($	<code>\MVLeftBracket</code>	$\neq$	<code>\NotCongruent</code>
$\Leftrightarrow$	<code>\Equivalence</code>	$-$	<code>\MVMinus</code>		

TABLE 320: marvosym Digits

0	<code>\MVZero</code>	2	<code>\MVTwo</code>	4	<code>\MVFour</code>	6	<code>\MVSix</code>	8	<code>\MVEight</code>
1	<code>\MVOne</code>	3	<code>\MVThree</code>	5	<code>\MVFive</code>	7	<code>\MVSeven</code>	9	<code>\MVNine</code>

TABLE 321: fge Digits

∞	<code>\fgeleftthree</code>	∞	<code>\fgerighttwo</code>	$\emptyset$	<code>\fgestruckzero</code>
∞	<code>\fgelefttwo</code>	∞	<code>\fgestruckone</code>		

TABLE 322: dozenal Base-12 Digits

 ζ `\x` ξ `\e`

TABLE 323: mathabx Mayan Digits

	<code>\maya{0}</code>	:	<code>\maya{2}</code>	:	<code>\maya{4}</code>
.	<code>\maya{1}</code>	:	<code>\maya{3}</code>	:	<code>\maya{5}</code>

TABLE 324: stix Infinities

	<code>\acidfree</code>	∞	<code>\infty</code>		<code>\tieinfty</code>
$\sim$	<code>\iinfin</code>	ϕ	<code>\nvinfty</code>		

TABLE 325: stix Primes

'	<code>\prime</code>	'	<code>\backprime</code>
"	<code>\dprime</code>	"	<code>\backdprime</code>
'''	<code>\trprime</code>	'''	<code>\backtrprime</code>
'''	<code>\qprime</code>		

TABLE 326: stix Empty Sets

$\emptyset$	<code>\emptysetset</code>	$\overline{\emptyset}$	<code>\emptysetsetobar</code>	$\varnothing$	<code>\varnothing</code>
$\vec{\emptyset}$	<code>\emptysetsetoarr</code>	$\circ\emptyset$	<code>\emptysetsetocirc</code>		
$\overleftarrow{\emptyset}$	<code>\emptysetsetoarrrl</code>	$\Re\emptyset$	<code>\revemptysetset</code>		

TABLE 327: $\mathcal{AMS}$ Angles
 $\angle$ `\angle` $\measuredangle$ `\measuredangle` $\sphericalangle$ `\sphericalangle`

TABLE 328: MnSymbol Angles

 $\angle$ `\angle` $\measuredangle$ `\measuredangle` $\sphericalangle$ `\sphericalangle`

TABLE 329: fdsymbol Angles

$\angle$	<code>\angle</code>	$\sphericalangle$	<code>\revangle</code>	$\sphericalangle$	<code>\sphericalangle</code>
$\sphericalangle$	<code>\measuredangle</code>	$\sphericalangle$	<code>\revmeasuredangle</code>	$\sphericalangle$	<code>\sphericalangledown</code>
$\sphericalangle$	<code>\measuredrightangle</code>	$\sphericalangle$	<code>\rightangle</code>	$\sphericalangle$	<code>\sphericalangleleft</code>
$\sphericalangle$	<code>\measuredrightangledot</code>	$\sphericalangle$	<code>\rightanglesquare</code>	$\sphericalangle$	<code>\sphericalangleup</code>

fdsymbol defines `\measuredangleleft` as a synonym for `\revmeasuredangle`; `\revsphericalangle` and `\gtlpar` as synonyms for `\sphericalangleleft`; `\rightanglesqr` as a synonym for `\rightanglesquare`; and `\rightangledot` as a synonym for `\measuredrightangledot`.

TABLE 330: boisik Angles

$\angle$	<code>\angle</code>	$\sphericalangle$	<code>\rightangle</code>	$\sphericalangle$	<code>\sphericalangle</code>
$\sphericalangle$	<code>\measuredangle</code>	$\sphericalangle$	<code>\rightangledot</code>		
$\sphericalangle$	<code>\measuredrightangle</code>	$\sphericalangle$	<code>\rightanglesqr</code>		

TABLE 331: stix Angles

$\angle$	<code>\angdnr</code>	$\sphericalangle$	<code>\measanglerutone</code>	$\sphericalangle$	<code>\rightangledot</code>
$\angle$	<code>\angle</code>	$\sphericalangle$	<code>\measangleultonw</code>	$\sphericalangle$	<code>\rightanglesqr</code>
$\sphericalangle$	<code>\angles</code>	$\sphericalangle$	<code>\measangleurtone</code>	$\sphericalangle$	<code>\sphericalangle</code>
$\angle$	<code>\angleubar</code>	$\sphericalangle$	<code>\measuredangle</code>	$\sphericalangle$	<code>\sphericalangleup</code>
$\sphericalangle$	<code>\gtlpar</code>	$\sphericalangle$	<code>\measuredangleleft</code>	$\sphericalangle$	<code>\threedangle</code>
$\sphericalangle$	<code>\measangledltosw</code>	$\sphericalangle$	<code>\measuredrightangle</code>	$\sphericalangle$	<code>\turnangle</code>
$\sphericalangle$	<code>\measangledrtose</code>	$\sphericalangle$	<code>\rangledownzigzagarrow</code>	$\sphericalangle$	<code>\wideangledown</code>
$\sphericalangle$	<code>\measangleldtosw</code>	$\sphericalangle$	<code>\revangle</code>	$\sphericalangle$	<code>\wideangleup</code>
$\sphericalangle$	<code>\measanglelultonw</code>	$\sphericalangle$	<code>\revangleubar</code>		
$\sphericalangle$	<code>\measanglerdtose</code>	$\sphericalangle$	<code>\rightangle</code>		

TABLE 332: typicons Decorative Mathematical Symbols

$\div$	<code>\tiDivide</code>	∞	<code>\tiInfinity</code>	π	<code>\tiPi</code>
$\div$	<code>\tiDivideOutline</code>	∞	<code>\tiInfinityOutline</code>	$+$	<code>\tiPlus</code>
$=$	<code>\tiEquals</code>	$-$	<code>\tiMinus</code>	$+$	<code>\tiPlusOutline</code>
$=$	<code>\tiEqualsOutline</code>	$-$	<code>\tiMinusOutline</code>		

See also `\tiTimes` ($\times$) and `\tiTimesOutline` ($\times$) in Table 422. All typicons symbols are intended to be used in text mode, not math mode.

typicons requires either Lua^AT_EX or X_YL^AT_EX.

TABLE 333: fontawesome5 Decorative Mathematical Symbols

$\div$	<code>\faDivide</code>	$<$	<code>\faLessThan</code>	$\%$	<code>\faPercentage</code>
$=$	<code>\faEquals</code>	$\leq$	<code>\faLessThanEqual</code>	$+$	<code>\faPlus</code>
$>$	<code>\faGreaterThan</code>	$-$	<code>\faMinus</code>	$?$	<code>\faQuestion</code>
$\geq$	<code>\faGreaterThanEqual</code>	$\neq$	<code>\faNotEqual</code>		
∞	<code>\faInfinity</code>	$\%$	<code>\faPercent</code>		

See also `\faTimes` ($\times$) in Table 423. All fontawesome5 symbols are intended to be used in text mode, not math mode.

TABLE 334: Miscellaneous L^AT_EX 2_ε Math Symbols

$\aleph$	<code>\aleph</code>	$\Box$	<code>\Box^{*,†}</code>	∇	<code>\nabla</code>	$\triangle$	<code>\triangle</code>
$\emptyset$	<code>\emptyset[‡]</code>	$\diamond$	<code>\Diamond[*]</code>	$\neg$	<code>\neg</code>		
$\angle$	<code>\angle</code>	∞	<code>\infty</code>	$'$	<code>\prime</code>		
$\backslash$	<code>\backslash</code>	$\mho$	<code>\mho[*]</code>	$\surd$	<code>\surd</code>		

* Not predefined in L^AT_EX 2_ε. Use one of the packages `latexsym`, `amssymb`, `txfonts`, `pxfonts`, or `wasysym`. Note, however, that `amssymb` and `amssymb` define `\Diamond` to produce the same glyph as `\lozenge` (“ $\diamond$ ”); the other packages produce a squarer `\Diamond` as depicted above.

† To use `\Box`—or any other symbol—as an end-of-proof (Q.E.D.) marker, consider using the `ntheorem` package, which properly juxtaposes a symbol with the end of the proof text.

‡ Many people prefer the look of $\mathcal{A}\mathcal{M}\mathcal{S}$ ’s `\varnothing` (“ $\emptyset$ ”, Table 335) to that of L^AT_EX’s `\emptyset`.

TABLE 335: Miscellaneous $\mathcal{A}\mathcal{M}\mathcal{S}$ Math Symbols

$\backprime$	<code>\backprime</code>	$\blacktriangledown$	<code>\blacktriangledown</code>	$\mho$	<code>\mho</code>
$\bigstar$	<code>\bigstar</code>	$\diagdown$	<code>\diagdown</code>	$\square$	<code>\square</code>
$\blacklozenge$	<code>\blacklozenge</code>	$\diagup$	<code>\diagup</code>	$\triangledown$	<code>\triangledown</code>
$\blacksquare$	<code>\blacksquare</code>	$\eth$	<code>\eth</code>	$\varnothing$	<code>\varnothing</code>
$\blacktriangle$	<code>\blacktriangle</code>	$\lozenge$	<code>\lozenge</code>	$\vartriangle$	<code>\vartriangle</code>

TABLE 336: Miscellaneous wasysym Math Symbols

$\Box$	<code>\Box</code>	$\Diamond$	<code>\Diamond</code>	$\mho$	<code>\mho[*]</code>	$\varangle$	<code>\varangle</code>
--------	-------------------	------------	-----------------------	--------	-------------------------------	-------------	------------------------

* `wasysym` also defines an `\agem0` symbol, which is the same glyph as `\mho` but is intended for use in text mode.

TABLE 337: Miscellaneous txfonts/pxfonts Math Symbols

◆	<code>\Diamondblack</code>	λ	<code>\lambdabar</code>
◇	<code>\Diamonddot</code>	λ	<code>\lambdaslash</code>

TABLE 338: Miscellaneous mathabx Math Symbols

◦	<code>\degree</code>	///	<code>\fourth</code>	∠	<code>\measuredangle</code>	//	<code>\second</code>
\	<code>\diagdown</code>	#	<code>\hash</code>	⌋	<code>\pitchfork</code>	⌘	<code>\sphericalangle</code>
/	<code>\diagup</code>	∞	<code>\infty</code>	∝	<code>\propto</code>	///	<code>\third</code>
∅	<code>\diameter</code>	λ	<code>\leftthreetimes</code>	λ	<code>\rightthreetimes</code>	#	<code>\varhash</code>

TABLE 339: Miscellaneous MnSymbol Math Symbols

¬	<code>\backneg</code>	∅	<code>\diameter</code>	¬	<code>\invneg</code>	¬	<code>\neg</code>
\	<code>\backprime</code>	∞	<code>\infty</code>	✕	<code>\maltese</code>	/	<code>\prime</code>
✓	<code>\checkmark</code>	¬	<code>\invbackneg</code>	∇	<code>\nabla</code>	f	<code>\smallint</code>

MnSymbol defines `\emptyset` and `\varnothing` as synonyms for `\diameter`; `\lnot` and `\minushookdown` as synonyms for `\neg`; `\minushookup` as a synonym for `\invneg`; `\hookdownminus` as a synonym for `\backneg`; and, `\hookupminus` as a synonym for `\invbackneg`.

TABLE 340: Miscellaneous Internal MnSymbol Math Symbols

∂	<code>\partialvardint</code>	∂	<code>\partialvartint</code>
∂	<code>\partialvardlanddownint</code>	∂	<code>\partialvartlanddownint</code>
∂	<code>\partialvardlandupint</code>	∂	<code>\partialvartlandupint</code>
∂	<code>\partialvardlcircleleftint</code>	∂	<code>\partialvartlcircleleftint</code>
∂	<code>\partialvardlcircclerightint</code>	∂	<code>\partialvartlcircclerightint</code>
∂	<code>\partialvardoiint</code>	∂	<code>\partialvartoiint</code>
∂	<code>\partialvardoint</code>	∂	<code>\partialvartoint</code>
∂	<code>\partialvardrcircleleftint</code>	∂	<code>\partialvartrcircleleftint</code>
∂	<code>\partialvardrcircclerightint</code>	∂	<code>\partialvartrcircclerightint</code>
∂	<code>\partialvardstrokedint</code>	∂	<code>\partialvartstrokedint</code>
∂	<code>\partialvardsumint</code>	∂	<code>\partialvartsumint</code>

These symbols are intended to be used internally by MnSymbol to construct the integrals appearing in Table 87 on page 58 but can nevertheless be used in isolation.

TABLE 341: Miscellaneous fdsymbol Math Symbols

$\neg$	<code>\backneg</code>	$\int$	<code>\intprod</code>	$'$	<code>\prime</code>
$\backprime$	<code>\backprime</code>	$\int$	<code>\intprodr</code>	$\emptyset$	<code>\revemptyset</code>
$\checkmark$	<code>\checkmark</code>	$\neg$	<code>\invneg</code>	∇	<code>\sector</code>
$\emptyset$	<code>\emptyset</code>	$\otimes$	<code>\maltese</code>	$\int$	<code>\smallint</code>
∞	<code>\infty</code>	$\neg$	<code>\neg</code>		

fdsymbol defines `\hookdownminus`, `\invneg`, and `\invnot` as synonyms for `\backneg`; `\lnot` and `\minushookdown` as synonyms for `\neg`; `\hookupminus` and `\turnedbackneg` as synonyms for `\intprodr`; `\minushookup`, `\turnedneg`, and `\turnednot` as synonyms for `\intprod`; and `\diameter` and `\varnothing` as synonyms for `\emptyset`.

TABLE 342: Miscellaneous boisik Math Symbols

ϵ	<code>\backepsilon</code>	$\dagger$	<code>\hermitmatrix</code>	$\nless$	<code>\notbot</code>
$\backprime$	<code>\backprime</code>	∞	<code>\iinfin</code>	$\nless$	<code>\nottop</code>
$\checkmark$	<code>\checkmark</code>	$\neg$	<code>\invnot</code>	$\wr$	<code>\riota</code>
$\square$	<code>\dalambert</code>	λ	<code>\lambdabar</code>	$\sim$	<code>\sinewave</code>
$\diagdown$	<code>\diagdown</code>	λ	<code>\lambdaslash</code>	$\emptyset$	<code>\varnothing</code>
$\diagup$	<code>\diagup</code>	$\otimes$	<code>\maltese</code>		

TABLE 343: Miscellaneous stix Math Symbols

$\sim$	<code>\accurrent</code>	$\dagger$	<code>\hermitmatrix</code>	$\P$	<code>\PropertyLine</code>
$\backslash$	<code>\backslash</code>	$\cdot$	<code>\hyphenbullet</code>	$\blacksquare$	<code>\QED</code>
$\equiv$	<code>\bbrktbrk</code>	$\sim$	<code>\hzigzag</code>	$??$	<code>\Question</code>
$\perp$	<code>\bigbot</code>	Δ	<code>\increment</code>	$\times$	<code>\rdiagovfdiag</code>
$\equiv$	<code>\biginterleave</code>	$\blacksquare$	<code>\inversebullet</code>	$\bowtie$	<code>\rightouterjoin</code>
$\top$	<code>\bigtop</code>	$\neg$	<code>\invnot</code>	$\lrcorner$	<code>\sansLmirrored</code>
☺	<code>\blacksmiley</code>	$\boxtimes$	<code>\Join</code>	$\lrcorner$	<code>\sansLturned</code>
$\lvert$	<code>\bracevert</code>	$\square$	<code>\laplac</code>	$\sim$	<code>\sinewave</code>
$\wedge$	<code>\caretinsert</code>	$\bowtie$	<code>\leftouterjoin</code>	—	<code>\strns</code>
$\checkmark$	<code>\checkmark</code>	$\lrcorner$	<code>\llarc</code>	⊕	<code>\thermod</code>
$\triangleright$	<code>\conictaper</code>	$\lrcorner$	<code>\lrarc</code>	$\int$	<code>\topcir</code>
⚡	<code>\danger</code>	$\otimes$	<code>\maltese</code>	$\neg$	<code>\turnednot</code>
$\diagdown$	<code>\diagdown</code>	$\S$	<code>\mathsection</code>	—	<code>\ubrbrak</code>
$\diagup$	<code>\diagup</code>	$\neg$	<code>\mathvisiblespace</code>	$\lrcorner$	<code>\ularc</code>
$\emptyset$	<code>\diameter</code>	∇	<code>\nabla</code>	$\nless$	<code>\urarc</code>

(continued on next page)

(continued from previous page)

$*$	<code>\dingasterisk</code>	$\neg$	<code>\neg*</code>	$\#$	<code>\viewdata</code>
$\times$	<code>\elinters</code>	$\neg$	<code>\obrbrak</code>	$\{$	<code>\vzigzag</code>
$\eth$	<code>\eth</code>	$\perp$	<code>\perps</code>	$\yen$	<code>\yen</code>
$!!$	<code>\Exclam</code>	$\overline{\neg}$	<code>\postalmark</code>	$\zmp$	<code>\zcmp</code>
$\times$	<code>\fdiagovrdiag</code>	$\cap$	<code>\profline</code>	$\gg$	<code>\zpipe</code>
$\bowtie$	<code>\fullouterjoin</code>	$\cup$	<code>\profsurf</code>	$\uparrow$	<code>\zproject</code>

* stix defines `\lnot` as a synonym for `\neg`.

TABLE 344: Miscellaneous textcomp Text-mode Math Symbols

$^{\circ}$	<code>\textdegree*</code>	$\frac{1}{2}$	<code>\textonehalf[†]</code>	$\frac{3}{4}$	<code>\textthreequarters[†]</code>
$\div$	<code>\textdiv</code>	$\frac{1}{4}$	<code>\textonequarter[†]</code>	3	<code>\textthreesuperior</code>
$/$	<code>\textfractionsolidus</code>	1	<code>\textonesuperior</code>	$\times$	<code>\texttimes</code>
$\neg$	<code>\textlnot</code>	$\pm$	<code>\textpm</code>	2	<code>\texttwosuperior</code>
$-$	<code>\textminus</code>	$\sqrt{}$	<code>\textsurd</code>		

* If you prefer a larger degree symbol you might consider defining one as “`\ensuremath{\sim\circ}`” (“ $\circ$ ”).

[†] nicefrac (part of the units package) or the newer xfrac package can be used to construct vulgar fractions like “ $\frac{1}{2}$ ”, “ $\frac{1}{4}$ ”, “ $\frac{3}{4}$ ”, and even “ $\frac{c}{o}$ ”.

TABLE 345: Miscellaneous fge Math Symbols

$\backslash$	<code>\fgebackslash</code>	$\cap$	<code>\fgecap</code>	$\cup$	<code>\fgecupacute</code>	$\lhd$	<code>\fgeangle</code>
$\perp$	<code>\fgebaracute</code>	$\supset$	<code>\fgecapbar</code>	$\simeq$	<code>\fgecupbar</code>	$\sqsubset$	<code>\fgeupbracket</code>
$\bar{\cap}$	<code>\fgebarcap</code>	$\cup$	<code>\fgecup</code>	∞	<code>\fgeinfty</code>		

TABLE 346: Miscellaneous mathdesign Math Symbols

$\perp$	<code>\rightangle</code>
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TABLE 347: Miscellaneous logix Math Symbols

$\otimes$	<code>\Aor</code>	$\otimes$	<code>\FncCnvrs</code>	$\sqcup$	<code>\MapJoin</code>	$\cup$	<code>\SetJoin</code>
$\triangleright$	<code>\Append</code>	$\circ$	<code>\FncComp</code>	$\sqcap$	<code>\MapMeet</code>	$\cap$	<code>\SetMeet</code>
$\mathfrak{I}$	<code>\BncBistab</code>	$\bullet$	<code>\ForComp</code>	$\oplus$	<code>\Mnd</code>	Δ	<code>\SetSymDiff</code>
$\sqcup$	<code>\BnchJoin</code>	ω	<code>\FrstOrd</code>	$\wp$	<code>\Mor</code>	$\perp$	<code>\SimPerp</code>
$\sqcap$	<code>\BnchMeet</code>	ν	<code>\GrtFix</code>	$\triangleleft$	<code>\Normal</code>	$\sim$	<code>\SInCoh</code>
$\#$	<code>\Catenate</code>	$\asymp$	<code>\InCoh</code>	$?$	<code>\OfCrse</code>	$\oplus$	<code>\SmCircPlus</code>
τ	<code>\Choice</code>	∞	<code>\Infin</code>	$\&$	<code>\QuantAAnd</code>	$\otimes$	<code>\SmCircStar</code>
$\mathcal{T}$	<code>\Choices</code>	$\mathfrak{I}$	<code>\LcgBistab</code>	$\sqcup$	<code>\QuantBnchJoin</code>	$\otimes$	<code>\SmCircTimes</code>
$\circ$	<code>\Coh</code>	$\oplus$	<code>\LgCircPlus</code>	$\sqcap$	<code>\QuantBnchMeet</code>	$\perp$	<code>\VeeJoin</code>
$\parallel$	<code>\Concat</code>	$\otimes$	<code>\LgCircStar</code>	$\wp$	<code>\QuantMor</code>	$\Uparrow$	<code>\VeeMeet</code>
$\prec$	<code>\Cover</code>	$\otimes$	<code>\LgCircTimes</code>	$\cup$	<code>\QuantSetJoin</code>	$!$	<code>\WhyNot</code>
$\vec{\nu}$	<code>\ExGrtFix</code>	μ	<code>\LstFix</code>	$\cap$	<code>\QuantSetMeet</code>		
$\vec{\mu}$	<code>\ExLstFix</code>	$\sqcup$	<code>\MapComp</code>	$\sim$	<code>\SCoh</code>		

logix requires either Lua $\text{\LaTeX}$ or X $\text{\LaTeX}$.

TABLE 348: Math Alphabets

Font sample	Generating command	T _E X font	Required package
ABCdef123	<code>\mathrm{ABCdef123}</code>	cmr10	<i>none</i>
<i>ABCdef123</i>	<code>\mathit{ABCdef123}</code>	cmmi10	<i>none</i>
<i>ABCdef123</i>	<code>\mathnormal{ABCdef123}</code>	cmmi10	<i>none</i>
<i>ABC</i>	<code>\mathcal{ABC}</code>	cmsy10	<i>none</i>
<i>ABℓ</i>	<code>\mathscr{ABC}</code>	rsfs10	mathrsfs
	<i>or</i> <code>\mathcal{ABC}</code>	rsfs10	calrsfs
<i>ABC</i>	<code>\mathcal{ABC}</code>	eusm10	euscript with the mathcal option
	<i>or</i> <code>\mathscr{ABC}</code>	eusm10	euscript with the mathscr option
<i>ABℓ</i>	<code>\mathcal{ABC}</code>	rsfso10	rsfso
	<i>or</i> <code>\mathscr{ABC}</code>	rsfso10	rsfso with the scr option
<i>ABC</i>	<code>\mathcal{ABC}</code>	urwchancal	urwchancal*
	<i>or</i> <code>\mathscr{ABC}</code>	urwchancal	urwchancal* with the mathscr option
ABC	<code>\mathbb{ABC}</code>	msbm10	amsfonts, [§] amssymb, txfonts, or pxfonts
ABC	<code>\varmathbb{ABC}</code>	txmia	txfonts or pxfonts
ABCdef123	<code>\mathbb{ABCdef123}</code>	bbold10	bbold or mathbbol [†]
ABCdef123	<code>\mathbb{ABCdef123}</code>	mbb10	mbboard [†]
ABCdef12	<code>\mathbbm{ABCdef12}</code>	bbm10	bbm
ABCdef12	<code>\mathbbmss{ABCdef12}</code>	bbmss10	bbm
ABCdef12	<code>\mathbbmtt{ABCdef12}</code>	bbmtt10	bbm
ABC1	<code>\mathds{ABC1}</code>	dsrom10	dsfont
ABC1	<code>\mathds{ABC1}</code>	dsss10	dsfont with the sans option
ABCdef123	<code>\mathbb{ABCdef123}</code>	DSSerif	ds serif
ABCdef123	<code>\mathbb{ABCdef123}</code>	DSSerif-Bold	ds serif
ABC	<code>\symA\symB\symC</code>	china10	G _A 2e [‡]
<i>ABCdef123</i>	<code>\mathfrak{ABCdef123}</code>	eufm10	eufrak
<i>ABCdef123</i>	<code>\textfrak{ABCdef123}</code>	yfrak	yfonts [¶]
<i>ABCdef123</i>	<code>\textswab{ABCdef123}</code>	yswab	yfonts [¶]
<i>ABCdef123</i>	<code>\textgoth{ABCdef123}</code>	ygoth	yfonts [¶]

The “T_EX font” column lists the underlying T_EX font (or, more accurately, the .tfm file) that provides the math alphabet. See the corresponding table in the associated Raw Font Tables document for the math alphabet’s complete character set.

* `urwchancal` redefines `\mathcal` or `\mathscr` to use Zapf Chancery as the calligraphic or script font. However, like all `\mathcal` and `\mathscr` commands shown in Table 348, these support only uppercase letters. An alternative is to put “`\DeclareMathAlphabet{\mathpzc}{OT1}{pzc}{m}{it}`” in your document’s preamble to make `\mathpzc` typeset a wider set of characters in Zapf Chancery. Unfortunately, with this technique accents, superscripts, and subscripts don’t align as well as they do with `urwchancal`.

As a similar trick, you can typeset the Calligra font’s script “*z*” (or other calligraphic symbols) in math mode by loading the `calligra` package and putting “`\DeclareMathAlphabet{\mathcalligra}{T1}{calligra}{m}{n}`” in your document’s preamble to make `\mathcalligra` typeset its argument in the Calligra font. You may also want to specify “`\DeclareFontShape{T1}{calligra}{m}{n}{<->s*[2.2]callig15}{}`” to set Calligra at 2.2 times its design size for a better blend with typical body fonts.

† The `mathbbol` package defines some additional blackboard bold characters: parentheses, square brackets, angle brackets, and—if the `bbgreek` option is passed to `mathbbol`—Greek letters. For instance, “ $\langle[(\alpha\beta\gamma)]\rangle$ ” is produced by “`\mathbb{\Langle\lbrack\lparen\bbalpha\bbbeta\bbgamma\Rparen\rbrack\Rangle}`”.

`mbboard` extends the blackboard bold symbol set significantly further. It supports not only the Greek alphabet—including “Greek-like” symbols such as `\bbnabla` (“ ∇ ”)—but also *all* punctuation marks, various currency symbols such as `\bbdollar` (“\$”) and `\bbeuro` (“€”), and the Hebrew alphabet (e.g., “`\bbfinalnun\bbod\bbqof\bbpe`” → “פּוֹףּוּ”).

‡ The `\sym...` commands provided by the `GnA2e` package are actually text-mode commands. They are included in Table 348 because they resemble the blackboard-bold symbols that appear in the rest of the table. In addition to the 26 letters of the English alphabet, `GnA2e` provides three unlauded blackboard-bold letters: `\symAE` (“ $\mathbb{A}$ ”), `\symOE` (“ $\mathbb{O}$ ”), and `\symUE` (“ $\mathbb{U}$ ”). Note that `GnA2e` does provide math-mode commands for the most common number-set symbols. These are presented in Table 207 on page 119.

¶ As their `\text...` names imply, the fonts provided by the `yfonts` package are actually text fonts. They are included in Table 348 because they are frequently used in a mathematical context.

§ An older (i.e., prior to 1991) version of the $\mathcal{AMS}$ ’s fonts rendered $\mathbb{C}$, $\mathbb{N}$, $\mathbb{R}$, $\mathbb{S}$, and $\mathbb{Z}$ as $\mathbb{C}$, $\mathbb{N}$, $\mathbb{R}$, $\mathbb{S}$, and $\mathbb{Z}$. As some people prefer the older glyphs—much to the $\mathcal{AMS}$ ’s surprise—and because those glyphs fail to build under modern versions of METAFONT, Berthold Horn uploaded PostScript fonts for the older blackboard-bold glyphs to CTAN, to the `fonts/msym10` directory. As of this writing, however, there are no $\text{\LaTeX} 2_{\epsilon}$ packages for utilizing the now-obsolete glyphs.

Chapter 4

Science and technology symbols

This chapter lists symbols that are employed in various branches of science and engineering.

TABLE 349: gensymb Symbols Defined to Work in Both Math and Text Mode

°C	<code>\celsius</code>	μ	<code>\micro</code>	‰	<code>\perthousand</code>
°	<code>\degree</code>	Ω	<code>\ohm</code>		

TABLE 350: wasysym Electrical and Physical Symbols

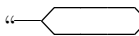
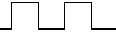
~	<code>\AC</code>	≈	<code>\VHF</code>	~~~~	<code>\photon</code>	≈	<code>\HF</code>	~~~~~	<code>\gluon</code>
---	------------------	---	-------------------	------	----------------------	---	------------------	-------	---------------------

TABLE 351: ifsym Pulse Diagram Symbols

┐	<code>\FallingEdge</code>	┐┐	<code>\LongPulseLow</code>	┐┐	<code>\PulseLow</code>	┐┐	<code>\ShortPulseHigh</code>
┐┐	<code>\LongPulseHigh</code>	┐┐	<code>\PulseHigh</code>	┐	<code>\RaisingEdge</code>	┐	<code>\ShortPulseLow</code>

In addition, within `\textifsym{...}`, the following codes are valid:

<code>_</code>	<code>l</code>	<code>-</code>	<code>m</code>	<code>-</code>	<code>h</code>	<code>-</code>	<code>d</code>	<code><</code>	<code><</code>	<code>></code>	<code>></code>
<code>—</code>	<code>L</code>	<code>—</code>	<code>M</code>	<code>—</code>	<code>H</code>	<code>—</code>	<code>D</code>	<code><</code>	<code><<</code>	<code>></code>	<code>>></code>

This enables one to write “`\textifsym{mm<DDD>mm}`” to get “” or “`\textifsym{L|H|L|H|L}`” to get “”. See also the `timing` package, which provides a wide variety of pulse-diagram symbols within an environment designed specifically for typesetting pulse diagrams.

Finally, `\textifsym` supports the display of segmented digits, as would appear on an LCD: “`\textifsym{-123.456}`” produces “- 123.456”. “`\textifsym{b}`” outputs a blank with the same width as an “8”.

TABLE 352: `ar` Aspect Ratio Symbol
 $\mathcal{R}$ `\AR`
TABLE 353: `plimsoll` Plimsoll Symbol
 $\ominus$ `\plimsoll`
TABLE 354: `textcomp` Text-mode Science and Engineering Symbols
 $^{\circ}\text{C}$ `\textcelsius` $\text{M}\Omega$ `\textmho` μ `\textmu` Ω `\textohm`
TABLE 355: `steinmetz` Extensible Phasor Symbol
 $\angle abc$ `\phase{abc}`

The `\phase` command uses the `pict2e` package to draw a horizontally and vertically scalable Steinmetz phasor symbol. Consequently, `\phase` works only with those T_EX backends supported by `pict2e`. See the `pict2e` documentation for more information.

TABLE 356: `emf` Electromotive Force Symbols
 $\mathcal{E}$ `\emf` with package option `boondox` (default)
 $\mathcal{E}$ `\emf` with package option `cal`*
 $\mathcal{E}$ `\emf` with package option `calligra`
 $\mathcal{E}$ `\emf` with package option `chorus`
 $\mathcal{E}$ `\emf` with package option `cmr`
 $\mathcal{E}$ `\emf` with package option `fourier`
 $\mathcal{E}$ `\emf` with package option `frursive`
 $\mathcal{E}$ `\emf` with package option `miama`
 $\mathcal{E}$ `\emf` with package option `rsfs`

* With the `cal` package option, `\emf` uses `\mathcal{cal}`. Hence, the depiction of “E” depends on the currently loaded math font.

TABLE 357: wasysym Astronomical Symbols

$\text{\textcircled{\tiny{♁}}}$	<code>\mercury</code>	$\text{\textcircled{\tiny{♁}}}$	<code>\earth</code>	$\text{\textcircled{\tiny{♁}}}$	<code>\jupiter</code>	$\text{\textcircled{\tiny{♁}}}$	<code>\uranus</code>	$\text{\textcircled{\tiny{♁}}}$	<code>\pluto</code>
$\text{\textcircled{\tiny{♀}}}$	<code>\venus</code>	$\text{\textcircled{\tiny{♂}}}$	<code>\mars</code>	$\text{\textcircled{\tiny{♄}}}$	<code>\saturn</code>	$\text{\textcircled{\tiny{♅}}}$	<code>\neptune</code>		
$\text{\textcircled{\tiny{☉}}}$	<code>\astrosun</code>	$\text{\textcircled{\tiny{☾}}}$	<code>\fullmoon</code>	$\text{\textcircled{\tiny{☾}}}$	<code>\leftmoon</code>	$\text{\textcircled{\tiny{☾}}}$	<code>\newmoon</code>	$\text{\textcircled{\tiny{☾}}}$	<code>\rightmoon</code>
$\text{\textcircled{\tiny{♈}}}$	<code>\aries</code>	$\text{\textcircled{\tiny{♋}}}$	<code>\cancer</code>	$\text{\textcircled{\tiny{♎}}}$	<code>\libra</code>	$\text{\textcircled{\tiny{♒}}}$	<code>\aquarius</code>		
$\text{\textcircled{\tiny{♉}}}$	<code>\taurus</code>	$\text{\textcircled{\tiny{♌}}}$	<code>\leo</code>	$\text{\textcircled{\tiny{♏}}}$	<code>\scorpio</code>	$\text{\textcircled{\tiny{♐}}}$	<code>\capricornus</code>		
$\text{\textcircled{\tiny{♊}}}$	<code>\gemini</code>	$\text{\textcircled{\tiny{♍}}}$	<code>\virgo</code>	$\text{\textcircled{\tiny{♐}}}$	<code>\sagittarius</code>	$\text{\textcircled{\tiny{♑}}}$	<code>\pisces</code>		
$\text{\textcircled{\tiny{♊}}}$	<code>\ascnode</code>	$\text{\textcircled{\tiny{♋}}}$	<code>\descnode</code>	$\text{\textcircled{\tiny{♌}}}$	<code>\conjunction</code>	$\text{\textcircled{\tiny{♍}}}$	<code>\opposition</code>	$\text{\textcircled{\tiny{♎}}}$	<code>\vernal</code>

TABLE 358: marvosym Astronomical Symbols

$\text{\textcircled{\tiny{♁}}}$	<code>\Mercury</code>	$\text{\textcircled{\tiny{♁}}}$	<code>\Earth</code>	$\text{\textcircled{\tiny{♁}}}$	<code>\Jupiter</code>	$\text{\textcircled{\tiny{♁}}}$	<code>\Uranus</code>	$\text{\textcircled{\tiny{♁}}}$	<code>\Pluto</code>
$\text{\textcircled{\tiny{♀}}}$	<code>\Venus</code>	$\text{\textcircled{\tiny{♂}}}$	<code>\Mars</code>	$\text{\textcircled{\tiny{♄}}}$	<code>\Saturn</code>	$\text{\textcircled{\tiny{♅}}}$	<code>\Neptune</code>		
$\text{\textcircled{\tiny{☾}}}$	<code>\Moon</code>	$\text{\textcircled{\tiny{☉}}}$	<code>\Sun</code>						
$\text{\textcircled{\tiny{♈}}}$	<code>\Aries</code>	$\text{\textcircled{\tiny{♋}}}$	<code>\Cancer</code>	$\text{\textcircled{\tiny{♎}}}$	<code>\Libra</code>	$\text{\textcircled{\tiny{♒}}}$	<code>\Capricorn</code>		
$\text{\textcircled{\tiny{♉}}}$	<code>\Taurus</code>	$\text{\textcircled{\tiny{♌}}}$	<code>\Leo</code>	$\text{\textcircled{\tiny{♏}}}$	<code>\Scorpio</code>	$\text{\textcircled{\tiny{♐}}}$	<code>\Aquarius</code>		
$\text{\textcircled{\tiny{♊}}}$	<code>\Gemini</code>	$\text{\textcircled{\tiny{♍}}}$	<code>\Virgo</code>	$\text{\textcircled{\tiny{♐}}}$	<code>\Sagittarius</code>	$\text{\textcircled{\tiny{♑}}}$	<code>\Pisces</code>		

Note that `\Aries... \Pisces` can also be specified with `\Zodiac{1}... \Zodiac{12}`.

TABLE 359: mathabx Astronomical Symbols

$\text{\textcircled{\tiny{♁}}}$	<code>\Mercury</code>	$\text{\textcircled{\tiny{♁}}}$	<code>\Earth</code>	$\text{\textcircled{\tiny{♁}}}$	<code>\Jupiter</code>	$\text{\textcircled{\tiny{♁}}}$	<code>\Uranus</code>	$\text{\textcircled{\tiny{♁}}}$	<code>\Pluto</code>
$\text{\textcircled{\tiny{♀}}}$	<code>\Venus</code>	$\text{\textcircled{\tiny{♂}}}$	<code>\Mars</code>	$\text{\textcircled{\tiny{♄}}}$	<code>\Saturn</code>	$\text{\textcircled{\tiny{♅}}}$	<code>\Neptune</code>	$\text{\textcircled{\tiny{♆}}}$	<code>\varEarth</code>
$\text{\textcircled{\tiny{☉}}}$	<code>\fullmoon</code>	$\text{\textcircled{\tiny{☾}}}$	<code>\leftmoon</code>	$\text{\textcircled{\tiny{☾}}}$	<code>\newmoon</code>	$\text{\textcircled{\tiny{☾}}}$	<code>\rightmoon</code>	$\text{\textcircled{\tiny{☉}}}$	<code>\Sun</code>
$\text{\textcircled{\tiny{♈}}}$	<code>\Aries</code>	$\text{\textcircled{\tiny{♉}}}$	<code>\Taurus</code>	$\text{\textcircled{\tiny{♊}}}$	<code>\Gemini</code>				

`mathabx` also defines `\girl` as an alias for `\Venus`, `\boy` as an alias for `\Mars`, and `\Moon` as an alias for `\leftmoon`.

TABLE 360: stix Astronomical Symbols

$\text{\textcircled{\tiny{☉}}}$	<code>\astrosun</code>	$\text{\textcircled{\tiny{☾}}}$	<code>\leftmoon</code>	$\text{\textcircled{\tiny{☾}}}$	<code>\rightmoon</code>	$\text{\textcircled{\tiny{☼}}}$	<code>\sun</code>
---------------------------------	------------------------	---------------------------------	------------------------	---------------------------------	-------------------------	---------------------------------	-------------------

TABLE 361: utfsym Astronomical Symbols

☉	\usym{2609}	♈	\usym{2643}	♎	\usym{264F}	●	\usym{1F318}
♊	\usym{260A}	♉	\usym{2644}	♏	\usym{2650}	☾	\usym{1F319}
♌	\usym{260B}	♊	\usym{2645}	♐	\usym{2651}	●	\usym{1F31A}
♍	\usym{260C}	♋	\usym{2646}	♑	\usym{2652}	♄	\usym{1F31B}
♎	\usym{260D}	♌	\usym{2647}	♒	\usym{2653}	♅	\usym{1F31C}
♏	\usym{263C}	♍	\usym{2648}	●	\usym{1F311}	♆	\usym{1F31D}
♐	\usym{263D}	♎	\usym{2649}	●	\usym{1F312}	♇	\usym{1F31E}
♑	\usym{263E}	♏	\usym{264A}	●	\usym{1F313}	♈	\usym{1F31F}
♒	\usym{263F}	♐	\usym{264B}	●	\usym{1F314}	♉	\usym{1F320}
♓	\usym{2640}	♑	\usym{264C}	○	\usym{1F315}		
♈	\usym{2641}	♒	\usym{264D}	○	\usym{1F316}		
♉	\usym{2642}	♓	\usym{264E}	●	\usym{1F317}		

All `utfsym` symbols are implemented with `TikZ` graphics, not with a font. In addition to `\usym`, the `utfsym` package defines `\usymH`, which renders a symbol at a given height, and `\usymW`, which renders a symbol at a given width. See the `utfsym` documentation for more information.

TABLE 362: starfont Astronomical Symbols

	<code>\Mercury</code>		<code>\Mars</code>		<code>\Uranus</code>		<code>\varTerra</code>
	<code>\Venus</code>		<code>\Jupiter</code>		<code>\Neptune</code>		<code>\varUranus</code>
	<code>\Terra</code>		<code>\Saturn</code>		<code>\Pluto</code>		<code>\varPluto</code>
	<code>\Sun</code>		<code>\Moon</code>		<code>\varMoon</code>		
	<code>\Cupido</code>		<code>\Zeus</code>		<code>\Apollon</code>		<code>\Vulkanus</code>
	<code>\Hades</code>		<code>\Kronos</code>		<code>\Admetos</code>		<code>\Poseidon</code>
	<code>\Lilith</code>		<code>\NorthNode</code>		<code>\SouthNode</code>		
	<code>\Amor</code>		<code>\Eros</code>		<code>\Juno</code>		<code>\Sappho</code>
	<code>\Ceres</code>		<code>\Hidalgo</code>		<code>\Pallas</code>		<code>\Vesta</code>
	<code>\Chiron</code>		<code>\Hygiea</code>		<code>\Psyche</code>		
	<code>\Fortune</code>						
	<code>\Aries</code>		<code>\Leo</code>		<code>\Sagittarius</code>		<code>\varCapricorn</code>
	<code>\Taurus</code>		<code>\Virgo</code>		<code>\Capricorn</code>		
	<code>\Gemini</code>		<code>\Libra</code>		<code>\Aquarius</code>		
	<code>\Cancer</code>		<code>\Scorpio</code>		<code>\Pisces</code>		
	<code>\Conjunction</code>		<code>\Square</code>		<code>\Semisextile</code>		
	<code>\Opposition</code>		<code>\Sextile</code>		<code>\Semisquare</code>		
	<code>\Trine</code>		<code>\Quincunx</code>		<code>\Sesquiquadrate</code>		
	<code>\ASC</code>		<code>\EastPoint</code>		<code>\MC</code>		
	<code>\DSC</code>		<code>\IC</code>		<code>\Vertex</code>		
	<code>\Direct</code>		<code>\Retrograde</code>		<code>\Station</code>		
	<code>\Air</code>		<code>\Earth</code>		<code>\Fire</code>		<code>\Water</code>
	<code>\Natal</code>		<code>\Pentagram</code>		<code>\Radix</code>		

TABLE 363: wasysym APL Symbols

	<code>\APLbox</code>		<code>\APLinv</code>		<code>\APLstar</code>
	<code>\APLcomment</code>		<code>\APLleftarrowbox</code>		<code>\APLup</code>
	<code>\APLdown</code>		<code>\APLlog</code>		<code>\APLuparrowbox</code>
	<code>\APLdownarrowbox</code>		<code>\APLminus</code>		<code>\notbackslash</code>
	<code>\APLinput</code>		<code>\APLrightarrowbox</code>		<code>\notslash</code>
	<code>\APLcirc{a}</code>		<code>\APLnot{a}</code>		<code>\APLvert{a}</code>

TABLE 364: stix APL Symbols

	<code>\APLboxquestion</code>	∇	<code>\APLnotbackslash</code>
	<code>\APLboxupcaret</code>	$\nexists$	<code>\APLnotslash</code>

TABLE 365: apl APL Symbols

	<code>\AB</code>	¨	<code>\DD</code>	∇	<code>\GD</code>	⊢	<code>\LK</code>	∇	<code>\PD</code>	↑	<code>\UA</code>	$\underline{G}$	<code>\ZG</code>	$\underline{Q}$	<code>\ZQ</code>
α	<code>\AM</code>	⊥	<code>\DE</code>	≥	<code>\GE</code>	○	<code>\LO</code>	⌈	<code>\QQ</code>	—	<code>\US</code>	$\underline{H}$	<code>\ZH</code>	$\underline{B}$	<code>\ZR</code>
\	<code>\BL</code>	∇	<code>\DL</code>	→	<code>\GO</code>	⊃	<code>\LU</code>	}	<code>\RB</code>	∪	<code>\UU</code>	$\underline{I}$	<code>\ZI</code>	$\underline{S}$	<code>\ZS</code>
□	<code>\BX</code>	◇	<code>\DM</code>	Δ	<code>\GU</code>	≠	<code>\NE</code>	⊢	<code>\RK</code>	⊥	<code>\XQ</code>	$\underline{J}$	<code>\ZJ</code>	$\underline{T}$	<code>\ZT</code>
\	<code>\CB</code>	⊞	<code>\DQ</code>	±	<code>\IB</code>	—	<code>\NG</code>	ρ	<code>\RO</code>	$\underline{A}$	<code>\ZA</code>	$\underline{K}$	<code>\ZK</code>	$\underline{U}$	<code>\ZU</code>
⌈	<code>\CE</code>	∩	<code>\DU</code>	˘	<code>\IO</code>	★	<code>\NN</code>	c	<code>\RU</code>	$\underline{B}$	<code>\ZB</code>	$\underline{L}$	<code>\ZL</code>	$\underline{V}$	<code>\ZV</code>
⊇	<code>\CO</code>	⊢	<code>\EN</code>	{	<code>\LB</code>	∇	<code>\NR</code>	φ	<code>\RV</code>	$\underline{C}$	<code>\ZC</code>	$\underline{M}$	<code>\ZM</code>	$\underline{W}$	<code>\ZW</code>
○	<code>\CR</code>	∈	<code>\EP</code>	Δ	<code>\LD</code>	~	<code>\NT</code>	◦	<code>\SO</code>	$\underline{D}$	<code>\ZD</code>	$\underline{N}$	<code>\ZN</code>	$\underline{X}$	<code>\ZX</code>
/	<code>\CS</code>	⌊	<code>\FL</code>	≤	<code>\LE</code>	ω	<code>\OM</code>	⊆	<code>\SS</code>	$\underline{E}$	<code>\ZE</code>	$\underline{Q}$	<code>\ZO</code>	$\underline{Y}$	<code>\ZY</code>
↓	<code>\DA</code>	∇	<code>\FM</code>	⊗	<code>\LG</code>	v	<code>\OR</code>	⊞	<code>\TR</code>	$\underline{F}$	<code>\ZF</code>	$\underline{P}$	<code>\ZP</code>	$\underline{Z}$	<code>\ZZ</code>

TABLE 366: marvosym Computer Hardware Symbols

	<code>\ComputerMouse</code>		<code>\ParallelPort</code>		<code>\SerialInterface</code>
	<code>\Keyboard</code>		<code>\Printer</code>		<code>\SerialPort</code>

TABLE 367: keystroke Computer Keys

	<code>\Alt</code>		<code>\Enter*</code>		<code>\PrtSc*</code>
	<code>\AltGr</code>		<code>\Esc*</code>		<code>\RArrow</code>
	<code>\Break*</code>		<code>\Home*</code>		<code>\Return</code>
	<code>\BSpace[†]</code>		<code>\Ins*</code>		<code>\Scroll*</code>
	<code>\Ctrl*</code>		<code>\LArrow</code>		<code>\Shift*</code>
	<code>\DArrow</code>		<code>\NumLock</code>		<code>\Spacebar</code>
	<code>\Del*</code>		<code>\PgDown*</code>		<code>\Tab[†]</code>
	<code>\End*</code>		<code>\PgUp*</code>		<code>\UArrow</code>

* Changes based on the language option passed to the `keystroke` package. For example, the `german` option makes `\Del` produce “” instead of “”.

[†] These symbols utilize the `rotating` package and therefore display improperly in most DVI viewers.

The `\keystroke` command draws a key with an arbitrary label. For example, “`\keystroke{F7}`” produces “”.

TABLE 368: ascii Control Characters (CP437)

⊙	\SOH	■	\BS	⚙	\SI	—	\SYN	↔	\GS
⦿	\STX	○	\HT	▶	\DLE	‡	\ETB	▲	\RS
♥	\ETX	◼	\LF	◀	\DCa	↑	\CAN	—	\US
♦	\EOT	♂	\VT	‡	\DCb	↓	\EM		
♣	\ENQ	♀	\FF	!!	\DCc	→	\SUB		
♠	\ACK	○	\CR	‡	\DCd	←	\ESC		
•	\BEL	◦	\SO	§	\NAK	⌞	\FS		
△	\DEL	␣	\NBSP	␣	\NUL	!	\splitvert		

Code Page 437 (CP437), which was first utilized by the original IBM PC, uses the symbols \SOH through \US to depict ASCII characters 1–31 and \DEL to depict ASCII character 127. The \NUL symbol, not part of CP437, represents ASCII character 0. \NBSP, also not part of CP437, represents a nonbreaking space. \splitvert is merely the “|” character drawn as it was on the IBM PC.

TABLE 369: logic Logic Gates

	\ANDd		\BUFu		\NANDl		\ORd
	\ANDl		\BusWidth		\NANDr		\ORl
	\ANDr		\INVd		\NANDu		\ORr
	\ANDu		\INVl		\NORd		\ORu
	\BUFd		\INVR		\NORl		
	\BUF1		\INVu		\NORr		
	\BUFr		\NANDd		\NORu		

The `logic` package implements the digital logic-gate symbols specified by the U.S. Department of Defense’s MIL-STD-806 standard. Note that on CTAN, the package is *called* `logic`, but the package is *loaded* using `\usepackage{milstd}`. (There was already a—completely unrelated—`milstd` package on CTAN at the time of `logic`’s release.) Consequently, package details are listed under `milstd` in Table 697 and Table 698 on page 387.

TABLE 370: quantikz Quantum-Mechanics Notation

$\langle a $	<code>\bra{a}</code>	$ a\rangle$	<code>\ket{a}</code>
$\langle a b\rangle$	<code>\braket{a}{b}</code>	$ a\rangle\langle a $	<code>\proj{a}</code>

All of these symbols work in both text and math mode and scale automatically to fit their argument(s).

TABLE 371: marvosym Communication Symbols

	<code>\Email</code>		<code>\fax</code>		<code>\Faxmachine</code>		<code>\Lightning</code>		<code>\Pickup</code>
	<code>\EmailCT</code>		<code>\FAX</code>		<code>\Letter</code>		<code>\Mobilefone</code>		<code>\Telefon</code>

TABLE 372: marvosym Engineering Symbols

	<code>\Beam</code>		<code>\Force</code>		<code>\Octosteel</code>		<code>\RoundedTTsteel</code>
	<code>\Bearing</code>		<code>\Hexasteel</code>		<code>\Rectpipe</code>		<code>\Squarepipe</code>
	<code>\Circpipe</code>		<code>\Lefttorque</code>		<code>\Rectsteel</code>		<code>\Squaresteel</code>
	<code>\Circsteel</code>		<code>\Lineload</code>		<code>\Righttorque</code>		<code>\Tsteel</code>
	<code>\Fixedbearing</code>		<code>\Loosebearing</code>		<code>\RoundedLsteel*</code>		<code>\TTsteel</code>
	<code>\Flatsteel</code>		<code>\Lsteel</code>		<code>\RoundedTsteel*</code>		

* `\RoundedLsteel` and `\RoundedTsteel` seem to be swapped, at least in the 2000/05/01 version of marvosym.

TABLE 373: typicons User-Interface Symbols

	<code>\tiAdjustBrightness</code>		<code>\tiInfo</code>
	<code>\tiAdjustContrast</code>		<code>\tiInfoLarge</code>
	<code>\tiArchive</code>		<code>\tiInfoLargeOutline</code>
	<code>\tiBackspace</code>		<code>\tiInfoOutline</code>
	<code>\tiBackspaceOutline</code>		<code>\tiLink</code>
	<code>\tiBatteryCharge</code>		<code>\tiLinkOutline</code>
	<code>\tiBatteryFull</code>		<code>\tiLocation</code>
	<code>\tiBatteryHigh</code>		<code>\tiLocationOutline</code>
	<code>\tiBatteryLow</code>		<code>\tiMessage</code>
	<code>\tiBatteryMid</code>		<code>\tiMessages</code>
	<code>\tiBookmark</code>		<code>\tiMessageTyping</code>

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	<code>\tiCancel</code>		<code>\tiRefresh</code>
	<code>\tiCancelOutline</code>		<code>\tiRefreshOutline</code>
	<code>\tiChartArea</code>		<code>\tiRss</code>
	<code>\tiChartAreaOutline</code>		<code>\tiRssOutline</code>
	<code>\tiChartBar</code>		<code>\tiSortAlphabetically</code>
	<code>\tiChartBarOutline</code>		<code>\tiSortAlphabeticallyOutline</code>
	<code>\tiChartLine</code>		<code>\tiSortNumerically</code>
	<code>\tiChartLineOutline</code>		<code>\tiSortNumericallyOutline</code>
	<code>\tiChartPie</code>		<code>\tiSupport</code>
	<code>\tiChartPieOutline</code>		<code>\tiTabsOutline</code>
	<code>\tiCloudStorage</code>		<code>\tiThLarge</code>
	<code>\tiCloudStorageOutline</code>		<code>\tiThLargeOutline</code>
	<code>\tiCode</code>		<code>\tiThList</code>
	<code>\tiCodeOutline</code>		<code>\tiThListOutline</code>
	<code>\tiCog</code>		<code>\tiThMenu</code>
	<code>\tiCogOutline</code>		<code>\tiThMenuOutline</code>
	<code>\tiCss</code>		<code>\tiThSmall</code>
	<code>\tiDatabase</code>		<code>\tiThSmallOutline</code>
	<code>\tiDownload</code>		<code>\tiUpload</code>
	<code>\tiDownloadOutline</code>		<code>\tiUploadOutline</code>
	<code>\tiEdit</code>		<code>\tiWarning</code>
	<code>\tiExport</code>		<code>\tiWarningOutline</code>
	<code>\tiExportOutline</code>		<code>\tiWaves</code>
	<code>\tiFilter</code>		<code>\tiWavesOutline</code>
	<code>\tiFlowChildren</code>		<code>\tiWiFi</code>
	<code>\tiFlowMerge</code>		<code>\tiWiFiOutline</code>
	<code>\tiFlowParallel</code>		<code>\tiZoom</code>
	<code>\tiFlowSwitch</code>		<code>\tiZoomIn</code>
	<code>\tiGroup</code>		<code>\tiZoomInOutline</code>
	<code>\tiGroupOutline</code>		<code>\tiZoomOut</code>
	<code>\tiHtml</code>		<code>\tiZoomOutline</code>
	<code>\tiImage</code>		<code>\tiZoomOutOutline</code>
	<code>\tiImageOutline</code>		

typicons requires either Lua^AT_EX or X_YL^AT_EX.

TABLE 374: fontawesome5 User-Interface Symbols

	\faAd		\faListUl
	\faAddressBook		\faLocationArrow
	\faAddressBook[regular]		\faMailBulk
	\faAddressCard		\faMapMarked*
	\faAddressCard[regular]		\faMapMarked
	\faAdjust		\faMapMarker*
	\faAlignCenter		\faMapMarker
	\faAlignJustify		\faMapPin
	\faAlignLeft		\faMicrophoneAltSlash
	\faAlignRight		\faMicrophoneSlash
	\faArrows*		\faMinusCircle
	\faAudioDescription		\faMinusSquare
	\faBackspace		\faMinusSquare[regular]
	\faBars		\faMousePointer
	\faBatteryEmpty		\faMusic
	\faBatteryFull		\faNetworkWired
	\faBatteryHalf		\faObjectGroup
	\faBatteryQuarter		\faObjectGroup[regular]
	\faBatteryThreeQuarters		\faObjectUngroup
	\faBellSlash		\faObjectUngroup[regular]
	\faBellSlash[regular]		\faOutdent
	\faBlog		\faPaste
	\faBold		\faPause
	\faBookmark		\faPauseCircle
	\faBookmark[regular]		\faPauseCircle[regular]
	\faBorderAll		\faPhotoVideo
	\faBorderNone		\faPlusCircle
	\faBorderStyle		\faPlusSquare
	\faCartArrowDown		\faPlusSquare[regular]
	\faCartPlus		\faPodcast
	\faChartArea		\faPoll
	\faChartBar		\faPollH
	\faChartBar[regular]		\faPortrait
	\faChartLine		\faPowerOff
	\faChartPie		\faPrint
	\faClipboard		\faProjectDiagram
	\faClipboard[regular]		\faQrcode
	\faClipboardCheck		\faQuestionCircle
	\faClone		\faQuestionCircle[regular]
	\faClone[regular]		\faRandom
	\faClosedCaptioning		\faRedo*
	\faClosedCaptioning[regular]		\faRedo

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	\faCloudDownload*		\faRemoveFormat
	\faCloudUpload*		\faReply
	\faCode		\faReplyAll
	\faCodeBranch		\faRetweet
	\faCog		\faRoute
	\faColumns		\faRss
	\faComment*[regular]		\faRssSquare
	\faComment*		\faSave
	\faComment		\faSave[regular]
	\faComment[regular]		\faSearch
	\faCommentDollar		\faSearchDollar
	\faCommentDots		\faSearchLocation
	\faCommentDots[regular]		\faSearchMinus
	\faComments		\faSearchPlus
	\faComments[regular]		\faServer
	\faCommentsDollar		\faShapes
	\faCommentSlash		\faShare*
	\faCompress*		\faShare
	\faCompress		\faShareAltSquare
	\faCompressArrows*		\faShareSquare
	\faCopy		\faShareSquare[regular]
	\faCopy[regular]		\faSignal
	\faCrop*		\faSignature
	\faCrop		\faSignIn*
	\faCrosshairs		\faSignOut*
	\faCut		\faSitemap
	\faDatabase		\faSlidersH
	\faDesktop		\faSms
	\faDonate		\faSort
	\faDownload		\faSortAlphaDown*
	\faDrawPolygon		\faSortAlphaDown
	\faEdit		\faSortAlphaUp*
	\faEdit[regular]		\faSortAlphaUp
	\faEnvelope		\faSortAmountDown*
	\faEnvelope[regular]		\faSortAmountDown
	\faEnvelopeOpen		\faSortAmountUp*
	\faEnvelopeOpen[regular]		\faSortAmountUp
	\faEnvelopeOpenText		\faSortDown
	\faEnvelopeSquare		\faSortNumericDown*
	\faEraser		\faSortNumericDown
	\faEthernet		\faSortNumericUp*
	\faExchange*		\faSortNumericUp
	\faExclamationCircle		\faSortUp
	\faExclamationTriangle		\faSpellCheck
	\faExpand*		\faSpinner

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	\faExpand		\faSquareRoot*
	\faExpandArrows*		\faStoreAltSlash
	\faExternalLink*		\faStoreSlash
	\faExternalLinkSquare*		\faStream
	\faEye		\faStreetView
	\faEye[regular]		\faStrikethrough
	\faEyeSlash		\faSubscript
	\faEyeSlash[regular]		\faSuperscript
	\faFill		\faSync*
	\faFillDrip		\faSync
	\faFilm		\faTable
	\faFilter		\faTasks
	\faFingerprint		\faTerminal
	\faFire*		\faTextHeight
	\faFont		\faTextWidth
	\faGripHorizontal		\faTh
	\faGripLines		\faThLarge
	\faGripLinesVertical		\faThList
	\faGripVertical		\faTint
	\faHashtag		\faTintSlash
	\faHeading		\faToggleOff
	\faHistory		\faToggleOn
	\faIcons		\faTrashRestore*
	\faICursor		\faTrashRestore
	\faImage		\faUnderline
	\faImage[regular]		\faUndo*
	\faImages		\faUndo
	\faImages[regular]		\faUniversalAccess
	\faInbox		\faUnlink
	\faIndent		\faUpload
	\faInfo		\faVectorSquare
	\faInfoCircle		\faVideo
	\faItalic		\faVideoSlash
	\faLanguage		\faVoicemail
	\faLaptopCode		\faWindowClose
	\faLayerGroup		\faWindowClose[regular]
	\faLevelDown*		\faWindowMaximize
	\faLevelUp*		\faWindowMaximize[regular]
	\faLink		\faWindowMinimize
	\faList*[regular]		\faWindowMinimize[regular]
	\faList*		\faWindowRestore
	\faList		\faWindowRestore[regular]
	\faListOl		

TABLE 375: wasysym Biological Symbols

♀ \female ♂ \male

TABLE 376: stix Biological Symbols

♀ \female ♂ \male
 ♂ \Hermaphrodite ♀ \neuter

TABLE 377: marvosym Biological Symbols

♀ \FEMALE ♂ \FemaleMale ♂ \Male ○ \Neutral
 ♀ \Female ♂ \Hermaphrodite ♂ \MALE
 ♀ \FemaleFemale ♂ \HERMAPHRODITE ♂ \MaleMale

TABLE 378: utfsym Biological Symbols

♀ \usym{26A2} ♂ \usym{26A4} ♂ \usym{26A6} ♂ \usym{26A8}
 ♂ \usym{26A3} ♂ \usym{26A5} ♂ \usym{26A7} ♂ \usym{26A9}

All utfsym symbols are implemented with TikZ graphics, not with a font. In addition to \usym, the utfsym package defines \usymH, which renders a symbol at a given height, and \usymW, which renders a symbol at a given width. See the utfsym documentation for more information.

TABLE 379: fontawesome5 Biological Symbols

○ \faGenderless ♂ \faMarsStrokeH ♀ \faTransgender
 ♂ \faMars ♂ \faMarsStrokeV ♀ \faVenus
 ♂ \faMarsDouble ♀ \faNeuter ♀ \faVenusDouble
 ♂ \faMarsStroke ♀ \faTransgender* ♀ \faVenusMars

TABLE 380: marvosym Safety-related Symbols

☠ \Biohazard ☹ \CEsign ☢ \Explosionsafe ☢ \Radioactivity
 ☢ \BSEfree ☢ \Estatically ☢ \Laserbeam ☢ \Stopsign

TABLE 381: feyn Feynman Diagram Symbols

	<code>\bigbosonloop</code>		<code>\hfermion</code>		<code>\smallbosonloopV</code>		
	<code>\bigbosonloopA</code>		<code>\shfermion</code>		<code>\wfermion</code>		
	<code>\bigbosonloopV</code>		<code>\smallbosonloop</code>		<code>\whfermion</code>		
	<code>\gvcropped</code>		<code>\smallbosonloopA</code>				
	<code>\feyn{a}</code>		<code>\feyn{fu}</code>		<code>\feyn{glS}</code>		<code>\feyn{hs}</code>
	<code>\feyn{c}</code>		<code>\feyn{fv}</code>		<code>\feyn{glu}</code>		<code>\feyn{hu}</code>
	<code>\feyn{f}</code>		<code>\feyn{g}</code>		<code>\feyn{gu}</code>		<code>\feyn{m}</code>
	<code>\feyn{fd}</code>		<code>\feyn{g1}</code>		<code>\feyn{gv}</code>		<code>\feyn{ms}</code>
	<code>\feyn{fl}</code>		<code>\feyn{gd}</code>		<code>\feyn{gvs}</code>		<code>\feyn{p}</code>
	<code>\feyn{flS}</code>		<code>\feyn{gl}</code>		<code>\feyn{h}</code>		<code>\feyn{P}</code>
	<code>\feyn{fs}</code>		<code>\feyn{glB}</code>		<code>\feyn{hd}</code>		<code>\feyn{x}</code>

All other arguments to the `\feyn` command produce a “?” symbol.

The `feyn` package provides various commands for composing the preceding symbols into complete Feynman diagrams. See the `feyn` documentation for examples and additional information.

TABLE 382: svrsymbols Physics Ideograms

	<code>\adsorbate</code>		<code>\experimentalsym</code>		<code>\protein</code>
	<code>\adsorbent</code>		<code>\externalsym</code>		<code>\proton</code>
	<code>\antimuon</code>		<code>\fermiDistrib</code>		<code>\quadrupole</code>
	<code>\antineutrino</code>		<code>\fermion</code>		<code>\quark</code>
	<code>\antineutron</code>		<code>\Gluon</code>		<code>\quarkb</code>
	<code>\antiproton</code>		<code>\graphene</code>		<code>\quarkc</code>
	<code>\antiquark</code>		<code>\graviton</code>		<code>\quarkd</code>
	<code>\antiquarkb</code>		<code>\hbond</code>		<code>\quarks</code>
	<code>\antiquarkc</code>		<code>\Higgsboson</code>		<code>\quarkt</code>
	<code>\antiquarkd</code>		<code>\hole</code>		<code>\quarku</code>
	<code>\antiquarks</code>		<code>\interaction</code>		<code>\reference</code>
	<code>\antiquarkt</code>		<code>\internalsym</code>		<code>\resistivity</code>

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$\bar{u}$	<code>\antiquarku</code>	$\textcircled{1}$	<code>\ion</code>	ϱ^-	<code>\rhomesonminus</code>
$\mathcal{A}$	<code>\anyon</code>	$\oplus$	<code>\ionicbond</code>	ϱ^0	<code>\rhomesonnull</code>
★	<code>\assumption</code>	$\mathcal{Y}$	<code>\Jpsimeson</code>	ϱ^+	<code>\rhomesonplus</code>
⊛	<code>\atom</code>	K^-	<code>\Kaonminus</code>	$\boxplus$	<code>\solid</code>
★	<code>\bigassumption</code>	K^0	<code>\Kaonnull</code>	$\mathcal{S}$	<code>\spin</code>
★	<code>\Bigassumption</code>	K^+	<code>\Kaonplus</code>	$\Downarrow$	<code>\spindown</code>
★	<code>\biggassumption</code>	$\mathcal{M}$	<code>\magnon</code>	$\Uparrow$	<code>\spinup</code>
B^-	<code>\Bmesonminus</code>	$\mathcal{M}$	<code>\maxwellDistrib</code>	Φ	<code>\surface</code>
B^0	<code>\Bmesonnull</code>	$\mathcal{M}$	<code>\metalbond</code>	$\mathbb{W}$	<code>\svrexample</code>
B^+	<code>\Bmesonplus</code>	$\mathcal{M}$	<code>\method</code>	f	<code>\svrphoton</code>
—	<code>\bond</code>	μ^-	<code>\muon</code>	$\mathfrak{t}$	<code>\tachyon</code>
$\mathcal{B}$	<code>\boseDistrib</code>	ν	<code>\neutrino</code>	τ^-	<code>\tauleptonminus</code>
$\mathcal{B}$	<code>\boson</code>	n^0	<code>\neutron</code>	τ^+	<code>\tauleptonplus</code>
⊛	<code>\conductivity</code>	$\mathcal{N}$	<code>\nucleus</code>	T^-	<code>\Tmesonminus</code>
$\oplus$	<code>\covbond</code>	$\curvearrowright$	<code>\orbit</code>	T^0	<code>\Tmesonnull</code>
d^p	<code>\dipole</code>	ϕ	<code>\phimeson</code>	T^+	<code>\Tmesonplus</code>
D^-	<code>\Dmesonminus</code>	ϕ^0	<code>\phimesonnull</code>	$\overleftrightarrow{\leftarrow\leftarrow\leftarrow}$	<code>\triplecovbond</code>
D^0	<code>\Dmesonnull</code>	$\mathcal{P}$	<code>\phonon</code>	Υ	<code>\Upsilonmeson</code>
D^+	<code>\Dmesonplus</code>	π^-	<code>\pionminus</code>	$\mathfrak{f}$	<code>\varphoton</code>
$\overleftrightarrow{\oplus}$	<code>\doublecovbond</code>	π^0	<code>\pionnull</code>	$\mathfrak{H}_2\mathfrak{O}$	<code>\water</code>
e^-	<code>\electron</code>	π^+	<code>\pionplus</code>	W	<code>\Wboson</code>
$\mathbb{E}$	<code>\errorsym</code>	$\sim e^-$	<code>\plasmon</code>	W^-	<code>\Wbosonminus</code>
η	<code>\etameson</code>	$\mathfrak{P}$	<code>\polariton</code>	W^+	<code>\Wbosonplus</code>
η'	<code>\etamesonprime</code>	$\mathfrak{P}$	<code>\polaron</code>	Z	<code>\Zboson</code>
$\sim h^+$	<code>\exciton</code>	e^+	<code>\positron</code>		

Chapter 5

Dingbats

Dingbats are symbols such as stars, arrows, and geometric shapes. They are commonly used as bullets in itemized lists or, more generally, as a means to draw attention to the text that follows.

The `pifont` dingbat package warrants special mention. Among other capabilities, `pifont` provides a $\LaTeX$ interface to the Zapf Dingbats font (one of the standard 35 PostScript fonts). However, rather than name each of the dingbats individually, `pifont` merely provides a single `\ding` command, which outputs the character that lies at a given position in the font. The consequence is that the `pifont` symbols can't be listed by name in this document's index, so be mindful of that fact when searching for a particular symbol.

TABLE 383: `bbding` Arrows

	<code>\ArrowBoldDownRight</code>		<code>\ArrowBoldRightShort</code>		<code>\ArrowBoldUpRight</code>
	<code>\ArrowBoldRightCircled</code>		<code>\ArrowBoldRightStrobe</code>		

TABLE 384: `pifont` Arrows

	<code>\ding{212}</code>		<code>\ding{221}</code>		<code>\ding{230}</code>		<code>\ding{239}</code>		<code>\ding{249}</code>
	<code>\ding{213}</code>		<code>\ding{222}</code>		<code>\ding{231}</code>		<code>\ding{241}</code>		<code>\ding{250}</code>
	<code>\ding{214}</code>		<code>\ding{223}</code>		<code>\ding{232}</code>		<code>\ding{242}</code>		<code>\ding{251}</code>
	<code>\ding{215}</code>		<code>\ding{224}</code>		<code>\ding{233}</code>		<code>\ding{243}</code>		<code>\ding{252}</code>
	<code>\ding{216}</code>		<code>\ding{225}</code>		<code>\ding{234}</code>		<code>\ding{244}</code>		<code>\ding{253}</code>
	<code>\ding{217}</code>		<code>\ding{226}</code>		<code>\ding{235}</code>		<code>\ding{245}</code>		<code>\ding{254}</code>
	<code>\ding{218}</code>		<code>\ding{227}</code>		<code>\ding{236}</code>		<code>\ding{246}</code>		
	<code>\ding{219}</code>		<code>\ding{228}</code>		<code>\ding{237}</code>		<code>\ding{247}</code>		
	<code>\ding{220}</code>		<code>\ding{229}</code>		<code>\ding{238}</code>		<code>\ding{248}</code>		

TABLE 385: adfsymbols Arrows

➤	<code>\adfarrowe1</code>	↗	<code>\adfarrown1</code>	↓	<code>\adfarrows1</code>	↘	<code>\adfarrowsw1</code>
→	<code>\adfarrowe2</code>	↖	<code>\adfarrown2</code>	↓	<code>\adfarrows2</code>	↗	<code>\adfarrowsw2</code>
➤	<code>\adfarrowe3</code>	↗	<code>\adfarrown3</code>	↓	<code>\adfarrows3</code>	↘	<code>\adfarrowsw3</code>
➤	<code>\adfarrowe4</code>	↗	<code>\adfarrown4</code>	↓	<code>\adfarrows4</code>	↘	<code>\adfarrowsw4</code>
→	<code>\adfarrowe5</code>	↖	<code>\adfarrown5</code>	↓	<code>\adfarrows5</code>	↗	<code>\adfarrowsw5</code>
➤	<code>\adfarrowe6</code>	↗	<code>\adfarrown6</code>	↓	<code>\adfarrows6</code>	↘	<code>\adfarrowsw6</code>
↑	<code>\adfarrown1</code>	↖	<code>\adfarrownw1</code>	↘	<code>\adfarrowse1</code>	←	<code>\adfarrownw1</code>
↑	<code>\adfarrown2</code>	↖	<code>\adfarrownw2</code>	↘	<code>\adfarrowse2</code>	←	<code>\adfarrownw2</code>
↑	<code>\adfarrown3</code>	↖	<code>\adfarrownw3</code>	↘	<code>\adfarrowse3</code>	←	<code>\adfarrownw3</code>
↑	<code>\adfarrown4</code>	↖	<code>\adfarrownw4</code>	↘	<code>\adfarrowse4</code>	←	<code>\adfarrownw4</code>
↑	<code>\adfarrown5</code>	↖	<code>\adfarrownw5</code>	↘	<code>\adfarrowse5</code>	←	<code>\adfarrownw5</code>
↑	<code>\adfarrown6</code>	↖	<code>\adfarrownw6</code>	↘	<code>\adfarrowse6</code>	←	<code>\adfarrownw6</code>
↖	<code>\adfhalfarrowleft</code>	↗	<code>\adfhalfarrowright</code>				
↖	<code>\adfhalfarrowleftsolid</code>	↗	<code>\adfhalfarrowrightsolid</code>				

Technically, the digit at the end of each `\adfarrow⟨dir⟩⟨digit⟩` command is a macro argument, not part of the command name.

The preceding symbols can also be produced by passing a number or a style/direction pair to the `\adfarrow` command. For example, both `\adfarrow{19}` and `\adfarrow[comic]{east}` produce “➤”. See the `adfsymbols` documentation for more information.

TABLE 386: adorn Arrows

↖	<code>\adhalfleftarrow</code>	➤	<code>\adhalfrightarrowhead</code>
↖	<code>\adhalfleftarrowhead</code>	↖	<code>\adleftarrowhead</code>
➤	<code>\adhalfrightarrow</code>	➤	<code>\adrightarrowhead</code>

TABLE 387: arev Arrows

➤	<code>\arrowbullet</code>
---	---------------------------

TABLE 388: utfsym Arrows

	<code>\usym{2794}</code>		<code>\usym{27A1}</code>		<code>\usym{27AB}</code>		<code>\usym{27B6}</code>
	<code>\usym{2798}</code>		<code>\usym{27A2}</code>		<code>\usym{27AC}</code>		<code>\usym{27B7}</code>
	<code>\usym{2799}</code>		<code>\usym{27A3}</code>		<code>\usym{27AD}</code>		<code>\usym{27B8}</code>
	<code>\usym{279A}</code>		<code>\usym{27A4}</code>		<code>\usym{27AE}</code>		<code>\usym{27B9}</code>
	<code>\usym{279B}</code>		<code>\usym{27A5}</code>		<code>\usym{27AF}</code>		<code>\usym{27BA}</code>
	<code>\usym{279C}</code>		<code>\usym{27A6}</code>		<code>\usym{27B1}</code>		<code>\usym{27BB}</code>
	<code>\usym{279D}</code>		<code>\usym{27A7}</code>		<code>\usym{27B2}</code>		<code>\usym{27BC}</code>
	<code>\usym{279E}</code>		<code>\usym{27A8}</code>		<code>\usym{27B3}</code>		<code>\usym{27BD}</code>
	<code>\usym{279F}</code>		<code>\usym{27A9}</code>		<code>\usym{27B4}</code>		<code>\usym{27BE}</code>
	<code>\usym{27A0}</code>		<code>\usym{27AA}</code>		<code>\usym{27B5}</code>		

All `utfsym` symbols are implemented with `TikZ` graphics, not with a font. In addition to `\usym`, the `utfsym` package defines `\usymH`, which renders a symbol at a given height, and `\usymW`, which renders a symbol at a given width. See the `utfsym` documentation for more information.

TABLE 389: asapsym Arrows

	<code>\asapArrowCircleFillDown</code>		<code>\asapArrowCircleOpenRight</code>
	<code>\asapArrowCircleFillDownLeft</code>		<code>\asapArrowCircleOpenUp</code>
	<code>\asapArrowCircleFillDownRight</code>		<code>\asapArrowCircleOpenUpLeft</code>
	<code>\asapArrowCircleFillLeft</code>		<code>\asapArrowCircleOpenUpRight</code>
	<code>\asapArrowCircleFillRight</code>		<code>\asapArrowDown</code>
	<code>\asapArrowCircleFillUp</code>		<code>\asapArrowDownLeft</code>
	<code>\asapArrowCircleFillUpLeft</code>		<code>\asapArrowDownRight</code>
	<code>\asapArrowCircleFillUpRight</code>		<code>\asapArrowLeft</code>
	<code>\asapArrowCircleOpenDown</code>		<code>\asapArrowRight</code>
	<code>\asapArrowCircleOpenDownLeft</code>		<code>\asapArrowUp</code>
	<code>\asapArrowCircleOpenDownRight</code>		<code>\asapArrowUpLeft</code>
	<code>\asapArrowCircleOpenLeft</code>		<code>\asapArrowUpRight</code>

`asapsym` requires either `LuaLATEX` or `XLLATEX`.

TABLE 390: typicons Arrows

↩	<code>\tiArrowBack</code>	↗	<code>\tiArrowMaximise</code>	▼	<code>\tiArrowSortedDown</code>
↩	<code>\tiArrowBackOutline</code>	↗	<code>\tiArrowMaximiseOutline</code>	▲	<code>\tiArrowSortedUp</code>
↓	<code>\tiArrowDown</code>	⌵	<code>\tiArrowMinimise</code>	↻	<code>\tiArrowSync</code>
↓	<code>\tiArrowDownOutline</code>	⌵	<code>\tiArrowMinimiseOutline</code>	↻	<code>\tiArrowSyncOutline</code>
↓	<code>\tiArrowDownThick</code>	↻	<code>\tiArrowMove</code>	↻	<code>\tiArrowUnsorted</code>
➡	<code>\tiArrowForward</code>	↻	<code>\tiArrowMoveOutline</code>	↑	<code>\tiArrowUp</code>
➡	<code>\tiArrowForwardOutline</code>	↻	<code>\tiArrowRepeat</code>	↑	<code>\tiArrowUpOutline</code>
←	<code>\tiArrowLeft</code>	↻	<code>\tiArrowRepeatOutline</code>	↑	<code>\tiArrowUpThick</code>
←	<code>\tiArrowLeftOutline</code>	➡	<code>\tiArrowRight</code>	↗	<code>\tiLocationArrow</code>
←	<code>\tiArrowLeftThick</code>	➡	<code>\tiArrowRightOutline</code>	↗	<code>\tiLocationArrowOutline</code>
↻	<code>\tiArrowLoop</code>	➡	<code>\tiArrowRightThick</code>		
↻	<code>\tiArrowLoopOutline</code>	↻	<code>\tiArrowShuffle</code>		

typicons requires either Lua^LA^TE^X or X^LA^TE^X.

TABLE 391: fontawesome5 Arrows

⬇	<code>\faArrowAltCircleDown[regular]</code>	⬇	<code>\faArrowCircleDown</code>	↕	<code>\faArrowsAltV</code>
⬇	<code>\faArrowAltCircleDown</code>	⬅	<code>\faArrowCircleLeft</code>	⬆	<code>\faArrowUp</code>
⬅	<code>\faArrowAltCircleLeft[regular]</code>	⬆	<code>\faArrowCircleRight</code>	⬇	<code>\faLongArrowAltDown</code>
⬅	<code>\faArrowAltCircleLeft</code>	⬆	<code>\faArrowCircleUp</code>	⬅	<code>\faLongArrowAltLeft</code>
⬆	<code>\faArrowAltCircleRight</code>	⬇	<code>\faArrowDown</code>	➡	<code>\faLongArrowAltRight</code>
⬆	<code>\faArrowAltCircleRight[regular]</code>	⬅	<code>\faArrowLeft</code>	⬆	<code>\faLongArrowAltUp</code>
⬆	<code>\faArrowAltCircleUp[regular]</code>	➡	<code>\faArrowRight</code>		
⬆	<code>\faArrowAltCircleUp</code>	↕	<code>\faArrowsAltH</code>		

TABLE 392: marvosym Scissors

✂	<code>\CutLeft</code>	---	<code>\CuttingLine</code>	✂	<code>\RightScissors</code>
✂	<code>\CutRight</code>	✂	<code>\LeftScissors</code>		

TABLE 393: bbding Scissors

✂	<code>\ScissorHollowLeft</code>	✂	<code>\ScissorLeftBrokenTop</code>
✂	<code>\ScissorHollowRight</code>	✂	<code>\ScissorRight</code>
✂	<code>\ScissorLeft</code>	✂	<code>\ScissorRightBrokenBottom</code>
✂	<code>\ScissorLeftBrokenBottom</code>	✂	<code>\ScissorRightBrokenTop</code>

TABLE 394: pifont Scissors

✂	<code>\ding{33}</code>	✂	<code>\ding{34}</code>	✂	<code>\ding{35}</code>	✂	<code>\ding{36}</code>
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TABLE 395: utfsym Scissors

	<code>\usym{2700}</code>		<code>\usym{2702}</code>		<code>\usym{2704}</code>
	<code>\usym{2701}</code>		<code>\usym{2703}</code>		

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TABLE 396: dingbat Pencils

	<code>\largepencil</code>		<code>\smallpencil</code>
---	---------------------------	---	---------------------------

TABLE 397: arev Pencils

	<code>\pencil</code>
---	----------------------

TABLE 398: typicons Pencils and Pens

	<code>\tiPen</code>		<code>\tiPencil</code>
---	---------------------	---	------------------------

`typicons` requires either `LuaLATEX` or `XLLATEX`.

TABLE 399: fontawesome5 Pencils, Pens, and Nibs

	<code>\faHighlighter</code>		<code>\faPen</code>		<code>\faPenNib</code>
	<code>\faMarker</code>		<code>\faPencil*</code>		<code>\faPenSquare</code>
	<code>\faPen*</code>		<code>\faPenFancy</code>		

TABLE 400: bbding Pencils and Nibs

	<code>\NibLeft</code>		<code>\PencilLeft</code>		<code>\PencilRightDown</code>
	<code>\NibRight</code>		<code>\PencilLeftDown</code>		<code>\PencilRightUp</code>
	<code>\NibSolidLeft</code>		<code>\PencilLeftUp</code>		
	<code>\NibSolidRight</code>		<code>\PencilRight</code>		

TABLE 401: pifont Pencils and Nibs

 `\ding{46}`  `\ding{47}`  `\ding{48}`  `\ding{49}`  `\ding{50}`

TABLE 402: utfsym Pencils, Pens, and Nibs

 `\usym{270E}`  `\usym{2711}`  `\usym{1F58A}`  `\usym{1F58D}`
 `\usym{270F}`  `\usym{2712}`  `\usym{1F58B}`
 `\usym{2710}`  `\usym{1F589}`  `\usym{1F58C}`

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TABLE 403: dingbat Fists

 `\leftpointright`  `\rightpointleft`  `\rightpointright`
 `\leftthumbsdown`  `\rightthumbsdown`
 `\leftthumbsup`  `\rightthumbsup`

TABLE 404: bbding Fists

 `\HandCuffLeft`  `\HandCuffRightUp`  `\HandPencilLeft`
 `\HandCuffLeftUp`  `\HandLeft`  `\HandRight`
 `\HandCuffRight`  `\HandLeftUp`  `\HandRightUp`

TABLE 405: pifont Fists

 `\ding{42}`  `\ding{43}`  `\ding{44}`  `\ding{45}`

TABLE 406: fourier Fists

 `\lefthand`  `\righthand`

TABLE 407: arev Fists

 `\pointright`

TABLE 408: utfsym Fists

	<code>\usym{261A}</code>		<code>\usym{1F447}</code>		<code>\usym{1F58F}</code>		<code>\usym{1F59A}</code>
	<code>\usym{261B}</code>		<code>\usym{1F448}</code>		<code>\usym{1F590}</code>		<code>\usym{1F59B}</code>
	<code>\usym{261C}</code>		<code>\usym{1F449}</code>		<code>\usym{1F591}</code>		<code>\usym{1F59C}</code>
	<code>\usym{261D}</code>		<code>\usym{1F44A}</code>		<code>\usym{1F592}</code>		<code>\usym{1F59D}</code>
	<code>\usym{261E}</code>		<code>\usym{1F44B}</code>		<code>\usym{1F593}</code>		<code>\usym{1F59E}</code>
	<code>\usym{261F}</code>		<code>\usym{1F44C}</code>		<code>\usym{1F594}</code>		<code>\usym{1F59F}</code>
	<code>\usym{270A}</code>		<code>\usym{1F44D}</code>		<code>\usym{1F595}</code>		<code>\usym{1F5A0}</code>
	<code>\usym{270B}</code>		<code>\usym{1F44E}</code>		<code>\usym{1F596}</code>		<code>\usym{1F5A1}</code>
	<code>\usym{270C}</code>		<code>\usym{1F44F}</code>		<code>\usym{1F597}</code>		<code>\usym{1F5A2}</code>
	<code>\usym{270D}</code>		<code>\usym{1F450}</code>		<code>\usym{1F598}</code>		<code>\usym{1F5A3}</code>
	<code>\usym{1F446}</code>		<code>\usym{1F58E}</code>		<code>\usym{1F599}</code>		

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TABLE 409: typicons Fists

	<code>\tiThumbsDown</code>		<code>\tiThumbsOk</code>		<code>\tiThumbsUp</code>
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`typicons` requires either `LuaLATEX` or `XYLATEX`.

TABLE 410: fontawesome5 Fists

	<code>\faFistRaised</code>		<code>\faHandPointUp</code>
	<code>\faHandHolding</code>		<code>\faHandPointUp[regular]</code>
	<code>\faHandHoldingHeart</code>		<code>\faHandRock</code>
	<code>\faHandHoldingMedical</code>		<code>\faHandRock[regular]</code>
	<code>\faHandHoldingUsd</code>		<code>\faHands</code>
	<code>\faHandHoldingWater</code>		<code>\faHandScissors</code>
	<code>\faHandLizard</code>		<code>\faHandScissors[regular]</code>
	<code>\faHandLizard[regular]</code>		<code>\faHandshake</code>
	<code>\faHandMiddleFinger</code>		<code>\faHandshake[regular]</code>
	<code>\faHandPaper</code>		<code>\faHandshakeAltSlash</code>
	<code>\faHandPaper[regular]</code>		<code>\faHandshakeSlash</code>
	<code>\faHandPeace</code>		<code>\faHandsHelping</code>
	<code>\faHandPeace[regular]</code>		<code>\faHandSparkles</code>
	<code>\faHandPointDown</code>		<code>\faHandSpock</code>
	<code>\faHandPointDown[regular]</code>		<code>\faHandSpock[regular]</code>
	<code>\faHandPointer</code>		<code>\faHandsWash</code>
	<code>\faHandPointer[regular]</code>		<code>\faThumbsDown</code>
	<code>\faHandPointLeft</code>		<code>\faThumbsDown[regular]</code>
	<code>\faHandPointLeft[regular]</code>		<code>\faThumbsUp</code>
	<code>\faHandPointRight</code>		<code>\faThumbsUp[regular]</code>
	<code>\faHandPointRight[regular]</code>		

TABLE 411: bbding Crosses and Plusses

	<code>\Cross</code>		<code>\CrossOpenShadow</code>		<code>\PlusOutline</code>
	<code>\CrossBoldOutline</code>		<code>\CrossOutline</code>		<code>\PlusThinCenterOpen</code>
	<code>\CrossCloverTips</code>		<code>\Plus</code>		
	<code>\CrossMaltese</code>		<code>\PlusCenterOpen</code>		

TABLE 412: pifont Crosses and Plusses

	<code>\ding{57}</code>		<code>\ding{59}</code>		<code>\ding{61}</code>		<code>\ding{63}</code>
	<code>\ding{58}</code>		<code>\ding{60}</code>		<code>\ding{62}</code>		<code>\ding{64}</code>

TABLE 413: adfsymbols Crosses and Plusses

	<code>\adfbullet{4}</code>		<code>\adfbullet{6}</code>		<code>\adfbullet{8}</code>		<code>\adfbullet{10}</code>
	<code>\adfbullet{5}</code>		<code>\adfbullet{7}</code>		<code>\adfbullet{9}</code>		

TABLE 414: utfsym Crosses and Plusses

✚	<code>\usym{2719}</code>	†	<code>\usym{271D}</code>	✚	<code>\usym{2722}</code>	†	<code>\usym{1F546}</code>
✚	<code>\usym{271A}</code>	†	<code>\usym{271E}</code>	✚	<code>\usym{2723}</code>	†	<code>\usym{1F547}</code>
✚	<code>\usym{271B}</code>	†	<code>\usym{271F}</code>	✚	<code>\usym{2724}</code>	†	<code>\usym{1F548}</code>
✚	<code>\usym{271C}</code>	✚	<code>\usym{2720}</code>	✚	<code>\usym{2725}</code>		

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TABLE 415: arev Crosses

✚	<code>\eastcross</code>	✚	<code>\westcross</code>
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TABLE 416: bbding Xs and Check Marks

✓	<code>\Checkmark</code>	✚	<code>\XSolid</code>	✚	<code>\XSolidBrush</code>
✓	<code>\CheckmarkBold</code>	✚	<code>\XSolidBold</code>		

TABLE 417: pifont Xs and Check Marks

✓	<code>\ding{51}</code>	✚	<code>\ding{53}</code>	✚	<code>\ding{55}</code>
✓	<code>\ding{52}</code>	✚	<code>\ding{54}</code>	✚	<code>\ding{56}</code>

TABLE 418: wasysym Xs and Check Marks

☑	<code>\CheckedBox</code>	☐	<code>\Square</code>	☒	<code>\XBox</code>
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TABLE 419: marvosym Xs and Check Marks

☑	<code>\Checkedbox</code>	☒	<code>\CrossedBox*</code>	☐	<code>\HollowBox</code>
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* `marvosym` defines `\Crossedbox` as a synonym for `\CrossedBox`.

TABLE 420: arev Xs and Check Marks

✓	<code>\ballotcheck</code>	✚	<code>\ballotx</code>
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TABLE 421: utfsym Xs and Check Marks

☐	<code>\usym{2610}</code>	✓	<code>\usym{2713}</code>	✗	<code>\usym{2718}</code>	✓	<code>\usym{1F5F8}</code>
☑	<code>\usym{2611}</code>	✓	<code>\usym{2714}</code>	✗	<code>\usym{1F5F4}</code>	☑	<code>\usym{1F5F9}</code>
☒	<code>\usym{2612}</code>	✗	<code>\usym{2715}</code>	☒	<code>\usym{1F5F5}</code>		
✗	<code>\usym{2613}</code>	✗	<code>\usym{2716}</code>	✗	<code>\usym{1F5F6}</code>		
✓	<code>\usym{2705}</code>	✗	<code>\usym{2717}</code>	☒	<code>\usym{1F5F7}</code>		

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TABLE 422: typicons Xs and Check Marks

✗	<code>\tiDelete</code>	☑	<code>\tiInputCheckedOutline</code>	✗	<code>\tiTimes</code>
⊗	<code>\tiDeleteOutline</code>	✓	<code>\tiTick</code>	⊗	<code>\tiTimesOutline</code>
☑	<code>\tiInputChecked</code>	✓	<code>\tiTickOutline</code>		

`typicons` requires either `LuaATEX` or `XYLATEX`.

TABLE 423: fontawesome5 Xs and Check Marks

✓	<code>\faCheck</code>	☑	<code>\faCheckSquare[regular]</code>
☑	<code>\faCheckCircle</code>	✗	<code>\faTimes</code>
☑	<code>\faCheckCircle[regular]</code>	⊗	<code>\faTimesCircle</code>
☑	<code>\faCheckDouble</code>	⊗	<code>\faTimesCircle[regular]</code>
☑	<code>\faCheckSquare</code>		

TABLE 424: pifont Circled Numerals

①	<code>\ding{172}</code>	❶	<code>\ding{182}</code>	①	<code>\ding{192}</code>	❶	<code>\ding{202}</code>
②	<code>\ding{173}</code>	❷	<code>\ding{183}</code>	②	<code>\ding{193}</code>	❷	<code>\ding{203}</code>
③	<code>\ding{174}</code>	❸	<code>\ding{184}</code>	③	<code>\ding{194}</code>	❸	<code>\ding{204}</code>
④	<code>\ding{175}</code>	❹	<code>\ding{185}</code>	④	<code>\ding{195}</code>	❹	<code>\ding{205}</code>
⑤	<code>\ding{176}</code>	❺	<code>\ding{186}</code>	⑤	<code>\ding{196}</code>	❺	<code>\ding{206}</code>
⑥	<code>\ding{177}</code>	❻	<code>\ding{187}</code>	⑥	<code>\ding{197}</code>	❻	<code>\ding{207}</code>
⑦	<code>\ding{178}</code>	❼	<code>\ding{188}</code>	⑦	<code>\ding{198}</code>	❼	<code>\ding{208}</code>
⑧	<code>\ding{179}</code>	❽	<code>\ding{189}</code>	⑧	<code>\ding{199}</code>	❽	<code>\ding{209}</code>
⑨	<code>\ding{180}</code>	❾	<code>\ding{190}</code>	⑨	<code>\ding{200}</code>	❾	<code>\ding{210}</code>
⑩	<code>\ding{181}</code>	❿	<code>\ding{191}</code>	⑩	<code>\ding{201}</code>	❿	<code>\ding{211}</code>

`pifont` (part of the `psnfss` package) provides a `dingautolist` environment which resembles `enumerate` but uses circled numbers as bullets.¹ See the `psnfss` documentation for more information.

TABLE 425: utfsym Circled Numerals

①	<code>\usym{2776}</code>	⑩	<code>\usym{277E}</code>	②	<code>\usym{2786}</code>	⑤	<code>\usym{278E}</code>
②	<code>\usym{2777}</code>	⑪	<code>\usym{277F}</code>	③	<code>\usym{2787}</code>	⑥	<code>\usym{278F}</code>
③	<code>\usym{2778}</code>	④	<code>\usym{2780}</code>	④	<code>\usym{2788}</code>	⑦	<code>\usym{2790}</code>
④	<code>\usym{2779}</code>	⑤	<code>\usym{2781}</code>	⑩	<code>\usym{2789}</code>	⑧	<code>\usym{2791}</code>
⑤	<code>\usym{277A}</code>	⑥	<code>\usym{2782}</code>	①	<code>\usym{278A}</code>	⑨	<code>\usym{2792}</code>
⑥	<code>\usym{277B}</code>	⑦	<code>\usym{2783}</code>	②	<code>\usym{278B}</code>	⑩	<code>\usym{2793}</code>
⑦	<code>\usym{277C}</code>	⑧	<code>\usym{2784}</code>	③	<code>\usym{278C}</code>		
⑧	<code>\usym{277D}</code>	⑨	<code>\usym{2785}</code>	④	<code>\usym{278D}</code>		

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TABLE 426: wasysym Stars

☆	<code>\davidssstar</code>	✱	<code>\hexstar</code>	✱	<code>\varhexstar</code>
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TABLE 427: bbding Stars, Flowers, and Similar Shapes

✱	<code>\Asterisk</code>	✿	<code>\FiveFlowerPetal</code>	✱	<code>\JackStar</code>
✱	<code>\AsteriskBold</code>	★	<code>\FiveStar</code>	✱	<code>\JackStarBold</code>
✱	<code>\AsteriskCenterOpen</code>	☆	<code>\FiveStarCenterOpen</code>	✱	<code>\SixFlowerAlternate</code>
✿	<code>\AsteriskRoundedEnds</code>	★	<code>\FiveStarConvex</code>	✱	<code>\SixFlowerAltPetal</code>
✱	<code>\AsteriskThin</code>	☆	<code>\FiveStarLines</code>	✱	<code>\SixFlowerOpenCenter</code>
✱	<code>\AsteriskThinCenterOpen</code>	☆	<code>\FiveStarOpen</code>	✱	<code>\SixFlowerPetalDotted</code>
☆	<code>\DavidStar</code>	✱	<code>\FiveStarOpenCircled</code>	✱	<code>\SixFlowerPetalRemoved</code>
★	<code>\DavidStarSolid</code>	★	<code>\FiveStarOpenDotted</code>	✱	<code>\SixFlowerRemovedOpenPetal</code>
✱	<code>\EightAsterisk</code>	★	<code>\FiveStarOutline</code>	★	<code>\SixStar</code>
✿	<code>\EightFlowerPetal</code>	★	<code>\FiveStarOutlineHeavy</code>	✱	<code>\SixteenStarLight</code>
✱	<code>\EightFlowerPetalRemoved</code>	☆	<code>\FiveStarShadow</code>	✱	<code>\Snowflake</code>
✱	<code>\EightStar</code>	✱	<code>\FourAsterisk</code>	✱	<code>\SnowflakeChevron</code>
★	<code>\EightStarBold</code>	✱	<code>\FourClowerOpen</code>	✱	<code>\SnowflakeChevronBold</code>
✱	<code>\EightStarConvex</code>	✱	<code>\FourClowerSolid</code>	✱	<code>\Sparkle</code>
✱	<code>\EightStarTaper</code>	✱	<code>\FourStar</code>	✱	<code>\SparkleBold</code>
✱	<code>\FiveFlowerOpen</code>	✱	<code>\FourStarOpen</code>	✱	<code>\TwelveStar</code>

¹In fact, `dingautolist` can use any set of consecutive Zapf Dingbats symbols.

TABLE 428: pifont Stars, Flowers, and Similar Shapes

☆	\ding{65}	⊛	\ding{74}	*	\ding{83}	*	\ding{92}	*	\ding{101}
✦	\ding{66}	☆	\ding{75}	*	\ding{84}	*	\ding{93}	⊛	\ding{102}
✧	\ding{67}	★	\ding{76}	*	\ding{85}	✧	\ding{94}	*	\ding{103}
♣	\ding{68}	★	\ding{77}	★	\ding{86}	⊛	\ding{95}	*	\ding{104}
♠	\ding{69}	☆	\ding{78}	*	\ding{87}	⊛	\ding{96}	*	\ding{105}
◆	\ding{70}	☆	\ding{79}	*	\ding{88}	⊛	\ding{97}	*	\ding{106}
◇	\ding{71}	☆	\ding{80}	*	\ding{89}	⊛	\ding{98}	*	\ding{107}
★	\ding{72}	*	\ding{81}	⊛	\ding{90}	*	\ding{99}		
☆	\ding{73}	*	\ding{82}	*	\ding{91}	⊛	\ding{100}		

TABLE 429: adfsymbols Stars, Flowers, and Similar Shapes

◇	\adfbullet{1}	*	\adfbullet{13}	⊛	\adfbullet{18}	◇	\adfbullet{23}
⊛	\adfbullet{2}	⊛	\adfbullet{14}	⊛	\adfbullet{19}	⊛	\adfbullet{24}
*	\adfbullet{3}	⊛	\adfbullet{15}	⊛	\adfbullet{20}	*	\adfbullet{25}
*	\adfbullet{11}	⊛	\adfbullet{16}	*	\adfbullet{21}	⊛	\adfbullet{26}
*	\adfbullet{12}	⊛	\adfbullet{17}	⊛	\adfbullet{22}		

TABLE 430: utfsym Stars, Flowers, and Similar Shapes

★	\usym{2605}	★	\usym{272B}	*	\usym{2737}	*	\usym{2743}
★	\usym{2606}	★	\usym{272C}	*	\usym{2738}	⊛	\usym{2744}
★	\usym{26E4}	★	\usym{272D}	*	\usym{2739}	⊛	\usym{2745}
★	\usym{26E5}	★	\usym{272E}	⊛	\usym{273A}	⊛	\usym{2746}
★	\usym{26E6}	★	\usym{272F}	*	\usym{273B}	*	\usym{2747}
☆	\usym{26E7}	☆	\usym{2730}	*	\usym{273C}	*	\usym{2748}
☆	\usym{2721}	*	\usym{2731}	*	\usym{273D}	*	\usym{2749}
◆	\usym{2726}	*	\usym{2732}	⊛	\usym{273E}	*	\usym{274A}
◇	\usym{2727}	*	\usym{2733}	⊛	\usym{273F}	*	\usym{274B}
⊛	\usym{2728}	*	\usym{2734}	⊛	\usym{2740}	⊛	\usym{1F52F}
☆	\usym{2729}	*	\usym{2735}	⊛	\usym{2741}		
⊛	\usym{272A}	*	\usym{2736}	⊛	\usym{2742}		

All utfsym symbols are implemented with TikZ graphics, not with a font. In addition to \usym, the utfsym package defines \usymH, which renders a symbol at a given height, and \usymW, which renders a symbol at a given width. See the utfsym documentation for more information.

TABLE 431: adorn Stars

*	\adfast{1}	*	\adfast{3}	*	\adfast{5}	*	\adfast{7}	*	\adfast{9}
*	\adfast{2}	*	\adfast{4}	*	\adfast{6}	*	\adfast{8}	*	\adfast{10}

TABLE 432: typicons Stars

★	<code>\tiStar</code>	★	<code>\tiStarFullOutline</code>	☆	<code>\tiStarOutline</code>
✻	<code>\tiStarburst</code>	✧	<code>\tiStarHalf</code>		
✪	<code>\tiStarburstOutline</code>	☆	<code>\tiStarHalfOutline</code>		

typicons requires either Lua^AT_EX or X_Y^AT_EX.

TABLE 433: fontawesome5 Stars

★	<code>\faStar</code>	☆	<code>\faStarHalf*</code>	✧	<code>\faStarHalf[regular]</code>
☆	<code>\faStar[regular]</code>	✧	<code>\faStarHalf</code>	✳	<code>\faStarOfLife</code>

TABLE 434: fourier Fleurons and Flowers

🌀	<code>\aldine</code>	✻	<code>\decoone</code>	🌸	<code>\floweroneright</code>
🌀	<code>\aldineleft</code>	✧	<code>\decosix</code>	🌿	<code>\leafleft</code>
🌀	<code>\aldineright</code>	🌀	<code>\decothreeleft</code>	🌿	<code>\leafNE</code>
🌀	<code>\aldinesmall</code>	🌀	<code>\decothreeright</code>	🌿	<code>\leafright</code>
🌀	<code>\decofourleft</code>	🌀	<code>\decotwo</code>	✳	<code>\starredbullet</code>
🌀	<code>\decofourright</code>	🌸	<code>\floweroneleft</code>		

TABLE 435: adorn Fleurons and Flowers

🌀	<code>\adfdownhalfleafleft</code>	🌀	<code>\adfdownhalfleafright</code>
🌀	<code>\adfdownleafleft</code>	🌀	<code>\adfdownleafright</code>
🌀	<code>\adfflatdownhalfleafleft</code>	🌀	<code>\adfflatdownhalfleafright</code>
🌀	<code>\adfflatdownoutlineleafleft</code>	🌀	<code>\adfflatdownoutlineleafright</code>
🌀	<code>\adfflatleafleft</code>	🌀	<code>\adfflatleafright</code>
🌀	<code>\adfflatleafoutlineleft</code>	🌀	<code>\adfflatleafoutlineright</code>
🌀	<code>\adfflatleafsolidleft</code>	🌀	<code>\adfflatleafsolidright</code>
🌀	<code>\adfflowerleft</code>	🌀	<code>\adfflowerright</code>
🌀	<code>\adfhalfleafleft</code>	🌀	<code>\adfhalfleafright</code>
🌀	<code>\adfhangingleafleft</code>	🌀	<code>\adfhangingleafright</code>
🌀	<code>\adfleafleft</code>	🌀	<code>\adfleafright</code>
🌀	<code>\adfoutlineleafleft</code>	🌀	<code>\adfoutlineleafright</code>
🌀	<code>\adfsmallhangingleafleft</code>	🌀	<code>\adfsmallhangingleafright</code>
🌀	<code>\adfsmallleafleft</code>	🌀	<code>\adfsmallleafright</code>
🌀	<code>\adfsolidleafleft</code>	🌀	<code>\adfsolidleafright</code>

TABLE 436: wasysym Geometric Shapes

○	<code>\Circle</code>	◐	<code>\LEFTcircle</code>	◑	<code>\octagon</code>	◒	<code>\RIGHTcircle</code>
●	<code>\CIRCLE</code>	◑	<code>\LEFTCIRCLE</code>	⬠	<code>\pentagon</code>	◒	<code>\RIGHTCIRCLE</code>
◑	<code>\hexagon</code>	◐	<code>\Leftcircle</code>	◑	<code>\Rightcircle</code>	◑	<code>\varhexagon</code>

TABLE 437: MnSymbol Geometric Shapes

★	<code>\filledlargestar</code>	◊	<code>\largelozenge</code>	◊	<code>\medlozenge</code>
◆	<code>\filledlozenge</code>	☆	<code>\largepentagram</code>	☆	<code>\medstarofdavid</code>
◆	<code>\filledmedlozenge</code>	◻	<code>\largetsquare</code>	◊	<code>\smalllozenge</code>
○	<code>\largecircle</code>	☆	<code>\largestar</code>		
◊	<code>\largediamond</code>	☆	<code>\largestarofdavid</code>		

MnSymbol defines `\bigcirc` as a synonym for `\largecircle`; `\bigstar` as a synonym for `\filledlargestar`; `\lozenge` as a synonym for `\medlozenge`; and, `\blacklozenge` as a synonym for `\filledmedlozenge`.

TABLE 438: fdsymbol Geometric Shapes

●	<code>\largeblackcircle</code>	▽	<code>\largetriangleup</code>	◊	<code>\medlozenge</code>
■	<code>\largeblacksquare</code>	△	<code>\largetriangleup</code>	◆	<code>\smallblacklozenge</code>
★	<code>\largeblackstar</code>	☆	<code>\largewhitestar</code>	◊	<code>\smalllozenge</code>
○	<code>\largecircle</code>	◊	<code>\lozengeminus</code>	☆	<code>\starofdavid</code>
◻	<code>\largetsquare</code>	◆	<code>\medblacklozenge</code>		

fdsymbol defines synonyms for almost all of the preceding symbols:

○	<code>\bigcirc</code>	■	<code>\lgblksquare</code>	◊	<code>\mdlgwhtlozenge</code>
★	<code>\bigstar</code>	○	<code>\lgwhtcircle</code>	◊	<code>\mdwhtlozenge</code>
▽	<code>\bigtriangledown</code>	◻	<code>\lgwhtsquare</code>	◆	<code>\smbklozenge</code>
△	<code>\bigtriangleup</code>	◊	<code>\lozenge</code>	◊	<code>\smwhtlozenge</code>
◆	<code>\blacklozenge</code>	◆	<code>\mdblklozenge</code>		
●	<code>\lgblkcicle</code>	◆	<code>\mdlgblklozenge</code>		

TABLE 439: boisik Geometric Shapes

★	<code>\bigstar</code>	◊	<code>\diamond</code>	▽	<code>\triangledown</code>
◆	<code>\blacklozenge</code>	◊	<code>\lozenge</code>	◁	<code>\triangleleft</code>
■	<code>\blacksquare</code>	◊	<code>\lozengedot</code>	▷	<code>\triangleright</code>
▲	<code>\blacktriangle</code>	◻	<code>\square</code>	⚡	<code>\varlrrtriangle</code>
▼	<code>\blacktriangledown</code>	*	<code>\star</code>		

TABLE 440: stix Geometric Shapes

	<code>\acwopencirclearrow</code>		<code>\enclosecircle</code>		<code>\smbldiamond</code>
	<code>\barovernorthwestarrow</code>		<code>\enclosediamond</code>		<code>\smbloklozenge</code>
	<code>\benzenr</code>		<code>\enclosesquare</code>		<code>\smbllksquare</code>
	<code>\bigblacktriangledown</code>		<code>\enclosetriangle</code>		<code>\smwhitestar</code>
	<code>\bigblacktriangleup</code>		<code>\errbarblackcircle</code>		<code>\smwhtcircle</code>
	<code>\bigstar</code>		<code>\errbarblackdiamond</code>		<code>\smwhtdiamond</code>
	<code>\bigtriangledown</code>		<code>\errbarblacksquare</code>		<code>\smwhtlozenge</code>
	<code>\bigtriangleleft</code>		<code>\errbarcircle</code>		<code>\smwhtsquare</code>
	<code>\bigtriangleup</code>		<code>\errbardiamond</code>		<code>\sqlozenge</code>
	<code>\bigwhitestar</code>		<code>\errbarsquare</code>		<code>\squarebotblack</code>
	<code>\blackcircledownarrow</code>		<code>\fisheye</code>		<code>\squarecrossfill</code>
	<code>\blackcircledrightdot</code>		<code>\fltns</code>		<code>\squarehfill</code>
	<code>\blackcircledtwodots</code>		<code>\hexagon</code>		<code>\squarehvfill</code>
	<code>\blackcircleulquadwhite</code>		<code>\hexagonblack</code>		<code>\squareleftblack</code>
	<code>\blackdiamonddownarrow</code>		<code>\house</code>		<code>\squarellblack</code>
	<code>\blackinwhitediamond</code>		<code>\hrectangle</code>		<code>\squarellquad</code>
	<code>\blackinwhitesquare</code>		<code>\hrectangleblack</code>		<code>\squarelrblack</code>
	<code>\blacklefthalfcircle</code>		<code>\inversewhitecircle</code>		<code>\squarelrquad</code>
	<code>\blackpointerleft</code>		<code>\invwhitelowerhalfcircle</code>		<code>\squareswfill</code>
	<code>\blackpointerright</code>		<code>\invwhiteupperhalfcircle</code>		<code>\squareswsefill</code>
	<code>\blackrighthalfcircle</code>		<code>\lgblkcircle</code>		<code>\squarerightblack</code>
	<code>\blacktriangle</code>		<code>\lgblksquare</code>		<code>\squaretopblack</code>
	<code>\blacktriangledown</code>		<code>\lgwhtcircle</code>		<code>\squareulblack</code>
	<code>\blacktriangleleft</code>		<code>\lgwhtsquare</code>		<code>\squareulquad</code>
	<code>\blacktriangleright</code>		<code>\llblacktriangle</code>		<code>\squareurblack</code>
	<code>\blkhorzoval</code>		<code>\lltriangle</code>		<code>\squareurquad</code>
	<code>\blkvertoval</code>		<code>\lrblacktriangle</code>		<code>\squarevfill</code>
	<code>\botsemicircle</code>		<code>\lrtriangle</code>		<code>\squoval</code>
	<code>\boxonbox</code>		<code>\mdblkcircle</code>		<code>\topsemicircle</code>
	<code>\bullseye</code>		<code>\mdblkdiamond</code>		<code>\trapezium</code>
	<code>\circ</code>		<code>\mdblklozenge</code>		<code>\trianglecdot</code>
	<code>\circlebottomhalfblack</code>		<code>\mdblksquare</code>		<code>\triangledown</code>
	<code>\circledbullet</code>		<code>\mdlgblkcircle</code>		<code>\triangleleftblack</code>
	<code>\circledownarrow</code>		<code>\mdlgblkdiamond</code>		<code>\triangleodot</code>
	<code>\circledrightdot</code>		<code>\mdlgblklozenge</code>		<code>\trianglerightblack</code>
	<code>\circledstar</code>		<code>\mdlgblksquare</code>		<code>\triangles</code>
	<code>\circledtwodots</code>		<code>\mdlgwhtdiamond</code>		<code>\triangleubar</code>
	<code>\circledwhitebullet</code>		<code>\mdlgwhtlozenge</code>		<code>\ulblacktriangle</code>
	<code>\circlelefthalfblack</code>		<code>\mdlgwhtsquare</code>		<code>\ultriangle</code>
	<code>\circlellquad</code>		<code>\mdsmbllkcircle</code>		<code>\uparrowoncircle</code>
	<code>\circlelrquad</code>		<code>\mdsmbllksquare</code>		<code>\urblacktriangle</code>
	<code>\cirlclerighthalfblack</code>		<code>\mdsmwhtcircle</code>		<code>\urtriangle</code>
	<code>\circletophalfblack</code>		<code>\mdsmwhtsquare</code>		<code>\varhexagon</code>

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	<code>\circleulquad</code>		<code>\mdwhtcircle</code>		<code>\varhexagonblack</code>
	<code>\circleurquad</code>		<code>\mdwhtdiamond</code>		<code>\varhexagonlrbonds</code>
	<code>\circleurquadblack</code>		<code>\mdwhtlozenge</code>		<code>\varlrtriangle</code>
	<code>\circlevertfill</code>		<code>\mdwhtsquare</code>		<code>\varstar</code>
	<code>\cirE</code>		<code>\medblackstar</code>		<code>\vartriangleleft</code>
	<code>\cirscir</code>		<code>\medwhitestar</code>		<code>\vartriangleright</code>
	<code>\cwopencirclearrow</code>		<code>\parallelogram</code>		<code>\vrectangle</code>
	<code>\diamondbotblack</code>		<code>\parallelogramblack</code>		<code>\vrectangleblack</code>
	<code>\diamondcdot</code>		<code>\pentagon</code>		<code>\vysmblksquare</code>
	<code>\diamondleftblack</code>		<code>\pentagonblack</code>		<code>\vysmwhtsquare</code>
	<code>\diamondrightblack</code>		<code>\rightpentagon</code>		<code>\whiteinwhitetriangle</code>
	<code>\diamondtopblack</code>		<code>\rightpentagonblack</code>		<code>\whitepointerleft</code>
	<code>\dottedcircle</code>		<code>\smallblacktriangleleft</code>		<code>\whitepointerright</code>
	<code>\dottedsquare</code>		<code>\smallblacktriangleright</code>		<code>\whthorzoval</code>
	<code>\downtriangleleftblack</code>		<code>\smalltriangleleft</code>		<code>\whtvertoval</code>
	<code>\downtrianglerightblack</code>		<code>\smalltriangleright</code>		

stix defines `\diamond` as a synonym for `\smwhtdiamond`, `\blacksquare` as a synonym for `\mdlgblksquare`, `\square` and `\Box` as synonyms for `\mdlgwhtsquare`, `\triangle` and `\varbigtriangleup` as synonyms for `\bigtriangleup`, `\rhd` as a synonym for `\vartriangleright`, `\varbigtriangledown` as a synonym for `\bigtriangledown`, `\lhd` as a synonym for `\vartriangleleft`, `\Diamond` and `\lozenge` as synonyms for `\mdlgwhtlozenge`, `\bigcirc` as a synonym for `\mdlgwhtcircle`, `\circ` as a synonym for `\smwhtcircle`. and `\blacklozenge` as a synonym for `\mdlgblklozenge`.

TABLE 441: ifsym Geometric Shapes

	<code>\BigCircle</code>		<code>\FilledBigTriangleRight</code>		<code>\SmallCircle</code>
	<code>\BigCross</code>		<code>\FilledBigTriangleUp</code>		<code>\SmallCross</code>
	<code>\BigDiamondshape</code>		<code>\FilledCircle</code>		<code>\SmallDiamondshape</code>
	<code>\BigHBar</code>		<code>\FilledDiamondShadowA</code>		<code>\SmallHBar</code>
	<code>\BigLowerDiamond</code>		<code>\FilledDiamondShadowC</code>		<code>\SmallLowerDiamond</code>
	<code>\BigRightDiamond</code>		<code>\FilledDiamondshape</code>		<code>\SmallRightDiamond</code>
	<code>\BigSquare</code>		<code>\FilledSmallCircle</code>		<code>\SmallSquare</code>
	<code>\BigTriangleDown</code>		<code>\FilledSmallDiamondshape</code>		<code>\SmallTriangleDown</code>
	<code>\BigTriangleLeft</code>		<code>\FilledSmallSquare</code>		<code>\SmallTriangleLeft</code>
	<code>\BigTriangleRight</code>		<code>\FilledSmallTriangleDown</code>		<code>\SmallTriangleRight</code>
	<code>\BigTriangleUp</code>		<code>\FilledSmallTriangleLeft</code>		<code>\SmallTriangleUp</code>

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	\BigVBar	►	\FilledSmallTriangleRight		\SmallVBar
○	\Circle	▲	\FilledSmallTriangleUp	↓	\SpinDown
×	\Cross	■	\FilledSquare	↑	\SpinUp
◊	\DiamondShadowA	▣	\FilledSquareShadowA	□	\Square
◊	\DiamondShadowB	▣	\FilledSquareShadowC	▣	\SquareShadowA
◊	\DiamondShadowC	▼	\FilledTriangleDown	▣	\SquareShadowB
◊	\Diamondshape	◄	\FilledTriangleLeft	▣	\SquareShadowC
●	\FilledBigCircle	►	\FilledTriangleRight	▽	\TriangleDown
◆	\FilledBigDiamondshape	▲	\FilledTriangleUp	◄	\TriangleLeft
■	\FilledBigSquare	—	\HBar	►	\TriangleRight
▼	\FilledBigTriangleDown	◊	\LowerDiamond	△	\TriangleUp
◄	\FilledBigTriangleLeft	◊	\RightDiamond		\VBar

The ifsym documentation points out that one can use \rlap to combine some of the above into useful, new symbols. For example, \BigCircle and \FilledSmallCircle combine to give “●”. Likewise, \Square and \Cross combine to give “⊠”. See Section 12.3 for more information about constructing new symbols out of existing symbols.

TABLE 442: bbding Geometric Shapes

○	\CircleShadow		\Rectangle	▣	\SquareShadowTopLeft
●	\CircleSolid	■	\RectangleBold	▣	\SquareShadowTopRight
◆	\DiamondSolid		\RectangleThin	■	\SquareSolid
○	\Ellipse	□	\Square	▼	\TriangleDown
○	\EllipseShadow	▣	\SquareCastShadowBottomRight	▲	\TriangleUp
●	\EllipseSolid	▣	\SquareCastShadowTopLeft		
◐	\HalfCircleLeft	▣	\SquareCastShadowTopRight		
◑	\HalfCircleRight	▣	\SquareShadowBottomRight		

TABLE 443: pifont Geometric Shapes

●	\ding{108}	▣	\ding{111}	▣	\ding{114}	◆	\ding{117}		\ding{121}
○	\ding{109}	▣	\ding{112}	▲	\ding{115}	◑	\ding{119}	■	\ding{122}
■	\ding{110}	▣	\ding{113}	▼	\ding{116}		\ding{120}		

TABLE 444: universa Geometric Shapes

● \baucircle ■ \bausquare ▲ \bautriangle

TABLE 445: adfsymbols Geometric Shapes

• \adfbullet{27}	► \adfbullet{32}	• \adfbullet{43}	✦ \adfbullet{48}
• \adfbullet{28}	▲ \adfbullet{33}	• \adfbullet{44}	✦ \adfbullet{49}
■ \adfbullet{29}	▼ \adfbullet{34}	• \adfbullet{45}	✦ \adfbullet{50}
◆ \adfbullet{30}	• \adfbullet{41}	■ \adfbullet{46}	◊ \adfbullet{51}
◄ \adfbullet{31}	• \adfbullet{42}	■ \adfbullet{47}	◊ \adfbullet{52}

TABLE 446: utfsym Geometric Shapes

● \usym{1F534}	◆ \usym{1F537}	▲ \usym{1F53A}	▼ \usym{1F53D}
● \usym{1F535}	◆ \usym{1F538}	▼ \usym{1F53B}	
◆ \usym{1F536}	◆ \usym{1F539}	▲ \usym{1F53C}	

All utfsym symbols are implemented with TikZ graphics, not with a font. In addition to \usym, the utfsym package defines \usymH, which renders a symbol at a given height, and \usymW, which renders a symbol at a given width. See the utfsym documentation for more information.

TABLE 447: fontawesome5 Geometric Shapes

● \faCircle	● \faDotCircle	□ \faSquare[regular]
○ \faCircle[regular]	⊙ \faDotCircle[regular]	■ \faSquareFull
◌ \faCircleNotch	■ \faSquare	

TABLE 448: oplotsymb1 Geometric Shapes

○ \circlet	◆ \rhombusfillha	△ \trianglepalineh
⊗ \circletcross	◆ \rhombusfillhb	△ \trianglepalinev
⊙ \circletdot	◆ \rhombusfillhl	△ \trianglepalinevh
● \circletfill	◆ \rhombusfillhr	▽ \trianglepb
● \circletfillha	◇ \rhombuslineh	⊗ \trianglepbcross
● \circletfillhb	◇ \rhombuslinev	▽ \trianglepbdot
● \circletfillhl	⊕ \rhombuslinevh	▼ \trianglepbfill
● \circletfillhr	□ \squad	▽ \trianglepbfillha
⊖ \circletlineh	⊗ \squadcross	▼ \trianglepbfillhb
⊖ \circletlinev	⊙ \squaddot	▼ \trianglepbfillhl
⊕ \circletlinevh	■ \squadfill	▼ \trianglepbfillhr

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	<code>\hexago</code>		<code>\squadfillha</code>		<code>\trianglepblin</code>
	<code>\hexagocross</code>		<code>\squadfillhb</code>		<code>\trianglepblin</code>
	<code>\hexagodot</code>		<code>\squadfillhl</code>		<code>\trianglepblin</code>
	<code>\hexagofill</code>		<code>\squadfillhr</code>		<code>\trianglepl</code>
	<code>\hexagofillha</code>		<code>\squadlineh</code>		<code>\triangleplcross</code>
	<code>\hexagofillhb</code>		<code>\squadlinev</code>		<code>\trianglepldot</code>
	<code>\hexagofillhl</code>		<code>\squadlinevh</code>		<code>\triangleplfill</code>
	<code>\hexagofillhr</code>		<code>\starlet</code>		<code>\triangleplfillha</code>
	<code>\hexagolineh</code>		<code>\starletcross</code>		<code>\triangleplfillhb</code>
	<code>\hexagolinev</code>		<code>\starletdot</code>		<code>\triangleplfillhl</code>
	<code>\hexagolinevh</code>		<code>\starletfill</code>		<code>\triangleplfillhr</code>
	<code>\pentago</code>		<code>\starletfillha</code>		<code>\trianglepllineh</code>
	<code>\pentagocross</code>		<code>\starletfillhb</code>		<code>\trianglepllinev</code>
	<code>\pentagodot</code>		<code>\starletfillhl</code>		<code>\trianglepllinevh</code>
	<code>\pentagofill</code>		<code>\starletfillhr</code>		<code>\trianglepr</code>
	<code>\pentagofillha</code>		<code>\starletlineh</code>		<code>\triangleprcross</code>
	<code>\pentagofillhb</code>		<code>\starletlinev</code>		<code>\triangleprdot</code>
	<code>\pentagofillhl</code>		<code>\starletlinevh</code>		<code>\triangleprfill</code>
	<code>\pentagofillhr</code>		<code>\trianglepa</code>		<code>\triangleprfillha</code>
	<code>\pentagolineh</code>		<code>\trianglepacross</code>		<code>\triangleprfillhb</code>
	<code>\pentagolinev</code>		<code>\trianglepadot</code>		<code>\triangleprfillhl</code>
	<code>\pentagolinevh</code>		<code>\trianglepafill</code>		<code>\triangleprfillhr</code>
	<code>\rhombus</code>		<code>\trianglepafillha</code>		<code>\triangleprlineh</code>
	<code>\rhombuscross</code>		<code>\trianglepafillhb</code>		<code>\triangleprlinev</code>
	<code>\rhombusdot</code>		<code>\trianglepafillhl</code>		<code>\triangleprlinevh</code>
	<code>\rhombusfill</code>		<code>\trianglepafillhr</code>		

“fillha”, “fillhb”, “fillhl”, and “fillhr”, imply, respectively, “half-filled above”, “half-filled below”, “half-filled left”, and “half-filled right”. In the `\triangle...` symbols, “pa”, “pb”, “pr”, and “pl” refer respectively to “peak above”, “peak below”, “peak left”, and “peak right”.

All `\oplotsymb` symbols are implemented with TikZ graphics, not with a font.

TABLE 449: adorn Flourishes

	<code>\adfclosedflourishleft</code>		<code>\adfclosedflourishright</code>
	<code>\adfdoubleflourishleft</code>		<code>\adfdoubleflourishright</code>
	<code>\adfdoublesharplflourishleft</code>		<code>\adfdoublesharprflourishright</code>
	<code>\adfflourishleft</code>		<code>\adfflourishright</code>
	<code>\adfflourishlefthdouble</code>		<code>\adfflourishrightdouble</code>
	<code>\adfopenflourishleft</code>		<code>\adfopenflourishright</code>
	<code>\adfsharpflourishleft</code>		<code>\adfsharpflourishright</code>
	<code>\adsickleflourishleft</code>		<code>\adsickleflourishright</code>
	<code>\adfsingleflourishleft</code>		<code>\adfsingleflourishright</code>
	<code>\adftripleflourishleft</code>		<code>\adftripleflourishright</code>
	<code>\adfwavesleft</code>		<code>\adfwavesright</code>

TABLE 450: Miscellaneous `oplotsymb` Symbols

`\lineh` `\linev` `\linevh` `\scross` `\scrossvh`

All `oplotsymb` symbols are implemented with *TikZ* graphics, not with a font.

TABLE 451: Miscellaneous `dingbat` Dingbats

	<code>\anchor</code>		<code>\eye</code>		<code>\Sborder</code>
	<code>\carriagereturn</code>		<code>\filledsquarewithdots</code>		<code>\squarewithdots</code>
	<code>\checkmark</code>		<code>\satellitedish</code>		<code>\Zborder</code>

TABLE 452: Miscellaneous `bbding` Dingbats

	<code>\Envelope</code>		<code>\Peace</code>		<code>\PhoneHandset</code>		<code>\SunshineOpenCircled</code>
	<code>\OrnamentDiamondSolid</code>		<code>\Phone</code>		<code>\Plane</code>		<code>\Tape</code>

TABLE 453: Miscellaneous `pifont` Dingbats

	<code>\ding{37}</code>		<code>\ding{40}</code>		<code>\ding{164}</code>		<code>\ding{167}</code>		<code>\ding{171}</code>
	<code>\ding{38}</code>		<code>\ding{41}</code>		<code>\ding{165}</code>		<code>\ding{168}</code>		<code>\ding{169}</code>
	<code>\ding{39}</code>		<code>\ding{118}</code>		<code>\ding{166}</code>		<code>\ding{170}</code>		

TABLE 454: Miscellaneous `adorn` Dingbats

`\adfbullet` `\adfdiamond` `\adfgee` `\adfS` `\adfsquare`

TABLE 455: Miscellaneous utfsym Dingbats

⓪	\usym{2706}	‡	\usym{2755}	‡	\usym{2762}	➤	\usym{276F}
Ⓛ	\usym{2707}	❖	\usym{2756}	‡	\usym{2763}	Ⓛ	\usym{2770}
✈	\usym{2708}	!	\usym{2757}	♥	\usym{2764}	Ⓛ	\usym{2771}
✉	\usym{2709}	!	\usym{2758}	♣	\usym{2765}	(	\usym{2772}
✕	\usym{274C}	!	\usym{2759}	♣	\usym{2766}	)	\usym{2773}
○	\usym{274D}	!	\usym{275A}	♣	\usym{2767}	!	\usym{2774}
Ⓛ	\usym{274E}	♣	\usym{275B}	(	\usym{2768}	!	\usym{2775}
□	\usym{274F}	♣	\usym{275C}	)	\usym{2769}	+	\usym{2795}
□	\usym{2750}	“	\usym{275D}	(	\usym{276A}	—	\usym{2796}
□	\usym{2751}	”	\usym{275E}	)	\usym{276B}	÷	\usym{2797}
□	\usym{2752}	♣	\usym{275F}	(	\usym{276C}	σ	\usym{27B0}
?	\usym{2753}	”	\usym{2760}	)	\usym{276D}	σσ	\usym{27BF}
?	\usym{2754}	♣	\usym{2761}	◀	\usym{276E}		

All `utfsym` symbols are implemented with `TikZ` graphics, not with a font. In addition to `\usym`, the `utfsym` package defines `\usymH`, which renders a symbol at a given height, and `\usymW`, which renders a symbol at a given width. See the `utfsym` documentation for more information.

Chapter 6

Ancient languages

This chapter presents letters and ideograms from various ancient scripts. Some of these symbols may also be useful in other typesetting contexts because of their pictorial nature.

TABLE 456: phaistos Symbols from the Phaistos Disk

	<code>\PHarrow</code>		<code>\PHeagle</code>		<code>\PHplumedHead</code>
	<code>\PHbee</code>		<code>\PHflute</code>		<code>\PHram</code>
	<code>\PHbeehive</code>		<code>\PHgauntlet</code>		<code>\PHrosette</code>
	<code>\PHboomerang</code>		<code>\PHgrater</code>		<code>\PHsaw</code>
	<code>\PHbow</code>		<code>\PHhelmet</code>		<code>\PHshield</code>
	<code>\PHbullLeg</code>		<code>\PHhide</code>		<code>\PHship</code>
	<code>\PHcaptive</code>		<code>\PHhorn</code>		<code>\PHsling</code>
	<code>\PHcarpentryPlane</code>		<code>\PHlid</code>		<code>\PHsmallAxe</code>
	<code>\PHcat</code>		<code>\PHlily</code>		<code>\PHstrainer</code>
	<code>\PHchild</code>		<code>\PHmanacles</code>		<code>\PHtattooedHead</code>
	<code>\PHclub</code>		<code>\PHmattock</code>		<code>\PHtiara</code>
	<code>\PHcolumn</code>		<code>\PHoxBack</code>		<code>\PHtunny</code>
	<code>\PHcomb</code>		<code>\PHpapyrus</code>		<code>\PHvine</code>
	<code>\PHdolium</code>		<code>\PHpedestrian</code>		<code>\PHwavyBand</code>
	<code>\PHdove</code>		<code>\PHplaneTree</code>		<code>\PHwoman</code>

TABLE 457: protosem Proto-Semitic Characters

𐤀	\Aaleph	𐤁	\AAhe	𐤂	\Akaph	𐤃	\AAayin	𐤄	\AAresh
𐤅	\AAaleph	𐤆	\Avav	𐤇	\AAkaph	𐤈	\Ape	𐤉	\Ashin
𐤊	\Abeth	𐤋	\Azayin	𐤌	\Alamed	𐤍	\AApe	𐤎	\Atav
𐤏	\AAbeth	𐤐	\Aheth	𐤑	\AAlamed	𐤒	\Asade	𐤓	\Ahelmet
𐤔	\Agimel	𐤕	\AAheth	𐤖	\Amem	𐤗	\AAsade	𐤘	\AAhelmet
𐤙	\Adaleth	𐤚	\Ateth	𐤛	\Anun	𐤜	\Aqoph		
𐤝	\AAdaleth	𐤞	\Ayod	𐤟	\Asamekh	𐤠	\AAqoph		
𐤡	\Ahe	𐤢	\AAyod	𐤣	\Aayin	𐤤	\Aresh		

The `protosem` package defines abbreviated control sequences for each of the above. In addition, single-letter shortcuts can be used within the argument to the `\textproto` command (e.g., “`\textproto{Pakyn}`” produces “𐤑𐤕𐤙𐤛𐤞𐤔”). See the `protosem` documentation for more information.

TABLE 458: hieroglf Hieroglyphics

	\HA		\HI		\Hn		\HT
	\Ha		\Hi		\HO		\Ht
	\HB		\Hibl		\Ho		\Htongue
	\Hb		\Hibp		\Hp		\HU
	\Hc		\Hibs		\HP		\Hu
	\HC		\Hibw		\Hplural		\HV
	\HD		\HJ		\Hplus		\Hv
	\Hd		\Hj		\HQ		\Hvbar
	\Hdual		\Hk		\Hq		\Hw
	\He		\HK		\Hquery		\HW
	\HE		\HL		\HR		\HX
	\Hf		\Hl		\Hr		\Hx
	\HF		\Hm		\Hs		\HY
	\HG		\HM		\HS		\Hy
	\Hg		\Hman		\Hscribe		\Hz
	\Hh		\Hms		\Hslash		\HZ
	\HH		\HN		\Hsv		
	\Hone		\Hhundred		\HXthousand		\Hmillion
	\Hten		\Hthousand		\HCthousand		

The hieroglf package defines alternate control sequences and single-letter shortcuts for each of the above which can be used within the argument to the `\textpmhg` command (e.g., “`\textpmhg{Pakin}`” produces “”). See the hieroglf documentation for more information.

TABLE 459: linearA Linear A Script

	\LinearAI		\LinearAXCIX		\LinearACXCVII		\LinearACCXCXV
	\LinearAII		\LinearAC		\LinearACXCVIII		\LinearACCXCXVI
	\LinearAIII		\LinearACI		\LinearACXCIX		\LinearACCXCXVII
	\LinearAIV		\LinearACII		\LinearACC		\LinearACCXCXVIII
	\LinearAV		\LinearACIII		\LinearACCI		\LinearACCXCXIX

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𐎠	\LinearAVI	𐎡	\LinearACIV	𐎢	\LinearACCII	𐎣	\LinearACCC
𐎠	\LinearAVII	𐎢	\LinearACV	𐎣	\LinearACCIII	𐎤	\LinearACCCI
𐎡	\LinearAVIII	𐎣	\LinearACVI	𐎤	\LinearACCIV	𐎥	\LinearACCCII
𐎢	\LinearAIX	𐎤	\LinearACVII	𐎥	\LinearACCV	𐎦	\LinearACCCIII
𐎣	\LinearAX	𐎦	\LinearACVIII	𐎦	\LinearACCVI	𐎧	\LinearACCCIV
𐎤	\LinearAXI	𐎧	\LinearACIX	𐎧	\LinearACCVII	𐎨	\LinearACCCV
𐎥	\LinearAXII	𐎨	\LinearACX	𐎨	\LinearACCVIII	𐎩	\LinearACCCVI
𐎦	\LinearAXIII	𐎩	\LinearACXI	𐎩	\LinearACCIX	𐎪	\LinearACCCVII
𐎧	\LinearAXIV	𐎪	\LinearACXII	𐎪	\LinearACCX	𐎫	\LinearACCCVIII
𐎨	\LinearAXV	𐎫	\LinearACXIII	𐎫	\LinearACCXI	𐎬	\LinearACCCIX
𐎩	\LinearAXVI	𐎬	\LinearACXIV	𐎬	\LinearACCXII	𐎭	\LinearACCCX
𐎪	\LinearAXVII	𐎭	\LinearACXV	𐎭	\LinearACCXIII	𐎮	\LinearACCCXI
𐎫	\LinearAXVIII	𐎮	\LinearACXVI	𐎮	\LinearACCXIV	𐎯	\LinearACCCXII
𐎬	\LinearAXIX	𐎯	\LinearACXVII	𐎯	\LinearACCXV	𐎰	\LinearACCCXIII
𐎭	\LinearAXX	𐎰	\LinearACXVIII	𐎰	\LinearACCXVI	𐎱	\LinearACCCXIV
𐎮	\LinearAXXI	𐎱	\LinearACXIX	𐎱	\LinearACCXVII	𐎲	\LinearACCCXV
𐎯	\LinearAXXII	𐎲	\LinearACXX	𐎲	\LinearACCXVIII	𐎳	\LinearACCCXVI
𐎰	\LinearAXXIII	𐎳	\LinearACXXI	𐎳	\LinearACCXIX	𐎴	\LinearACCCXVII
𐎱	\LinearAXXIV	𐎴	\LinearACXXII	𐎴	\LinearACCXX	𐎵	\LinearACCCXVIII
𐎲	\LinearAXXV	𐎵	\LinearACXXIII	𐎵	\LinearACCXXI	𐎶	\LinearACCCXIX
𐎳	\LinearAXXVI	𐎶	\LinearACXXIV	𐎶	\LinearACCXXII	𐎷	\LinearACCCXX
𐎴	\LinearAXXVII	𐎷	\LinearACXXV	𐎷	\LinearACCXXIII	𐎸	\LinearACCCXXI
𐎵	\LinearAXXVIII	𐎸	\LinearACXXVI	𐎸	\LinearACCXXIV	𐎹	\LinearACCCXXII
𐎶	\LinearAXXIX	𐎹	\LinearACXXVII	𐎹	\LinearACCXXV	𐎺	\LinearACCCXXIII
𐎷	\LinearAXXX	𐎺	\LinearACXXVIII	𐎺	\LinearACCXXVI	𐎻	\LinearACCCXXIV
𐎸	\LinearAXXXI	𐎻	\LinearACXXIX	𐎻	\LinearACCXXVII	𐎼	\LinearACCCXXV
𐎹	\LinearAXXXII	𐎼	\LinearACXXX	𐎼	\LinearACCXXVIII	𐎽	\LinearACCCXXVI
𐎺	\LinearAXXXIII	𐎽	\LinearACXXXI	𐎽	\LinearACCXXIX	𐎾	\LinearACCCXXVII
𐎻	\LinearAXXXIV	𐎾	\LinearACXXXII	𐎾	\LinearACCXXX	𐎿	\LinearACCCXXVIII
𐎼	\LinearAXXXV	𐎿	\LinearACXXXIII	𐎿	\LinearACCXXXI	𐏀	\LinearACCCXXIX
𐎽	\LinearAXXXVI	𐏀	\LinearACXXXIV	𐏀	\LinearACCXXXII	𐏁	\LinearACCCXXX
𐎾	\LinearAXXXVII	𐏁	\LinearACXXXV	𐏁	\LinearACCXXXIII	𐏂	\LinearACCCXXXI
𐎿	\LinearAXXXVIII	𐏂	\LinearACXXXVI	𐏂	\LinearACCXXXIV	𐏃	\LinearACCCXXXII
𐏀	\LinearAXXXIX	𐏃	\LinearACXXXVII	𐏃	\LinearACCXXXV	𐏄	\LinearACCCXXXIII
𐏁	\LinearAXL	𐏄	\LinearACXXXVIII	𐏄	\LinearACCXXXVI	𐏅	\LinearACCCXXXIV
𐏂	\LinearAXLI	𐏅	\LinearACXXXIX	𐏅	\LinearACCXXXVII	𐏆	\LinearACCCXXXV
𐏃	\LinearAXLII	𐏆	\LinearACXL	𐏆	\LinearACCXXXVIII	𐏇	\LinearACCCXXXVI
𐏄	\LinearAXLIII	𐏇	\LinearACXLI	𐏇	\LinearACCXXXIX	𐏈	\LinearACCCXXXVII
𐏅	\LinearAXLIV	𐏈	\LinearACXLII	𐏈	\LinearACCXL	𐏉	\LinearACCCXXXVIII
𐏆	\LinearAXLV	𐏉	\LinearACXLIII	𐏉	\LinearACCXLI	𐏊	\LinearACCCXXXIX
𐏇	\LinearAXLVI	𐏊	\LinearACXLIV	𐏊	\LinearACCXLII	𐏋	\LinearACCCXL
𐏈	\LinearAXLVII	𐏋	\LinearACXLV	𐏋	\LinearACCXLIII	𐏌	\LinearACCCXLI
𐏉	\LinearAXLVIII	𐏌	\LinearACXLVI	𐏌	\LinearACCXLIV	𐏍	\LinearACCCXLII
𐏊	\LinearAXLIX	𐏍	\LinearACXLVII	𐏍	\LinearACCXLV	𐏎	\LinearACCCXLIII
𐏋	\LinearAL	𐏎	\LinearACXLVIII	𐏎	\LinearACCXLVI	𐏏	\LinearACCCXLIV

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𐎠	\LinearALI	𐎡	\LinearACXLIX	𐎢	\LinearACCXLVII	𐎣	\LinearACCCXLV
𐎤	\LinearALII	𐎥	\LinearACL	𐎦	\LinearACCXLVIII	𐎧	\LinearACCCXLVI
𐎨	\LinearALIII	𐎩	\LinearACLI	𐎪	\LinearACCXLIX	𐎫	\LinearACCCXLVII
𐎬	\LinearALIV	𐎭	\LinearACLII	𐎮	\LinearACCL	𐎯	\LinearACCCXLVIII
𐎱	\LinearALV	𐎲	\LinearACLIII	𐎳	\LinearACCLI	𐎴	\LinearACCCXLIX
𐎶	\LinearALVI	𐎷	\LinearACLIV	𐎸	\LinearACCLII	𐎹	\LinearACCCCL
𐎺	\LinearALVII	𐎻	\LinearACLV	𐎼	\LinearACCLIII	𐎽	\LinearACCCCLI
𐎿	\LinearALVIII	𐏀	\LinearACLVI	𐏁	\LinearACCLIV	𐏂	\LinearACCCCLII
𐏃	\LinearALIX	𐏄	\LinearACLVII	𐏅	\LinearACCLV	𐏆	\LinearACCCCLIII
𐏇	\LinearALX	𐏈	\LinearACLVIII	𐏉	\LinearACCLVI	𐏊	\LinearACCCCLIV
𐏋	\LinearALXI	𐏌	\LinearACLIX	𐏍	\LinearACCLVII	𐏎	\LinearACCCCLV
𐏏	\LinearALXII	𐏐	\LinearACLX	𐏑	\LinearACCLVIII	𐏒	\LinearACCCCLVI
𐏓	\LinearALXIII	𐏔	\LinearACLXI	𐏕	\LinearACCLIX	𐏖	\LinearACCCCLVII
𐏗	\LinearALXIV	𐏘	\LinearACLXII	𐏙	\LinearACCLX	𐏚	\LinearACCCCLVIII
𐏛	\LinearALXV	𐏜	\LinearACLXIII	𐏝	\LinearACCLXI	𐏞	\LinearACCCCLIX
𐏟	\LinearALXVI	𐏠	\LinearACLXIV	𐏡	\LinearACCLXII	𐏢	\LinearACCCCLX
𐏣	\LinearALXVII	𐏤	\LinearACLXV	𐏥	\LinearACCLXIII	𐏦	\LinearACCCCLXI
𐏧	\LinearALXVIII	𐏨	\LinearACLXVI	𐏩	\LinearACCLXIV	𐏪	\LinearACCCCLXII
𐏬	\LinearALXIX	𐏭	\LinearACLXVII	𐏮	\LinearACCLXV	𐏯	\LinearACCCCLXIII
𐏱	\LinearALXX	𐏲	\LinearACLXVIII	𐏳	\LinearACCLXVI	𐏴	\LinearACCCCLXIV
𐏶	\LinearALXXI	𐏷	\LinearACLXIX	𐏸	\LinearACCLXVII	𐏹	\LinearACCCCLXV
𐏻	\LinearALXXII	𐏼	\LinearACLXX	𐏽	\LinearACCLXVIII	𐏾	\LinearACCCCLXVI
𐏿	\LinearALXXIII	𐐀	\LinearACLXXI	𐐁	\LinearACCLXIX	𐐂	\LinearACCCCLXVII
𐐃	\LinearALXXIV	𐐄	\LinearACLXXII	𐐅	\LinearACCLXX	𐐆	\LinearACCCCLXVIII
𐐇	\LinearALXXV	𐐈	\LinearACLXXIII	𐐉	\LinearACCLXXI	𐐊	\LinearACCCCLXIX
𐐋	\LinearALXXVI	𐐌	\LinearACLXXIV	𐐍	\LinearACCLXXII	𐐎	\LinearACCCCLXX
𐐏	\LinearALXXVII	𐐐	\LinearACLXXV	𐐑	\LinearACCLXXIII	𐐒	\LinearACCCCLXXI
𐐓	\LinearALXXVIII	𐐔	\LinearACLXXVI	𐐕	\LinearACCLXXIV	𐐖	\LinearACCCCLXXII
𐐗	\LinearALXXIX	𐐘	\LinearACLXXVII	𐐙	\LinearACCLXXV	𐐚	\LinearACCCCLXXIII
𐐛	\LinearALXXX	𐐜	\LinearACLXXVIII	𐐝	\LinearACCLXXVI	𐐞	\LinearACCCCLXXIV
𐐟	\LinearALXXXI	𐐠	\LinearACLXXIX	𐐡	\LinearACCLXXVII	𐐢	\LinearACCCCLXXV
𐐣	\LinearALXXXII	𐐤	\LinearACLXXX	𐐥	\LinearACCLXXVIII	𐐦	\LinearACCCCLXXVI
𐐧	\LinearALXXXIII	𐐨	\LinearACLXXXI	𐐩	\LinearACCLXXIX	𐐪	\LinearACCCCLXXVII
𐐬	\LinearALXXXIV	𐐭	\LinearACLXXXII	𐐮	\LinearACCLXXX	𐐯	\LinearACCCCLXXVIII
𐐱	\LinearALXXXV	𐐲	\LinearACLXXXIII	𐐳	\LinearACCLXXXI	𐐴	\LinearACCCCLXXXIX
𐐷	\LinearALXXXVI	𐐸	\LinearACLXXXIV	𐐹	\LinearACCLXXXII	𐐺	\LinearACCCCLXXX
𐐻	\LinearALXXXVII	𐐼	\LinearACLXXXV	𐐽	\LinearACCLXXXIII	𐐿	\LinearACCCCLXXXI
𐑀	\LinearALXXXVIII	𐑁	\LinearACLXXXVI	𐑂	\LinearACCLXXXIV	𐑃	\LinearACCCCLXXXII
𐑄	\LinearALXXXIX	𐑅	\LinearACLXXXVII	𐑆	\LinearACCLXXXV	𐑇	\LinearACCCCLXXXIII
𐑉	\LinearALXXXX	𐑊	\LinearACLXXXVIII	𐑋	\LinearACCLXXXVI	𐑌	\LinearACCCCLXXXIV
𐑏	\LinearAXCI	𐑐	\LinearACLXXXIX	𐑑	\LinearACCLXXXVII	𐑒	\LinearACCCCLXXXV
𐑓	\LinearAXCII	𐑔	\LinearACLXXXX	𐑕	\LinearACCLXXXVIII	𐑖	\LinearACCCCLXXXVI
𐑗	\LinearAXCIII	𐑘	\LinearACXCI	𐑙	\LinearACCLXXXIX	𐑚	\LinearACCCCLXXXVII
𐑛	\LinearAXCIV	𐑜	\LinearACXCII	𐑝	\LinearACCLXXXX	𐑞	\LinearACCCCLXXXVIII
𐑟	\LinearAXCV	𐑠	\LinearACXCIII	𐑡	\LinearACCXCI	𐑢	\LinearACCCCLXXXIX
𐑣	\LinearAXCVI	𐑤	\LinearACXCIV	𐑥	\LinearACCXCII		

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4	\LinearACXVII	𐀇	\LinearACXCV	𐀈	\LinearACCXCIII
I	\LinearACXVIII	𐀈	\LinearACXCVI	𐀉	\LinearACCXCIV

TABLE 460: linearb Linear B Basic and Optional Letters

𐀀	\Ba	𐀁	\Bja	𐀂	\Bmu	𐀃	\Bpte	𐀄	\Broii	𐀅	\Bto
𐀆	\Baii	𐀇	\Bje	𐀈	\Bna	𐀉	\Bpu	𐀊	\Bru	𐀋	\Btu
𐀌	\Baiiii	𐀍	\Bjo	𐀎	\Bne	𐀏	\Bpuui	𐀐	\Bsa	𐀑	\Btwo
𐀒	\Bau	𐀓	\Bju	𐀔	\Bni	𐀕	\Bqa	𐀖	\Bse	𐀗	\Bu
𐀘	\Bda	𐀙	\Bka	𐀚	\Bno	𐀛	\Bqe	𐀜	\Bsi	𐀝	\Bwa
𐀞	\Bde	𐀟	\Bke	𐀠	\Bnu	𐀡	\Bqi	𐀢	\Bso	𐀣	\Bwe
𐀤	\Bdi	𐀥	\Bki	𐀦	\Bnwa	𐀧	\Bqo	𐀨	\Bsu	𐀩	\Bwi
𐀪	\Bdo	𐀫	\Bko	𐀬	\Bo	𐀭	\Bra	𐀮	\Bswa	𐀯	\Bwo
𐀰	\Bdu	𐀱	\Bku	𐀲	\Bpa	𐀳	\Brai	𐀴	\Bswi	𐀵	\Bza
𐀶	\Bdwe	𐀷	\Bma	𐀸	\Bpaiiii	𐀹	\Brai	𐀺	\Bta	𐀻	\Bze
𐀼	\Bdwo	𐀽	\Bme	𐀾	\Bpe	𐀿	\Bre	𐁀	\Btaii	𐁁	\Bzo
𐁂	\Be	𐁃	\Bmi	𐁄	\Bpi	𐁅	\Bri	𐁆	\Bte		
𐁇	\Bi	𐁈	\Bmo	𐁉	\Bpo	𐁊	\Bro	𐁋	\Bti		

These symbols must appear either within the argument to `\textlinb` or following the `\linbfamily` font-selection command within a scope. Single-character shortcuts are also supported: Both “`\textlinb{\Bpa\Bki\Bna}`” and “`\textlinb{pcn}`” produce “𐀐𐀥𐀈”, for example. See the `linearb` documentation for more information.

TABLE 461: linearb Linear B Numerals

I	\BNi		\BNvii	==	\BNxl	o	\BNc	oooo	\BNdcc
II	\BNii		\BNviii	≡	\BNl	o	\BNcc	oooo	\BNdccc
III	\BNiii		\BNix	≡≡	\BNlx	oo	\BNccc	ooooo	\BNcm
IIII	\BNiv	—	\BNx	≡≡≡	\BNlxx	oo	\BNcd	o	\BNm
IIII	\BNv	=	\BNxx	≡≡≡	\BNlxxx	ooo	\BNd		
IIII	\BNvi	≡	\BNxxx	≡≡≡	\BNxc	ooo	\BNdc		

These symbols must appear either within the argument to `\textlinb` or following the `\linbfamily` font-selection command within a scope.

TABLE 462: linearb Linear B Weights and Measures

	<code>\BPtalent</code>		<code>\BPvolb</code>		<code>\BPvolcf</code>		<code>\BPwtb</code>		<code>\BPwtd</code>
	<code>\BPvola</code>		<code>\BPvolcd</code>		<code>\BPwta</code>		<code>\BPwtc</code>		

These symbols must appear either within the argument to `\textlinb` or following the `\linbfamily` font-selection command within a scope.

TABLE 463: linearb Linear B Ideograms

	<code>\BPamphora</code>		<code>\BPchassis</code>		<code>\BPman</code>		<code>\BPwheat</code>
	<code>\BParrow</code>		<code>\BPcloth</code>		<code>\BPnanny</code>		<code>\BPwheel</code>
	<code>\BPbarley</code>		<code>\BPcow</code>		<code>\BPolive</code>		<code>\BPwine</code>
	<code>\BPbilly</code>		<code>\BPCup</code>		<code>\BPox</code>		<code>\BPwineiih</code>
	<code>\BPboar</code>		<code>\BPewe</code>		<code>\BPpig</code>		<code>\BPwineiiih</code>
	<code>\BPbronze</code>		<code>\BPfoal</code>		<code>\BPram</code>		<code>\BPwineivh</code>
	<code>\BPbull</code>		<code>\BPgoat</code>		<code>\BPsheep</code>		<code>\BPwoman</code>
	<code>\BPcauldroni</code>		<code>\BPgoblet</code>		<code>\BPsow</code>		<code>\BPwool</code>
	<code>\BPcauldronii</code>		<code>\BPgold</code>		<code>\BPspear</code>		
	<code>\BPchariot</code>		<code>\BPhorse</code>		<code>\BPsword</code>		

These symbols must appear either within the argument to `\textlinb` or following the `\linbfamily` font-selection command within a scope.

TABLE 464: linearb Unidentified Linear B Symbols

	<code>\BUi</code>		<code>\BUiv</code>		<code>\BUvii</code>		<code>\BUx</code>		<code>\Btwe</code>
	<code>\BUii</code>		<code>\BUv</code>		<code>\BUviii</code>		<code>\BUxi</code>		
	<code>\BUiii</code>		<code>\BUvi</code>		<code>\BUix</code>		<code>\BUxii</code>		

These symbols must appear either within the argument to `\textlinb` or following the `\linbfamily` font-selection command within a scope.

TABLE 465: cypriot Cypriot Letters

✱	\Ca	✱	\Cku	✱	\Cmu	↷	\Cpo	≡	\Cso	↷	\Cwi
✱	\Ce	∇	\Cla	↑	\Cna	↷	\Cpu	⋈	\Csu	↑	\Cwo
↷	\Cga	8	\Cle	⋈	\Cne	∇	\Cra	↑	\Cta	⋈	\Cxa
✱	\Ci	≤	\Cli	↷	\Cni	↑	\Cre	↓	\Cte	⋈	\Cxe
∅	\Cja	+	\Clo	↷	\Cno	↷	\Cri	↑	\Cti	∅	\Cya
↷	\Cjo	∇	\Clu	⋈	\Cnu	⋈	\Cro	∇	\Cto	↷	\Cyo
↑	\Cka	✱	\Cma	≡	\Co	⋈	\Cru	∇	\Ctu	↷	\Cza
↷	\Cke	✱	\Cme	⋈	\Cpa	∇	\Csa	↑	\Cu	↷	\Czo
↑	\Cki	∇	\Cmi	↷	\Cpe	↑	\Cse	↷	\Cwa		
∇	\Cko	∅	\Cmo	≡	\Cpi	↑	\Csi	∇	\Cwe		

These symbols must appear either within the argument to `\textcypr` or following the `\cyprfamily` font-selection command within a scope. Single-character shortcuts are also supported: Both “`\textcypr{\Cpa\Cki\Cna}`” and “`\textcypr{pcn}`” produce “ $\uparrow \uparrow \uparrow$ ”, for example. See the cypriot documentation for more information.

TABLE 466: sarabian South Arabian Letters

◦	\SAa	⋈	\SAz	↷	\SAm	⋈	\SAsd	∇	\Sadb
∇	\SAb	ψ	\SAhd	↷	\SAn	⋈	\SAq	⋈	\Satb
∇	\SAg	∇	\SAtd	↷	\SAs	↷	\SAr	∇	\SAGA
↷	\SAd	↑	\SAy	∇	\SAf	↷	\SAsv	⋈	\SAzd
↑	\SAh	↷	\SAk	↷	\SAlq	↷	\SAt	↷	\SAsa
∅	\SAw	↑	\SAl	↷	\SAo	↷	\SAhu	∇	\SAdd

These symbols must appear either within the argument to `\textsarab` or following the `\sarabfamily` font-selection command within a scope. Single-character shortcuts are also supported: Both “`\textsarab{\SAb\Sak\SAn}`” and “`\textsarab{bkn}`” produce “ $\uparrow \uparrow \uparrow$ ”, for example. See the sarabian documentation for more information.

TABLE 467: teubner Archaic Greek Letters and Greek Numerals

Ω	\Coppa [†]	Ϝ	\Digamma*	ϗ	\sampi*	Ϛ	\varstigma
ϙ	\coppa [†]	ϝ	\koppa*	Ϟ	\Stigma		
ϝ	\digamma*, [‡]	ϗ	\Sampi	Ϛ	\stigma*		

* Technically, these symbols do not require `teubner`; it is sufficient to load the `babel` package with the `greek` option (upon which `teubner` depends)—but use `\qoppa` for `\koppa` and `\ddigamma` for `\digamma`.

[†] For compatibility with other naming conventions `teubner` defines `\Koppa` as a synonym for `\Coppa` and `\varcoppa` as a synonym for `\coppa`.

[‡] If both `teubner` and `amssymb` are loaded, `teubner`'s `\digamma` replaces `amssymb`'s `\digamma`, regardless of package-loading order.

TABLE 468: boisik Archaic Greek Letters and Greek Numerals

Ϝ	\Digamma	ϙ	\qoppa	Ϛ	\stigma	ϗ	\varsampi
ϝ	\digamma	Ϟ	\Qoppa	Ϟ	\Stigma		
ϗ	\heta	ϗ	\Sampi	ϝ	\vardigamma		
ϗ	\Heta	ϗ	\sampi	ϗ	\Varsampi		

TABLE 469: epiolmec Epi-Olmec Script

	\EOafter		\EOMiddle		\EOStarWarrior
	\EOandThen		\EOMonster		\EOstep
	\EOAppear		\EOMountain		\EOSu
	\EOBeardMask		\EOMuu		\EOSu
	\EOBedeck		\EOna		\EOSun
	\EOBlood		\EOne		\EOSuu
	\EObrace		\EOni		\EOSuu
	\EObuilding		\EOnow		\EOta
	\EOBundle		\EOnu		\EOte
	\EOChop		\EOnuu		\EOthrone

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	\EOChronI		\EOofficerI		\EOti
	\EOCloth		\EOofficerII		\EOtime
	\EODealWith		\EOofficerIII		\EOTime
	\EODeer		\EOofficerIV		\EOTitle
	\EOeat		\EOpa		\EOTitleII
	\EOflint		\EOpak		\EOTitleIV
	\EOflower		\EOPatron		\EOto
	\EOFold		\EOPatronII		\EOtu
	\EOGod		\EOpe		\EOtuki
	\EOGoUp		\EOpenis		\EOtukpa
	\EOgovernor		\EOpi		\EOturtle
	\EOGuisse		\EOPierce		\EOtuu
	\EOHallow		\EOPlant		\EOtza
	\EOja		\EOPlay		\EOtze
	\EOjaguar		\EOpo		\EOtzetze
	\EOje		\EOpriest		\EOtzi
	\EOji		\EOPrince		\EOtzu
	\EOJI		\EOpu		\EOtzuu
	\EOjo		\EOpuu		\EOundef
	\EOju		\EOpuuk		\EOvarBeardMask
	\EOkak		\EORain		\EOvarja
	\EOke		\EOSa		\EOvarji
	\EOki		\EOSa		\EOvarki
	\EOkij		\EOSacrifice		\EOvarkuu
	\EOKing		\EOSaw		\EOvarni
	\EOknottedCloth		\EOScorpius		\EOvarpa

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	\EOknottedClothStraps		\EOset		\EOvarSi
	\EOko		\EOsi		\EOvarsi
	\EOku		\EOSi		\EOvartza
	\EOkuu		\EOSing		\EOvarwuu
	\EOLetBlood		\EOSini		\EOvarYear
	\EOloinCloth		\EOSkin		\EOwa
	\EOlongLipII		\EOSky		\EOwe
	\EOLord		\EOSkyAnimal		\EOwi
	\EOLose		\EOSkyPillar		\EOwo
	\EOma		\EOSnake		\EOwuu
	\EOmacaw		\EOSo		\EOya
	\EOmacawI		\EOSpan		\EOyaj
	\EOme		\EOSprinkle		\EOye
	\EOMexNew		\EOstar		\EOYear
	\EOmi		\EOstarWarrior		\EOyuu

TABLE 470: epiolmec Epi-Olmec Numerals

	\EOzero		\EOvi		\EOxii		\EOxviii
	\EOi		\EOvii		\EOxiii		\EOxix
	\EOii		\EOviii		\EOxiv		\EOxx
	\EOiii		\EOix		\EOxv		
	\EOiv		\EOx		\EOxvi		
	\EOv		\EOxi		\EOxvii		

TABLE 471: allrunes Runes

þ	\a	ſ	E	ϕ	\ING	ℳ	m	Υ	R	⋈	\sthree
*	\A	ƿ	F	ϣ	\ing	†	n	⌘	\RR	↑	T
ƿ	a	ƿ	f	ϣ	\Ing	◻	\NG	⋈	\s	↑	t
⋈	A	X	g	ϣ	\j	◊	\ng	⋈	s	⋈	\textsection
β	b	ℋ	\h	ϣ	j	⋈	o	⋈	S	þ	\th
β	B	N	H	⋈	J	⋈	\p	⋈	\seight	Λ	U
⋈	\d	ℋ	h	ϣ	\k	⋈	p	⋈	\sfive	∩	u
◻	D	ℳ	\i	ϣ	\K	⋈	P	⋈	\sfour	þ	w
⋈	d	ℳ	i	ϣ	k	⋈	\R	⋈	\sseven		
ℳ	e	ℳ	I	ℳ	l	R	r	⋈	\ssix		

The symbols in this table should appear within the argument to `\textarc` (for common Germanic runes), `\textara` (for Anglo-Frisian runes), `\textarn` (for normal runes), `\textart` (for short-twig runes), `\textarl` (for staveless runes), `\textarm` (for medieval runes), or within a scope that sets, respectively, `\arcfamily`, `\arafamily`, `\arnfamily`, `\artfamily`, `\arlfamily`, or `\armfamily`. Each family presents slightly different glyphs and/or slightly different subsets of the available runes. (The table presents the common Germanic runes.) See the `allrunes` documentation for more information.

TABLE 472: allrunes Rune Separators

⋈	\bar	:	\doubleeye	+	\plus	:	\triplidot
*	\cross	‡	\doubleplus	:	\quaddot	⋈	\tripleeye
·	\dot	⋈	\doublestar	⋈	\quadeye	‡	\tripleplus
⋈	\doublebar	·	\eye	*	\star		
⋈	\doublecross	:	\pentdot	⋈	\triplebar		
:	\doubledot	⋈	\penteye	⋈	\triplecross		

See the usage comment under Table 471 on page 211.

Chapter 7

Musical symbols

The following symbols are used to typeset musical notation. The *lily[♩]ly[♩]ps* package provides a large subset of the symbols in this chapter. Note, however, that *lily[♩]ly[♩]ps* depends upon the *fontspec* package, OpenType (*.otf*) fonts, and some PDF graphics and therefore works only with Lua^ℒTeX or Xe^ℒTeX.

A simple way to typeset time signatures, due to Daniel Hirst, is to attach a superscript and a subscript to an empty math object. For example, $\text{\{}^3_4\}$ renders as “ $\frac{3}{4}$ ”. Because superscripts and subscripts are left-justified, some extra padding may need to be added if the beats per measure and beat unit contain different numbers of digits. A 5mu space (“\;”) vertically centers the “8” relative to the “12” in $\text{\{}^{12}_{\;8}\}$ (“ $\frac{12}{8}$ ”). For boldface time signatures (e.g., “ $\frac{4}{4}$ ”), consider the boldface-math options presented in Section 12.5. See also Table 486.

TABLE 473: L^AT_EX 2_ε Musical Symbols

$\flat$ \flat $\natural$ \natural $\sharp$ \sharp

TABLE 474: textcomp Musical Symbols

♩ \textmusicalnote

TABLE 475: wasysym Musical Symbols

♩ \eighthnote ♪ \halfnote ♫ \twonotes ♬ \fullnote ♭ \quarternote

TABLE 476: MnSymbol Musical Symbols

$\flat$ \flat $\natural$ \natural $\sharp$ \sharp

TABLE 477: fdsymbol Musical Symbols

$\flat$ `\flat` $\natural$ `\natural` $\sharp$ `\sharp`

TABLE 478: boisik Musical Symbols

$\flat$ `\flat` $\natural$ `\natural` $\sharp$ `\sharp`

TABLE 479: stix Musical Symbols

eighthnote `\eighthnote` $\natural$ `\natural $\sharp$ \sharp
 $\flat$ \flat quarternote \quarternote twonotes \twonotes`

TABLE 480: arev Musical Symbols

quarternote `\quarternote` eighthnote `\eighthnote` sixteenthnote `\sixteenthnote`

TABLE 481: utfsym Musical Symbols

$\text{usym}{2669}$ `\usym{2669}` $\text{usym}{266C}$ `\usym{266C}` $\sharp$ `\usym{266F}` $\text{usym}{1F3B5}$ `\usym{1F3B5}`
 $\text{usym}{266A}$ `\usym{266A}` $\flat$ `\usym{266D}` $\text{usym}{1F39C}$ `\usym{1F39C}` $\text{usym}{1F3B6}$ `\usym{1F3B6}`
 $\text{usym}{266B}$ `\usym{266B}` $\natural$ `\usym{266E}` $\text{usym}{1F39D}$ `\usym{1F39D}` $\text{usym}{1F3BC}$ `\usym{1F3BC}`

All `utfsym` symbols are implemented with `TikZ` graphics, not with a font. In addition to `\usym`, the `utfsym` package defines `\usymH`, which renders a symbol at a given height, and `\usymW`, which renders a symbol at a given width. See the `utfsym` documentation for more information.

TABLE 482: MusiX_{TEX} Musical Symbols

	<code>\allabreve</code>		<code>\lsf</code>		<code>\shake</code>
	<code>\altoclef</code>		<code>\lsfz</code>		<code>\Shake</code>
	<code>\backturn</code>		<code>\maxima</code>		<code>\Shakel</code>
	<code>\bassclef</code>		<code>\meterplus</code>		<code>\Shakene</code>
	<code>\caesura</code>		<code>\mordent</code>		<code>\Shakenw</code>
	<code>\coda</code>		<code>\Mordent</code>		<code>\Shakesw</code>
	<code>\Coda</code>		<code>\PAUSE</code>		<code>\smallaltoclef</code>
	<code>\Dep</code>		<code>\PAUSE</code>		<code>\smallbassclef</code>
	<code>\doublethumb</code>		<code>\pause</code>		<code>\smalltrebleclef</code>
	<code>\downbow</code>		<code>\Ped</code>		<code>\sPed</code>
	<code>\ds</code>		<code>\qp</code>		<code>\trebleclef</code>
	<code>\duevolte</code>		<code>\qqqs</code>		<code>\trill</code>
	<code>\fermatadown</code>		<code>\qs</code>		<code>\turn</code>
	<code>\fermataup</code>		<code>\reverseallabreve</code>		<code>\upbow</code>
	<code>\flageolet</code>		<code>\reverseC</code>		<code>\usf</code>
	<code>\hpause</code>		<code>\sDep</code>		<code>\usfz</code>
	<code>\hs</code>		<code>\Segno</code>		<code>\wq</code>
	<code>\longa</code>		<code>\segno</code>		<code>\wqq</code>

All of these symbols are intended to be used in the context of typesetting musical scores. See the MusiX_{TEX} documentation for more information.

TABLE 483: MusiX_{TEX} Alternative Clefs

	<code>\drumclef</code>		<code>\gregorianFclef</code>
	<code>\gregorianCclef</code>		<code>\oldGclef</code>

In addition to MusiX_{TEX}, `\drumclef` requires the `musixper` package; `\oldGclef` requires the `musixlit` package; and both `\gregorianCclef` and `\gregorianFclef` require the `musixgre` package. Together with MusiX_{TEX}, these packages provide a complete system for typesetting percussion notation (`musixper`), liturgical music (`musixlit`), and Gregorian chants (`musixgre`, including the staves and all of the necessary neumes. See the MusiX_{TEX} documentation for more information.

TABLE 484: harmony Musical Symbols

	<code>\AAcht</code>		<code>\DDohne</code>		<code>\Halb</code>		<code>\SechBR</code>		<code>\VM</code>
	<code>\Acht</code>		<code>\Dohne</code>		<code>\HaPa</code>		<code>\SechBr</code>		<code>\Zwdr</code>
	<code>\AchtBL</code>		<code>\Ds</code>		<code>\Pu</code>		<code>\SePa</code>		<code>\ZwPa</code>
	<code>\AchtBR</code>		<code>\DS</code>		<code>\Sech</code>		<code>\UB</code>		
	<code>\AcPa</code>		<code>\Ganz</code>		<code>\SechBL</code>		<code>\Vier</code>		
	<code>\DD</code>		<code>\GaPa</code>		<code>\SechBl</code>		<code>\ViPa</code>		

The MusiX_{TEX} package must be installed to use `harmony`.

TABLE 485: musicography Musical Symbols

	<code>\musDoubleFlat</code>		<code>\musNatural</code>		<code>\musSixtyFourth</code>
	<code>\musDoubleSharp</code>		<code>\musQuarter</code>		<code>\musSixtyFourthDotted</code>
	<code>\musEighth</code>		<code>\musQuarterDotted</code>		<code>\musThirtySecond</code>
	<code>\musEighthDotted</code>		<code>\musSegno</code>		<code>\musThirtySecondDotted</code>
	<code>\musFlat</code>		<code>\musSharp</code>		<code>\musWhole</code>
	<code>\musHalf</code>		<code>\musSixteenth</code>		<code>\musWholeDotted</code>
	<code>\musHalfDotted</code>		<code>\musSixteenthDotted</code>		

musicography defines `\fl`, `\sh`, and `\na` as shorthands for `\musFlat`, `\musSharp`, and `\musNatural`, respectively. It also defines `\musCorchea` as an alias for `\musEighth`, `\musCorcheaDotted` as an alias for `\musEighthDotted`, `\musFusa` as an alias for `\musEighth`, `\musFusaDotted` as an alias for `\musEighthDotted`, `\musMinim` as an alias for `\musHalf`, `\musMinimDotted` as an alias for `\musHalfDotted`, `\musSemibreve` as an alias for `\musWhole`, `\musSemibreveDotted` as an alias for `\musWholeDotted`, `\musSemiminim` as an alias for `\musQuarter`, and `\musSeminiminimDotted` as an alias for `\musQuarterDotted`.

The M_usiX_TE_X package must be installed to use musicography.

TABLE 486: musicography Time Signatures

C	<code>\meterC</code>	C₂³	<code>\meterCThreeTwo</code>	CZ	<code>\meterCZ</code>
C3	<code>\meterCThree</code>	¢	<code>\meterCutC</code>	○	<code>\meterO</code>

Other time signatures can be specified with `\musMeter`, as in

$$\text{\musMeter{2}{4}} \rightarrow \frac{2}{4}$$

The M_usiX_TE_X package must be installed to use musicography.

TABLE 487: harmony Musical Accents

$\hat{\text{A}}\hat{\text{a}}$	<code>\Ferli{A}\Ferli{a}</code> *	$\text{\text{A}}\text{\text{a}}$	<code>\Ohne{A}\Ohne{a}</code> *
$\hat{\text{A}}\hat{\text{a}}$	<code>\Fermi{A}\Fermi{a}</code>	$\text{\text{A}}\text{\text{a}}$	<code>\Umd{A}\Umd{a}</code> *
$\text{\text{A}}\text{\text{a}}$	<code>\Kr{A}\Kr{a}</code>		

* These symbols take an optional argument which shifts the accent either horizontally or vertically (depending on the command) by the given distance.

In addition to the accents shown above, `\HH` is a special accent command that accepts five period-separated characters and typesets them such that “`\HH.X.a.b.c.d.`” produces “ X_a^b ”. All arguments except the first can be omitted: “`\HH.X....`” produces “ X ”. `\Takt` takes two arguments and composes them into a musical time signature. For example, “`\Takt{12}{8}`” produces “ $\frac{12}{8}$ ”. As two special cases, “`\Takt{c}{0}`” produces “ $\text{\text{C}}$ ” and “`\Takt{c}{1}`” produces “ $\text{\text{C}}$ ”.

The M_usiX_TE_X package must be installed to use harmony.

TABLE 488: *lily_glyp_s* Single Notes

	<code>\eighthNote</code>		<code>\quarterNoteDottedDown</code>
	<code>\eighthNoteDotted</code>		<code>\quarterNoteDown</code>
	<code>\eighthNoteDottedDouble</code>		<code>\sixteenthNote</code>
	<code>\eighthNoteDottedDoubleDown</code>		<code>\sixteenthNoteDotted</code>
	<code>\eighthNoteDottedDown</code>		<code>\sixteenthNoteDottedDouble</code>
	<code>\eighthNoteDown</code>		<code>\sixteenthNoteDottedDoubleDown</code>
	<code>\halfNote</code>		<code>\sixteenthNoteDottedDown</code>
	<code>\halfNoteDotted</code>		<code>\sixteenthNoteDown</code>
	<code>\halfNoteDottedDouble</code>		<code>\thirtysecondNote</code>
	<code>\halfNoteDottedDoubleDown</code>		<code>\thirtysecondNoteDotted</code>
	<code>\halfNoteDottedDown</code>		<code>\thirtysecondNoteDottedDouble</code>
	<code>\halfNoteDown</code>		<code>\thirtysecondNoteDottedDoubleDown</code>
	<code>\quarterNote</code>		<code>\thirtysecondNoteDottedDown</code>
	<code>\quarterNoteDotted</code>		<code>\thirtysecondNoteDown</code>
	<code>\quarterNoteDottedDouble</code>		<code>\wholeNote</code>
	<code>\quarterNoteDottedDoubleDown</code>		<code>\wholeNoteDotted</code>

lily_glyp_s defines synonyms for all of the preceding symbols:

	<code>\crotchet</code>		<code>\minimDottedDown</code>
	<code>\crotchetDotted</code>		<code>\minimDown</code>
	<code>\crotchetDottedDouble</code>		<code>\quaver</code>
	<code>\crotchetDottedDoubleDown</code>		<code>\quaverDotted</code>
	<code>\crotchetDottedDown</code>		<code>\quaverDottedDouble</code>
	<code>\crotchetDown</code>		<code>\quaverDottedDoubleDown</code>
	<code>\demisemiquaver</code>		<code>\quaverDottedDown</code>
	<code>\demisemiquaverDotted</code>		<code>\quaverDown</code>
	<code>\demisemiquaverDottedDouble</code>		<code>\semibreve</code>
	<code>\demisemiquaverDottedDoubleDown</code>		<code>\semibreveDotted</code>
	<code>\demisemiquaverDottedDown</code>		<code>\semiquaver</code>
	<code>\demisemiquaverDown</code>		<code>\semiquaverDotted</code>
	<code>\minim</code>		<code>\semiquaverDottedDouble</code>
	<code>\minimDotted</code>		<code>\semiquaverDottedDoubleDown</code>
	<code>\minimDottedDouble</code>		<code>\semiquaverDottedDown</code>
	<code>\minimDottedDoubleDown</code>		<code>\semiquaverDown</code>

TABLE 489: *lily_gly_pbs* Beamed Notes

	<code>\twoBeamedQuavers</code>		<code>\threeBeamedQuaversII</code>
	<code>\threeBeamedQuavers</code>		<code>\threeBeamedQuaversIII</code>
	<code>\threeBeamedQuaversI</code>		

TABLE 490: *lily_gly_pbs* Clefs

	<code>\clefC</code>		<code>\clefF</code>		<code>\clefG</code>
---	---------------------	---	---------------------	---	---------------------

Each of these symbols provides a smaller, “inline” form (`\clefCInline`, `\clefFInline`, and `\clefGInline`, respectively) intended for use within a paragraph. See the *lily_gly_pbs* documentation for more information.

TABLE 491: *lily[♩]lyp^{bs}* Time Signatures

C	<code>\lilyTimeC</code>	⌭	<code>\lilyTimeCHalf</code>
----------	-------------------------	----------	-----------------------------

lily[♩]lyp^{bs} also provides a `\lilyTimeSignature` command that lets a user typeset single and compound time signatures by specifying a numerator and a denominator. See the *lily[♩]lyp^{bs}* documentation for more information.

TABLE 492: *lily[♩]lyp^{bs}* Accidentals

⦿	<code>\doublesharp</code>	⬇	<code>\sharpArrowdown</code>
b	<code>\flat</code>	⬆	<code>\sharpArrowup</code>
♭♭	<code>\flatflat</code>	⬇	<code>\sharpSlashslashslashStem</code>
♮	<code>\natural</code>	⬆	<code>\sharpSlashslashslashStemstem</code>
#	<code>\sharp</code>	⬆	<code>\sharpSlashslashStem</code>
⬆	<code>\sharpArrowboth</code>	⬆	<code>\sharpSlashslashStemstemstem</code>

TABLE 493: *lily[♩]lyp^{bs}* Rests

♪	<code>\crotchetRest</code>	♪.	<code>\quaverRestDotted</code>
♪.	<code>\crotchetRestDotted</code>	♩	<code>\semiquaverRest</code>
—	<code>\halfNoteRest</code>	♩.	<code>\semiquaverRestDotted</code>
—.	<code>\halfNoteRestDotted</code>	—	<code>\wholeNoteRest</code>
7	<code>\quaverRest</code>	—.	<code>\wholeNoteRestDotted</code>

Multiply dotted rests can be produced with the `\lilyPrintMoreDots` command. See the *lily[♩]lyp^{bs}* documentation for more information.

TABLE 494: *lily[♩]lyp^{bs}* Dynamics Letters

<i>f</i>	<code>\lilyDynamics{f}</code>	<i>r</i>	<code>\lilyDynamics{r}</code>
<i>p</i>	<code>\lilyDynamics{p}</code>	<i>s</i>	<code>\lilyDynamics{s}</code>
<i>m</i>	<code>\lilyDynamics{m}</code>	<i>z</i>	<code>\lilyDynamics{z}</code>
<i>rf</i>	<code>\lilyRF</code>	<i>rfz</i>	<code>\lilyRFZ</code>

These letters and the digits 0–9 are the only alphanumerics defined by *lily[♩]lyp^{bs}*’s underlying Emmentaler fonts.

TABLE 495: *lily[♩]lyp^{bs}* Dynamics Symbols

< `\crescHairpin` > `\decrescHairpin`

TABLE 496: *lily[♩]lyp^{bs}* Articulations

>	<code>\lilyAccent</code>	^	<code>\marcato</code>	,	<code>\staccatissimo</code>
<>	<code>\lilyEspressivo</code>	v	<code>\marcatoDown</code>	-	<code>\tenuto</code>
.	<code>\lilyStaccato</code>	:	<code>\portato</code>		
^	<code>\lilyThumb</code>	-	<code>\portatoDown</code>		

TABLE 497: *lily[♩]lyp^{bs}* Scripts

^ `\fermata`

TABLE 498: *lily[♩]lyp^{bs}* Accordion Notation

 	<code>\accordionBayanBass</code>	⊗	<code>\accordionOldEE</code>	⊙	<code>\accordionStdBass</code>
⊙	<code>\accordionDiscant</code>	⌈	<code>\accordionPull</code>		
⊖	<code>\accordionFreeBass</code>	>	<code>\accordionPush</code>		

TABLE 499: *lily[♩]lyp^{bs}* Named Time Signatures

C	<code>\lilyGlyph{timesig.C22}</code>	ϕ	<code>\lilyGlyph{timesig.mensural98}</code>
C	<code>\lilyGlyph{timesig.C44}</code>	C	<code>\lilyGlyph{timesig.neomensural22}</code>
¢	<code>\lilyGlyph{timesig.mensural22}</code>	D	<code>\lilyGlyph{timesig.neomensural24}</code>
¢	<code>\lilyGlyph{timesig.mensural24}</code>	O	<code>\lilyGlyph{timesig.neomensural32}</code>
O	<code>\lilyGlyph{timesig.mensural32}</code>	⊖	<code>\lilyGlyph{timesig.neomensural34}</code>
ϕ	<code>\lilyGlyph{timesig.mensural34}</code>	C	<code>\lilyGlyph{timesig.neomensural44}</code>
C	<code>\lilyGlyph{timesig.mensural44}</code>	C	<code>\lilyGlyph{timesig.neomensural48}</code>
C	<code>\lilyGlyph{timesig.mensural48}</code>	C	<code>\lilyGlyph{timesig.neomensural64}</code>
C	<code>\lilyGlyph{timesig.mensural64}</code>	C	<code>\lilyGlyph{timesig.neomensural68}</code>
¢	<code>\lilyGlyph{timesig.mensural68}</code>	C	<code>\lilyGlyph{timesig.neomensural68alt}</code>
C	<code>\lilyGlyph{timesig.mensural68alt}</code>	C	<code>\lilyGlyph{timesig.neomensural94}</code>
C	<code>\lilyGlyph{timesig.mensural94}</code>	C	<code>\lilyGlyph{timesig.neomensural98}</code>

lily[♩]lyp^{bs} defines shorter names for a few of these symbols. See Table 491.

TABLE 500: *lilyglyphs* Named Scripts

	<code>\lilyGlyph{scripts.arpeggio}</code>		<code>\lilyGlyph{scripts.prallmordent}</code>
	<code>\lilyGlyph{scripts.arpeggio.arrow.1}</code>		<code>\lilyGlyph{scripts.prallprall}</code>
	<code>\lilyGlyph{scripts.arpeggio.arrow.M1}</code>		<code>\lilyGlyph{scripts.prallup}</code>
	<code>\lilyGlyph{scripts.augmentum}</code>		<code>\lilyGlyph{scripts.rcomma}</code>
	<code>\lilyGlyph{scripts.barline.kievian}</code>		<code>\lilyGlyph{scripts.reverseturn}</code>
	<code>\lilyGlyph{scripts.caesura.curved}</code>		<code>\lilyGlyph{scripts.rvarcomma}</code>
	<code>\lilyGlyph{scripts.caesura.straight}</code>		<code>\lilyGlyph{scripts.segno}</code>
	<code>\lilyGlyph{scripts.circulus}</code>		<code>\lilyGlyph{scripts.sforzato}</code>
	<code>\lilyGlyph{scripts.coda}</code>		<code>\lilyGlyph{scripts.snappizzicato}</code>
	<code>\lilyGlyph{scripts.daccentus}</code>		<code>\lilyGlyph{scripts.staccato}</code>
	<code>\lilyGlyph{scripts.dfermata}</code>		<code>\lilyGlyph{scripts.stopped}</code>
	<code>\lilyGlyph{scripts.dlongfermata}</code>		<code>\lilyGlyph{scripts.tenuto}</code>
	<code>\lilyGlyph{scripts.dmarcato}</code>		<code>\lilyGlyph{scripts.thumb}</code>
	<code>\lilyGlyph{scripts.downbow}</code>		<code>\lilyGlyph{scripts.tickmark}</code>
	<code>\lilyGlyph{scripts.downmordent}</code>		<code>\lilyGlyph{scripts.trilelement}</code>
	<code>\lilyGlyph{scripts.downprall}</code>		<code>\lilyGlyph{scripts.trill}</code>
	<code>\lilyGlyph{scripts.dpedalheel}</code>		<code>\lilyGlyph{scripts.trill_element}</code>
	<code>\lilyGlyph{scripts.dpedaltoe}</code>		<code>\lilyGlyph{scripts.turn}</code>
	<code>\lilyGlyph{scripts.dportato}</code>		<code>\lilyGlyph{scripts.uaccentus}</code>
	<code>\lilyGlyph{scripts.dsemicirculus}</code>		<code>\lilyGlyph{scripts.ufermata}</code> *
	<code>\lilyGlyph{scripts.dshortfermata}</code>		<code>\lilyGlyph{scripts.ulongfermata}</code>
	<code>\lilyGlyph{scripts.dsignumcongruentiae}</code>		<code>\lilyGlyph{scripts.umarcato}</code>
	<code>\lilyGlyph{scripts.dstaccatissimo}</code>		<code>\lilyGlyph{scripts.upbow}</code>
	<code>\lilyGlyph{scripts.dverylongfermata}</code>		<code>\lilyGlyph{scripts.upedalheel}</code>
	<code>\lilyGlyph{scripts.espr}</code>		<code>\lilyGlyph{scripts.upedaltoe}</code>
	<code>\lilyGlyph{scripts.flageolet}</code>		<code>\lilyGlyph{scripts.upmordent}</code>
	<code>\lilyGlyph{scripts.halfopen}</code>		<code>\lilyGlyph{scripts.uportato}</code>
	<code>\lilyGlyph{scripts.halfopenvertical}</code>		<code>\lilyGlyph{scripts.upprall}</code>
	<code>\lilyGlyph{scripts.ictus}</code>		<code>\lilyGlyph{scripts.usemicirculus}</code>
	<code>\lilyGlyph{scripts.lcomma}</code>		<code>\lilyGlyph{scripts.ushortfermata}</code>
	<code>\lilyGlyph{scripts.lineprall}</code>		<code>\lilyGlyph{scripts.usignumcongruentiae}</code>
	<code>\lilyGlyph{scripts.lvarcomma}</code>		<code>\lilyGlyph{scripts.ustaccatissimo}</code>
	<code>\lilyGlyph{scripts.mordent}</code>		<code>\lilyGlyph{scripts.uverylongfermata}</code>
	<code>\lilyGlyph{scripts.open}</code>		<code>\lilyGlyph{scripts.varcoda}</code>
	<code>\lilyGlyph{scripts.prall}</code>		<code>\lilyGlyph{scripts.varsegno}</code>
	<code>\lilyGlyph{scripts.pralldown}</code>		

* *lilyglyphs* defines `\fermata` as a shorter name for “” than `\lilyGlyph{scripts.ufermata}`. See Table 497.

TABLE 501: *lilyglyphs* Named Rests

	<code>\lilyGlyph{rests.0}</code>		<code>\lilyGlyph{rests.4mensural}</code>
	<code>\lilyGlyph{rests.0mensural}</code>		<code>\lilyGlyph{rests.4neomensural}</code>
	<code>\lilyGlyph{rests.0neomensural}</code>		<code>\lilyGlyph{rests.5}</code>
	<code>\lilyGlyph{rests.0o}*</code>		<code>\lilyGlyph{rests.6}</code>
	<code>\lilyGlyph{rests.1}</code>		<code>\lilyGlyph{rests.7}</code>
	<code>\lilyGlyph{rests.1mensural}</code>		<code>\lilyGlyph{rests.M1}</code>
	<code>\lilyGlyph{rests.1neomensural}</code>		<code>\lilyGlyph{rests.M1mensural}</code>
	<code>\lilyGlyph{rests.1o}*</code>		<code>\lilyGlyph{rests.M1neomensural}</code>
	<code>\lilyGlyph{rests.2}*</code>		<code>\lilyGlyph{rests.M1o}</code>
	<code>\lilyGlyph{rests.2classical}</code>		<code>\lilyGlyph{rests.M2}</code>
	<code>\lilyGlyph{rests.2mensural}</code>		<code>\lilyGlyph{rests.M2mensural}</code>
	<code>\lilyGlyph{rests.2neomensural}</code>		<code>\lilyGlyph{rests.M2neomensural}</code>
	<code>\lilyGlyph{rests.3}*</code>		<code>\lilyGlyph{rests.M3}</code>
	<code>\lilyGlyph{rests.3mensural}</code>		<code>\lilyGlyph{rests.M3mensural}</code>
	<code>\lilyGlyph{rests.3neomensural}</code>		<code>\lilyGlyph{rests.M3neomensural}</code>
	<code>\lilyGlyph{rests.4}*</code>		

* *lilyglyphs* defines shorter names for these symbols. See Table 493.

TABLE 502: *lilyglyphs* Named Pedals

	<code>\lilyGlyph{pedal.*}</code>		<code>\lilyGlyph{pedal.M}</code>
	<code>\lilyGlyph{pedal..}</code>		<code>\lilyGlyph{pedal.P}</code>
	<code>\lilyGlyph{pedal.d}</code>		<code>\lilyGlyph{pedal.Ped}</code>
	<code>\lilyGlyph{pedal.e}</code>		

TABLE 503: *lilyglyphs* Named Flags

	<code>\lilyGlyph{flags.d3}</code>		<code>\lilyGlyph{flags.mensuralu03}</code>
	<code>\lilyGlyph{flags.d4}</code>		<code>\lilyGlyph{flags.mensuralu04}</code>
	<code>\lilyGlyph{flags.d5}</code>		<code>\lilyGlyph{flags.mensuralu05}</code>
	<code>\lilyGlyph{flags.d6}</code>		<code>\lilyGlyph{flags.mensuralu06}</code>
	<code>\lilyGlyph{flags.d7}</code>		<code>\lilyGlyph{flags.mensuralu13}</code>
	<code>\lilyGlyph{flags.dgrace}</code>		<code>\lilyGlyph{flags.mensuralu14}</code>
	<code>\lilyGlyph{flags.mensurald03}</code>		<code>\lilyGlyph{flags.mensuralu15}</code>
	<code>\lilyGlyph{flags.mensurald04}</code>		<code>\lilyGlyph{flags.mensuralu16}</code>
	<code>\lilyGlyph{flags.mensurald05}</code>		<code>\lilyGlyph{flags.mensuralu23}</code>
	<code>\lilyGlyph{flags.mensurald06}</code>		<code>\lilyGlyph{flags.mensuralu24}</code>
	<code>\lilyGlyph{flags.mensurald13}</code>		<code>\lilyGlyph{flags.mensuralu25}</code>
	<code>\lilyGlyph{flags.mensurald14}</code>		<code>\lilyGlyph{flags.mensuralu26}</code>
	<code>\lilyGlyph{flags.mensurald15}</code>		<code>\lilyGlyph{flags.u3}</code>
	<code>\lilyGlyph{flags.mensurald16}</code>		<code>\lilyGlyph{flags.u4}</code>
	<code>\lilyGlyph{flags.mensurald23}</code>		<code>\lilyGlyph{flags.u5}</code>
	<code>\lilyGlyph{flags.mensurald24}</code>		<code>\lilyGlyph{flags.u6}</code>
	<code>\lilyGlyph{flags.mensurald25}</code>		<code>\lilyGlyph{flags.u7}</code>
	<code>\lilyGlyph{flags.mensurald26}</code>		<code>\lilyGlyph{flags.ugrace}</code>

TABLE 504: *lilyglyphs* Named Custodes

	<code>\lilyGlyph{custodes.hufnagel.d0}</code>		<code>\lilyGlyph{custodes.mensural.d0}</code>
	<code>\lilyGlyph{custodes.hufnagel.d1}</code>		<code>\lilyGlyph{custodes.mensural.d1}</code>
	<code>\lilyGlyph{custodes.hufnagel.d2}</code>		<code>\lilyGlyph{custodes.mensural.d2}</code>
	<code>\lilyGlyph{custodes.hufnagel.u0}</code>		<code>\lilyGlyph{custodes.mensural.u0}</code>
	<code>\lilyGlyph{custodes.hufnagel.u1}</code>		<code>\lilyGlyph{custodes.mensural.u1}</code>
	<code>\lilyGlyph{custodes.hufnagel.u2}</code>		<code>\lilyGlyph{custodes.mensural.u2}</code>
	<code>\lilyGlyph{custodes.medicaea.d0}</code>		<code>\lilyGlyph{custodes.vaticana.d0}</code>
	<code>\lilyGlyph{custodes.medicaea.d1}</code>		<code>\lilyGlyph{custodes.vaticana.d1}</code>
	<code>\lilyGlyph{custodes.medicaea.d2}</code>		<code>\lilyGlyph{custodes.vaticana.d2}</code>
	<code>\lilyGlyph{custodes.medicaea.u0}</code>		<code>\lilyGlyph{custodes.vaticana.u0}</code>
	<code>\lilyGlyph{custodes.medicaea.u1}</code>		<code>\lilyGlyph{custodes.vaticana.u1}</code>
	<code>\lilyGlyph{custodes.medicaea.u2}</code>		<code>\lilyGlyph{custodes.vaticana.u2}</code>

TABLE 505: *lilyglyphs* Named Clefs

	<code>\lilyGlyph{clefs.blackmensural.c}</code>		<code>\lilyGlyph{clefs.mensural.g_change}</code>
	<code>\lilyGlyph{clefs.blackmensural.c_change}</code>		<code>\lilyGlyph{clefs.neomensural.c}</code>
	<code>\lilyGlyph{clefs.C}*</code>		<code>\lilyGlyph{clefs.neomensural.c_change}</code>
	<code>\lilyGlyph{clefs.C_change}*</code>		<code>\lilyGlyph{clefs.percussion}</code>
	<code>\lilyGlyph{clefs.F}*</code>		<code>\lilyGlyph{clefs.percussion_change}</code>
	<code>\lilyGlyph{clefs.F_change}*</code>		<code>\lilyGlyph{clefs.petrucci.c1}</code>
	<code>\lilyGlyph{clefs.G}*</code>		<code>\lilyGlyph{clefs.petrucci.c1_change}</code>
	<code>\lilyGlyph{clefs.G_change}*</code>		<code>\lilyGlyph{clefs.petrucci.c2}</code>
	<code>\lilyGlyph{clefs.hufnagel.do}</code>		<code>\lilyGlyph{clefs.petrucci.c2_change}</code>
	<code>\lilyGlyph{clefs.hufnagel.do.fa}</code>		<code>\lilyGlyph{clefs.petrucci.c3}</code>
	<code>\lilyGlyph{clefs.hufnagel.do.fa_change}</code>		<code>\lilyGlyph{clefs.petrucci.c3_change}</code>
	<code>\lilyGlyph{clefs.hufnagel.do_change}</code>		<code>\lilyGlyph{clefs.petrucci.c4}</code>
	<code>\lilyGlyph{clefs.hufnagel.fa}</code>		<code>\lilyGlyph{clefs.petrucci.c4_change}</code>
	<code>\lilyGlyph{clefs.hufnagel.fa_change}</code>		<code>\lilyGlyph{clefs.petrucci.c5}</code>
	<code>\lilyGlyph{clefs.kievan.do}</code>		<code>\lilyGlyph{clefs.petrucci.c5_change}</code>
	<code>\lilyGlyph{clefs.kievan.do_change}</code>		<code>\lilyGlyph{clefs.petrucci.f}</code>
	<code>\lilyGlyph{clefs.medicaea.do}</code>		<code>\lilyGlyph{clefs.petrucci.f_change}</code>
	<code>\lilyGlyph{clefs.medicaea.do_change}</code>		<code>\lilyGlyph{clefs.petrucci.g}</code>
	<code>\lilyGlyph{clefs.medicaea.fa}</code>		<code>\lilyGlyph{clefs.petrucci.g_change}</code>
	<code>\lilyGlyph{clefs.medicaea.fa_change}</code>		<code>\lilyGlyph{clefs.tab}</code>
	<code>\lilyGlyph{clefs.mensural.c}</code>		<code>\lilyGlyph{clefs.tab_change}</code>
	<code>\lilyGlyph{clefs.mensural.c_change}</code>		<code>\lilyGlyph{clefs.vaticana.do}</code>
	<code>\lilyGlyph{clefs.mensural.f}</code>		<code>\lilyGlyph{clefs.vaticana.do_change}</code>
	<code>\lilyGlyph{clefs.mensural.f_change}</code>		<code>\lilyGlyph{clefs.vaticana.fa}</code>
	<code>\lilyGlyph{clefs.mensural.g}</code>		<code>\lilyGlyph{clefs.vaticana.fa_change}</code>

* *lilyglyphs* defines shorter names for these symbols. See Table 490.

TABLE 506: *lilyglyphs* Named Noteheads

◡	<code>\lilyGlyph{noteheads.d0doFunk}</code>
▷	<code>\lilyGlyph{noteheads.d0fa}</code>
◡	<code>\lilyGlyph{noteheads.d0faFunk}</code>
▷	<code>\lilyGlyph{noteheads.d0faThin}</code>
◊	<code>\lilyGlyph{noteheads.d0miFunk}</code>
◡	<code>\lilyGlyph{noteheads.d0reFunk}</code>
◊	<code>\lilyGlyph{noteheads.d0tiFunk}</code>
▲	<code>\lilyGlyph{noteheads.d1do}</code>
◡	<code>\lilyGlyph{noteheads.d1doFunk}</code>
▷	<code>\lilyGlyph{noteheads.d1doThin}</code>
◡	<code>\lilyGlyph{noteheads.d1doWalker}</code>
▷	<code>\lilyGlyph{noteheads.d1fa}</code>
◡	<code>\lilyGlyph{noteheads.d1faFunk}</code>
▷	<code>\lilyGlyph{noteheads.d1faThin}</code>
◡	<code>\lilyGlyph{noteheads.d1faWalker}</code>
◊	<code>\lilyGlyph{noteheads.d1miFunk}</code>
◡	<code>\lilyGlyph{noteheads.d1re}</code>
◡	<code>\lilyGlyph{noteheads.d1reFunk}</code>
◡	<code>\lilyGlyph{noteheads.d1reThin}</code>
◡	<code>\lilyGlyph{noteheads.d1reWalker}</code>
◊	<code>\lilyGlyph{noteheads.d1ti}</code>
◊	<code>\lilyGlyph{noteheads.d1tiFunk}</code>
◊	<code>\lilyGlyph{noteheads.d1tiThin}</code>
◡	<code>\lilyGlyph{noteheads.d1tiWalker}</code>
▷	<code>\lilyGlyph{noteheads.d1triangle}</code>
▲	<code>\lilyGlyph{noteheads.d2do}</code>
◡	<code>\lilyGlyph{noteheads.d2doFunk}</code>
▷	<code>\lilyGlyph{noteheads.d2doThin}</code>
◡	<code>\lilyGlyph{noteheads.d2doWalker}</code>
▷	<code>\lilyGlyph{noteheads.d2fa}</code>
◡	<code>\lilyGlyph{noteheads.d2faFunk}</code>
▷	<code>\lilyGlyph{noteheads.d2faThin}</code>
◡	<code>\lilyGlyph{noteheads.d2faWalker}</code>
7	<code>\lilyGlyph{noteheads.d2kievan}</code>
◡	<code>\lilyGlyph{noteheads.d2re}</code>
◡	<code>\lilyGlyph{noteheads.d2reFunk}</code>
◡	<code>\lilyGlyph{noteheads.d2reThin}</code>
◡	<code>\lilyGlyph{noteheads.d2reWalker}</code>
◊	<code>\lilyGlyph{noteheads.d2ti}</code>
◊	<code>\lilyGlyph{noteheads.d2tiFunk}</code>
◊	<code>\lilyGlyph{noteheads.d2tiThin}</code>
◡	<code>\lilyGlyph{noteheads.d2tiWalker}</code>
▷	<code>\lilyGlyph{noteheads.d2triangle}</code>

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	<code>\lilyGlyph{noteheads.d3kievan}</code>
	<code>\lilyGlyph{noteheads.dM2}</code>
	<code>\lilyGlyph{noteheads.dM2blackmensural}</code>
	<code>\lilyGlyph{noteheads.dM2mensural}</code>
	<code>\lilyGlyph{noteheads.dM2neomensural}</code>
	<code>\lilyGlyph{noteheads.dM2semimensural}</code>
	<code>\lilyGlyph{noteheads.dM3blackmensural}</code>
	<code>\lilyGlyph{noteheads.dM3mensural}</code>
	<code>\lilyGlyph{noteheads.dM3neomensural}</code>
	<code>\lilyGlyph{noteheads.dM3semimensural}</code>
	<code>\lilyGlyph{noteheads.drM2mensural}</code>
	<code>\lilyGlyph{noteheads.drM2neomensural}</code>
	<code>\lilyGlyph{noteheads.drM2semimensural}</code>
	<code>\lilyGlyph{noteheads.drM3mensural}</code>
	<code>\lilyGlyph{noteheads.drM3neomensural}</code>
	<code>\lilyGlyph{noteheads.drM3semimensural}</code>
	<code>\lilyGlyph{noteheads.s0}</code>
	<code>\lilyGlyph{noteheads.s0blackmensural}</code>
	<code>\lilyGlyph{noteheads.s0blackpetrucci}</code>
	<code>\lilyGlyph{noteheads.s0cross}</code>
	<code>\lilyGlyph{noteheads.s0diamond}</code>
	<code>\lilyGlyph{noteheads.s0do}</code>
	<code>\lilyGlyph{noteheads.s0doThin}</code>
	<code>\lilyGlyph{noteheads.s0doWalker}</code>
	<code>\lilyGlyph{noteheads.s0faWalker}</code>
	<code>\lilyGlyph{noteheads.s0harmonic}</code>
	<code>\lilyGlyph{noteheads.s0kievan}</code>
	<code>\lilyGlyph{noteheads.s0la}</code>
	<code>\lilyGlyph{noteheads.s0laFunk}</code>
	<code>\lilyGlyph{noteheads.s0laThin}</code>
	<code>\lilyGlyph{noteheads.s0laWalker}</code>
	<code>\lilyGlyph{noteheads.s0mensural}</code>
	<code>\lilyGlyph{noteheads.s0mi}</code>
	<code>\lilyGlyph{noteheads.s0miMirror}</code>
	<code>\lilyGlyph{noteheads.s0miThin}</code>
	<code>\lilyGlyph{noteheads.s0miWalker}</code>
	<code>\lilyGlyph{noteheads.s0neomensural}</code>
	<code>\lilyGlyph{noteheads.s0petrucci}</code>
	<code>\lilyGlyph{noteheads.s0re}</code>
	<code>\lilyGlyph{noteheads.s0reThin}</code>
	<code>\lilyGlyph{noteheads.s0reWalker}</code>
	<code>\lilyGlyph{noteheads.s0slash}</code>
	<code>\lilyGlyph{noteheads.s0sol}</code>

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◦      \lilyGlyph{noteheads.s0solFunk}
◊      \lilyGlyph{noteheads.s0ti}
◊      \lilyGlyph{noteheads.s0tiThin}
◊      \lilyGlyph{noteheads.s0tiWalker}
▶      \lilyGlyph{noteheads.s0triangle}
◦      \lilyGlyph{noteheads.s1}
♦      \lilyGlyph{noteheads.s1blackpetrucci}
⌘      \lilyGlyph{noteheads.s1cross}
◊      \lilyGlyph{noteheads.s1diamond}
†      \lilyGlyph{noteheads.s1kievan}
◻      \lilyGlyph{noteheads.s1la}
◻      \lilyGlyph{noteheads.s1laFunk}
◻      \lilyGlyph{noteheads.s1laThin}
◻      \lilyGlyph{noteheads.s1laWalker}
◊      \lilyGlyph{noteheads.s1mensural}
◊      \lilyGlyph{noteheads.s1mi}
◊      \lilyGlyph{noteheads.s1miMirror}
◊      \lilyGlyph{noteheads.s1miThin}
◊      \lilyGlyph{noteheads.s1miWalker}
◊      \lilyGlyph{noteheads.s1neomensural}
◊      \lilyGlyph{noteheads.s1petrucci}
//     \lilyGlyph{noteheads.s1slash}
◦      \lilyGlyph{noteheads.s1sol}
◦      \lilyGlyph{noteheads.s1solFunk}
●      \lilyGlyph{noteheads.s2}
♦      \lilyGlyph{noteheads.s2blackpetrucci}
×      \lilyGlyph{noteheads.s2cross}
/      \lilyGlyph{noteheads.s2diamond}
♦      \lilyGlyph{noteheads.s2harmonic}
■      \lilyGlyph{noteheads.s2la}
■      \lilyGlyph{noteheads.s2laFunk}
■      \lilyGlyph{noteheads.s2laThin}
■      \lilyGlyph{noteheads.s2laWalker}
◊      \lilyGlyph{noteheads.s2mensural}
◊      \lilyGlyph{noteheads.s2mi}
◊      \lilyGlyph{noteheads.s2miFunk}
◊      \lilyGlyph{noteheads.s2miMirror}
◊      \lilyGlyph{noteheads.s2miThin}
◊      \lilyGlyph{noteheads.s2miWalker}
◊      \lilyGlyph{noteheads.s2neomensural}
◊      \lilyGlyph{noteheads.s2petrucci}
/      \lilyGlyph{noteheads.s2slash}
●      \lilyGlyph{noteheads.s2sol}
●      \lilyGlyph{noteheads.s2solFunk}
⊗      \lilyGlyph{noteheads.s2xcircle}
■      \lilyGlyph{noteheads.shufnagel.lpes}

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♦      \lilyGlyph{noteheads.shufnagel.punctum}
†      \lilyGlyph{noteheads.shufnagel.virga}
♩      \lilyGlyph{noteheads.sM1}
♩      \lilyGlyph{noteheads.sM1blackmensural}
♩      \lilyGlyph{noteheads.sM1double}
♩      \lilyGlyph{noteheads.sM1kievan}
♩      \lilyGlyph{noteheads.sM1mensural}
♩      \lilyGlyph{noteheads.sM1neomensural}
♩      \lilyGlyph{noteheads.sM1semimensural}
♩      \lilyGlyph{noteheads.sM2blackligmensural}
♩      \lilyGlyph{noteheads.sM2kievan}
♩      \lilyGlyph{noteheads.sM2ligmensural}
♩      \lilyGlyph{noteheads.sM2semiligmensural}
♩      \lilyGlyph{noteheads.sM3blackligmensural}
♩      \lilyGlyph{noteheads.sM3ligmensural}
♩      \lilyGlyph{noteheads.sM3semiligmensural}
♦      \lilyGlyph{noteheads.smedicaea.inclinatum}
▪      \lilyGlyph{noteheads.smedicaea.punctum}
└      \lilyGlyph{noteheads.smedicaea.rvirga}
└      \lilyGlyph{noteheads.smedicaea.virga}
└      \lilyGlyph{noteheads.sr1kievan}
♩      \lilyGlyph{noteheads.srM1mensural}
♩      \lilyGlyph{noteheads.srM1neomensural}
♩      \lilyGlyph{noteheads.srM1semimensural}
♩      \lilyGlyph{noteheads.srM2ligmensural}
♩      \lilyGlyph{noteheads.srM2semiligmensural}
♩      \lilyGlyph{noteheads.srM3ligmensural}
♩      \lilyGlyph{noteheads.srM3semiligmensural}
,      \lilyGlyph{noteheads.ssolesmes.auct.asc}
,      \lilyGlyph{noteheads.ssolesmes.auct.desc}
,      \lilyGlyph{noteheads.ssolesmes.incl.auctum}
.      \lilyGlyph{noteheads.ssolesmes.incl.parvum}
.      \lilyGlyph{noteheads.ssolesmes.oriscus}
,      \lilyGlyph{noteheads.ssolesmes.stropha}
,      \lilyGlyph{noteheads.ssolesmes.stropha.aucta}
♩      \lilyGlyph{noteheads.svaticana.cephalicus}
,      \lilyGlyph{noteheads.svaticana.epiphonus}
♦      \lilyGlyph{noteheads.svaticana.inclinatum}
▪      \lilyGlyph{noteheads.svaticana.inner.cephalicus}
▪      \lilyGlyph{noteheads.svaticana.linea.punctum}
◻      \lilyGlyph{noteheads.svaticana.linea.punctum.cavum}
▪      \lilyGlyph{noteheads.svaticana.lpes}
.      \lilyGlyph{noteheads.svaticana.plica}
▪      \lilyGlyph{noteheads.svaticana.punctum}
◻      \lilyGlyph{noteheads.svaticana.punctum.cavum}

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. \lilyGlyph{noteheads.svaticana.quilisma}
. \lilyGlyph{noteheads.svaticana.reverse.plica}
. \lilyGlyph{noteheads.svaticana.reverse.vplica}
. \lilyGlyph{noteheads.svaticana.upes}
. \lilyGlyph{noteheads.svaticana.vepiphonus}
. \lilyGlyph{noteheads.svaticana.vlpes}
. \lilyGlyph{noteheads.svaticana.vplica}
. \lilyGlyph{noteheads.svaticana.vupes}
o \lilyGlyph{noteheads.u0doFunk}
^ \lilyGlyph{noteheads.u0fa}
^ \lilyGlyph{noteheads.u0faFunk}
^ \lilyGlyph{noteheads.u0faThin}
o \lilyGlyph{noteheads.u0miFunk}
v \lilyGlyph{noteheads.u0reFunk}
o \lilyGlyph{noteheads.u0tiFunk}
^ \lilyGlyph{noteheads.u1do}
o \lilyGlyph{noteheads.u1doFunk}
^ \lilyGlyph{noteheads.u1doThin}
o \lilyGlyph{noteheads.u1doWalker}
^ \lilyGlyph{noteheads.u1fa}
^ \lilyGlyph{noteheads.u1faFunk}
^ \lilyGlyph{noteheads.u1faThin}
^ \lilyGlyph{noteheads.u1faWalker}
o \lilyGlyph{noteheads.u1miFunk}
o \lilyGlyph{noteheads.u1re}
v \lilyGlyph{noteheads.u1reFunk}
o \lilyGlyph{noteheads.u1reThin}
o \lilyGlyph{noteheads.u1reWalker}
o \lilyGlyph{noteheads.u1ti}
o \lilyGlyph{noteheads.u1tiFunk}
o \lilyGlyph{noteheads.u1tiThin}
v \lilyGlyph{noteheads.u1tiWalker}
v \lilyGlyph{noteheads.u1triangle}
^ \lilyGlyph{noteheads.u2do}
v \lilyGlyph{noteheads.u2doFunk}
^ \lilyGlyph{noteheads.u2doThin}
v \lilyGlyph{noteheads.u2doWalker}
v \lilyGlyph{noteheads.u2fa}
v \lilyGlyph{noteheads.u2faFunk}
v \lilyGlyph{noteheads.u2faThin}
v \lilyGlyph{noteheads.u2faWalker}
┌ \lilyGlyph{noteheads.u2kievan}
u \lilyGlyph{noteheads.u2re}
v \lilyGlyph{noteheads.u2reFunk}
u \lilyGlyph{noteheads.u2reThin}
v \lilyGlyph{noteheads.u2reWalker}

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•	<code>\lilyGlyph{noteheads.u2ti}</code>
•	<code>\lilyGlyph{noteheads.u2tiFunk}</code>
•	<code>\lilyGlyph{noteheads.u2tiThin}</code>
•	<code>\lilyGlyph{noteheads.u2tiWalker}</code>
•	<code>\lilyGlyph{noteheads.u2triangle}</code>
•	<code>\lilyGlyph{noteheads.u3kievan}</code>
•	<code>\lilyGlyph{noteheads.uM2}</code>
•	<code>\lilyGlyph{noteheads.uM2blackmensural}</code>
•	<code>\lilyGlyph{noteheads.uM2mensural}</code>
•	<code>\lilyGlyph{noteheads.uM2neomensural}</code>
•	<code>\lilyGlyph{noteheads.uM2semimensural}</code>
•	<code>\lilyGlyph{noteheads.uM3blackmensural}</code>
•	<code>\lilyGlyph{noteheads.uM3mensural}</code>
•	<code>\lilyGlyph{noteheads.uM3neomensural}</code>
•	<code>\lilyGlyph{noteheads.uM3semimensural}</code>
•	<code>\lilyGlyph{noteheads.urM2mensural}</code>
•	<code>\lilyGlyph{noteheads.urM2neomensural}</code>
•	<code>\lilyGlyph{noteheads.urM2semimensural}</code>
•	<code>\lilyGlyph{noteheads.urM3mensural}</code>
•	<code>\lilyGlyph{noteheads.urM3neomensural}</code>
•	<code>\lilyGlyph{noteheads.urM3semimensural}</code>

TABLE 507: *lilyglyphs* Named Accordion Symbols

☐	<code>\lilyGlyph{accordion.bayanbass}</code>	⊗	<code>\lilyGlyph{accordion.oldEE}</code>
⊖	<code>\lilyGlyph{accordion.discant}</code>	⌈	<code>\lilyGlyph{accordion.pull}</code>
•	<code>\lilyGlyph{accordion.dot}</code>	>	<code>\lilyGlyph{accordion.push}</code>
⊖	<code>\lilyGlyph{accordion.freebass}</code>	⊖	<code>\lilyGlyph{accordion.stdbass}</code>

lilyglyphs defines shorter names for all of these symbols except `\lilyGlyph{accordion.dot}`. See Table 498.

TABLE 508: *lilyglyphs* Named Accidentals

×	<code>\lilyGlyph{accidentals.doublersharp}*</code>
♭	<code>\lilyGlyph{accidentals.flat}*</code>
↕	<code>\lilyGlyph{accidentals.flat.arrowboth}</code>
↴	<code>\lilyGlyph{accidentals.flat.arrowdown}</code>
↱	<code>\lilyGlyph{accidentals.flat.arrowup}</code>
/	<code>\lilyGlyph{accidentals.flat.slash}</code>
//	<code>\lilyGlyph{accidentals.flat.slashslash}</code>
♭♭	<code>\lilyGlyph{accidentals.flatflat}*</code>
♭♭/	<code>\lilyGlyph{accidentals.flatflat.slash}</code>
ℳ	<code>\lilyGlyph{accidentals.hufnagelM1}</code>
⌘	<code>\lilyGlyph{accidentals.kievan1}</code>
ℳ	<code>\lilyGlyph{accidentals.kievanM1}</code>
(	<code>\lilyGlyph{accidentals.leftparen}</code>
⋈	<code>\lilyGlyph{accidentals.medicaeaM1}</code>
×	<code>\lilyGlyph{accidentals.mensural1}</code>
ℳ	<code>\lilyGlyph{accidentals.mensuralM1}</code>
♭	<code>\lilyGlyph{accidentals.mirroredflat}</code>
♭	<code>\lilyGlyph{accidentals.mirroredflat.backslash}</code>
♭	<code>\lilyGlyph{accidentals.mirroredflat.flat}</code>
♮	<code>\lilyGlyph{accidentals.natural}*</code>
↕	<code>\lilyGlyph{accidentals.natural.arrowboth}</code>
↴	<code>\lilyGlyph{accidentals.natural.arrowdown}</code>
↱	<code>\lilyGlyph{accidentals.natural.arrowup}</code>
)	<code>\lilyGlyph{accidentals.rightparen}</code>
#	<code>\lilyGlyph{accidentals.sharp}*</code>
↕	<code>\lilyGlyph{accidentals.sharp.arrowboth}*</code>
↴	<code>\lilyGlyph{accidentals.sharp.arrowdown}*</code>
↱	<code>\lilyGlyph{accidentals.sharp.arrowup}*</code>
/	<code>\lilyGlyph{accidentals.sharp.slashslash.stem}*</code>
//	<code>\lilyGlyph{accidentals.sharp.slashslash.stemstemstem}*</code>
/	<code>\lilyGlyph{accidentals.sharp.slashslashslash.stem}*</code>
//	<code>\lilyGlyph{accidentals.sharp.slashslashslash.stemstem}*</code>
ℳ	<code>\lilyGlyph{accidentals.vaticana0}</code>
ℳ	<code>\lilyGlyph{accidentals.vaticanaM1}</code>

* *lilyglyphs* defines shorter names for these symbols. See Table 492.

TABLE 509: *lily^gly^pbs* Named Arrowheads

➤ <code>\lilyGlyph{arrowheads.close.01}</code>	> <code>\lilyGlyph{arrowheads.open.01}</code>
➤ <code>\lilyGlyph{arrowheads.close.0M1}</code>	< <code>\lilyGlyph{arrowheads.open.0M1}</code>
⤴ <code>\lilyGlyph{arrowheads.close.11}</code>	⤵ <code>\lilyGlyph{arrowheads.open.11}</code>
▼ <code>\lilyGlyph{arrowheads.close.1M1}</code>	▼ <code>\lilyGlyph{arrowheads.open.1M1}</code>

TABLE 510: *lily^gly^pbs* Named Alphanumerics and Punctuation

0 <code>\lilyGlyph{zero}</code>	4 <code>\lilyGlyph{four}</code>	8 <code>\lilyGlyph{eight}</code>
1 <code>\lilyGlyph{one}</code>	5 <code>\lilyGlyph{five}</code>	9 <code>\lilyGlyph{nine}</code>
2 <code>\lilyGlyph{two}</code>	6 <code>\lilyGlyph{six}</code>	
3 <code>\lilyGlyph{three}</code>	7 <code>\lilyGlyph{seven}</code>	
<i>f</i> <code>\lilyGlyph{f}</code>	<i>p</i> <code>\lilyGlyph{p}</code>	<i>s</i> <code>\lilyGlyph{s}</code>
<i>m</i> <code>\lilyGlyph{m}</code>	<i>r</i> <code>\lilyGlyph{r}</code>	<i>z</i> <code>\lilyGlyph{z}</code>
, <code>\lilyGlyph{comma}</code>	. <code>\lilyGlyph{period}</code>	
- <code>\lilyGlyph{hyphen}</code>	+ <code>\lilyGlyph{plus}</code>	

See Table 494 for an alternative way to typeset dynamics letters. *lily^gly^pbs* additionally provides a `\lilyText` command that can be useful for typesetting groups of the preceding symbols. See the *lily^gly^pbs* documentation for more information.

TABLE 511: Miscellaneous *lily^gly^pbs* Named Musical Symbols

⏏ <code>\lilyGlyph{brackettips.down}</code>	.	<code>\lilyGlyph{dots.dotvaticana}</code>
⏏ <code>\lilyGlyph{brackettips.up}</code>	⏏	<code>\lilyGlyph{ties.lyric.default}</code>
.	⏏	<code>\lilyGlyph{ties.lyric.short}</code>
• <code>\lilyGlyph{dots.dotkievan}</code>		

Chapter 8

Gaming symbols

This chapter presents symbols related to games and gaming: playing-card suits, dice, and symbols used to represent pieces and moves in various games. Additional gaming symbols appear in Chapter 11, but those symbols are delivered by packages that provide minimal L^AT_EX support.

TABLE 512: L^AT_EX 2_ε Playing-Card Suits

♣ `\clubsuit` ♦ `\diamondsuit` ♥ `\heartsuit` ♠ `\spadesuit`

TABLE 513: txfonts/pxfonts Playing-Card Suits

♣ `\varclubsuit` ♦ `\vardiamondsuit` ♥ `\varheartsuit` ♠ `\varspadesuit`

TABLE 514: MnSymbol Playing-Card Suits

♣ `\clubsuit` ♦ `\diamondsuit` ♥ `\heartsuit` ♠ `\spadesuit`

TABLE 515: fdsymbol Playing-Card Suits

♣ `\clubsuit` ♥ `\heartsuit` ♦ `\vardiamondsuit`
 ♦ `\diamondsuit` ♠ `\spadesuit` ♥ `\varheartsuit`

TABLE 516: boisik Playing-Card Suits

♣ `\clubsuit` ♦ `\diamondsuit` ♥ `\heartsuit` ♠ `\spadesuit`

TABLE 517: stix Playing-Card Suits

♣	<code>\clubsuit</code>	♥	<code>\heartsuit</code>	♠	<code>\varclubsuit</code>	♥	<code>\varheartsuit</code>
♦	<code>\diamondsuit</code>	♠	<code>\spadesuit</code>	♦	<code>\vardiamondsuit</code>	♠	<code>\varspadesuit</code>

TABLE 518: arev Playing-Card Suits

♠	<code>\varclub</code>	♦	<code>\vardiamond</code>	♥	<code>\varheart</code>	♠	<code>\varspade</code>
---	-----------------------	---	--------------------------	---	------------------------	---	------------------------

TABLE 519: twemojis Playing-Card Suits

♣	<code>\twemoji{club suit}</code>	♥	<code>\twemoji{heart suit}</code>
♦	<code>\twemoji{diamond suit}</code>	♠	<code>\twemoji{spade suit}</code>

Most `twemojis` symbols have multiple names. Only the most descriptive name for each symbol is shown in this table.

All `twemojis` symbols are implemented as PDF graphics, not with a font. See also the `hwemoji` package, which enables direct Unicode entry of emoji characters in pdfL^AT_EX; the `emoji` package, which provides a LuaL^AT_EX interface to different underlying emoji fonts; and the `emo` package, which uses a font if possible, otherwise PDF graphics .

TABLE 520: utfsym Playing-Card Suits

♠	<code>\usym{2660}</code>	♦	<code>\usym{2662}</code>	♠	<code>\usym{2664}</code>	♦	<code>\usym{2666}</code>
♥	<code>\usym{2661}</code>	♣	<code>\usym{2663}</code>	♥	<code>\usym{2665}</code>	♠	<code>\usym{2667}</code>

All `utfsym` symbols are implemented with TikZ graphics, not with a font. In addition to `\usym`, the `utfsym` package defines `\usymH`, which renders a symbol at a given height, and `\usymW`, which renders a symbol at a given width. See the `utfsym` documentation for more information.

TABLE 521: utfsym Playing Cards

	<code>\usym{1FOA0}</code>		<code>\usym{1FOB7}</code>		<code>\usym{1FOCD}</code>		<code>\usym{1FOE3}</code>
	<code>\usym{1FOA1}</code>		<code>\usym{1FOB8}</code>		<code>\usym{1FOCE}</code>		<code>\usym{1FOE4}</code>
	<code>\usym{1FOA2}</code>		<code>\usym{1FOB9}</code>		<code>\usym{1FOCF}</code>		<code>\usym{1FOE5}</code>
	<code>\usym{1FOA3}</code>		<code>\usym{1FOBA}</code>		<code>\usym{1FOD1}</code>		<code>\usym{1FOE6}</code>
	<code>\usym{1FOA4}</code>		<code>\usym{1FOBB}</code>		<code>\usym{1FOD2}</code>		<code>\usym{1FOE7}</code>
	<code>\usym{1FOA5}</code>		<code>\usym{1FOBC}</code>		<code>\usym{1FOD3}</code>		<code>\usym{1FOE8}</code>
	<code>\usym{1FOA6}</code>		<code>\usym{1FOBD}</code>		<code>\usym{1FOD4}</code>		<code>\usym{1FOE9}</code>
	<code>\usym{1FOA7}</code>		<code>\usym{1FOBE}</code>		<code>\usym{1FOD5}</code>		<code>\usym{1FOEA}</code>
	<code>\usym{1FOA8}</code>		<code>\usym{1FOBF}</code>		<code>\usym{1FOD6}</code>		<code>\usym{1FOEB}</code>
	<code>\usym{1FOA9}</code>		<code>\usym{1FOC1}</code>		<code>\usym{1FOD7}</code>		<code>\usym{1FOEC}</code>
	<code>\usym{1FOAA}</code>		<code>\usym{1FOC2}</code>		<code>\usym{1FOD8}</code>		<code>\usym{1FOED}</code>
	<code>\usym{1FOAB}</code>		<code>\usym{1FOC3}</code>		<code>\usym{1FOD9}</code>		<code>\usym{1FOEE}</code>
	<code>\usym{1FOAC}</code>		<code>\usym{1FOC4}</code>		<code>\usym{1FODA}</code>		<code>\usym{1FOEF}</code>
	<code>\usym{1FOAD}</code>		<code>\usym{1FOC5}</code>		<code>\usym{1FODB}</code>		<code>\usym{1FOF0}</code>
	<code>\usym{1FOAE}</code>		<code>\usym{1FOC6}</code>		<code>\usym{1FODC}</code>		<code>\usym{1FOF1}</code>
	<code>\usym{1FOB1}</code>		<code>\usym{1FOC7}</code>		<code>\usym{1FODD}</code>		<code>\usym{1FOF2}</code>
	<code>\usym{1FOB2}</code>		<code>\usym{1FOC8}</code>		<code>\usym{1FODE}</code>		<code>\usym{1FOF3}</code>
	<code>\usym{1FOB3}</code>		<code>\usym{1FOC9}</code>		<code>\usym{1FODF}</code>		<code>\usym{1FOF4}</code>
	<code>\usym{1FOB4}</code>		<code>\usym{1FOCA}</code>		<code>\usym{1FOE0}</code>		<code>\usym{1FOF5}</code>
	<code>\usym{1FOB5}</code>		<code>\usym{1FOCB}</code>		<code>\usym{1FOE1}</code>		
	<code>\usym{1FOB6}</code>		<code>\usym{1FOCC}</code>		<code>\usym{1FOE2}</code>		

All `utfsym` symbols are implemented with `TikZ` graphics, not with a font. In addition to `\usym`, the `utfsym` package defines `\usymH`, which renders a symbol at a given height, and `\usymW`, which renders a symbol at a given width. For example, “`\usymH{1FOBE}{36pt}`” produces



See the `utfsym` documentation for more information.

TABLE 522: epsdice Dice

	<code>\epsdice{1}</code>		<code>\epsdice{3}</code>		<code>\epsdice{5}</code>
	<code>\epsdice{2}</code>		<code>\epsdice{4}</code>		<code>\epsdice{6}</code>

TABLE 523: hhcount Dice

	<code>\fcdice{1}</code>		<code>\fcdice{3}</code>		<code>\fcdice{5}</code>
	<code>\fcdice{2}</code>		<code>\fcdice{4}</code>		<code>\fcdice{6}</code>

The `\fcdice` command accepts values larger than 6. For example, “`\fcdice{47}`” produces “”.

TABLE 524: stix Dice

	<code>\dicei</code>		<code>\diceiii</code>		<code>\dicev</code>
	<code>\diceii</code>		<code>\diceiv</code>		<code>\dicevi</code>

TABLE 525: ifsym Dice

	<code>\Cube{1}</code>		<code>\Cube{3}</code>		<code>\Cube{5}</code>
	<code>\Cube{2}</code>		<code>\Cube{4}</code>		<code>\Cube{6}</code>

TABLE 526: utfsym Dice

	<code>\usym{2680}</code>		<code>\usym{2682}</code>		<code>\usym{2684}</code>
	<code>\usym{2681}</code>		<code>\usym{2683}</code>		<code>\usym{2685}</code>

All `utfsym` symbols are implemented with *TikZ* graphics, not with a font. In addition to `\usym`, the `utfsym` package defines `\usymH`, which renders a symbol at a given height, and `\usymW`, which renders a symbol at a given width. See the `utfsym` documentation for more information.

TABLE 527: fontawesome5 Dice

	<code>\faDice</code>		<code>\faDiceFive</code>		<code>\faDiceSix</code>
	<code>\faDiceD20</code>		<code>\faDiceFour</code>		<code>\faDiceThree</code>
	<code>\faDiceD6</code>		<code>\faDiceOne</code>		<code>\faDiceTwo</code>

TABLE 528: utfsym Domino Tiles

	<code>\usym{1F030}</code>		<code>\usym{1F049}</code>		<code>\usym{1F062}</code>		<code>\usym{1F07B}</code>
	<code>\usym{1F031}</code>		<code>\usym{1F04A}</code>		<code>\usym{1F063}</code>		<code>\usym{1F07C}</code>
	<code>\usym{1F032}</code>		<code>\usym{1F04B}</code>		<code>\usym{1F064}</code>		<code>\usym{1F07D}</code>
	<code>\usym{1F033}</code>		<code>\usym{1F04C}</code>		<code>\usym{1F065}</code>		<code>\usym{1F07E}</code>
	<code>\usym{1F034}</code>		<code>\usym{1F04D}</code>		<code>\usym{1F066}</code>		<code>\usym{1F07F}</code>
	<code>\usym{1F035}</code>		<code>\usym{1F04E}</code>		<code>\usym{1F067}</code>		<code>\usym{1F080}</code>
	<code>\usym{1F036}</code>		<code>\usym{1F04F}</code>		<code>\usym{1F068}</code>		<code>\usym{1F081}</code>
	<code>\usym{1F037}</code>		<code>\usym{1F050}</code>		<code>\usym{1F069}</code>		<code>\usym{1F082}</code>
	<code>\usym{1F038}</code>		<code>\usym{1F051}</code>		<code>\usym{1F06A}</code>		<code>\usym{1F083}</code>
	<code>\usym{1F039}</code>		<code>\usym{1F052}</code>		<code>\usym{1F06B}</code>		<code>\usym{1F084}</code>
	<code>\usym{1F03A}</code>		<code>\usym{1F053}</code>		<code>\usym{1F06C}</code>		<code>\usym{1F085}</code>
	<code>\usym{1F03B}</code>		<code>\usym{1F054}</code>		<code>\usym{1F06D}</code>		<code>\usym{1F086}</code>
	<code>\usym{1F03C}</code>		<code>\usym{1F055}</code>		<code>\usym{1F06E}</code>		<code>\usym{1F087}</code>
	<code>\usym{1F03D}</code>		<code>\usym{1F056}</code>		<code>\usym{1F06F}</code>		<code>\usym{1F088}</code>
	<code>\usym{1F03E}</code>		<code>\usym{1F057}</code>		<code>\usym{1F070}</code>		<code>\usym{1F089}</code>
	<code>\usym{1F03F}</code>		<code>\usym{1F058}</code>		<code>\usym{1F071}</code>		<code>\usym{1F08A}</code>
	<code>\usym{1F040}</code>		<code>\usym{1F059}</code>		<code>\usym{1F072}</code>		<code>\usym{1F08B}</code>
	<code>\usym{1F041}</code>		<code>\usym{1F05A}</code>		<code>\usym{1F073}</code>		<code>\usym{1F08C}</code>
	<code>\usym{1F042}</code>		<code>\usym{1F05B}</code>		<code>\usym{1F074}</code>		<code>\usym{1F08D}</code>
	<code>\usym{1F043}</code>		<code>\usym{1F05C}</code>		<code>\usym{1F075}</code>		<code>\usym{1F08E}</code>
	<code>\usym{1F044}</code>		<code>\usym{1F05D}</code>		<code>\usym{1F076}</code>		<code>\usym{1F08F}</code>
	<code>\usym{1F045}</code>		<code>\usym{1F05E}</code>		<code>\usym{1F077}</code>		<code>\usym{1F090}</code>
	<code>\usym{1F046}</code>		<code>\usym{1F05F}</code>		<code>\usym{1F078}</code>		<code>\usym{1F091}</code>
	<code>\usym{1F047}</code>		<code>\usym{1F060}</code>		<code>\usym{1F079}</code>		<code>\usym{1F092}</code>
	<code>\usym{1F048}</code>		<code>\usym{1F061}</code>		<code>\usym{1F07A}</code>		<code>\usym{1F093}</code>

All `utfsym` symbols are implemented with `TikZ` graphics, not with a font. In addition to `\usym`, the `utfsym` package defines `\usymH`, which renders a symbol at a given height, and `\usymW`, which renders a symbol at a given width. For example, “`\usymH{1F089}{36pt}`” produces



See the `utfsym` documentation for more information.

TABLE 529: utfsym Mahjong Tiles

	<code>\usym{1F000}</code>		<code>\usym{1F00B}</code>		<code>\usym{1F016}</code>		<code>\usym{1F021}</code>
	<code>\usym{1F001}</code>		<code>\usym{1F00C}</code>		<code>\usym{1F017}</code>		<code>\usym{1F022}</code>
	<code>\usym{1F002}</code>		<code>\usym{1F00D}</code>		<code>\usym{1F018}</code>		<code>\usym{1F023}</code>
	<code>\usym{1F003}</code>		<code>\usym{1F00E}</code>		<code>\usym{1F019}</code>		<code>\usym{1F024}</code>
	<code>\usym{1F004}</code>		<code>\usym{1F00F}</code>		<code>\usym{1F01A}</code>		<code>\usym{1F025}</code>
	<code>\usym{1F005}</code>		<code>\usym{1F010}</code>		<code>\usym{1F01B}</code>		<code>\usym{1F026}</code>
	<code>\usym{1F006}</code>		<code>\usym{1F011}</code>		<code>\usym{1F01C}</code>		<code>\usym{1F027}</code>
	<code>\usym{1F007}</code>		<code>\usym{1F012}</code>		<code>\usym{1F01D}</code>		<code>\usym{1F028}</code>
	<code>\usym{1F008}</code>		<code>\usym{1F013}</code>		<code>\usym{1F01E}</code>		<code>\usym{1F029}</code>
	<code>\usym{1F009}</code>		<code>\usym{1F014}</code>		<code>\usym{1F01F}</code>		<code>\usym{1F02A}</code>
	<code>\usym{1F00A}</code>		<code>\usym{1F015}</code>		<code>\usym{1F020}</code>		<code>\usym{1F02B}</code>

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See the `utfsym` documentation for more information.

TABLE 530: utfsym Chess Pieces

	<code>\usym{2654}</code>		<code>\usym{2657}</code>		<code>\usym{265A}</code>		<code>\usym{265D}</code>
	<code>\usym{2655}</code>		<code>\usym{2658}</code>		<code>\usym{265B}</code>		<code>\usym{265E}</code>
	<code>\usym{2656}</code>		<code>\usym{2659}</code>		<code>\usym{265C}</code>		<code>\usym{265F}</code>

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TABLE 531: skak Chess Informator Symbols

	<code>\bbetter</code>		<code>\doublepawns</code>		<code>\seppawns</code>
	<code>\bdecisive</code>		<code>\ending</code>		<code>\shortcastling</code>
	<code>\betteris</code>		<code>\equal</code>		<code>\timelimit</code>
	<code>\bishoppair</code>		<code>\file</code>		<code>\unclear</code>
	<code>\bupperhand</code>		<code>\kside</code>		<code>\unitedpawns</code>
	<code>\capturesymbol</code>		<code>\longcastling</code>		<code>\various</code>
	<code>\castlingchar</code>		<code>\markera</code>		<code>\wbetter</code>
	<code>\castlinghyphen</code>		<code>\markerb</code>		<code>\wdecisive</code>
	<code>\centre</code>		<code>\mate</code>		<code>\weakpt</code>
	<code>\checksymbol</code>		<code>\morepawns</code>		<code>\with</code>
	<code>\chesscomment</code>		<code>\moreroom</code>		<code>\withattack</code>
	<code>\chessetc</code>		<code>\novelty</code>		<code>\withidea</code>
	<code>\chesssee</code>		<code>\onlymove</code>		<code>\within it</code>
	<code>\compensation</code>		<code>\opposbishops</code>		<code>\without</code>
	<code>\counterplay</code>		<code>\passedpawn</code>		<code>\wupperhand</code>
	<code>\devadvantage</code>		<code>\qside</code>		<code>\zugzwang</code>
	<code>\diagonal</code>		<code>\samebishops</code>		

TABLE 532: skak Chess Pieces and Chessboard Squares

	<code>\BlackBishopOnBlack</code>		<code>\BlackRookOnBlack</code>		<code>\WhiteKingOnBlack</code>
	<code>\BlackBishopOnWhite</code>		<code>\BlackRookOnWhite</code>		<code>\WhiteKingOnWhite</code>
	<code>\BlackEmptySquare</code>		<code>\symbishop</code>		<code>\WhiteKnightOnBlack</code>
	<code>\BlackKingOnBlack</code>		<code>\symking</code>		<code>\WhiteKnightOnWhite</code>
	<code>\BlackKingOnWhite</code>		<code>\symknight</code>		<code>\WhitePawnOnBlack</code>
	<code>\BlackKnightOnBlack</code>		<code>\sympawn</code>		<code>\WhitePawnOnWhite</code>
	<code>\BlackKnightOnWhite</code>		<code>\symqueen</code>		<code>\WhiteQueenOnBlack</code>
	<code>\BlackPawnOnBlack</code>		<code>\symrook</code>		<code>\WhiteQueenOnWhite</code>
	<code>\BlackPawnOnWhite</code>		<code>\WhiteBishopOnBlack</code>		<code>\WhiteRookOnBlack</code>
	<code>\BlackQueenOnBlack</code>		<code>\WhiteBishopOnWhite</code>		<code>\WhiteRookOnWhite</code>
	<code>\BlackQueenOnWhite</code>	<code>\WhiteEmptySquare</code>			

The skak package also provides commands for drawing complete chessboards. See the skak documentation for more information.

TABLE 533: fontawesome5 Chess Pieces and Chessboards

	<code>\faChess</code>		<code>\faChessKing</code>		<code>\faChessQueen</code>
	<code>\faChessBishop</code>		<code>\faChessKnight</code>		<code>\faChessRook</code>
	<code>\faChessBoard</code>		<code>\faChessPawn</code>		

TABLE 534: igo Go Symbols

	<code>\blackstone[\igocircle]</code>		<code>\whitestone[\igocircle]</code>
	<code>\blackstone[\igocross]</code>		<code>\whitestone[\igocross]</code>
	<code>\blackstone[\igonone]</code>		<code>\whitestone[\igonone]</code>
	<code>\blackstone[\igosquare]</code>		<code>\whitestone[\igosquare]</code>
	<code>\blackstone[\igotriangle]</code>		<code>\whitestone[\igotriangle]</code>

In addition to the symbols shown above, igo's `\blackstone` and `\whitestone` commands accept numbers from 1 to 99 and display them circled as ❶, ❷, ❸, ..., ❹❹ and ❶, ❷, ❸, ..., ❹❹, respectively.

The igo package is intended to typeset complete Go boards (goban). See the igo documentation for more information.

TABLE 535: go Go Symbols

	<code>\botborder</code>		<code>\lftbotcorner</code>		<code>\rttopcorner</code>
	<code>\empty</code>		<code>\lfttopcorner</code>		<code>\square</code>
	<code>\hoshi</code>		<code>\rtborder</code>		<code>\topborder</code>
	<code>\lftborder</code>		<code>\rtbotcorner</code>		<code>\triangle</code>

In addition to the board fragments and stones shown above, go's `\black` and `\white` commands accept numbers from 1 to 253 and display them circled as ❶, ❷, ❸, ..., ❷❸ and ❶, ❷, ❸, ..., ❷❸, respectively. `\black` and `\white` additionally accept `\square` and `\triangle` as arguments, producing  and  for `\black` and  and  for `\white`.

The go package is intended to typeset complete Go boards (goban). See the go documentation for more information.

TABLE 536: fontawesome5 Sports

	<code>\faBaseballBall</code>		<code>\faFootballBall</code>		<code>\faSkiing</code>
	<code>\faBasketballBall</code>		<code>\faFutbol</code>		<code>\faSkiingNordic</code>
	<code>\faBiking</code>		<code>\faFutbol[regular]</code>		<code>\faSnowboarding</code>
	<code>\faBowlingBall</code>		<code>\faGolfBall</code>		<code>\faSwimmer</code>
	<code>\faDribbble</code>		<code>\faHockeyPuck</code>		<code>\faTableTennis</code>
	<code>\faDribbbleSquare</code>		<code>\faQuidditch</code>		<code>\faVolleyballBall</code>
	<code>\faDumbbell</code>		<code>\faSkating</code>		

TABLE 537: utfsym Games and Sports

	<code>\usym{1F3AE}</code>		<code>\usym{1F3BF}</code>		<code>\usym{1F3C6}</code>		<code>\usym{1F3CF}</code>
	<code>\usym{1F3AF}</code>		<code>\usym{1F3C0}</code>		<code>\usym{1F3C7}</code>		<code>\usym{1F3D0}</code>
	<code>\usym{1F3B0}</code>		<code>\usym{1F3C1}</code>		<code>\usym{1F3C8}</code>		<code>\usym{1F3D1}</code>
	<code>\usym{1F3B1}</code>		<code>\usym{1F3C2}</code>		<code>\usym{1F3C9}</code>		<code>\usym{1F3D2}</code>
	<code>\usym{1F3B2}</code>		<code>\usym{1F3C3}</code>		<code>\usym{1F3CA}</code>		<code>\usym{1F3D3}</code>
	<code>\usym{1F3B3}</code>		<code>\usym{1F3C4}</code>		<code>\usym{1F3CB}</code>		<code>\usym{1F3F8}</code>
	<code>\usym{1F3BE}</code>		<code>\usym{1F3C5}</code>		<code>\usym{1F3CC}</code>		<code>\usym{1F3F9}</code>

All `utfsym` symbols are implemented with `TikZ` graphics, not with a font. In addition to `\usym`, the `utfsym` package defines `\usymH`, which renders a symbol at a given height, and `\usymW`, which renders a symbol at a given width. For example, “`\usymH{1F3B0}{36pt}`” produces



See the `utfsym` documentation for more information.

Chapter 9

Geographical Symbols

The symbols in this chapter relate in some manner to geography. In particular, the following tables present both maps and national and regional flags.

TABLE 538: countriesofeuropa Country Maps

	<code>\Albania</code>		<code>\Latvia</code>
	<code>\Andorra</code>		<code>\Liechtenstein</code>
	<code>\Austria</code>		<code>\Lithuania</code>
	<code>\Belarus</code>		<code>\Luxembourg</code>
	<code>\Belgium</code>		<code>\Macedonia</code>
	<code>\Bosnia</code>		<code>\Malta</code>
	<code>\Bulgaria</code>		<code>\Moldova</code>
	<code>\Croatia</code>		<code>\Montenegro</code>
	<code>\Czechia</code>		<code>\Netherlands</code>

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The preceding commands work only when the `CountriesOfEurope` font family is active. For convenience, the package defines a `\countriesofeuropfamily` command that switches to that font family.

By default, countries are drawn in the current font size. Hence, “`\countriesofeuropfamily\France`” draws a nearly unrecognizable “”. For clarity of presentation, Table 538 scales each glyph to 72 pt. via an explicit `\fontsize{72}{72}`. An alternative is to specify the `scaled` package option to scale all country glyphs by a given factor of the font size.

TABLE 539: rojud Maps of Romanian Counties

	<code>\jAB</code>		<code>\jCT</code>		<code>\jMS</code>
	<code>\jAG</code>		<code>\jCV</code>		<code>\jNT</code>
	<code>\jAR</code>		<code>\jDB</code>		<code>\jOT</code>
	<code>\jBC</code>		<code>\jDJ</code>		<code>\jPH</code>
	<code>\jBH</code>		<code>\jGJ</code>		<code>\jSB</code>
	<code>\jBI</code>		<code>\jGL</code>		<code>\jSJ</code>
	<code>\jBN</code>		<code>\jGR</code>		<code>\jSM</code>
	<code>\jBR</code>		<code>\jHD</code>		<code>\jSV</code>
	<code>\jBT</code>		<code>\jHR</code>		<code>\jTL</code>
	<code>\jBV</code>		<code>\jIF</code>		<code>\jTM</code>

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	<code>\jBZ</code>		<code>\jIL</code>		<code>\jTR</code>
	<code>\jCJ</code>		<code>\jIS</code>		<code>\jVL</code>
	<code>\jCL</code>		<code>\jMH</code>		<code>\jVN</code>
	<code>\jCS</code>		<code>\jMM</code>		<code>\jVS</code>

The preceding commands work only when the `rojud` font family is active. Use the OT1 font encoding in pdf $\LaTeX$ and the TU font encoding in X $\LaTeX$. (`rojud` requires one of those two $\TeX$ engines.) For example, “`\usefont{OT1}{rojud}{m}{n}\jBI`” draws Bucharest.^a

^atechnically a municipality, not a county

TABLE 540: `euflag` European Union Flag



`\euflag`

The `\euflag` flag is drawn using the $\LaTeX$ `picture` environment.



\worldflag{CF}
\worldflag{CG}
\worldflag{CH}
\worldflag{CI}

\worldflag{IQ}
\worldflag{IR}
\worldflag{IS}
\worldflag{IT}

\worldflag{N}
\worldflag{O}
\worldflag{P}
\worldflag{Q}

\worldflag{TV}
\worldflag{TW}
\worldflag{TZ}
\worldflag{UA}
\worldflag{UG}

(continued from previous page)

	<code>\worldflag{CK}</code>		<code>\worldflag{JM}</code>		<code>\worldflag{NZ}</code>		<code>\worldflag{US}</code>
	<code>\worldflag{CL}</code>		<code>\worldflag{JO}</code>		<code>\worldflag{OM}</code>		<code>\worldflag{UY}</code>
	<code>\worldflag{CM}</code>		<code>\worldflag{JP}</code>		<code>\worldflag{PA}</code>		<code>\worldflag{UZ}</code>
	<code>\worldflag{CN}</code>		<code>\worldflag{KE}</code>		<code>\worldflag{PE}</code>		<code>\worldflag{VA}</code>
	<code>\worldflag{CO}</code>		<code>\worldflag{KG}</code>		<code>\worldflag{PG}</code>		<code>\worldflag{VC}</code>
	<code>\worldflag{CR}</code>		<code>\worldflag{KH}</code>		<code>\worldflag{PH}</code>		<code>\worldflag{VE}</code>
	<code>\worldflag{CU}</code>		<code>\worldflag{KI}</code>		<code>\worldflag{PK}</code>		<code>\worldflag{VN}</code>
	<code>\worldflag{CV}</code>		<code>\worldflag{KM}</code>		<code>\worldflag{PL}</code>		<code>\worldflag{VU}</code>
	<code>\worldflag{CY}</code>		<code>\worldflag{KN}</code>		<code>\worldflag{PS}</code>		<code>\worldflag{WS}</code>
	<code>\worldflag{CZ}</code>		<code>\worldflag{KO}</code>		<code>\worldflag{PT}</code>		<code>\worldflag{YE}</code>
	<code>\worldflag{DE}</code>		<code>\worldflag{KP}</code>		<code>\worldflag{PW}</code>		<code>\worldflag{ZA}</code>
	<code>\worldflag{DJ}</code>		<code>\worldflag{KR}</code>		<code>\worldflag{PY}</code>		<code>\worldflag{ZM}</code>
	<code>\worldflag{DK}</code>		<code>\worldflag{KW}</code>		<code>\worldflag{QA}</code>		<code>\worldflag{ZW}</code>
	<code>\worldflag{DM}</code>		<code>\worldflag{KZ}</code>		<code>\worldflag{RO}</code>		
	<code>\worldflag{DO}</code>		<code>\worldflag{LA}</code>		<code>\worldflag{RS}</code>		
	<code>\worldflag{DZ}</code>		<code>\worldflag{LB}</code>		<code>\worldflag{RU}</code>		

All worldflags symbols are implemented with TikZ graphics, not with a font. The package provides a number of options for controlling flag size and style. See the worldflags documentation for more information.

TABLE 542: worldflags Flags of Non-Sovereign Countries and Territories

	<code>\worldflag{Abkhazia}</code>		<code>\worldflag{GF}</code>		<code>\worldflag{PR}</code>
	<code>\worldflag{AQ}</code>		<code>\worldflag{GG}</code>		<code>\worldflag{RE}</code>
	<code>\worldflag{Artsakh}</code>		<code>\worldflag{GI}</code>		<code>\worldflag{Saba}</code>
	<code>\worldflag{AX}</code>		<code>\worldflag{GL}</code>		<code>\worldflag{Somaliland}</code>
	<code>\worldflag{Bonaire}</code>		<code>\worldflag{IM}</code>		<code>\worldflag{StEustasius}</code>
	<code>\worldflag{EH}</code>		<code>\worldflag{JE}</code>		<code>\worldflag{Tibet}</code>
	<code>\worldflag{FO}</code>		<code>\worldflag{NU}</code>		<code>\worldflag{Transnistria}</code>

All worldflags symbols are implemented with TikZ graphics, not with a font. The package provides a number of options for controlling flag size and style. See the worldflags documentation for more information.

TABLE 543: worldflags Flags of Austrian Federal States

	<code>\worldflag{AT-B}</code>		<code>\worldflag{AT-O}</code>		<code>\worldflag{AT-T}</code>
	<code>\worldflag{AT-K}</code>		<code>\worldflag{AT-S}</code>		<code>\worldflag{AT-V}</code>
	<code>\worldflag{AT-N}</code>		<code>\worldflag{AT-St}</code>		<code>\worldflag{AT-W}</code>

All `worldflags` symbols are implemented with TikZ graphics, not with a font. The package provides a number of options for controlling flag size and style. See the `worldflags` documentation for more information.

TABLE 544: twemojis Flags

	<code>\twemoji{flag: Åland Islands}</code>		<code>\twemoji{flag: Lesotho}</code>
	<code>\twemoji{flag: Afghanistan}</code>		<code>\twemoji{flag: Liberia}</code>
	<code>\twemoji{flag: Albania}</code>		<code>\twemoji{flag: Libya}</code>
	<code>\twemoji{flag: Algeria}</code>		<code>\twemoji{flag: Liechtenstein}</code>
	<code>\twemoji{flag: American Samoa}</code>		<code>\twemoji{flag: Lithuania}</code>
	<code>\twemoji{flag: Andorra}</code>		<code>\twemoji{flag: Luxembourg}</code>
	<code>\twemoji{flag: Angola}</code>		<code>\twemoji{flag: Macao SAR China}</code>
	<code>\twemoji{flag: Anguilla}</code>		<code>\twemoji{flag: Madagascar}</code>
	<code>\twemoji{flag: Antarctica}</code>		<code>\twemoji{flag: Malawi}</code>
	<code>\twemoji{flag: Antigua & Barbuda}</code>		<code>\twemoji{flag: Malaysia}</code>
	<code>\twemoji{flag: Argentina}</code>		<code>\twemoji{flag: Maldives}</code>
	<code>\twemoji{flag: Armenia}</code>		<code>\twemoji{flag: Mali}</code>
	<code>\twemoji{flag: Aruba}</code>		<code>\twemoji{flag: Malta}</code>
	<code>\twemoji{flag: Ascension Island}</code>		<code>\twemoji{flag: Marshall Islands}</code>
	<code>\twemoji{flag: Australia}</code>		<code>\twemoji{flag: Martinique}</code>
	<code>\twemoji{flag: Austria}</code>		<code>\twemoji{flag: Mauritania}</code>
	<code>\twemoji{flag: Azerbaijan}</code>		<code>\twemoji{flag: Mauritius}</code>
	<code>\twemoji{flag: Bahamas}</code>		<code>\twemoji{flag: Mayotte}</code>
	<code>\twemoji{flag: Bahrain}</code>		<code>\twemoji{flag: Mexico}</code>
	<code>\twemoji{flag: Bangladesh}</code>		<code>\twemoji{flag: Micronesia}</code>
	<code>\twemoji{flag: Barbados}</code>		<code>\twemoji{flag: Moldova}</code>
	<code>\twemoji{flag: Belarus}</code>		<code>\twemoji{flag: Monaco}</code>
	<code>\twemoji{flag: Belgium}</code>		<code>\twemoji{flag: Mongolia}</code>
	<code>\twemoji{flag: Belize}</code>		<code>\twemoji{flag: Montenegro}</code>
	<code>\twemoji{flag: Benin}</code>		<code>\twemoji{flag: Montserrat}</code>
	<code>\twemoji{flag: Bermuda}</code>		<code>\twemoji{flag: Morocco}</code>
	<code>\twemoji{flag: Bhutan}</code>		<code>\twemoji{flag: Mozambique}</code>
	<code>\twemoji{flag: Bolivia}</code>		<code>\twemoji{flag: Myanmar (Burma)}</code>
	<code>\twemoji{flag: Bosnia & Herzegovina}</code>		<code>\twemoji{flag: Namibia}</code>

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 \twemoji{flag: Botswana}	 \twemoji{flag: Nauru}
 \twemoji{flag: Bouvet Island}	 \twemoji{flag: Nepal}
 \twemoji{flag: Brazil}	 \twemoji{flag: Netherlands}
 \twemoji{flag: British Indian Ocean Territory}	 \twemoji{flag: New Caledonia}
 \twemoji{flag: British Virgin Islands}	 \twemoji{flag: New Zealand}
 \twemoji{flag: Brunei}	 \twemoji{flag: Nicaragua}
 \twemoji{flag: Bulgaria}	 \twemoji{flag: Nigeria}
 \twemoji{flag: Burkina Faso}	 \twemoji{flag: Niger}
 \twemoji{flag: Burundi}	 \twemoji{flag: Niue}
 \twemoji{flag: Cambodia}	 \twemoji{flag: Norfolk Island}
 \twemoji{flag: Cameroon}	 \twemoji{flag: North Korea}
 \twemoji{flag: Canada}	 \twemoji{flag: North Macedonia}
 \twemoji{flag: Canary Islands}	 \twemoji{flag: Northern Mariana Islands}
 \twemoji{flag: Cape Verde}	 \twemoji{flag: Norway}
 \twemoji{flag: Caribbean Netherlands}	 \twemoji{flag: Oman}
 \twemoji{flag: Cayman Islands}	 \twemoji{flag: Pakistan}
 \twemoji{flag: Central African Republic}	 \twemoji{flag: Palau}
 \twemoji{flag: Ceuta & Melilla}	 \twemoji{flag: Palestinian Territories}
 \twemoji{flag: Chad}	 \twemoji{flag: Panama}
 \twemoji{flag: Chile}	 \twemoji{flag: Papua New Guinea}
 \twemoji{flag: China}	 \twemoji{flag: Paraguay}
 \twemoji{flag: Christmas Island}	 \twemoji{flag: Peru}
 \twemoji{flag: Clipperton Island}	 \twemoji{flag: Philippines}
 \twemoji{flag: Cocos (Keeling) Islands}	 \twemoji{flag: Pitcairn Islands}
 \twemoji{flag: Colombia}	 \twemoji{flag: Poland}
 \twemoji{flag: Comoros}	 \twemoji{flag: Portugal}
 \twemoji{flag: Congo - Brazzaville}	 \twemoji{flag: Puerto Rico}
 \twemoji{flag: Congo - Kinshasa}	 \twemoji{flag: Qatar}
 \twemoji{flag: Cook Islands}	 \twemoji{flag: Romania}
 \twemoji{flag: Costa Rica}	 \twemoji{flag: Russia}
 \twemoji{flag: Croatia}	 \twemoji{flag: Rwanda}
 \twemoji{flag: Cuba}	 \twemoji{flag: Réunion}
 \twemoji{flag: Curaçao}	 \twemoji{flag: Samoa}
 \twemoji{flag: Cyprus}	 \twemoji{flag: San Marino}
 \twemoji{flag: Czechia}	 \twemoji{flag: Saudi Arabia}
 \twemoji{flag: Côte d'Ivoire}	 \twemoji{flag: Scotland}
 \twemoji{flag: Denmark}	 \twemoji{flag: Senegal}
 \twemoji{flag: Diego Garcia}	 \twemoji{flag: Serbia}
 \twemoji{flag: Djibouti}	 \twemoji{flag: Seychelles}

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	<code>\twemoji{flag: Dominican Republic}</code>		<code>\twemoji{flag: Sierra Leone}</code>
	<code>\twemoji{flag: Dominica}</code>		<code>\twemoji{flag: Singapore}</code>
	<code>\twemoji{flag: Ecuador}</code>		<code>\twemoji{flag: Sint Maarten}</code>
	<code>\twemoji{flag: Egypt}</code>		<code>\twemoji{flag: Slovakia}</code>
	<code>\twemoji{flag: El Salvador}</code>		<code>\twemoji{flag: Slovenia}</code>
	<code>\twemoji{flag: England}</code>		<code>\twemoji{flag: Solomon Islands}</code>
	<code>\twemoji{flag: Equatorial Guinea}</code>		<code>\twemoji{flag: Somalia}</code>
	<code>\twemoji{flag: Eritrea}</code>		<code>\twemoji{flag: South Africa}</code>
	<code>\twemoji{flag: Estonia}</code>		<code>\twemoji{flag: South Georgia & South Sandwich Islands}</code>
	<code>\twemoji{flag: Eswatini}</code>		<code>\twemoji{flag: South Korea}</code>
	<code>\twemoji{flag: Ethiopia}</code>		<code>\twemoji{flag: South Sudan}</code>
	<code>\twemoji{flag: European Union}</code>		<code>\twemoji{flag: Spain}</code>
	<code>\twemoji{flag: Falkland Islands}</code>		<code>\twemoji{flag: Sri Lanka}</code>
	<code>\twemoji{flag: Faroe Islands}</code>		<code>\twemoji{flag: St. Barthélemy}</code>
	<code>\twemoji{flag: Fiji}</code>		<code>\twemoji{flag: St. Helena}</code>
	<code>\twemoji{flag: Finland}</code>		<code>\twemoji{flag: St. Kitts & Nevis}</code>
	<code>\twemoji{flag: France}</code>		<code>\twemoji{flag: St. Lucia}</code>
	<code>\twemoji{flag: French Guiana}</code>		<code>\twemoji{flag: St. Martin}</code>
	<code>\twemoji{flag: French Polynesia}</code>		<code>\twemoji{flag: St. Pierre & Miquelon}</code>
	<code>\twemoji{flag: French Southern Territories}</code>		<code>\twemoji{flag: St. Vincent & Grenadines}</code>
	<code>\twemoji{flag: Gabon}</code>		<code>\twemoji{flag: Sudan}</code>
	<code>\twemoji{flag: Gambia}</code>		<code>\twemoji{flag: Suriname}</code>
	<code>\twemoji{flag: Georgia}</code>		<code>\twemoji{flag: Svalbard & Jan Mayen}</code>
	<code>\twemoji{flag: Germany}</code>		<code>\twemoji{flag: Sweden}</code>
	<code>\twemoji{flag: Ghana}</code>		<code>\twemoji{flag: Switzerland}</code>
	<code>\twemoji{flag: Gibraltar}</code>		<code>\twemoji{flag: Syria}</code>
	<code>\twemoji{flag: Greece}</code>		<code>\twemoji{flag: São Tomé & Príncipe}</code>
	<code>\twemoji{flag: Greenland}</code>		<code>\twemoji{flag: Taiwan}</code>
	<code>\twemoji{flag: Grenada}</code>		<code>\twemoji{flag: Tajikistan}</code>
	<code>\twemoji{flag: Guadeloupe}</code>		<code>\twemoji{flag: Tanzania}</code>
	<code>\twemoji{flag: Guam}</code>		<code>\twemoji{flag: Thailand}</code>
	<code>\twemoji{flag: Guatemala}</code>		<code>\twemoji{flag: Timor-Leste}</code>
	<code>\twemoji{flag: Guernsey}</code>		<code>\twemoji{flag: Togo}</code>
	<code>\twemoji{flag: Guinea-Bissau}</code>		<code>\twemoji{flag: Tokelau}</code>
	<code>\twemoji{flag: Guinea}</code>		<code>\twemoji{flag: Tonga}</code>
	<code>\twemoji{flag: Guyana}</code>		<code>\twemoji{flag: Trinidad & Tobago}</code>
	<code>\twemoji{flag: Haiti}</code>		<code>\twemoji{flag: Tristan da Cunha}</code>
	<code>\twemoji{flag: Heard & McDonald Islands}</code>		<code>\twemoji{flag: Tunisia}</code>
	<code>\twemoji{flag: Honduras}</code>		<code>\twemoji{flag: Turkey}</code>
	<code>\twemoji{flag: Hong Kong SAR China}</code>		<code>\twemoji{flag: Turkmenistan}</code>

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	<code>\twemoji{flag: Hungary}</code>		<code>\twemoji{flag: Turks & Caicos Islands}</code>
	<code>\twemoji{flag: Iceland}</code>		<code>\twemoji{flag: Tuvalu}</code>
	<code>\twemoji{flag: India}</code>		<code>\twemoji{flag: U.S. Outlying Islands}</code>
	<code>\twemoji{flag: Indonesia}</code>		<code>\twemoji{flag: U.S. Virgin Islands}</code>
	<code>\twemoji{flag: Iran}</code>		<code>\twemoji{flag: Uganda}</code>
	<code>\twemoji{flag: Iraq}</code>		<code>\twemoji{flag: Ukraine}</code>
	<code>\twemoji{flag: Ireland}</code>		<code>\twemoji{flag: United Arab Emirates}</code>
	<code>\twemoji{flag: Isle of Man}</code>		<code>\twemoji{flag: United Kingdom}</code>
	<code>\twemoji{flag: Israel}</code>		<code>\twemoji{flag: United Nations}</code>
	<code>\twemoji{flag: Italy}</code>		<code>\twemoji{flag: United States}</code>
	<code>\twemoji{flag: Jamaica}</code>		<code>\twemoji{flag: Uruguay}</code>
	<code>\twemoji{flag: Japan}</code>		<code>\twemoji{flag: Uzbekistan}</code>
	<code>\twemoji{flag: Jersey}</code>		<code>\twemoji{flag: Vanuatu}</code>
	<code>\twemoji{flag: Jordan}</code>		<code>\twemoji{flag: Vatican City}</code>
	<code>\twemoji{flag: Kazakhstan}</code>		<code>\twemoji{flag: Venezuela}</code>
	<code>\twemoji{flag: Kenya}</code>		<code>\twemoji{flag: Vietnam}</code>
	<code>\twemoji{flag: Kiribati}</code>		<code>\twemoji{flag: Wales}</code>
	<code>\twemoji{flag: Kosovo}</code>		<code>\twemoji{flag: Wallis & Futuna}</code>
	<code>\twemoji{flag: Kuwait}</code>		<code>\twemoji{flag: Western Sahara}</code>
	<code>\twemoji{flag: Kyrgyzstan}</code>		<code>\twemoji{flag: Yemen}</code>
	<code>\twemoji{flag: Laos}</code>		<code>\twemoji{flag: Zambia}</code>
	<code>\twemoji{flag: Latvia}</code>		<code>\twemoji{flag: Zimbabwe}</code>
	<code>\twemoji{flag: Lebanon}</code>		

Most twemojis symbols have multiple names. Only the most descriptive name for each symbol is shown in this table.

All twemojis symbols are implemented as PDF graphics, not with a font. See also the hwemoji package, which enables direct Unicode entry of emoji characters in pdfL^AT_EX; the emoji package, which provides a LuaL^AT_EX interface to different underlying emoji fonts; and the emo package, which uses a font if possible, otherwise PDF graphics .

Chapter 10

Other symbols

The following are all the symbols that didn't fit neatly or unambiguously into any of the previous chapters. (Do weather symbols belong under "Science and technology"? Should tally markers be considered "mathematics"?) While some of the tables contain clearly related groups of symbols (e.g., symbols related to cooking), others represent motley assortments of whatever the font designer felt like drawing.

TABLE 545: textcomp Genealogical Symbols

★	<code>\textborn</code>	∅	<code>\textdivorced</code>	∞	<code>\textmarried</code>
†	<code>\textdied</code>	🍃	<code>\textleaf</code>		

TABLE 546: wasysym General Symbols

🕹	<code>\ataribox</code>	∅	<code>\diameter</code>	⚡	<code>\lightning</code>	☀	<code>\sun</code>
🔔	<code>\bell</code>	▼	<code>\DOWNarrow</code>	☎	<code>\phone</code>	▲	<code>\UParrow</code>
☹	<code>\blacksmiley</code>	☹	<code>\frownie</code>	☞	<code>\pointer</code>	⌘	<code>\wasycmd*</code>
🎩	<code>\Bowtie</code>	⊗	<code>\invdiameter</code>	📻	<code>\recorder</code>	🍷	<code>\wasylozenge</code>
!	<code>\brokenvert</code>	✱	<code>\kreuz</code>	▶	<code>\RIGHTarrow</code>		
✓	<code>\checked</code>	◀	<code>\LEFTarrow</code>	↻	<code>\rightturn</code>		
🕒	<code>\clock</code>	↻	<code>\leftturn</code>	😊	<code>\smiley</code>		

* wasysym defines `\applecmd` as a synonym for `\wasycmd`.

TABLE 547: utfsym Transportation Symbols

	<code>\usym{1F3CD}</code>		<code>\usym{1F698}</code>		<code>\usym{1F6B2}</code>		<code>\usym{1F6CC}</code>
	<code>\usym{1F3CE}</code>		<code>\usym{1F699}</code>		<code>\usym{1F6B3}</code>		<code>\usym{1F6CD}</code>
	<code>\usym{1F680}</code>		<code>\usym{1F69A}</code>		<code>\usym{1F6B4}</code>		<code>\usym{1F6CE}</code>
	<code>\usym{1F681}</code>		<code>\usym{1F69B}</code>		<code>\usym{1F6B5}</code>		<code>\usym{1F6CF}</code>
	<code>\usym{1F682}</code>		<code>\usym{1F69C}</code>		<code>\usym{1F6B6}</code>		<code>\usym{1F6D0}</code>
	<code>\usym{1F683}</code>		<code>\usym{1F69D}</code>		<code>\usym{1F6B7}</code>		<code>\usym{1F6D1}</code>
	<code>\usym{1F684}</code>		<code>\usym{1F69E}</code>		<code>\usym{1F6B8}</code>		<code>\usym{1F6D2}</code>
	<code>\usym{1F685}</code>		<code>\usym{1F69F}</code>		<code>\usym{1F6B9}</code>		<code>\usym{1F6E0}</code>
	<code>\usym{1F686}</code>		<code>\usym{1F6A0}</code>		<code>\usym{1F6BA}</code>		<code>\usym{1F6E1}</code>
	<code>\usym{1F687}</code>		<code>\usym{1F6A1}</code>		<code>\usym{1F6BB}</code>		<code>\usym{1F6E2}</code>
	<code>\usym{1F688}</code>		<code>\usym{1F6A2}</code>		<code>\usym{1F6BC}</code>		<code>\usym{1F6E3}</code>
	<code>\usym{1F689}</code>		<code>\usym{1F6A3}</code>		<code>\usym{1F6BD}</code>		<code>\usym{1F6E4}</code>
	<code>\usym{1F68A}</code>		<code>\usym{1F6A4}</code>		<code>\usym{1F6BE}</code>		<code>\usym{1F6E5}</code>
	<code>\usym{1F68B}</code>		<code>\usym{1F6A5}</code>		<code>\usym{1F6BF}</code>		<code>\usym{1F6E6}</code>
	<code>\usym{1F68C}</code>		<code>\usym{1F6A6}</code>		<code>\usym{1F6C0}</code>		<code>\usym{1F6E7}</code>
	<code>\usym{1F68D}</code>		<code>\usym{1F6A7}</code>		<code>\usym{1F6C1}</code>		<code>\usym{1F6E8}</code>
	<code>\usym{1F68E}</code>		<code>\usym{1F6A8}</code>		<code>\usym{1F6C2}</code>		<code>\usym{1F6E9}</code>
	<code>\usym{1F68F}</code>		<code>\usym{1F6A9}</code>		<code>\usym{1F6C3}</code>		<code>\usym{1F6EA}</code>
	<code>\usym{1F690}</code>		<code>\usym{1F6AA}</code>		<code>\usym{1F6C4}</code>		<code>\usym{1F6EB}</code>
	<code>\usym{1F691}</code>		<code>\usym{1F6AB}</code>		<code>\usym{1F6C5}</code>		<code>\usym{1F6EC}</code>
	<code>\usym{1F692}</code>		<code>\usym{1F6AC}</code>		<code>\usym{1F6C6}</code>		<code>\usym{1F6F1}</code>
	<code>\usym{1F693}</code>		<code>\usym{1F6AD}</code>		<code>\usym{1F6C7}</code>		<code>\usym{1F6F2}</code>
	<code>\usym{1F694}</code>		<code>\usym{1F6AE}</code>		<code>\usym{1F6C8}</code>		<code>\usym{1F6F3}</code>
	<code>\usym{1F695}</code>		<code>\usym{1F6AF}</code>		<code>\usym{1F6C9}</code>		<code>\usym{1F6F4}</code>
	<code>\usym{1F696}</code>		<code>\usym{1F6B0}</code>		<code>\usym{1F6CA}</code>		<code>\usym{1F6F5}</code>
	<code>\usym{1F697}</code>		<code>\usym{1F6B1}</code>		<code>\usym{1F6CB}</code>		<code>\usym{1F6F6}</code>

All utfsym symbols are implemented with TikZ graphics, not with a font. In addition to `\usym`, the utfsym package defines `\usymH`, which renders a symbol at a given height, and `\usymW`, which renders a symbol at a given width. For example, “`\usymH{1F6F3}{36pt}`” produces



See the utfsym documentation for more information.

TABLE 548: manfnt Dangerous Bend Symbols

	<code>\dbend</code>		<code>\lhdbend</code>		<code>\reversedvideobend</code>
---	---------------------	---	-----------------------	---	---------------------------------

Note that these symbols descend far beneath the baseline. `manfnt` also defines non-descending versions, which it calls, correspondingly, `\textdbend`, `\textlhdbend`, and `\textreversedvideobend`.

TABLE 549: Miscellaneous manfnt Symbols

	<code>\manboldkidney</code>		<code>\manpenkidney</code>
	<code>\manconcentriccircles</code>		<code>\manquadrifolium</code>
	<code>\manconcentricdiamond</code>		<code>\manquartercircle</code>
	<code>\mancone</code>		<code>\manrotatedquadrifolium</code>
	<code>\mancube</code>		<code>\manrotatedquartercircle</code>
	<code>\manerrarrow</code>		<code>\manstar</code>
	<code>\manfilledquartercircle</code>		<code>\mantiltpennib</code>
	<code>\manhpennib</code>		<code>\mantriangledown</code>
	<code>\manimpossiblecube</code>		<code>\mantriangleright</code>
	<code>\mankidney</code>		<code>\mantriangleup</code>
	<code>\manlhpenkidney</code>		<code>\manvpennib</code>

TABLE 550: marvosym Media Control Symbols

	<code>\Forward</code>		<code>\MoveDown</code>		<code>\RewindToIndex</code>		<code>\ToTop</code>
	<code>\ForwardToEnd</code>		<code>\MoveUp</code>		<code>\RewindToStart</code>		
	<code>\ForwardToIndex</code>		<code>\Rewind</code>		<code>\ToBottom</code>		

TABLE 551: typicons Media Control Symbols

	<code>\tiEject</code>		<code>\tiMediaPlay</code>		<code>\tiMediaStop</code>
	<code>\tiEjectOutline</code>		<code>\tiMediaPlayOutline</code>		<code>\tiMediaStopOutline</code>
	<code>\tiMediaEject</code>		<code>\tiMediaPlayReverse</code>		<code>\tiPower</code>
	<code>\tiMediaEjectOutline</code>		<code>\tiMediaPlayReverseOutline</code>		<code>\tiPowerOutline</code>
	<code>\tiMediaFastForward</code>		<code>\tiMediaRecord</code>		<code>\tiVolume</code>
	<code>\tiMediaFastForwardOutline</code>		<code>\tiMediaRecordOutline</code>		<code>\tiVolumeDown</code>
	<code>\tiMediaPause</code>		<code>\tiMediaRewind</code>		<code>\tiVolumeMute</code>
	<code>\tiMediaPauseOutline</code>		<code>\tiMediaRewindOutline</code>		<code>\tiVolumeUp</code>

`typicons` requires either `LuaLATEX` or `XLLATEX`.

TABLE 552: fontawesome5 Media Control Symbols

⏮	\faBackward	▶	\faPlayCircle	⏹	\faStopCircle[regular]
⏭	\faEject	⏵	\faPlayCircle[regular]	🔊	\faVolumeDown
⏮	\faFastBackward	⏮	\faStepBackward	🔊	\faVolumeMute
⏭	\faFastForward	⏭	\faStepForward	🔊	\faVolumeOff
⏭	\faForward	■	\faStop	🔊	\faVolumeUp
▶	\faPlay	⏹	\faStopCircle		

TABLE 553: utfsym Media Control Symbols

⌘	\usym{1F500}	⌘	\usym{1F504}	⌘	\usym{1F508}	⌘	\usym{1F569}
⌘	\usym{1F501}	⌘	\usym{1F505}	⌘	\usym{1F509}	⌘	\usym{1F56A}
⌘	\usym{1F502}	⌘	\usym{1F506}	⌘	\usym{1F50A}		
⌘	\usym{1F503}	⌘	\usym{1F507}	⌘	\usym{1F568}		

All utfsym symbols are implemented with TikZ graphics, not with a font. In addition to \usym, the utfsym package defines \usymH, which renders a symbol at a given height, and \usymW, which renders a symbol at a given width. See the utfsym documentation for more information.

TABLE 554: typicons Left/Right Pointers

◀	\tiChevronLeft	▶	\tiChevronRight
◀	\tiChevronLeftOutline	▶	\tiChevronRightOutline

typicons requires either Lua $\text{\LaTeX}$ or X $\text{\LaTeX}$.

TABLE 555: fontawesome5 Up/Down/Left/Right Pointers

↘	\faAngleDoubleDown	▶	\faCaretRight	⬇	\faChevronCircleDown
◀◀	\faAngleDoubleLeft	⬇	\faCaretSquareDown	◀	\faChevronCircleLeft
≫	\faAngleDoubleRight	⬇	\faCaretSquareDown[regular]	⬆	\faChevronCircleRight
↗	\faAngleDoubleUp	⬇	\faCaretSquareLeft	⬆	\faChevronCircleUp
▼	\faAngleDown	◻	\faCaretSquareLeft[regular]	▼	\faChevronDown
◀	\faAngleLeft	⬆	\faCaretSquareRight	◀	\faChevronLeft
▶	\faAngleRight	◻	\faCaretSquareRight[regular]	▶	\faChevronRight
^	\faAngleUp	⬆	\faCaretSquareUp	^	\faChevronUp
▼	\faCaretDown	◻	\faCaretSquareUp[regular]		
◀	\faCaretLeft	▲	\faCaretUp		

TABLE 556: marvosym Laundry Symbols

	<code>\AtForty</code>		<code>\Handwash</code>		<code>\ShortNinetyFive</code>
	<code>\AtNinetyFive</code>		<code>\IroningI</code>		<code>\ShortSixty</code>
	<code>\AtSixty</code>		<code>\IroningII</code>		<code>\ShortThirty</code>
	<code>\Bleech</code>		<code>\IroningIII</code>		<code>\SpecialForty</code>
	<code>\CleaningA</code>		<code>\NoBleech</code>		<code>\Tumbler</code>
	<code>\CleaningF</code>		<code>\NoChemicalCleaning</code>		<code>\WashCotton</code>
	<code>\CleaningFF</code>		<code>\NoIroning</code>		<code>\WashSynthetics</code>
	<code>\CleaningP</code>		<code>\NoTumbler</code>		<code>\WashWool</code>
	<code>\CleaningPP</code>		<code>\ShortFifty</code>		
	<code>\Dontwash</code>		<code>\ShortForty</code>		

TABLE 557: Miscellaneous marvosym Symbols

	<code>\Ankh</code>		<code>\CircledA</code>		<code>\Industry</code>		<code>\PointingHand</code>
	<code>\Bat</code>		<code>\ClockLogo</code>		<code>\Info</code>		<code>\Smiley</code>
	<code>\Bicycle</code>		<code>\Coffeecup</code>		<code>\Ladiesroom</code>		<code>\Wheelchair</code>
	<code>\BOLogo</code>		<code>\Cross</code>		<code>\ManFace</code>		<code>\WomanFace</code>
	<code>\BOLogoL</code>		<code>\Football</code>		<code>\MineSign</code>		<code>\WritingHand</code>
	<code>\BOLogoP</code>		<code>\Frowny</code>		<code>\Mundus</code>		<code>\Yinyang</code>
	<code>\Bouquet</code>		<code>\Gentsroom</code>		<code>\MVAt</code>		
	<code>\Celtcross</code>		<code>\Heart</code>		<code>\PeaceDove</code>		

TABLE 558: Miscellaneous universa Symbols

	<code>\bauforms</code>		<code>\bauhead</code>
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TABLE 559: Miscellaneous fourier Symbols

	<code>\bomb</code>		<code>\noway</code>		<code>\textxsdown*</code>		<code>\warning</code>
	<code>\grimace</code>		<code>\texttthing*</code>		<code>\textxswup*</code>		

* fourier defines math-mode synonyms for a few of the preceding symbols:
`\thething` (“”), `\xswdsup` (“”), and `\xswdsdown` (“”).

TABLE 560: utfsym Weather Symbols

	<code>\usym{1F321}</code>		<code>\usym{1F324}</code>		<code>\usym{1F327}</code>		<code>\usym{1F32A}</code>
	<code>\usym{1F322}</code>		<code>\usym{1F325}</code>		<code>\usym{1F328}</code>		<code>\usym{1F32B}</code>
	<code>\usym{1F323}</code>		<code>\usym{1F326}</code>		<code>\usym{1F329}</code>		<code>\usym{1F32C}</code>

All `utfsym` symbols are implemented with `TikZ` graphics, not with a font. In addition to `\usym`, the `utfsym` package defines `\usymH`, which renders a symbol at a given height, and `\usymW`, which renders a symbol at a given width. See the `utfsym` documentation for more information.

TABLE 561: twemojis Weather Symbols

	<code>\twemoji{cloud}</code>		<code>\twemoji{sun behind cloud}</code>
	<code>\twemoji{cloud with lightning}</code>		<code>\twemoji{sun behind large cloud}</code>
	<code>\twemoji{cloud with lightning and rain}</code>		<code>\twemoji{sun behind rain cloud}</code>
	<code>\twemoji{cloud with rain}</code>		<code>\twemoji{sun behind small cloud}</code>
	<code>\twemoji{cloud with snow}</code>		<code>\twemoji{thermometer}</code>
	<code>\twemoji{fog}</code>		<code>\twemoji{tornado}</code>
	<code>\twemoji{sun}</code>		<code>\twemoji{wind face}</code>

Most `twemojis` symbols have multiple names. Only the most descriptive name for each symbol is shown in this table.

All `twemojis` symbols are implemented as PDF graphics, not with a font. See also the `hwemoji` package, which enables direct Unicode entry of emoji characters in `pdfLATEX`; the `emoji` package, which provides a `LuaLATEX` interface to different underlying emoji fonts; and the `emo` package, which uses a font if possible, otherwise PDF graphics .

TABLE 562: ifsym Weather Symbols

	<code>\Cloud</code>		<code>\Hail</code>		<code>\Sleet</code>		<code>\WeakRain</code>
	<code>\FilledCloud</code>		<code>\HalfSun</code>		<code>\Snow</code>		<code>\WeakRainCloud</code>
	<code>\FilledRainCloud</code>		<code>\Lightning</code>		<code>\SnowCloud</code>		<code>\FilledSnowCloud</code>
	<code>\FilledSunCloud</code>		<code>\NoSun</code>		<code>\Sun</code>		
	<code>\FilledWeakRainCloud</code>		<code>\Rain</code>		<code>\SunCloud</code>		
	<code>\Fog</code>		<code>\RainCloud</code>		<code>\ThinFog</code>		

In addition, `\Thermo{0}...``\Thermo{6}` produce thermometers that are between 0/6 and 6/6 full of mercury:       

Similarly, `\wind{<sun>}{<angle>}{<strength>}` will draw wind symbols with a given amount of sun (0–4), a given angle (in degrees), and a given strength in km/h (0–100). For example, `\wind{0}{0}{0}` produces “”, `\wind{2}{0}{0}` produces “”, and `\wind{4}{0}{100}` produces “”.

TABLE 563: typicons Weather Symbols

	<code>\tiThermometer</code>		<code>\tiWeatherPartlySunny</code>		<code>\tiWeatherSunny</code>
	<code>\tiWeatherCloudy</code>		<code>\tiWeatherShower</code>		<code>\tiWeatherWindy</code>
	<code>\tiWeatherDownpour</code>		<code>\tiWeatherSnow</code>		<code>\tiWeatherWindyCloudy</code>
	<code>\tiWeatherNight</code>		<code>\tiWeatherStormy</code>		

typicons requires either Lua $\text{\LaTeX}$ or X $\text{\LaTeX}$.

TABLE 564: fontawesome5 Weather Symbols

	<code>\faCloud</code>		<code>\faIcicles</code>		<code>\faThermometerEmpty</code>
	<code>\faCloudMeatball</code>		<code>\faSmog</code>		<code>\faThermometerFull</code>
	<code>\faCloudMoon</code>		<code>\faSnowflake</code>		<code>\faThermometerHalf</code>
	<code>\faCloudMoonRain</code>		<code>\faSnowflake[regular]</code>		<code>\faThermometerQuarter</code>
	<code>\faCloudRain</code>		<code>\faSun</code>		<code>\faThermometerThreeQuarters</code>
	<code>\faCloudShowersHeavy</code>		<code>\faSun[regular]</code>		<code>\faWind</code>
	<code>\faCloudSun</code>		<code>\faTemperatureHigh</code>		
	<code>\faCloudSunRain</code>		<code>\faTemperatureLow</code>		

TABLE 565: figchild Weather Symbols

	<code>\fcCloud</code>		<code>\fcCloudC</code>		<code>\fcSunB</code>
	<code>\fcCloudA</code>		<code>\fcSun</code>		<code>\fcThermometerA</code>
	<code>\fcCloudB</code>		<code>\fcSunA</code>		<code>\fcThermometerB</code>

All figchild symbols are implemented with TikZ graphics, not with a font. Not shown above, each symbol takes three arguments: a scale factor, a line color, and a line thickness. See the figchild documentation for more information.

TABLE 566: ifsym Alpine Symbols

	<code>\SummitSign</code>		<code>\Summit</code>		<code>\SurveySign</code>		<code>\HalfFilledHut</code>
	<code>\StoneMan</code>		<code>\Mountain</code>		<code>\Joch</code>		<code>\VarSummit</code>
	<code>\Hut</code>		<code>\IceMountain</code>		<code>\Flag</code>		
	<code>\FilledHut</code>		<code>\VarMountain</code>		<code>\VarFlag</code>		
	<code>\Village</code>		<code>\VarIceMountain</code>		<code>\Tent</code>		

TABLE 567: ifsym Clocks

 <code>\Interval</code>	 <code>\StopWatchStart</code>	 <code>\VarClock</code>	 <code>\Wecker</code>
 <code>\StopWatchEnd</code>	 <code>\Taschenuhr</code>	 <code>\VarTaschenuhr</code>	

ifsym also exports a `\showclock` macro. `\showclock{<hours>}{<minutes>}` outputs a clock displaying the corresponding time. For instance, “`\showclock{5}{40}`” produces “”. `<hours>` must be an integer from 0 to 11, and `<minutes>` must be an integer multiple of 5 from 0 to 55.

TABLE 568: utfsym Clocks

 <code>\usym{1F550}</code>	 <code>\usym{1F557}</code>	 <code>\usym{1F55E}</code>	 <code>\usym{1F565}</code>
 <code>\usym{1F551}</code>	 <code>\usym{1F558}</code>	 <code>\usym{1F55F}</code>	 <code>\usym{1F566}</code>
 <code>\usym{1F552}</code>	 <code>\usym{1F559}</code>	 <code>\usym{1F560}</code>	 <code>\usym{1F567}</code>
 <code>\usym{1F553}</code>	 <code>\usym{1F55A}</code>	 <code>\usym{1F561}</code>	 <code>\usym{1F570}</code>
 <code>\usym{1F554}</code>	 <code>\usym{1F55B}</code>	 <code>\usym{1F562}</code>	
 <code>\usym{1F555}</code>	 <code>\usym{1F55C}</code>	 <code>\usym{1F563}</code>	
 <code>\usym{1F556}</code>	 <code>\usym{1F55D}</code>	 <code>\usym{1F564}</code>	

All utfsym symbols are implemented with TikZ graphics, not with a font. In addition to `\usym`, the utfsym package defines `\usymH`, which renders a symbol at a given height, and `\usymW`, which renders a symbol at a given width. See the utfsym documentation for more information.

TABLE 569: clock Clocks

<code>\ClockStyle</code>	<code>\ClockFramefalse</code>	<code>\ClockFrametrue</code>
0		
1		
2		
3		

The clock package provides a `\clock` command to typeset an arbitrary time on an analog clock (and `\clocktime` to typeset the document’s build time). For example, the clocks in the above table were produced with `\clock{15}{41}`. Clock symbols are composed from a font of clock-face fragments using one of four values for `\ClockStyle` and either `\ClockFrametrue` or `\ClockFramefalse` as illustrated above. See the clock documentation for more information.

TABLE 570: twemojis Clocks

	<code>\twemoji{one o'clock}</code>		<code>\twemoji{eight-thirty}</code>
	<code>\twemoji{one-thirty}</code>		<code>\twemoji{nine o'clock}</code>
	<code>\twemoji{two o'clock}</code>		<code>\twemoji{nine-thirty}</code>
	<code>\twemoji{two-thirty}</code>		<code>\twemoji{ten o'clock}</code>
	<code>\twemoji{three o'clock}</code>		<code>\twemoji{ten-thirty}</code>
	<code>\twemoji{three-thirty}</code>		<code>\twemoji{eleven o'clock}</code>
	<code>\twemoji{four o'clock}</code>		<code>\twemoji{eleven-thirty}</code>
	<code>\twemoji{four-thirty}</code>		<code>\twemoji{twelve o'clock}</code>
	<code>\twemoji{five o'clock}</code>		<code>\twemoji{twelve-thirty}</code>
	<code>\twemoji{five-thirty}</code>		<code>\twemoji{alarm clock}</code>
	<code>\twemoji{six o'clock}</code>		<code>\twemoji{hourglass done}</code>
	<code>\twemoji{six-thirty}</code>		<code>\twemoji{hourglass not done}</code>
	<code>\twemoji{seven o'clock}</code>		<code>\twemoji{mantelpiece clock}</code>
	<code>\twemoji{seven-thirty}</code>		<code>\twemoji{stopwatch}</code>
	<code>\twemoji{eight o'clock}</code>		<code>\twemoji{timer clock}</code>

Most twemojis symbols have multiple names. Only the most descriptive name for each symbol is shown in this table.

All twemojis symbols are implemented as PDF graphics, not with a font. See also the hwemoji package, which enables direct Unicode entry of emoji characters in pdfL^AT_EX; the emoji package, which provides a LuaL^AT_EX interface to different underlying emoji fonts; and the emo package, which uses a font if possible, otherwise PDF graphics .

TABLE 571: typicons Time and Date Symbols

	<code>\tiCalendar</code>		<code>\tiStopwatch</code>		<code>\tiWatch</code>
	<code>\tiCalendarOutline</code>		<code>\tiTime</code>		

typicons requires either LuaL^AT_EX or X_LL^AT_EX.

TABLE 572: fontawesome5 Time and Date Symbols

	<code>\faBusinessTime</code>		<code>\faCalendarMinus</code>		<code>\faClock[regular]</code>
	<code>\faCalendar*[regular]</code>		<code>\faCalendarMinus[regular]</code>		<code>\faDigitalTachograph</code>
	<code>\faCalendar*</code>		<code>\faCalendarPlus</code>		<code>\faHourglass</code>
	<code>\faCalendar</code>		<code>\faCalendarPlus[regular]</code>		<code>\faHourglass[regular]</code>
	<code>\faCalendar[regular]</code>		<code>\faCalendarTimes</code>		<code>\faHourglassEnd</code>
	<code>\faCalendarCheck</code>		<code>\faCalendarTimes[regular]</code>		<code>\faHourglassHalf</code>
	<code>\faCalendarCheck[regular]</code>		<code>\faCalendarWeek</code>		<code>\faHourglassStart</code>
	<code>\faCalendarDay</code>		<code>\faClock</code>		<code>\faTachometer*</code>

TABLE 573: twemojis Animals

	<code>\twemoji{ant}</code>		<code>\twemoji{microbe}</code>
	<code>\twemoji{baby chick}</code>		<code>\twemoji{monkey}</code>
	<code>\twemoji{badger}</code>		<code>\twemoji{monkey face}</code>
	<code>\twemoji{bat}</code>		<code>\twemoji{mosquito}</code>
	<code>\twemoji{bear}</code>		<code>\twemoji{mouse face}</code>
	<code>\twemoji{beaver}</code>		<code>\twemoji{mouse2}</code>
	<code>\twemoji{beetle}</code>		<code>\twemoji{octopus}</code>
	<code>\twemoji{bird}</code>		<code>\twemoji{orangutan}</code>
	<code>\twemoji{black cat}</code>		<code>\twemoji{otter}</code>
	<code>\twemoji{blowfish}</code>		<code>\twemoji{owl}</code>
	<code>\twemoji{boar}</code>		<code>\twemoji{ox}</code>
	<code>\twemoji{bug}</code>		<code>\twemoji{oyster}</code>
	<code>\twemoji{butterfly}</code>		<code>\twemoji{panda}</code>
	<code>\twemoji{cat face}</code>		<code>\twemoji{parrot}</code>
	<code>\twemoji{cat2}</code>		<code>\twemoji{paw prints}</code>
	<code>\twemoji{chicken}</code>		<code>\twemoji{peacock}</code>
	<code>\twemoji{chipmunk}</code>		<code>\twemoji{penguin}</code>
	<code>\twemoji{cockroach}</code>		<code>\twemoji{pig face}</code>
	<code>\twemoji{cow face}</code>		<code>\twemoji{pig nose}</code>
	<code>\twemoji{cow2}</code>		<code>\twemoji{pig2}</code>
	<code>\twemoji{crab}</code>		<code>\twemoji{polar bear}</code>
	<code>\twemoji{cricket}</code>		<code>\twemoji{poodle}</code>
	<code>\twemoji{crocodile}</code>		<code>\twemoji{rabbit face}</code>
	<code>\twemoji{deer}</code>		<code>\twemoji{rabbit2}</code>
	<code>\twemoji{dodo}</code>		<code>\twemoji{raccoon}</code>
	<code>\twemoji{dog face}</code>		<code>\twemoji{racehorse}</code>
	<code>\twemoji{dog2}</code>		<code>\twemoji{ram}</code>
	<code>\twemoji{dolphin}</code>		<code>\twemoji{rat}</code>
	<code>\twemoji{dragon}</code>		<code>\twemoji{rhinoceros}</code>
	<code>\twemoji{dragon face}</code>		<code>\twemoji{rooster}</code>
	<code>\twemoji{dromedary camel}</code>		<code>\twemoji{sauropod}</code>
	<code>\twemoji{duck}</code>		<code>\twemoji{scorpion}</code>
	<code>\twemoji{eagle}</code>		<code>\twemoji{seal}</code>
	<code>\twemoji{elephant}</code>		<code>\twemoji{service dog}</code>
	<code>\twemoji{fish}</code>		<code>\twemoji{shark}</code>
	<code>\twemoji{flamingo}</code>		<code>\twemoji{sheep}</code>
	<code>\twemoji{fly}</code>		<code>\twemoji{shrimp}</code>
	<code>\twemoji{fox}</code>		<code>\twemoji{skunk}</code>
	<code>\twemoji{frog}</code>		<code>\twemoji{sloth}</code>
	<code>\twemoji{front-facing baby chick}</code>		<code>\twemoji{snail}</code>
	<code>\twemoji{giraffe}</code>		<code>\twemoji{snake}</code>
	<code>\twemoji{goat}</code>		<code>\twemoji{spiral shell}</code>
	<code>\twemoji{gorilla}</code>		<code>\twemoji{spouting whale}</code>

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	<code>\twemoji{guide dog}</code>		<code>\twemoji{squid}</code>
	<code>\twemoji{hamster}</code>		<code>\twemoji{swan}</code>
	<code>\twemoji{hatching chick}</code>		<code>\twemoji{T-Rex}</code>
	<code>\twemoji{hedgehog}</code>		<code>\twemoji{tiger face}</code>
	<code>\twemoji{hippopotamus}</code>		<code>\twemoji{tiger2}</code>
	<code>\twemoji{honeybee}</code>		<code>\twemoji{tropical fish}</code>
	<code>\twemoji{horse face}</code>		<code>\twemoji{turkey}</code>
	<code>\twemoji{kangaroo}</code>		<code>\twemoji{turtle}</code>
	<code>\twemoji{koala}</code>		<code>\twemoji{two-hump camel}</code>
	<code>\twemoji{lady beetle}</code>		<code>\twemoji{unicorn}</code>
	<code>\twemoji{leopard}</code>		<code>\twemoji{water buffalo}</code>
	<code>\twemoji{lion}</code>		<code>\twemoji{whale2}</code>
	<code>\twemoji{lizard}</code>		<code>\twemoji{wolf}</code>
	<code>\twemoji{llama}</code>		<code>\twemoji{worm}</code>
	<code>\twemoji{lobster}</code>		<code>\twemoji{zebra}</code>
	<code>\twemoji{mammoth}</code>		

Most twemojis symbols have multiple names. Only the most descriptive name for each symbol is shown in this table.

All twemojis symbols are implemented as PDF graphics, not with a font. See also the hwemoji package, which enables direct Unicode entry of emoji characters in pdfL^AT_EX; the emoji package, which provides a LuaL^AT_EX interface to different underlying emoji fonts; and the emo package, which uses a font if possible, otherwise PDF graphics .

TABLE 574: fontawesome5 Animals

	<code>\faBug</code>		<code>\faDove</code>		<code>\faHippo</code>		<code>\faOtter</code>
	<code>\faCat</code>		<code>\faDragon</code>		<code>\faHorse</code>		<code>\faSpider</code>
	<code>\faCrow</code>		<code>\faFish</code>		<code>\faHorseHead</code>		
	<code>\faDog</code>		<code>\faFrog</code>		<code>\faKiwiBird</code>		

TABLE 575: figchild Animals

	<code>\fcAlligator</code>		<code>\fcGiraffeA</code>
	<code>\fcAlligatorA</code>		<code>\fcGiraffeB</code>
	<code>\fcAnt</code>		<code>\fcGiraffes</code>
	<code>\fcAntA</code>		<code>\fcGnat</code>
	<code>\fcAntelope</code>		<code>\fcGoose</code>
	<code>\fcArmadillo</code>		<code>\fcHerring</code>
	<code>\fcBat</code>		<code>\fcHippo</code>
	<code>\fcBear</code>		<code>\fcHorse</code>
	<code>\fcBearA</code>		<code>\fcHorseA</code>
	<code>\fcBearB</code>		<code>\fcHummingbird</code>
	<code>\fcBearC</code>		<code>\fcKittenA</code>
	<code>\fcBearD</code>		<code>\fcKittenB</code>
	<code>\fcBears</code>		<code>\fcKittensA</code>
	<code>\fcBee</code>		<code>\fcKittensB</code>
	<code>\fcBeeA</code>		<code>\fcLadybirdA</code>
	<code>\fcBird</code>		<code>\fcLadybirdB</code>
	<code>\fcBirdA</code>		<code>\fcLadyBug</code>
	<code>\fcBirdB</code>		<code>\fcLamb</code>
	<code>\fcBirdC</code>		<code>\fcLion</code>
	<code>\fcBirdD</code>		<code>\fcLionA</code>
	<code>\fcBirdE</code>		<code>\fcLittleBirds</code>
	<code>\fcBull</code>		<code>\fcLittleMouse</code>

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	<code>\fcBunnyA</code>		<code>\fcLocust</code>
	<code>\fcBunnyB</code>		<code>\fcLouvadeus</code>
	<code>\fcBunnyC</code>		<code>\fcMacaw</code>
	<code>\fcBunnyD</code>		<code>\fcMonkey</code>
	<code>\fcBunnyE</code>		<code>\fcMonkeyA</code>
	<code>\fcButterfly</code>		<code>\fcMoonfish</code>
	<code>\fcButterflyA</code>		<code>\fcMoose</code>
	<code>\fcButterflyB</code>		<code>\fcMouse</code>
	<code>\fcButterflyC</code>		<code>\fcMouseA</code>
	<code>\fcCalf</code>		<code>\fcMouseB</code>
	<code>\fcCat</code>		<code>\fcOctopus</code>
	<code>\fcCaterpillar</code>		<code>\fcOctopusA</code>
	<code>\fcCatfish</code>		<code>\fcOrca</code>
	<code>\fcCentipede</code>		<code>\fcOstrich</code>
	<code>\fcChick</code>		<code>\fcOwl</code>
	<code>\fcChicken</code>		<code>\fcOwlA</code>
	<code>\fcChicks</code>		<code>\fcOwlB</code>
	<code>\fcCobrabebe</code>		<code>\fcOx</code>
	<code>\fcCow</code>		<code>\fcPandaBear</code>
	<code>\fcCrabA</code>		<code>\fcParrot</code>
	<code>\fcCrabB</code>		<code>\fcPeacock</code>
	<code>\fcDinosaurA</code>		<code>\fcPenguin</code>
	<code>\fcDinosaurB</code>		<code>\fcPerch</code>

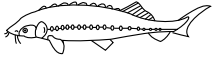
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	<code>\fcDinosaurC</code>		<code>\fcPeruA</code>
	<code>\fcDinosaurD</code>		<code>\fcPeruB</code>
	<code>\fcDinosaurE</code>		<code>\fcPig</code>
	<code>\fcDinosaurF</code>		<code>\fcPigA</code>
	<code>\fcDinosaurG</code>		<code>\fcPigB</code>
	<code>\fcDinosaurH</code>		<code>\fcPigC</code>
	<code>\fcDinosaurI</code>		<code>\fcPigD</code>
	<code>\fcDinosaurJ</code>		<code>\fcPigE</code>
	<code>\fcDog</code>		<code>\fcPuppy</code>
	<code>\fcDolphin</code>		<code>\fcRabbit</code>
	<code>\fcDolphinA</code>		<code>\fcRabbitA</code>
	<code>\fcDragonFly</code>		<code>\fcRabbits</code>
	<code>\fcDuck</code>		<code>\fcRaccoon</code>
	<code>\fcDuckA</code>		<code>\fcScorpion</code>
	<code>\fcDuckB</code>		<code>\fcSeahorse</code>
	<code>\fcDuckC</code>		<code>\fcShark</code>
	<code>\fcElephant</code>		<code>\fcSheep</code>
	<code>\fcElephantA</code>		<code>\fcSheepA</code>
	<code>\fcElephantB</code>		<code>\fcSheepB</code>
	<code>\fcFishA</code>		<code>\fcSheepC</code>
	<code>\fcFishB</code>		<code>\fcSnailA</code>
	<code>\fcFishC</code>		<code>\fcSnailB</code>
	<code>\fcFishD</code>		<code>\fcSnailC</code>

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	<code>\fcFishE</code>		<code>\fcSpider</code>
	<code>\fcFishF</code>		<code>\fcSpiderA</code>
	<code>\fcFishG</code>		<code>\fcSpiderB</code>
	<code>\fcFishH</code>		<code>\fcSquirrel</code>
	<code>\fcFishI</code>		<code>\fcSquirrelA</code>
	<code>\fcFishK</code>		<code>\fcSturgeon</code>
	<code>\fcFishL</code>		<code>\fcToucan</code>
	<code>\fcFishM</code>		<code>\fcTurtle</code>
	<code>\fcFlamingo</code>		<code>\fcTurtleA</code>
	<code>\fcFlamingoA</code>		<code>\fcTurtleB</code>
	<code>\fcFrog</code>		<code>\fcUrchin</code>
	<code>\fcGiraffe</code>		<code>\fcZebra</code>

All `figchild` symbols are implemented with `TikZ` graphics, not with a font. Not shown above, each symbol takes three arguments: a scale factor, a line color, and a line thickness. See the `figchild` documentation for more information.

TABLE 576: utfsym Animals

	<code>\usym{1F400}</code>		<code>\usym{1F410}</code>		<code>\usym{1F420}</code>		<code>\usym{1F430}</code>
	<code>\usym{1F401}</code>		<code>\usym{1F411}</code>		<code>\usym{1F421}</code>		<code>\usym{1F431}</code>
	<code>\usym{1F402}</code>		<code>\usym{1F412}</code>		<code>\usym{1F422}</code>		<code>\usym{1F432}</code>
	<code>\usym{1F403}</code>		<code>\usym{1F413}</code>		<code>\usym{1F423}</code>		<code>\usym{1F433}</code>
	<code>\usym{1F404}</code>		<code>\usym{1F414}</code>		<code>\usym{1F424}</code>		<code>\usym{1F434}</code>
	<code>\usym{1F405}</code>		<code>\usym{1F415}</code>		<code>\usym{1F425}</code>		<code>\usym{1F435}</code>
	<code>\usym{1F406}</code>		<code>\usym{1F416}</code>		<code>\usym{1F426}</code>		<code>\usym{1F436}</code>
	<code>\usym{1F407}</code>		<code>\usym{1F417}</code>		<code>\usym{1F427}</code>		<code>\usym{1F437}</code>
	<code>\usym{1F408}</code>		<code>\usym{1F418}</code>		<code>\usym{1F428}</code>		<code>\usym{1F438}</code>
	<code>\usym{1F409}</code>		<code>\usym{1F419}</code>		<code>\usym{1F429}</code>		<code>\usym{1F439}</code>
	<code>\usym{1F40A}</code>		<code>\usym{1F41A}</code>		<code>\usym{1F42A}</code>		<code>\usym{1F43A}</code>
	<code>\usym{1F40B}</code>		<code>\usym{1F41B}</code>		<code>\usym{1F42B}</code>		<code>\usym{1F43B}</code>
	<code>\usym{1F40C}</code>		<code>\usym{1F41C}</code>		<code>\usym{1F42C}</code>		<code>\usym{1F43C}</code>
	<code>\usym{1F40D}</code>		<code>\usym{1F41D}</code>		<code>\usym{1F42D}</code>		<code>\usym{1F43D}</code>
	<code>\usym{1F40E}</code>		<code>\usym{1F41E}</code>		<code>\usym{1F42E}</code>		<code>\usym{1F43E}</code>
	<code>\usym{1F40F}</code>		<code>\usym{1F41F}</code>		<code>\usym{1F42F}</code>		<code>\usym{1F43F}</code>

All `utfsym` symbols are implemented with `TikZ` graphics, not with a font. In addition to `\usym`, the `utfsym` package defines `\usymH`, which renders a symbol at a given height, and `\usymW`, which renders a symbol at a given width. For example, “`\usymH{1F409}{36pt}`” produces



See the `utfsym` documentation for more information.

TABLE 577: hhcount Tally Markers

	\fcscore{1}		\fcscore{3}		\fcscore{5}
	\fcscore{2}		\fcscore{4}		

The `\fcscore` command accepts values larger than 5. For example, “`\fcscore{47}`” produces “||||| ||||| ||||| ||||| |||||”.

TABLE 578: ifsym Tally Markers

	\StrokeOne		\StrokeThree		\StrokeFive
	\StrokeTwo		\StrokeFour		

TABLE 579: `bullcntr` Tally Markers

•	<code>\bullcntr{⟨1⟩}</code>	⋯	<code>\bullcntr{⟨4⟩}</code>	⋯	<code>\bullcntr{⟨7⟩}</code>
••	<code>\bullcntr{⟨2⟩}</code>	⋯	<code>\bullcntr{⟨5⟩}</code>	⋯	<code>\bullcntr{⟨8⟩}</code>
•••	<code>\bullcntr{⟨3⟩}</code>	⋯	<code>\bullcntr{⟨6⟩}</code>	⋯	<code>\bullcntr{⟨9⟩}</code>

The notation for `\bullcntr` used in the above bears explanation. `\bullcntr` does not take a number as its argument but rather a $\text{\LaTeX}$ counter, whose value it uses to typeset a tally marker. “`\bullcntr{⟨3⟩}`”, for example, means to invoke `\bullcntr` with a counter whose value is 3. (`\bullcntr` usage is therefore akin to that of $\text{\LaTeX}$ ’s `\fnsymbol`.) The intention is to use `\bullcntr` indirectly via the `bullenum` package’s `bullenum` environment, which is a variation on the `enumerate` environment that uses `\bullcntr` to typeset the labels.

To typeset individual tally markers, one can define a helper command:

```
\newcounter{bull}
\newcommand{\showbullcntr}[1]{%
  \setcounter{bull}{#1}%
  \bullcntr{bull}%
}
```

`bullcntr`’s package options `smallctrbull`, `largectrbull`, and `heartctrbull` and corresponding commands `\smallctrbull`, `\largectrbull`, and `\heartctrbull` control the formatting of each tally marker:

	small	large	heart
<code>\bullcntr{⟨5⟩}</code>	⋯	⋯	♡♡

The default is `smartctrbull` (`\smartctrbull`), which maps counter values 1–5 to large pips and 6–9 to small pips. It is also possible to use arbitrary symbols for `\bullcntr`’s pips. See the `bullcntr` documentation for more information.

TABLE 580: `dozenal` Tally Markers

	<code>\tally{1}</code>	□	<code>\tally{3}</code>	▣	<code>\tally{5}</code>
└	<code>\tally{2}</code>	□	<code>\tally{4}</code>	⊠	<code>\tally{6}</code>

TABLE 581: figchild Letters and Digits

	<code>\fcLetterK</code>		<code>\fcLetterT</code>		<code>\fcNumberThree</code>
	<code>\fcLetterL</code>		<code>\fcLetterU</code>		<code>\fcNumberFour</code>
	<code>\fcLetterM</code>		<code>\fcLetterV</code>		<code>\fcNumberFive</code>
	<code>\fcLetterN</code>		<code>\fcLetterW</code>		<code>\fcNumberSix</code>
	<code>\fcLetterO</code>		<code>\fcLetterX</code>		<code>\fcNumberSeven</code>
	<code>\fcLetterP</code>		<code>\fcLetterY</code>		<code>\fcNumberEight</code>
	<code>\fcLetterQ</code>		<code>\fcLetterZ</code>		<code>\fcNumberNine</code>
	<code>\fcLetterR</code>		<code>\fcNumberOne</code>		<code>\fcNumberTen</code>
	<code>\fcLetterS</code>		<code>\fcNumberTwo</code>		

It's a mystery why figchild's alphabet begins with "K".

All figchild symbols are implemented with *TikZ* graphics, not with a font. Not shown above, each symbol takes three arguments: a scale factor, a line color, and a line thickness. See the *figchild* documentation for more information.

TABLE 582: skull Symbols

 `\skull`

TABLE 583: Non-Mathematical mathabx Symbols

 `\rip`

TABLE 584: Miscellaneous ifsym Symbols

	<code>\FilledSectioningDiamond</code>		<code>\Letter</code>		<code>\Radiation</code>
	<code>\Fire</code>		<code>\PaperLandscape</code>		<code>\SectioningDiamond</code>
	<code>\Irritant</code>		<code>\PaperPortrait</code>		<code>\Telephone</code>

TABLE 585: asapsym Signs

Ⓢ	\asapCigaretteSign	Ⓢ	\asapNotEmergencySign
Ⓣ	\asapDogSign	Ⓢ	\asapNotHelpSign
Ⓣ	\asapDollarSign	Ⓢ	\asapNotHospitalSign
Ⓢ	\asapEmergencySign	Ⓢ	\asapNotInformationSign
Ⓣ	\asapHelpSign	Ⓢ	\asapNotMobilePhoneSign
Ⓢ	\asapHospitalSign	Ⓢ	\asapNotParkingSign
Ⓢ	\asapInformationSign	Ⓢ	\asapNotSign
Ⓢ	\asapMobilePhoneSign	Ⓢ	\asapNotWalkSign
Ⓢ	\asapNotCigaretteSign	Ⓢ	\asapParkingSign
Ⓢ	\asapNotDogSign	Ⓢ	\asapWalkSign
Ⓢ	\asapNotDollarSign		

asapsym requires either Lua $\text{\LaTeX}$ or X $\text{\LaTeX}$.

TABLE 586: metre Metrical Symbols

×	\a	⏟	\bBm		\cc	⏟	\Mbb	⋮	\Pppp	⊗	\t
↷	\B	⏟	\bbm		\Ccc	⏟	\mbbx	⋮	\pppp	└	\tsbm
↷	\b	⏟	\Bbm	—	\m	oo	\oo	⋮	\Ppppp	└	\tsmb
↷	\Bb	⏟	\bbmb	⌞	\M	.	\p	⋮	\ppppp	└	\tsmm
↷	\BB	⏟	\bbmx	×	\ma	+	\pm	└	\ps	⋮	\vppm
↷	\bb	⏟	\bm	⏟	\Mb	:	\pp	:	\pxp	⋮	\vpppm
↷	\bB	⏟	\Bm	└	\mb	:	\Pp	:	\Pxp	::	\x
↷	\bba		\c	⏟	\mBb	..	\ppm	~	\R		
↷	\bbb		\C	⏟	\mbB	⋮	\ppp	~	\r		
⏟	\BBm		\Cc	⏟	\mbb	⋮	\Ppp	⊗	\T		

The preceding symbols are valid only within the argument to the `\metre` command.

TABLE 587: metre Small and Large Metrical Symbols

÷	\anacclasis	÷	\Anacclasis
<	\antidiple	<	\Antidiple
⋈	\antidiple*	⋈	\Antidiple*
⌞	\antisigma	⌞	\Antisigma
✱	\asteriscus	✱	\Asteriscus
^	\catalexis	^	\Catalexis
>	\diple	>	\Diple
⋈	\diple*	⋈	\Diple*
—	\obelus	—	\Obelus
÷	\obelus*	÷	\Obelus*
~	\respondens	~	\Respondens
⊗	\terminus	⊗	\Terminus
⊕	\terminus*	⊕	\Terminus*

TABLE 588: teubner Metrical Symbols

∞	\aeolicbii	⊖	\barbrevis	+	\ipercatal
∞∞	\aeolicbiii	∞	\bbrevis	—	\longa
∞∞∞	\aeolicbiv	∪	\brevis	⌞	\ubarbbrevis
×	\anceps	^	\catal	⌞	\ubarbrevis
⌘	\ancepsdbrevis	^	\corona	⌞	\ubarsbrevis
⌘	\banceps	∪	\coronainv	∪	\ubrevislonga
⌞	\barbbrevis	H	\hiatus		

The `teubner` package provides a `\newmetrics` command that helps users combine the preceding symbols as well as other `teubner` symbols. For example, the predefined `\pentam` symbol uses `\newmetrics` to juxtapose six `\longas`, two `\barbbrevises`, four `\brevises`, and a `\dBar` into “`—⌞—⌞—||—∪—∪—`”. See the `teubner` documentation for more information.

TABLE 589: hamnosys Hand Shapes

⊖	\hamceeall	⌞	\hamfingertwothree	⊖	\hamflathand
⊖	\hamceeonetwo	⌞	\hamfingertwothreefourfive	⊖	\hampinchall
⊖	\hamceeopen	⌞	\hamfingertwothreespread	⊖	\hampinchonetwo
⊖	\hamfingertwo	⊖	\hamfist	⊖	\hampinchonetwoopen

`hamnosys` requires either `LuaATEX` or `XYATEX`.

TABLE 590: hamnosys Hand-Shape Modifiers

^	\hamdoublebent	⌞	\hamfingerhookmod	⌞	\hamthumbopenmod
^	\hamdoublehooked	⌞	\hamfingerstraightmod	⌞	\hamthumboutmod
^	\hamfingerbendmod	⌞	\hamthumbacrossmod		

`hamnosys` requires either `LuaATEX` or `XYATEX`.

TABLE 591: hamnosys Extended Finger Directions

⌞	\hamextfingerd	⌞	\hamextfingeril	⌞	\hamextfingerr
⌞	\hamextfingerdi	⌞	\hamextfingerir	⌞	\hamextfingeru
⌞	\hamextfingerdl	⌞	\hamextfingerl	⌞	\hamextfingerui
⌞	\hamextfingerdo	⌞	\hamextfingero	⌞	\hamextfingerul
⌞	\hamextfingerdr	⌞	\hamextfingerol	⌞	\hamextfingeruo
⌞	\hamextfingeri	⌞	\hamextfingeror	⌞	\hamextfingerur

`hamnosys` requires either `LuaATEX` or `XYATEX`.

TABLE 592: hamnosys Palm Orientations

	<code>\hampalmd</code>		<code>\hampalmdr</code>		<code>\hampalml</code>		<code>\hampalmu</code>
	<code>\hampalmdl</code>		<code>\hampalmdr</code>		<code>\hampalml</code>		<code>\hampalmu</code>

hamnosys requires either Lua^LA^TE^X or X_Y^LA^TE^X.

TABLE 593: hamnosys Body Locations

	<code>\hambelowstomach</code>		<code>\hamfingertip</code>		<code>\hampinkyside</code>
	<code>\hamcheek</code>		<code>\hamforehead</code>		<code>\hamringfinger</code>
	<code>\hamchest</code>		<code>\hamhandback</code>		<code>\hamshoulders</code>
	<code>\hamchin</code>		<code>\hamhead</code>		<code>\hamshouldertop</code>
	<code>\hamear</code>		<code>\hamheadtop</code>		<code>\hamstomach</code>
	<code>\hamearlobe</code>		<code>\hamindexfinger</code>		<code>\hamteeth</code>
	<code>\hamelbow</code>		<code>\hamlips</code>		<code>\hamthumb</code>
	<code>\hamelbowinside</code>		<code>\hamlowerarm</code>		<code>\hamthumbball</code>
	<code>\hameyebrows</code>		<code>\hammiddlefinger</code>		<code>\hamthumbside</code>
	<code>\hameyes</code>		<code>\hamneck</code>		<code>\hamtongue</code>
	<code>\hamfingerbase</code>		<code>\hamneutralspace</code>		<code>\hamunderchin</code>
	<code>\hamfingermidjoint</code>		<code>\hamnose</code>		<code>\hamupperarm</code>
	<code>\hamfingernail</code>		<code>\hamnostrils</code>		<code>\hamwristback</code>
	<code>\hamfingerpad</code>		<code>\hampalm</code>		<code>\hamwristpulse</code>
	<code>\hamfingerside</code>		<code>\hampinky</code>		

hamnosys requires either Lua^LA^TE^X or X_Y^LA^TE^X.

TABLE 594: hamnosys Location Modifiers

	<code>\hamcorefref</code>		<code>\hamcoreftag</code>		<code>\hamlrat</code>		<code>\hamlrbeside</code>
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hamnosys requires either Lua^LA^TE^X or X_Y^LA^TE^X.

TABLE 595: hamnosys Movements

	<code>\hamarcd</code>		<code>\hamclockdl</code>		<code>\hammoveil</code>
	<code>\hamarcl</code>		<code>\hamclockdr</code>		<code>\hammoveir</code>
	<code>\hamarcr</code>		<code>\hamclockfull</code>		<code>\hammoveil</code>
	<code>\hamarcu</code>		<code>\hamclockl</code>		<code>\hammoveo</code>
	<code>\hamarmextended</code>		<code>\hamclockr</code>		<code>\hammoveol</code>
	<code>\hambehind</code>		<code>\hamclocku</code>		<code>\hammoveor</code>
	<code>\hambrushing</code>		<code>\hamclockul</code>		<code>\hammover</code>
	<code>\hamcircled</code>		<code>\hamclockur</code>		<code>\hammoveu</code>
	<code>\hamcircledi</code>		<code>\hamclose</code>		<code>\hammoveui</code>
	<code>\hamcircledl</code>		<code>\hamcross</code>		<code>\hammoveul</code>
	<code>\hamcircledo</code>		<code>\hamdecreasing</code>		<code>\hammoveuo</code>
	<code>\hamcircledr</code>		<code>\hamellipseh</code>		<code>\hammoveur</code>
	<code>\hamcirclei</code>		<code>\hamellipseul</code>		<code>\hamnodding</code>
	<code>\hamcircleil</code>		<code>\hamellipseur</code>		<code>\hamnomotion</code>
	<code>\hamcircleir</code>		<code>\hamellipsev</code>		<code>\hamreplace</code>
	<code>\hamcirclel</code>		<code>\hamfast</code>		<code>\hamrest</code>
	<code>\hamcircleo</code>		<code>\hamfingerplay</code>		<code>\hamslow</code>
	<code>\hamcircleol</code>		<code>\hamhalt</code>		<code>\hamstirccw</code>
	<code>\hamcircleor</code>		<code>\hamincreasing</code>		<code>\hamstircw</code>
	<code>\hamcircler</code>		<code>\haminterlock</code>		<code>\hamswinging</code>
	<code>\hamcircleu</code>		<code>\hammoved</code>		<code>\hamtense</code>
	<code>\hamcircleui</code>		<code>\hammovedi</code>		<code>\hamtouch</code>
	<code>\hamcircleul</code>		<code>\hammovedl</code>		<code>\hamtwisting</code>
	<code>\hamcircleuo</code>		<code>\hammovedo</code>		<code>\hamwavy</code>
	<code>\hamcircleur</code>		<code>\hammovedr</code>		<code>\hamzigzag</code>
	<code>\hamclockd</code>		<code>\hammovei</code>		

hamnosys requires either Lua^AT_EX or X_YL^AT_EX.

TABLE 596: hamnosys Movement Modifiers

`\hamlargemod` `\hamsmallmod`

hamnosys requires either Lua^AT_EX or X_YL^AT_EX.

TABLE 597: hamnosys Obsolete Spacing Symbols

	<code>\hammovecross</code>		<code>\hamwristtoback</code>		<code>\hamwristtopulse</code>
	<code>\hammoveX</code>		<code>\hamwristtopinky</code>		<code>\hamwristtothumb</code>

hamnosys requires either Lua^AT_EX or X_YL^AT_EX.

TABLE 598: Miscellaneous hamnosys Symbols

$\sim$	<code>\hamalternatingmotion</code>	$\nearrow$	<code>\hamplus</code>
$\backslash$	<code>\hambetween</code>	$\leftrightarrow$	<code>\hamrepeatcontinue</code>
$\dots$	<code>\hametc</code>	$\leftrightarrow$	<code>\hamrepeatcontinueseveral</code>
$\langle$	<code>\hamfusionbegin</code>	$+$	<code>\hamrepeatfromstart</code>
$\rangle$	<code>\hamfusionend</code>	$++$	<code>\hamrepeatfromstartseveral</code>
$\square$	<code>\hammime</code>	$\leftarrow$	<code>\hamrepeatreverse</code>
$\boxtimes$	<code>\hamnondominant</code>	$($	<code>\hamseqbegin</code>
$\P$	<code>\hamnonipsi</code>	$)$	<code>\hamseqend</code>
$\sim$	<code>\hamorirelative</code>	$"$	<code>\hamsymmlr</code>
$[$	<code>\hamparbegin</code>	$:$	<code>\hamsymmpar</code>
$]$	<code>\hamparend</code>		

hamnosys requires either Lua $\text{\LaTeX}$ or X $\text{\LaTeX}$.

TABLE 599: dictsym Dictionary Symbols

$\mathbb{A}$	<code>\dsaeronautical</code>	$\mathbb{C}$	<code>\dscommercial</code>	$\mathbb{M}$	<code>\dsmedical</code>
$\mathbb{A}$	<code>\dsagricultural</code>	$\mathbb{H}$	<code>\ds heraldical</code>	$\mathbb{X}$	<code>\dsmilitary</code>
$\mathbb{A}$	<code>\dsarchitectural</code>	$\mathbb{J}$	<code>\dsjuridical</code>	$\mathbb{R}$	<code>\dsrailways</code>
$\mathbb{B}$	<code>\dsbiological</code>	$\mathbb{L}$	<code>\dsliterary</code>	$\mathbb{T}$	<code>\dstechnical</code>
$\mathbb{C}$	<code>\dschemical</code>	$\mathbb{M}$	<code>\dsmathematical</code>		

TABLE 600: pmboxdraw Box-Drawing Symbols

	<code>\textblock</code>		<code>\textSFli</code>		<code>\textSFxli</code>		<code>\textSFxxiii</code>
	<code>\textdkshade</code>		<code>\textSFlii</code>		<code>\textSFxlii</code>		<code>\textSFxxiv</code>
	<code>\textdnblock</code>		<code>\textSFliiii</code>		<code>\textSFxliiii</code>		<code>\textSFxxv</code>
	<code>\textlfblock</code>		<code>\textSFliv</code>		<code>\textSFxliv</code>		<code>\textSFxxvi</code>
	<code>\textltshade</code>		<code>\textSFv</code>		<code>\textSFxlix</code>		<code>\textSFxxvii</code>
	<code>\textrtblock</code>		<code>\textSFvi</code>		<code>\textSFxlv</code>		<code>\textSFxxviii</code>
	<code>\textSFi</code>		<code>\textSFvii</code>		<code>\textSFxlvi</code>		<code>\textSFxxxix</code>
	<code>\textSFii</code>		<code>\textSFviii</code>		<code>\textSFxlvii</code>		<code>\textSFxxxvi</code>
	<code>\textSFiii</code>		<code>\textSFx</code>		<code>\textSFxlviiii</code>		<code>\textSFxxxvii</code>
	<code>\textSFiv</code>		<code>\textSFxi</code>		<code>\textSFxx</code>		<code>\textSFxxxviii</code>
	<code>\textSFix</code>		<code>\textSFxix</code>		<code>\textSFxxi</code>		<code>\textshade</code>
	<code>\textSF1</code>		<code>\textSFx1</code>		<code>\textSFxxii</code>		<code>\textupblock</code>

Code Page 437 (CP437), which was first utilized by the original IBM PC, contains the set of box-drawing symbols (sides, corners, and intersections of single- and double-ruled boxes) shown above in character positions 176–223. These symbols also appear in the Unicode Box Drawing and Block Element tables.

The `pmboxdraw` package draws the CP437 box-drawing symbols using `TeX` rules (specifically, `\vrule`) instead of with a font and thereby provides the ability to alter both rule width and the separation between rules. See the `pmboxdraw` documentation for more information.

TABLE 601: staves Magical Staves

	<code>\staveI</code>		<code>\staveXXIV</code>		<code>\staveXLVII</code>
	<code>\staveII</code>		<code>\staveXXV</code>		<code>\staveXLVIII</code>
	<code>\staveIII</code>		<code>\staveXXVI</code>		<code>\staveXLIX</code>
	<code>\staveIV</code>		<code>\staveXXVII</code>		<code>\staveL</code>
	<code>\staveV</code>		<code>\staveXXVIII</code>		<code>\staveLI</code>
	<code>\staveVI</code>		<code>\staveXXIX</code>		<code>\staveLII</code>
	<code>\staveVII</code>		<code>\staveXXX</code>		<code>\staveLIII</code>

(continued on next page)

(continued from previous page)

	<code>\staveVIII</code>		<code>\staveXXXI</code>		<code>\staveLIV</code>
	<code>\staveIX</code>		<code>\staveXXXII</code>		<code>\staveLV</code>
	<code>\staveX</code>		<code>\staveXXXIII</code>		<code>\staveLVI</code>
	<code>\staveXI</code>		<code>\staveXXXIV</code>		<code>\staveLVII</code>
	<code>\staveXII</code>		<code>\staveXXXV</code>		<code>\staveLVIII</code>
	<code>\staveXIII</code>		<code>\staveXXXVI</code>		<code>\staveLIX</code>
	<code>\staveXIV</code>		<code>\staveXXXVII</code>		<code>\staveLX</code>
	<code>\staveXV</code>		<code>\staveXXXVIII</code>		<code>\staveLXI</code>
	<code>\staveXVI</code>		<code>\staveXXXIX</code>		<code>\staveLXII</code>
	<code>\staveXVII</code>		<code>\staveXL</code>		<code>\staveLXIII</code>
	<code>\staveXVIII</code>		<code>\staveXLI</code>		<code>\staveLXIV</code>
	<code>\staveXIX</code>		<code>\staveXLII</code>		<code>\staveLXV</code>
	<code>\staveXX</code>		<code>\staveXLIII</code>		<code>\staveLXVI</code>
	<code>\staveXXI</code>		<code>\staveXLIV</code>		<code>\staveLXVII</code>
	<code>\staveXXII</code>		<code>\staveXLV</code>		<code>\staveLXVIII</code>
	<code>\staveXXIII</code>		<code>\staveXLVI</code>		

The meanings of these symbols are described on the Web site for the Museum of Icelandic Sorcery and Witchcraft at http://www.galdrasyning.is/index.php?option=com_content&task=category§ionid=5&id=18&Itemid=60 (TinyURL: <http://tinyurl.com/25979m>). For example, `\staveL` () is intended to ward off ghosts and evil spirits.

TABLE 602: pigpen Cipher Symbols

┐	{\pigpenfont A}	┌	{\pigpenfont J}	∨	{\pigpenfont S}
└	{\pigpenfont B}	┐	{\pigpenfont K}	>	{\pigpenfont T}
┌	{\pigpenfont C}	└	{\pigpenfont L}	<	{\pigpenfont U}
┘	{\pigpenfont D}	┘	{\pigpenfont M}	^	{\pigpenfont V}
┑	{\pigpenfont E}	┑	{\pigpenfont N}	∨	{\pigpenfont W}
┒	{\pigpenfont F}	┒	{\pigpenfont O}	>	{\pigpenfont X}
┓	{\pigpenfont G}	┓	{\pigpenfont P}	<	{\pigpenfont Y}
└	{\pigpenfont H}	└	{\pigpenfont Q}	^	{\pigpenfont Z}
┐	{\pigpenfont I}	┐	{\pigpenfont R}		

TABLE 603: GnA2e Phases of the Moon

☾	\MoonPha{1}	☾	\MoonPha{2}	☾	\MoonPha{3}	☾	\MoonPha{4}
---	-------------	---	-------------	---	-------------	---	-------------

TABLE 604: twemojis Phases of the Moon

🌑	\twemoji{crescent moon}	🌑	\twemoji{new moon}
🌒	\twemoji{first quarter moon}	🌑	\twemoji{new moon face}
🌓	\twemoji{first quarter moon face}	🌒	\twemoji{waning crescent moon}
🌔	\twemoji{full moon}	🌓	\twemoji{waning gibbous moon}
🌕	\twemoji{full moon face}	🌔	\twemoji{waxing crescent moon}
🌖	\twemoji{last quarter moon}	🌕	\twemoji{waxing gibbous moon}
🌗	\twemoji{last quarter moon face}		

Most twemojis symbols have multiple names. Only the most descriptive name for each symbol is shown in this table.

All twemojis symbols are implemented as PDF graphics, not with a font. See also the hwemoji package, which enables direct Unicode entry of emoji characters in pdfL^AT_EX; the emoji package, which provides a LuaL^AT_EX interface to different underlying emoji fonts; and the emo package, which uses a font if possible, otherwise PDF graphics .

TABLE 605: figchild Space Symbols

	<code>\fcET</code>		<code>\fcPlanetF</code>		<code>\fcShootingStar</code>
	<code>\fcFlyingSaucer</code>		<code>\fcPlanetG</code>		<code>\fcSpacecraftA</code>
	<code>\fcMoonA</code>		<code>\fcPlanets</code>		<code>\fcSpacecraftB</code>
	<code>\fcMoonB</code>		<code>\fcRocket</code>		<code>\fcStar</code>
	<code>\fcPlanetA</code>		<code>\fcRocketA</code>		<code>\fcStarA</code>
	<code>\fcPlanetB</code>		<code>\fcRocketB</code>		<code>\fcStarB</code>
	<code>\fcPlanetC</code>		<code>\fcRocketC</code>		<code>\fcStars</code>
	<code>\fcPlanetD</code>		<code>\fcSaturnA</code>		
	<code>\fcPlanetE</code>		<code>\fcSaturnB</code>		

All figchild symbols are implemented with TikZ graphics, not with a font. Not shown above, each symbol takes three arguments: a scale factor, a line color, and a line thickness. See the figchild documentation for more information.

TABLE 606: G_{PA}2e Recycling Symbols

 `\Greenpoint`

TABLE 607: marvosym Recycling Symbols

 `\PackingWaste`  `\Recycling`

TABLE 608: utfsym Recycling Symbols

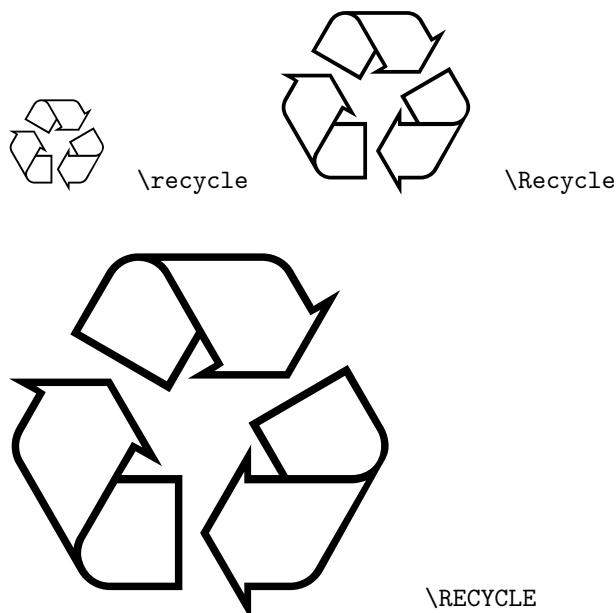
	<code>\usym{2672}</code>		<code>\usym{2676}</code>		<code>\usym{267A}</code>		<code>\usym{267E}</code>
	<code>\usym{2673}</code>		<code>\usym{2677}</code>		<code>\usym{267B}</code>		
	<code>\usym{2674}</code>		<code>\usym{2678}</code>		<code>\usym{267C}</code>		
	<code>\usym{2675}</code>		<code>\usym{2679}</code>		<code>\usym{267D}</code>		

All utfsym symbols are implemented with TikZ graphics, not with a font. In addition to `\usym`, the utfsym package defines `\usymH`, which renders a symbol at a given height, and `\usymW`, which renders a symbol at a given width. See the utfsym documentation for more information.

TABLE 609: fontawesome5 Recycling Symbols

 `\faRecycle`

TABLE 610: recycle Recycling Symbols



The METAFONT code that implements the recycling symbols shown above is, in the words of its author, “awful code [that] doesn’t even put the logo in a box (properly)”. Expect to receive “**Inconsistent equation (off by $\langle number \rangle$)**” errors from METAFONT. Fortunately, if you tell METAFONT to proceed past those errors (e.g., by pressing Enter after each one or by specifying “`-interaction=nonstopmode`” on the METAFONT command line) it should produce a valid font.

The commands listed above should be used within a group (e.g., “`{\recycle}`”) because they exhibit the side effect of *changing* the font to the recycle font.

TABLE 611: utfsym Plants and Flowers

	<code>\usym{1F331}</code>		<code>\usym{1F337}</code>		<code>\usym{1F33C}</code>		<code>\usym{1F341}</code>
	<code>\usym{1F332}</code>		<code>\usym{1F338}</code>		<code>\usym{1F33D}</code>		<code>\usym{1F342}</code>
	<code>\usym{1F333}</code>		<code>\usym{1F339}</code>		<code>\usym{1F33E}</code>		<code>\usym{1F343}</code>
	<code>\usym{1F334}</code>		<code>\usym{1F33A}</code>		<code>\usym{1F33F}</code>		<code>\usym{1F3F5}</code>
	<code>\usym{1F335}</code>		<code>\usym{1F33B}</code>		<code>\usym{1F340}</code>		<code>\usym{1F3F6}</code>

All `utfsym` symbols are implemented with `TikZ` graphics, not with a font. In addition to `\usym`, the `utfsym` package defines `\usymH`, which renders a symbol at a given height, and `\usymW`, which renders a symbol at a given width. See the `utfsym` documentation for more information.

TABLE 612: utfsym Clothing

	<code>\usym{1F451}</code>		<code>\usym{1F456}</code>		<code>\usym{1F45B}</code>		<code>\usym{1F460}</code>
	<code>\usym{1F452}</code>		<code>\usym{1F457}</code>		<code>\usym{1F45C}</code>		<code>\usym{1F461}</code>
	<code>\usym{1F453}</code>		<code>\usym{1F458}</code>		<code>\usym{1F45D}</code>		<code>\usym{1F462}</code>
	<code>\usym{1F454}</code>		<code>\usym{1F459}</code>		<code>\usym{1F45E}</code>		
	<code>\usym{1F455}</code>		<code>\usym{1F45A}</code>		<code>\usym{1F45F}</code>		

All `utfsym` symbols are implemented with `TikZ` graphics, not with a font. In addition to `\usym`, the `utfsym` package defines `\usymH`, which renders a symbol at a given height, and `\usymW`, which renders a symbol at a given width. See the `utfsym` documentation for more information.

TABLE 613: Miscellaneous QtA2e Symbols

	<code>\Info</code>		<code>\Request</code>
	<code>\Postbox</code>		<code>\Telephone</code>

TABLE 614: soyombo Soyombo Symbols

	<code>\Soyombo</code>		<code>\sA*</code>		<code>\s0*</code>
---	-----------------------	---	-------------------	---	-------------------

* These symbols require that the Soyombo font be active (“`\soyombo ... }`”).

TABLE 615: knitting Knitting Symbols

$\wedge$	<code>\textknit{!}</code>	$\rightarrow$	<code>\textknit{[]}</code>	$\mathcal{Q}$	<code>\textknit{Q}</code>
$\mathcal{G}$	<code>\textknit{"}</code>	$\leftarrow$	<code>\textknit{[]}</code>	$\mathcal{Q}$	<code>\textknit{q}</code>
$\backslash$	<code>\textknit{(}</code>	$\mathcal{A}$	<code>\textknit{A}</code>	$\mathcal{R}$	<code>\textknit{R}</code>
$/$	<code>\textknit{)}</code>	$\mathcal{a}$	<code>\textknit{a}</code>	$\mathcal{r}$	<code>\textknit{r}</code>
$*$	<code>\textknit{*}</code>	$\mathcal{B}$	<code>\textknit{B}</code>	$\leftarrow$	<code>\textknit{S}</code>
$ $	<code>\textknit{-}</code>	$\mathcal{b}$	<code>\textknit{b}</code>	$\rightarrow$	<code>\textknit{s}</code>
$\mathcal{2}$	<code>\textknit{2}</code>	$\mathcal{E}$	<code>\textknit{E}</code>	$\mathcal{T}$	<code>\textknit{T}</code>
$\mathcal{3}$	<code>\textknit{3}</code>	$\mathcal{F}$	<code>\textknit{F}</code>	$\mathcal{t}$	<code>\textknit{t}</code>
$\mathcal{4}$	<code>\textknit{4}</code>	$\mathcal{f}$	<code>\textknit{f}</code>	$\mathcal{U}$	<code>\textknit{U}</code>
$\mathcal{5}$	<code>\textknit{5}</code>	$\uparrow$	<code>\textknit{H}</code>	$\mathcal{u}$	<code>\textknit{u}</code>
$\mathcal{6}$	<code>\textknit{6}</code>	$\downarrow$	<code>\textknit{h}</code>	$\mathcal{V}$	<code>\textknit{V}</code>
$\mathcal{7}$	<code>\textknit{7}</code>	$\mathcal{I}$	<code>\textknit{I}</code>	$\mathcal{v}$	<code>\textknit{v}</code>
$\mathcal{8}$	<code>\textknit{8}</code>	$\mathcal{i}$	<code>\textknit{i}</code>	$\mathcal{W}$	<code>\textknit{W}</code>
$\mathcal{9}$	<code>\textknit{9}</code>	$\mathcal{J}$	<code>\textknit{J}</code>	$\mathcal{w}$	<code>\textknit{w}</code>
$\mathcal{:}$	<code>\textknit{:}</code>	$\mathcal{j}$	<code>\textknit{j}</code>	$\mathcal{X}$	<code>\textknit{X}</code>
$\mathcal{;}$	<code>\textknit{;}</code>	$\mathcal{L}$	<code>\textknit{L}</code>	$\mathcal{x}$	<code>\textknit{x}</code>
$\mathcal{<}$	<code>\textknit{<}</code>	$\mathcal{l}$	<code>\textknit{l}</code>	$\mathcal{Y}$	<code>\textknit{Y}</code>
$\mathcal{=}$	<code>\textknit{=}</code>	$\mathcal{M}$	<code>\textknit{M}</code>	$\mathcal{y}$	<code>\textknit{y}</code>
$\mathcal{>}$	<code>\textknit{>}</code>	$\mathcal{m}$	<code>\textknit{m}</code>	$\mathcal{Z}$	<code>\textknit{Z}</code>
$\bullet$	<code>\textknit{@}</code>	$\mathcal{O}$	<code>\textknit{O}</code>	$\mathcal{z}$	<code>\textknit{z}</code>

The knitting package is intended to typeset complete knitting charts. See the knitting documentation for more information.

Some symbols behave differently when used as part of a sequence. For example, contrast `\textknit{1}` (“ $\mathcal{1}$ ”), `\textknit{11}` (“ $\mathcal{11}$ ”), and `\textknit{111}` (“ $\mathcal{111}$ ”). Similarly, contrast `\textknit{"}` (“ $\mathcal{G}$ ”) and `\textknit{"}` (“ $\mathcal{S}$ ”). Again, see the knitting documentation for more information.

TABLE 616: worldflags Nautical Symbol Flags

	<code>\worldflag{A}</code>		<code>\worldflag{J}</code>		<code>\worldflag{S}</code>		<code>\worldflag{1}</code>
	<code>\worldflag{B}</code>		<code>\worldflag{K}</code>		<code>\worldflag{T}</code>		<code>\worldflag{2}</code>
	<code>\worldflag{C}</code>		<code>\worldflag{L}</code>		<code>\worldflag{U}</code>		<code>\worldflag{3}</code>
	<code>\worldflag{D}</code>		<code>\worldflag{M}</code>		<code>\worldflag{V}</code>		<code>\worldflag{4}</code>
	<code>\worldflag{E}</code>		<code>\worldflag{N}</code>		<code>\worldflag{W}</code>		<code>\worldflag{5}</code>
	<code>\worldflag{F}</code>		<code>\worldflag{O}</code>		<code>\worldflag{X}</code>		<code>\worldflag{6}</code>
	<code>\worldflag{G}</code>		<code>\worldflag{P}</code>		<code>\worldflag{Y}</code>		<code>\worldflag{7}</code>
	<code>\worldflag{H}</code>		<code>\worldflag{Q}</code>		<code>\worldflag{Z}</code>		<code>\worldflag{8}</code>
	<code>\worldflag{I}</code>		<code>\worldflag{R}</code>		<code>\worldflag{0}</code>		<code>\worldflag{9}</code>

All `worldflags` symbols are implemented with `TikZ` graphics, not with a font. The package provides a number of options for controlling flag size and style. See the `worldflags` documentation for more information.

TABLE 617: Other worldflags Flags

	<code>\worldflag{Buddhism}</code>		<code>\worldflag{NATO}</code>		<code>\worldflag{RedCrystal}</code>
	<code>\worldflag{Christian}</code>		<code>\worldflag{Olympics}</code>		<code>\worldflag{UNESCO}</code>
	<code>\worldflag{Esperanto}</code>		<code>\worldflag{Rainbow}</code>		<code>\worldflag{UNO}</code>
	<code>\worldflag{EU}</code>		<code>\worldflag{RedCrescent}</code>		<code>\worldflag{WB}</code>
	<code>\worldflag{JollyRoger}</code>		<code>\worldflag{RedCross}</code>		<code>\worldflag{WHO}</code>

All `worldflags` symbols are implemented with `TikZ` graphics, not with a font. The package provides a number of options for controlling flag size and style. See the `worldflags` documentation for more information.

TABLE 618: twemojis Non-National Flags

	<code>\twemoji{pirate flag}</code>		<code>\twemoji{transgender flag}</code>
	<code>\twemoji{rainbow flag}</code>		

Most `twemojis` symbols have multiple names. Only the most descriptive name for each symbol is shown in this table.

All `twemojis` symbols are implemented as PDF graphics, not with a font. See also the `hwemoji` package, which enables direct Unicode entry of emoji characters in `pdfLATEX`; the `emoji` package, which provides a `LuaLATEX` interface to different underlying emoji fonts; and the `emo` package, which uses a font if possible, otherwise PDF graphics.

TABLE 619: fontawesome5 Flags

	<code>\faFlag</code>		<code>\faFlagCheckered</code>
	<code>\faFlag[regular]</code>		<code>\faFlagUsa</code>

TABLE 620: Miscellaneous arev Symbols

	<code>\anchor</code>		<code>\invsmileface</code>		<code>\skull</code>		<code>\warning</code>
	<code>\biohazard</code>		<code>\radiation</code>		<code>\smileface</code>		<code>\yinyang</code>
	<code>\heavyqleft</code>		<code>\recycle</code>		<code>\steaming</code>		
	<code>\heavyqtright</code>		<code>\sadface</code>		<code>\swords</code>		

TABLE 621: twemojis Food Emoji

	<code>\twemoji{avocado}</code>		<code>\twemoji{hot beverage}</code>
	<code>\twemoji{bacon}</code>		<code>\twemoji{hot dog}</code>
	<code>\twemoji{bagel}</code>		<code>\twemoji{hot pepper}</code>
	<code>\twemoji{baguette bread}</code>		<code>\twemoji{ice}</code>
	<code>\twemoji{banana}</code>		<code>\twemoji{ice cream}</code>
	<code>\twemoji{beer mug}</code>		<code>\twemoji{kiwi fruit}</code>
	<code>\twemoji{bell pepper}</code>		<code>\twemoji{leafy green}</code>
	<code>\twemoji{bento box}</code>		<code>\twemoji{lemon}</code>
	<code>\twemoji{beverage box}</code>		<code>\twemoji{lollipop}</code>
	<code>\twemoji{blueberries}</code>		<code>\twemoji{mango}</code>
	<code>\twemoji{bottle with popping cork}</code>		<code>\twemoji{mate}</code>
	<code>\twemoji{bowl with spoon}</code>		<code>\twemoji{meat on bone}</code>
	<code>\twemoji{bread}</code>		<code>\twemoji{melon}</code>
	<code>\twemoji{broccoli}</code>		<code>\twemoji{moon cake}</code>
	<code>\twemoji{bubble tea}</code>		<code>\twemoji{mushroom}</code>
	<code>\twemoji{burrito}</code>		<code>\twemoji{oden}</code>
	<code>\twemoji{butter}</code>		<code>\twemoji{olive}</code>
	<code>\twemoji{candy}</code>		<code>\twemoji{onion}</code>
	<code>\twemoji{canned food}</code>		<code>\twemoji{pancakes}</code>
	<code>\twemoji{carrot}</code>		<code>\twemoji{peach}</code>
	<code>\twemoji{cheese wedge}</code>		<code>\twemoji{peanuts}</code>
	<code>\twemoji{cherries}</code>		<code>\twemoji{pear}</code>
	<code>\twemoji{chocolate bar}</code>		<code>\twemoji{pie}</code>
	<code>\twemoji{chopsticks}</code>		<code>\twemoji{pineapple}</code>
	<code>\twemoji{clinking beer mugs}</code>		<code>\twemoji{pizza}</code>
	<code>\twemoji{clinking glasses}</code>		<code>\twemoji{popcorn}</code>

(continued on next page)

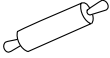
(continued from previous page)

	<code>\twemoji{cocktail glass}</code>		<code>\twemoji{pot of food}</code>
	<code>\twemoji{coconut}</code>		<code>\twemoji{potato}</code>
	<code>\twemoji{cooked rice}</code>		<code>\twemoji{poultry leg}</code>
	<code>\twemoji{cookie}</code>		<code>\twemoji{pretzel}</code>
	<code>\twemoji{cooking}</code>		<code>\twemoji{red apple}</code>
	<code>\twemoji{croissant}</code>		<code>\twemoji{rice ball}</code>
	<code>\twemoji{cucumber}</code>		<code>\twemoji{rice cracker}</code>
	<code>\twemoji{cup with straw}</code>		<code>\twemoji{roasted sweet potato}</code>
	<code>\twemoji{cupcake}</code>		<code>\twemoji{sake}</code>
	<code>\twemoji{curry rice}</code>		<code>\twemoji{salt}</code>
	<code>\twemoji{custard}</code>		<code>\twemoji{sandwich}</code>
	<code>\twemoji{cut of meat}</code>		<code>\twemoji{shallow pan of food}</code>
	<code>\twemoji{dango}</code>		<code>\twemoji{shaved ice}</code>
	<code>\twemoji{doughnut}</code>		<code>\twemoji{shortcake}</code>
	<code>\twemoji{dumpling}</code>		<code>\twemoji{soft ice cream}</code>
	<code>\twemoji{egg}</code>		<code>\twemoji{spaghetti}</code>
	<code>\twemoji{eggplant}</code>		<code>\twemoji{steaming bowl}</code>
	<code>\twemoji{falafel}</code>		<code>\twemoji{strawberry}</code>
	<code>\twemoji{fish cake with swirl}</code>		<code>\twemoji{stuffed flatbread}</code>
	<code>\twemoji{flatbread}</code>		<code>\twemoji{sushi}</code>
	<code>\twemoji{fondue}</code>		<code>\twemoji{taco}</code>
	<code>\twemoji{fork and knife}</code>		<code>\twemoji{takeout box}</code>
	<code>\twemoji{fork and knife with plate}</code>		<code>\twemoji{tamale}</code>
	<code>\twemoji{fortune cookie}</code>		<code>\twemoji{tangerine}</code>
	<code>\twemoji{french fries}</code>		<code>\twemoji{teacup without handle}</code>
	<code>\twemoji{fried shrimp}</code>		<code>\twemoji{teapot}</code>
	<code>\twemoji{garlic}</code>		<code>\twemoji{tomato}</code>
	<code>\twemoji{glass of milk}</code>		<code>\twemoji{tropical drink}</code>
	<code>\twemoji{grapes}</code>		<code>\twemoji{tumbler glass}</code>
	<code>\twemoji{green apple}</code>		<code>\twemoji{waffle}</code>
	<code>\twemoji{green salad}</code>		<code>\twemoji{watermelon}</code>
	<code>\twemoji{hamburger}</code>		<code>\twemoji{wine glass}</code>
	<code>\twemoji{honey pot}</code>		

Most twemojis symbols have multiple names. Only the most descriptive name for each symbol is shown in this table.

All twemojis symbols are implemented as PDF graphics, not with a font. See also the hwemoji package, which enables direct Unicode entry of emoji characters in pdfL^AT_EX; the emoji package, which provides a LuaL^AT_EX interface to different underlying emoji fonts; and the emo package, which uses a font if possible, otherwise PDF graphics .

TABLE 622: figchild Food and Cooking Symbols

	<code>\fcApple</code>		<code>\fcFrenchFries</code>		<code>\fcPimento</code>
	<code>\fcBarbecue</code>		<code>\fcFridge</code>		<code>\fcPineapple</code>
	<code>\fcBread</code>		<code>\fchamburger</code>		<code>\fcPopsicle</code>
	<code>\fcBrownie</code>		<code>\fcIceCreamA</code>		<code>\fcPotato</code>
	<code>\fcBullet</code>		<code>\fcIceCreamB</code>		<code>\fcPulse</code>
	<code>\fcBurrito</code>		<code>\fcIceCreamC</code>		<code>\fcRoastChicken</code>
	<code>\fcCabbage</code>		<code>\fcIceCreamD</code>		<code>\fcRoller</code>
	<code>\fcCarrot</code>		<code>\fcIceCreamE</code>		<code>\fcScallion</code>
	<code>\fcCarrotA</code>		<code>\fcIceCreamF</code>		<code>\fcScaredEgg</code>
	<code>\fcCashier</code>		<code>\fcIceCreamG</code>		<code>\fcSharpKnife</code>
	<code>\fcCheese</code>		<code>\fcIceCreamH</code>		<code>\fcShell</code>
	<code>\fcCherry</code>		<code>\fcKetchup</code>		<code>\fcShrimp</code>
	<code>\fcChickenThigh</code>		<code>\fcKettle</code>		<code>\fcSpatulas</code>
	<code>\fcCucumber</code>		<code>\fcKnife</code>		<code>\fcSteak</code>
	<code>\fcCupcake</code>		<code>\fcMug</code>		<code>\fcStrawberry</code>
	<code>\fcCupcakeA</code>		<code>\fcMushroom</code>		<code>\fcStrawberryA</code>
	<code>\fcCupcakeB</code>		<code>\fcMushroomA</code>		<code>\fcSugar</code>
	<code>\fcCuttingBoard</code>		<code>\fcMushroomB</code>		<code>\fcTomato</code>
	<code>\fcEgg</code>		<code>\fcNuggets</code>		<code>\fcTony</code>
	<code>\fcEggA</code>		<code>\fcOnion</code>		<code>\fcWatermelon</code>
	<code>\fcEggB</code>		<code>\fcPanA</code>		



\fcEggplant



\fcPanB

All figchild symbols are implemented with TikZ graphics, not with a font. Not shown above, each symbol takes three arguments: a scale factor, a line color, and a line thickness. See the figchild documentation for more information.

TABLE 623: utfsym Food and Cooking Symbols

	\usym{1F32D}		\usym{1F350}		\usym{1F362}		\usym{1F372}
	\usym{1F32E}		\usym{1F351}		\usym{1F363}		\usym{1F373}
	\usym{1F32F}		\usym{1F352}		\usym{1F364}		\usym{1F374}
	\usym{1F336}		\usym{1F353}		\usym{1F365}		\usym{1F375}
	\usym{1F344}		\usym{1F354}		\usym{1F366}		\usym{1F376}
	\usym{1F345}		\usym{1F355}		\usym{1F367}		\usym{1F377}
	\usym{1F346}		\usym{1F356}		\usym{1F368}		\usym{1F378}
	\usym{1F347}		\usym{1F357}		\usym{1F369}		\usym{1F379}
	\usym{1F348}		\usym{1F35A}		\usym{1F36A}		\usym{1F37A}
	\usym{1F349}		\usym{1F35B}		\usym{1F36B}		\usym{1F37B}
	\usym{1F34A}		\usym{1F35C}		\usym{1F36C}		\usym{1F37C}
	\usym{1F34B}		\usym{1F35D}		\usym{1F36D}		\usym{1F37D}
	\usym{1F34C}		\usym{1F35E}		\usym{1F36E}		\usym{1F37E}
	\usym{1F34D}		\usym{1F35F}		\usym{1F36F}		\usym{1F37F}
	\usym{1F34E}		\usym{1F360}		\usym{1F370}		\usym{1F382}
	\usym{1F34F}		\usym{1F361}		\usym{1F371}		

All utfsym symbols are implemented with TikZ graphics, not with a font. In addition to \usym, the utfsym package defines \usymH, which renders a symbol at a given height, and \usymW, which renders a symbol at a given width. See the utfsym documentation for more information.

TABLE 624: cookingsymbols Cooking Symbols

	\Bottomheat		\Fork		\Knife		\Topbottomheat
	\Dish		\Gasstove		\Oven		\Topheat
	\Fanoven		\Gloves		\Spoon		

TABLE 625: tikzsymbols Cooking Symbols

	<code>\bakingplate</code>		<code>\eggbeater</code>		<code>\pan</code>		<code>\squeezer</code>
	<code>\blender</code>		<code>\fryingpan</code>		<code>\peeler</code>		<code>\trident</code>
	<code>\bottle</code>		<code>\garlicpress</code>		<code>\pot</code>		
	<code>\bowl</code>		<code>\grater</code>		<code>\rollingpin</code>		
	<code>\cooker</code>		<code>\oven</code>		<code>\sieve</code>		

`tikzsymbols` defines German-language aliases for each of the above: `\Backblech` for `\bakingplate`, `\Bratpfanne` for `\fryingpan`, `\Dreizack` for `\trident`, `\Flasche` for `\bottle`, `\Herd` for `\cooker`, `\Kochtopf` for `\pot`, `\Knoblauchpresse` for `\garlicpress`, `\Nudelholz` for `\rollingpin`, `\Ofen` for `\oven`, `\Pfanne` for `\pan`, `\Purierstab` for `\blender`, `\Reibe` for `\grater`, `\Saftpresse` for `\squeezer`, `\Schaler` for `\peeler`, `\Schneebesen` for `\eggbeater`, `\Schussel` for `\bowl`, and `\Sieb` for `\sieve`.

All `tikzsymbols` symbols are implemented with `TikZ` graphics, not with a font.

TABLE 626: tikzsymbols Emoji

	<code>\Annoey</code>		<code>\Laughey</code>		<code>\rWalley</code>		<code>\Tongey</code>
	<code>\Cat</code>		<code>\Neutrey</code>		<code>\Sadey</code>		<code>\Vomey</code>
	<code>\cChangey{1}</code>		<code>\NiceReapey</code>		<code>\SchrodingersCat{0}</code>		<code>\Walley</code>
	<code>\Changey{1}</code>		<code>\Ninja</code>		<code>\Sey</code>		<code>\Winkey</code>
	<code>\Cooley</code>		<code>\Nursey</code>		<code>\Sleepey</code>		<code>\wInnocey</code>
	<code>\Innocey</code>		<code>\oldWinkey</code>		<code>\Smiley</code>		<code>\Xey</code>

All `tikzsymbols` symbols are implemented with `TikZ` graphics, not with a font. Hence, symbols like `\Ninja` can include color. In fact, most of the commands shown above accept one or more color arguments for further customization. Also note that `\cChangey`, `\Changey`, and `\SchrodingersCat` take a mandatory argument. See the `tikzsymbols` documentation for more information.

TABLE 627: tikzsymbols 3D Emoji

	<code>\dAnnoey</code>		<code>\dLaughey</code>		<code>\dSadey</code>		<code>\dVomey</code>
	<code>\dcChangey{1}</code>		<code>\dNeutrey</code>		<code>\dSey</code>		<code>\dWalley</code>
	<code>\dChangey{1}</code>		<code>\dNinja</code>		<code>\dSleepey</code>		<code>\dWinkey</code>
	<code>\dCooley</code>		<code>\dNursey</code>		<code>\dSmiley</code>		<code>\dXey</code>
	<code>\dInnocey</code>		<code>\drWalley</code>		<code>\dTongey</code>		<code>\olddWinkey</code>

All `tikzsymbols` symbols are implemented with `TikZ` graphics, not with a font. Hence, all of the symbols shown above can include color. In fact, each command in Table 627 accepts one or more color arguments for further customization. Note that `\dcChangey` and `\dChangey` also take a mandatory argument. See the `tikzsymbols` documentation for more information.

TABLE 628: utfsym Emoji

👤	\usym{1F600}	👤	\usym{1F614}	👤	\usym{1F628}	👤	\usym{1F63C}
👤	\usym{1F601}	👤	\usym{1F615}	👤	\usym{1F629}	👤	\usym{1F63D}
👤	\usym{1F602}	👤	\usym{1F616}	👤	\usym{1F62A}	👤	\usym{1F63E}
👤	\usym{1F603}	👤	\usym{1F617}	👤	\usym{1F62B}	👤	\usym{1F63F}
👤	\usym{1F604}	👤	\usym{1F618}	👤	\usym{1F62C}	👤	\usym{1F640}
👤	\usym{1F605}	👤	\usym{1F619}	👤	\usym{1F62D}	👤	\usym{1F641}
👤	\usym{1F606}	👤	\usym{1F61A}	👤	\usym{1F62E}	👤	\usym{1F642}
👤	\usym{1F607}	👤	\usym{1F61B}	👤	\usym{1F62F}	👤	\usym{1F643}
👤	\usym{1F608}	👤	\usym{1F61C}	👤	\usym{1F630}	👤	\usym{1F644}
👤	\usym{1F609}	👤	\usym{1F61D}	👤	\usym{1F631}	👤	\usym{1F645}
👤	\usym{1F60A}	👤	\usym{1F61E}	👤	\usym{1F632}	👤	\usym{1F646}
👤	\usym{1F60B}	👤	\usym{1F61F}	👤	\usym{1F633}	👤	\usym{1F647}
👤	\usym{1F60C}	👤	\usym{1F620}	👤	\usym{1F634}	👤	\usym{1F648}
👤	\usym{1F60D}	👤	\usym{1F621}	👤	\usym{1F635}	👤	\usym{1F649}
👤	\usym{1F60E}	👤	\usym{1F622}	👤	\usym{1F636}	👤	\usym{1F64A}
👤	\usym{1F60F}	👤	\usym{1F623}	👤	\usym{1F637}	👤	\usym{1F64B}
👤	\usym{1F610}	👤	\usym{1F624}	👤	\usym{1F638}	👤	\usym{1F64C}
👤	\usym{1F611}	👤	\usym{1F625}	👤	\usym{1F639}	👤	\usym{1F64D}
👤	\usym{1F612}	👤	\usym{1F626}	👤	\usym{1F63A}	👤	\usym{1F64E}
👤	\usym{1F613}	👤	\usym{1F627}	👤	\usym{1F63B}	👤	\usym{1F64F}

All `utfsym` symbols are implemented with `TikZ` graphics, not with a font. In addition to `\usym`, the `utfsym` package defines `\usymH`, which renders a symbol at a given height, and `\usymW`, which renders a symbol at a given width. See the `utfsym` documentation for more information.

TABLE 629: tikzsymbols Trees

🌳	\Autumntree	🌳	\Summertree	🌳	\WorstTree
🌳	\Springtree	🌳	\Wintertree		

All `tikzsymbols` symbols are implemented with `TikZ` graphics, not with a font. Hence, all of the symbols shown above can include color. `tikzsymbols` additionally defines a `\BasicTree` command that supports customization of trunk and leaf colors. See the `tikzsymbols` documentation for more information.

TABLE 630: utfsym Love Symbols

♥	<code>\usym{1F394}</code>	♠	<code>\usym{1F490}</code>	♥	<code>\usym{1F496}</code>	♥	<code>\usym{1F49C}</code>
💋	<code>\usym{1F48B}</code>	♣	<code>\usym{1F491}</code>	♥	<code>\usym{1F497}</code>	♥	<code>\usym{1F49D}</code>
💍	<code>\usym{1F48C}</code>	♣	<code>\usym{1F492}</code>	💍	<code>\usym{1F498}</code>	♣	<code>\usym{1F49E}</code>
💎	<code>\usym{1F48D}</code>	♣	<code>\usym{1F493}</code>	♥	<code>\usym{1F499}</code>	♣	<code>\usym{1F49F}</code>
💎	<code>\usym{1F48E}</code>	♥	<code>\usym{1F494}</code>	♥	<code>\usym{1F49A}</code>	♣	<code>\usym{1F54A}</code>
💎	<code>\usym{1F48F}</code>	♥	<code>\usym{1F495}</code>	♥	<code>\usym{1F49B}</code>	♥	<code>\usym{1F5A4}</code>

All `utfsym` symbols are implemented with `TikZ` graphics, not with a font. In addition to `\usym`, the `utfsym` package defines `\usymH`, which renders a symbol at a given height, and `\usymW`, which renders a symbol at a given width. For example, “`\usymH{1F492}{36pt}`” produces



See the `utfsym` documentation for more information.

TABLE 631: Miscellaneous `tikzsymbols` Symbols

	<code>\Bed</code>		<code>\Chair</code>		<code>\Fire</code>		<code>\Snowman</code>		<code>\Tribar</code>
	<code>\Candle</code>		<code>\Coffeecup</code>		<code>\Moai</code>		<code>\Strichmaxerl</code>		

All `tikzsymbols` symbols are implemented with `TikZ` graphics, not with a font. `\Tribar` supports customization of the fill color for each bar. `\Strichmaxerl` supports customization of the angles at which the stick figure’s arms and legs are drawn. See the `tikzsymbols` documentation for more information.

TABLE 632: Miscellaneous `twemojis` Emoji

A	<code>\twemoji{1f1e6}</code>		<code>\twemoji{man in lotus position}*</code>
B	<code>\twemoji{1f1e7}</code>		<code>\twemoji{man in manual wheelchair}*</code>
C	<code>\twemoji{1f1e8}</code>		<code>\twemoji{man in motorized wheelchair}*</code>
D	<code>\twemoji{1f1e9}</code>		<code>\twemoji{man in steamy room}*</code>
E	<code>\twemoji{1f1ea}</code>		<code>\twemoji{man in tuxedo}*</code>
F	<code>\twemoji{1f1eb}</code>		<code>\twemoji{man judge}*</code>

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	<code>\twemoji{1f1ec}</code>		<code>\twemoji{man juggling}*</code>
	<code>\twemoji{1f1ed}</code>		<code>\twemoji{man kneeling}*</code>
	<code>\twemoji{1f1ee}</code>		<code>\twemoji{man lifting weights}*</code>
	<code>\twemoji{1f1ef}</code>		<code>\twemoji{man mage}*</code>
	<code>\twemoji{1f1f0}</code>		<code>\twemoji{man mechanic}*</code>
	<code>\twemoji{1f1f1}</code>		<code>\twemoji{man office worker}*</code>
	<code>\twemoji{1f1f2}</code>		<code>\twemoji{man pilot}*</code>
	<code>\twemoji{1f1f3}</code>		<code>\twemoji{man playing handball}*</code>
	<code>\twemoji{1f1f4}</code>		<code>\twemoji{man playing water polo}*</code>
	<code>\twemoji{1f1f5}</code>		<code>\twemoji{man police officer}*</code>
	<code>\twemoji{1f1f6}</code>		<code>\twemoji{man pouting}*</code>
	<code>\twemoji{1f1f7}</code>		<code>\twemoji{man raising hand}*</code>
	<code>\twemoji{1f1f8}</code>		<code>\twemoji{man running}*</code>
	<code>\twemoji{1f1f9}</code>		<code>\twemoji{man scientist}*</code>
	<code>\twemoji{1f1fa}</code>		<code>\twemoji{man shrugging}*</code>
	<code>\twemoji{1f1fb}</code>		<code>\twemoji{man singer}*</code>
	<code>\twemoji{1f1fc}</code>		<code>\twemoji{man standing}*</code>
	<code>\twemoji{1f1fd}</code>		<code>\twemoji{man student}*</code>
	<code>\twemoji{1f1fe}</code>		<code>\twemoji{man superhero}*</code>
	<code>\twemoji{1f1ff}</code>		<code>\twemoji{man supervillain}*</code>
	<code>\twemoji{1f468-1f3fb-200d-1f384}</code>		<code>\twemoji{man surfing}*</code>
	<code>\twemoji{1f468-1f3fc-200d-1f384}</code>		<code>\twemoji{man swimming}*</code>
	<code>\twemoji{1f468-1f3fd-200d-1f384}</code>		<code>\twemoji{man teacher}*</code>
	<code>\twemoji{1f468-1f3fe-200d-1f384}</code>		<code>\twemoji{man technologist}*</code>
	<code>\twemoji{1f468-1f3ff-200d-1f384}</code>		<code>\twemoji{man tipping hand}*</code>
	<code>\twemoji{1f468-200d-1f384}</code>		<code>\twemoji{man vampire}*</code>
	<code>\twemoji{1f469-1f3fb-200d-1f384}</code>		<code>\twemoji{man walking}*</code>
	<code>\twemoji{1f469-1f3fc-200d-1f384}</code>		<code>\twemoji{man wearing turban}*</code>
	<code>\twemoji{1f469-1f3fd-200d-1f384}</code>		<code>\twemoji{man with veil}*</code>
	<code>\twemoji{1f469-1f3fe-200d-1f384}</code>		<code>\twemoji{man with white cane}*</code>
	<code>\twemoji{1f469-1f3ff-200d-1f384}</code>		<code>\twemoji{man zombie}</code>
	<code>\twemoji{1f469-200d-1f384}</code>		<code>\twemoji{man's shoe}</code>
	<code>\twemoji{1f574-1f3fb-200d-2640-fe0f}</code>		<code>\twemoji{manual wheelchair}</code>
	<code>\twemoji{1f574-1f3fc-200d-2642-fe0f}</code>		<code>\twemoji{map of Japan}</code>
	<code>\twemoji{1f574-1f3fd-200d-2640-fe0f}</code>		<code>\twemoji{maple leaf}</code>
	<code>\twemoji{1f574-1f3fe-200d-2642-fe0f}</code>		<code>\twemoji{martial arts uniform}</code>
	<code>\twemoji{1f574-1f3fd-200d-2640-fe0f}</code>		<code>\twemoji{mechanic}*</code>
	<code>\twemoji{1f574-1f3fd-200d-2642-fe0f}</code>		<code>\twemoji{mechanical arm}</code>
	<code>\twemoji{1f574-1f3fe-200d-2640-fe0f}</code>		<code>\twemoji{mechanical leg}</code>
	<code>\twemoji{1f574-1f3fe-200d-2642-fe0f}</code>		<code>\twemoji{medical symbol}</code>
	<code>\twemoji{1f574-1f3ff-200d-2640-fe0f}</code>		<code>\twemoji{medium skin tone}</code>
	<code>\twemoji{1f574-1f3ff-200d-2642-fe0f}</code>		<code>\twemoji{medium-dark skin tone}</code>
	<code>\twemoji{1f574-fe0f-200d-2640-fe0f}</code>		<code>\twemoji{medium-light skin tone}</code>
	<code>\twemoji{1f574-fe0f-200d-2642-fe0f}</code>		<code>\twemoji{megaphone}</code>
	<code>\twemoji{1f576}</code>		<code>\twemoji{men holding hands}*</code>
	<code>\twemoji{1f6cf}</code>		<code>\twemoji{men with bunny ears}</code>

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	<code>\twemoji{1st place medal}</code>		<code>\twemoji{men wrestling}</code>
	<code>\twemoji{26f7-1f3fb}</code>		<code>\twemoji{men's room}</code>
	<code>\twemoji{26f7-1f3fc}</code>		<code>\twemoji{menorah}</code>
	<code>\twemoji{26f7-1f3fd}</code>		<code>\twemoji{mermaid}*</code>
	<code>\twemoji{26f7-1f3fe}</code>		<code>\twemoji{merman}*</code>
	<code>\twemoji{26f7-1f3ff}</code>		<code>\twemoji{merperson}*</code>
	<code>\twemoji{270f}</code>		<code>\twemoji{microphone}</code>
	<code>\twemoji{2nd place medal}</code>		<code>\twemoji{microscope}</code>
	<code>\twemoji{3rd place medal}</code>		<code>\twemoji{middle finger}*</code>
	<code>\twemoji{A button (blood type)}</code>		<code>\twemoji{military helmet}</code>
	<code>\twemoji{AB button (blood type)}</code>		<code>\twemoji{military medal}</code>
	<code>\twemoji{abacus}</code>		<code>\twemoji{milky way}</code>
	<code>\twemoji{accordion}</code>		<code>\twemoji{minus}</code>
	<code>\twemoji{adhesive bandage}</code>		<code>\twemoji{mirror}</code>
	<code>\twemoji{admission tickets}</code>		<code>\twemoji{mobile phone}</code>
	<code>\twemoji{alembic}</code>		<code>\twemoji{mobile phone off}</code>
	<code>\twemoji{alien}</code>		<code>\twemoji{mobile phone with arrow}</code>
	<code>\twemoji{alien monster}</code>		<code>\twemoji{money bag}</code>
	<code>\twemoji{american football}</code>		<code>\twemoji{money with wings}</code>
	<code>\twemoji{amphora}</code>		<code>\twemoji{money-mouth face}</code>
	<code>\twemoji{anatomical heart}</code>		<code>\twemoji{moon viewing ceremony}</code>
	<code>\twemoji{anchor}</code>		<code>\twemoji{mosque}</code>
	<code>\twemoji{anger symbol}</code>		<code>\twemoji{motorized wheelchair}</code>
	<code>\twemoji{angry face}</code>		<code>\twemoji{mount fuji}</code>
	<code>\twemoji{angry face with horns}</code>		<code>\twemoji{mountain}</code>
	<code>\twemoji{anguished face}</code>		<code>\twemoji{mouse trap}</code>
	<code>\twemoji{antenna bars}</code>		<code>\twemoji{mouth}</code>
	<code>\twemoji{anxious face with sweat}</code>		<code>\twemoji{movie camera}</code>
	<code>\twemoji{Aquarius}</code>		<code>\twemoji{moyai}</code>
	<code>\twemoji{Aries}</code>		<code>\twemoji{Mrs. Claus}*</code>
	<code>\twemoji{artist}*</code>		<code>\twemoji{multiply}</code>
	<code>\twemoji{artist palette}</code>		<code>\twemoji{musical keyboard}</code>
	<code>\twemoji{astonished face}</code>		<code>\twemoji{musical note}</code>
	<code>\twemoji{astronaut}*</code>		<code>\twemoji{musical notes}</code>
	<code>\twemoji{ATM sign}</code>		<code>\twemoji{musical score}</code>
	<code>\twemoji{atom symbol}</code>		<code>\twemoji{muted speaker}</code>
	<code>\twemoji{axe}</code>		<code>\twemoji{mx claus}*</code>
	<code>\twemoji{B button (blood type)}</code>		<code>\twemoji{nail polish}*</code>
	<code>\twemoji{baby}*</code>		<code>\twemoji{name badge}</code>
	<code>\twemoji{baby angel}*</code>		<code>\twemoji{national park}</code>
	<code>\twemoji{baby bottle}</code>		<code>\twemoji{nauseated face}</code>
	<code>\twemoji{baby symbol}</code>		<code>\twemoji{nazar amulet}</code>
	<code>\twemoji{BACK arrow}</code>		<code>\twemoji{necktie}</code>
	<code>\twemoji{backhand index pointing down}*</code>		<code>\twemoji{nerd face}</code>

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	<code>\twemoji{backhand index pointing left}*</code>		<code>\twemoji{nesting dolls}</code>
	<code>\twemoji{backhand index pointing right}*</code>		<code>\twemoji{neutral face}</code>
	<code>\twemoji{backhand index pointing up}*</code>		<code>\twemoji{NEW button}</code>
	<code>\twemoji{backpack}</code>		<code>\twemoji{newspaper}</code>
	<code>\twemoji{badminton}</code>		<code>\twemoji{next track button}</code>
	<code>\twemoji{balance scale}</code>		<code>\twemoji{NG button}</code>
	<code>\twemoji{bald}</code>		<code>\twemoji{night with stars}</code>
	<code>\twemoji{ballet shoes}</code>		<code>\twemoji{ninja}*</code>
	<code>\twemoji{balloon}</code>		<code>\twemoji{no entry}</code>
	<code>\twemoji{ballot box with ballot}</code>		<code>\twemoji{no littering}</code>
	<code>\twemoji{banjo}</code>		<code>\twemoji{no mobile phones}</code>
	<code>\twemoji{bank}</code>		<code>\twemoji{no one under eighteen}</code>
	<code>\twemoji{bar chart}</code>		<code>\twemoji{no pedestrians}</code>
	<code>\twemoji{barber pole}</code>		<code>\twemoji{no smoking}</code>
	<code>\twemoji{baseball}</code>		<code>\twemoji{non-potable water}</code>
	<code>\twemoji{basket}</code>		<code>\twemoji{nose}*</code>
	<code>\twemoji{basketball}</code>		<code>\twemoji{notebook}</code>
	<code>\twemoji{bathtub}</code>		<code>\twemoji{notebook with decorative cover}</code>
	<code>\twemoji{battery}</code>		<code>\twemoji{nut and bolt}</code>
	<code>\twemoji{beach with umbrella}</code>		<code>\twemoji{O button (blood type)}</code>
	<code>\twemoji{beaming face with smiling eyes}</code>		<code>\twemoji{office building}</code>
	<code>\twemoji{beating heart}</code>		<code>\twemoji{office worker}*</code>
	<code>\twemoji{bell}</code>		<code>\twemoji{ogre}</code>
	<code>\twemoji{bell with slash}</code>		<code>\twemoji{oil drum}</code>
	<code>\twemoji{bellhop bell}</code>		<code>\twemoji{OK button}</code>
	<code>\twemoji{bikini}</code>		<code>\twemoji{OK hand}*</code>
	<code>\twemoji{billed cap}</code>		<code>\twemoji{old key}</code>
	<code>\twemoji{biohazard}</code>		<code>\twemoji{old man}*</code>
	<code>\twemoji{birthday cake}</code>		<code>\twemoji{old woman}*</code>
	<code>\twemoji{bison}</code>		<code>\twemoji{older person}*</code>
	<code>\twemoji{black circle}</code>		<code>\twemoji{om}</code>
	<code>\twemoji{black flag}</code>		<code>\twemoji{ON! arrow}</code>
	<code>\twemoji{black heart}</code>		<code>\twemoji{oncoming fist}*</code>
	<code>\twemoji{black large square}</code>		<code>\twemoji{one-piece swimsuit}</code>
	<code>\twemoji{black medium square}</code>		<code>\twemoji{open book}</code>
	<code>\twemoji{black medium-small square}</code>		<code>\twemoji{open file folder}</code>
	<code>\twemoji{black nib}</code>		<code>\twemoji{open hands}*</code>
	<code>\twemoji{black small square}</code>		<code>\twemoji{open mailbox with lowered flag}</code>
	<code>\twemoji{black square button}</code>		<code>\twemoji{open mailbox with raised flag}</code>

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	<code>\twemoji{blossom}</code>		<code>\twemoji{Ophiuchus}</code>
	<code>\twemoji{blue book}</code>		<code>\twemoji{optical disk}</code>
	<code>\twemoji{blue circle}</code>		<code>\twemoji{orange book}</code>
	<code>\twemoji{blue heart}</code>		<code>\twemoji{orange circle}</code>
	<code>\twemoji{blue square}</code>		<code>\twemoji{orange heart}</code>
	<code>\twemoji{bomb}</code>		<code>\twemoji{orange square}</code>
	<code>\twemoji{bone}</code>		<code>\twemoji{orthodox cross}</code>
	<code>\twemoji{bookmark}</code>		<code>\twemoji{outbox tray}</code>
	<code>\twemoji{bookmark tabs}</code>		<code>\twemoji{P button}</code>
	<code>\twemoji{books}</code>		<code>\twemoji{package}</code>
	<code>\twemoji{boomerang}</code>		<code>\twemoji{page facing up}</code>
	<code>\twemoji{bouquet}</code>		<code>\twemoji{page with curl}</code>
	<code>\twemoji{bow and arrow}</code>		<code>\twemoji{pager}</code>
	<code>\twemoji{bowling}</code>		<code>\twemoji{paintbrush}</code>
	<code>\twemoji{boxing glove}</code>		<code>\twemoji{palm tree}</code>
	<code>\twemoji{boy}*</code>		<code>\twemoji{palms up together}*</code>
	<code>\twemoji{brain}</code>		<code>\twemoji{paperclip}</code>
	<code>\twemoji{breast-feeding}*</code>		<code>\twemoji{parachute}</code>
	<code>\twemoji{bricks}</code>		<code>\twemoji{part alternation mark}</code>
	<code>\twemoji{bridge at night}</code>		<code>\twemoji{party popper}</code>
	<code>\twemoji{briefcase}</code>		<code>\twemoji{partying face}</code>
	<code>\twemoji{briefs}</code>		<code>\twemoji{pause button}</code>
	<code>\twemoji{bright button}</code>		<code>\twemoji{peace symbol}</code>
	<code>\twemoji{broken heart}</code>		<code>\twemoji{pen}</code>
	<code>\twemoji{broom}</code>		<code>\twemoji{pencil}</code>
	<code>\twemoji{brown circle}</code>		<code>\twemoji{pensive face}</code>
	<code>\twemoji{brown heart}</code>		<code>\twemoji{people holding hands}*</code>
	<code>\twemoji{brown square}</code>		<code>\twemoji{people hugging}</code>
	<code>\twemoji{bucket}</code>		<code>\twemoji{people with bunny ears}</code>
	<code>\twemoji{building construction}</code>		<code>\twemoji{people wrestling}</code>
	<code>\twemoji{bullseye}</code>		<code>\twemoji{performing arts}</code>
	<code>\twemoji{bust in silhouette}</code>		<code>\twemoji{persevering face}</code>
	<code>\twemoji{busts in silhouette}</code>		<code>\twemoji{person}*</code>
	<code>\twemoji{cactus}</code>		<code>\twemoji{person bouncing ball}*</code>
	<code>\twemoji{call me hand}*</code>		<code>\twemoji{person bowing}*</code>
	<code>\twemoji{camera}</code>		<code>\twemoji{person cartwheeling}*</code>
	<code>\twemoji{camera with flash}</code>		<code>\twemoji{person climbing}*</code>
	<code>\twemoji{camping}</code>		<code>\twemoji{person facepalming}*</code>
	<code>\twemoji{Cancer}</code>		<code>\twemoji{person feeding baby}*</code>
	<code>\twemoji{candle}</code>		<code>\twemoji{person fencing}</code>
	<code>\twemoji{Capricorn}</code>		<code>\twemoji{person frowning}*</code>
	<code>\twemoji{card file box}</code>		<code>\twemoji{person gesturing NO}*</code>
	<code>\twemoji{card index}</code>		<code>\twemoji{person gesturing OK}*</code>
	<code>\twemoji{card index dividers}</code>		<code>\twemoji{person getting haircut}*</code>
	<code>\twemoji{carousel horse}</code>		<code>\twemoji{person getting massage}*</code>
	<code>\twemoji{carp streamer}</code>		<code>\twemoji{person golfing}*</code>

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	<code>\twemoji{carpentry saw}</code>		<code>\twemoji{person in bed}*</code>
	<code>\twemoji{castle}</code>		<code>\twemoji{person in lotus position}*</code>
	<code>\twemoji{cat with tears of joy}</code>		<code>\twemoji{person in manual wheelchair}*</code>
	<code>\twemoji{cat with wry smile}</code>		<code>\twemoji{person in motorized wheelchair}*</code>
	<code>\twemoji{chains}</code>		<code>\twemoji{person in steamy room}*</code>
	<code>\twemoji{chair}</code>		<code>\twemoji{person in suit levitating}*</code>
	<code>\twemoji{chart decreasing}</code>		<code>\twemoji{person in tuxedo}*</code>
	<code>\twemoji{chart increasing}</code>		<code>\twemoji{person juggling}*</code>
	<code>\twemoji{chart increasing with yen}</code>		<code>\twemoji{person kneeling}*</code>
	<code>\twemoji{check box with check}</code>		<code>\twemoji{person lifting weights}*</code>
	<code>\twemoji{check mark}</code>		<code>\twemoji{person playing handball}*</code>
	<code>\twemoji{check mark button}</code>		<code>\twemoji{person playing water polo}*</code>
	<code>\twemoji{chequered flag}</code>		<code>\twemoji{person pouting}*</code>
	<code>\twemoji{cherry blossom}</code>		<code>\twemoji{person raising hand}*</code>
	<code>\twemoji{chess pawn}</code>		<code>\twemoji{person running}*</code>
	<code>\twemoji{chestnut}</code>		<code>\twemoji{person shrugging}*</code>
	<code>\twemoji{child}*</code>		<code>\twemoji{person standing}*</code>
	<code>\twemoji{children crossing}</code>		<code>\twemoji{person surfing}*</code>
	<code>\twemoji{Christmas tree}</code>		<code>\twemoji{person swimming}*</code>
	<code>\twemoji{church}</code>		<code>\twemoji{person taking bath}*</code>
	<code>\twemoji{cigarette}</code>		<code>\twemoji{person tipping hand}*</code>
	<code>\twemoji{cinema}</code>		<code>\twemoji{person walking}*</code>
	<code>\twemoji{circled M}</code>		<code>\twemoji{person wearing turban}*</code>
	<code>\twemoji{circus tent}</code>		<code>\twemoji{person with skullcap}*</code>
	<code>\twemoji{cityscape}</code>		<code>\twemoji{person with veil}*</code>
	<code>\twemoji{cityscape at dusk}</code>		<code>\twemoji{person with white cane}*</code>
	<code>\twemoji{CL button}</code>		<code>\twemoji{petri dish}</code>
	<code>\twemoji{clamp}</code>		<code>\twemoji{pick}</code>
	<code>\twemoji{clapper board}</code>		<code>\twemoji{pile of poo}</code>
	<code>\twemoji{clapping hands}*</code>		<code>\twemoji{pill}</code>
	<code>\twemoji{classical building}</code>		<code>\twemoji{pilot}*</code>
	<code>\twemoji{clipboard}</code>		<code>\twemoji{pinched fingers}*</code>
	<code>\twemoji{clockwise vertical arrows}</code>		<code>\twemoji{pinching hand}*</code>
	<code>\twemoji{closed book}</code>		<code>\twemoji{pine decoration}</code>
	<code>\twemoji{closed mailbox with lowered flag}</code>		<code>\twemoji{ping pong}</code>
	<code>\twemoji{closed mailbox with raised flag}</code>		<code>\twemoji{Pisces}</code>
	<code>\twemoji{closed umbrella}</code>		<code>\twemoji{piñata}</code>
	<code>\twemoji{clown face}</code>		<code>\twemoji{placard}</code>
	<code>\twemoji{clutch bag}</code>		<code>\twemoji{place of worship}</code>
	<code>\twemoji{coat}</code>		<code>\twemoji{play button}</code>
	<code>\twemoji{coffin}</code>		<code>\twemoji{play or pause button}</code>
	<code>\twemoji{coin}</code>		<code>\twemoji{pleading face}</code>

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	<code>\twemoji{cold face}</code>		<code>\twemoji{plunger}</code>
	<code>\twemoji{collision}</code>		<code>\twemoji{plus}</code>
	<code>\twemoji{comet}</code>		<code>\twemoji{police officer}*</code>
	<code>\twemoji{compass}</code>		<code>\twemoji{pool 8 ball}</code>
	<code>\twemoji{computer}</code>		<code>\twemoji{post office}</code>
	<code>\twemoji{computer disk}</code>		<code>\twemoji{postal horn}</code>
	<code>\twemoji{computer mouse}</code>		<code>\twemoji{postbox}</code>
	<code>\twemoji{confetti ball}</code>		<code>\twemoji{potable water}</code>
	<code>\twemoji{confounded face}</code>		<code>\twemoji{potted plant}</code>
	<code>\twemoji{confused face}</code>		<code>\twemoji{pound banknote}</code>
	<code>\twemoji{construction worker}*</code>		<code>\twemoji{pouting cat}</code>
	<code>\twemoji{control knobs}</code>		<code>\twemoji{pouting face}</code>
	<code>\twemoji{convenience store}</code>		<code>\twemoji{prayer beads}</code>
	<code>\twemoji{cook}*</code>		<code>\twemoji{pregnant woman}*</code>
	<code>\twemoji{COOL button}</code>		<code>\twemoji{prince}*</code>
	<code>\twemoji{copyright}</code>		<code>\twemoji{princess}*</code>
	<code>\twemoji{couch and lamp}</code>		<code>\twemoji{printer}</code>
	<code>\twemoji{counterclockwise arrows button}</code>		<code>\twemoji{prohibited}</code>
	<code>\twemoji{couple with heart}*</code>		<code>\twemoji{purple circle}</code>
	<code>\twemoji{couplekiss}</code>		<code>\twemoji{purple heart}</code>
	<code>\twemoji{cowboy hat face}</code>		<code>\twemoji{purple square}</code>
	<code>\twemoji{crayon}</code>		<code>\twemoji{purse}</code>
	<code>\twemoji{credit card}</code>		<code>\twemoji{pushpin}</code>
	<code>\twemoji{cricket game}</code>		<code>\twemoji{puzzle piece}</code>
	<code>\twemoji{cross mark}</code>		<code>\twemoji{radio}</code>
	<code>\twemoji{cross mark button}</code>		<code>\twemoji{radio button}</code>
	<code>\twemoji{crossed fingers}*</code>		<code>\twemoji{radioactive}</code>
	<code>\twemoji{crossed flags}</code>		<code>\twemoji{rainbow}</code>
	<code>\twemoji{crossed swords}</code>		<code>\twemoji{raised back of hand}*</code>
	<code>\twemoji{crown}</code>		<code>\twemoji{raised fist}*</code>
	<code>\twemoji{crying cat}</code>		<code>\twemoji{raised hand}*</code>
	<code>\twemoji{crying face}</code>		<code>\twemoji{raising hands}*</code>
	<code>\twemoji{crystal ball}</code>		<code>\twemoji{razor}</code>
	<code>\twemoji{curling stone}</code>		<code>\twemoji{receipt}</code>
	<code>\twemoji{curly hair}</code>		<code>\twemoji{record button}</code>
	<code>\twemoji{curly loop}</code>		<code>\twemoji{recycling symbol}</code>
	<code>\twemoji{currency exchange}</code>		<code>\twemoji{red circle}</code>
	<code>\twemoji{cyclone}</code>		<code>\twemoji{red envelope}</code>
	<code>\twemoji{dagger}</code>		<code>\twemoji{red exclamation mark}</code>
	<code>\twemoji{dark skin tone}</code>		<code>\twemoji{red hair}</code>
	<code>\twemoji{dashing away}</code>		<code>\twemoji{red heart}</code>
	<code>\twemoji{date}</code>		<code>\twemoji{red paper lantern}</code>
	<code>\twemoji{deaf man}*</code>		<code>\twemoji{red question mark}</code>
	<code>\twemoji{deaf person}*</code>		<code>\twemoji{red square}</code>
	<code>\twemoji{deaf woman}*</code>		<code>\twemoji{red triangle pointed down}</code>

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	<code>\twemoji{deciduous tree}</code>		<code>\twemoji{red triangle pointed up}</code>
	<code>\twemoji{department store}</code>		<code>\twemoji{registered}</code>
	<code>\twemoji{derelict house}</code>		<code>\twemoji{relieved face}</code>
	<code>\twemoji{desert}</code>		<code>\twemoji{reminder ribbon}</code>
	<code>\twemoji{desert island}</code>		<code>\twemoji{repeat button}</code>
	<code>\twemoji{desktop computer}</code>		<code>\twemoji{repeat single button}</code>
	<code>\twemoji{detective}*</code>		<code>\twemoji{rescue worker's helmet}</code>
	<code>\twemoji{diamond with a dot}</code>		<code>\twemoji{restroom}</code>
	<code>\twemoji{dim button}</code>		<code>\twemoji{reverse button}</code>
	<code>\twemoji{disappointed face}</code>		<code>\twemoji{revolving hearts}</code>
	<code>\twemoji{disguised face}</code>		<code>\twemoji{ribbon}</code>
	<code>\twemoji{divide}</code>		<code>\twemoji{right anger bubble}</code>
	<code>\twemoji{diving mask}</code>		<code>\twemoji{right arrow}</code>
	<code>\twemoji{diya lamp}</code>		<code>\twemoji{right arrow curving down}</code>
	<code>\twemoji{dizzy}</code>		<code>\twemoji{right arrow curving left}</code>
	<code>\twemoji{dna}</code>		<code>\twemoji{right arrow curving up}</code>
	<code>\twemoji{dollar banknote}</code>		<code>\twemoji{right-facing fist}*</code>
	<code>\twemoji{door}</code>		<code>\twemoji{ring}</code>
	<code>\twemoji{dotted six-pointed star}</code>		<code>\twemoji{ringed planet}</code>
	<code>\twemoji{double curly loop}</code>		<code>\twemoji{robot}</code>
	<code>\twemoji{double exclamation mark}</code>		<code>\twemoji{rock}</code>
	<code>\twemoji{dove}</code>		<code>\twemoji{roll of paper}</code>
	<code>\twemoji{down arrow}</code>		<code>\twemoji{rolled-up newspaper}</code>
	<code>\twemoji{down-left arrow}</code>		<code>\twemoji{roller coaster}</code>
	<code>\twemoji{down-right arrow}</code>		<code>\twemoji{rolling on the floor laughing}</code>
	<code>\twemoji{downcast face with sweat}</code>		<code>\twemoji{rose}</code>
	<code>\twemoji{downwards button}</code>		<code>\twemoji{rosette}</code>
	<code>\twemoji{dress}</code>		<code>\twemoji{round pushpin}</code>
	<code>\twemoji{drooling face}</code>		<code>\twemoji{rugby football}</code>
	<code>\twemoji{drop of blood}</code>		<code>\twemoji{running shirt}</code>
	<code>\twemoji{droplet}</code>		<code>\twemoji{running shoe}</code>
	<code>\twemoji{drum}</code>		<code>\twemoji{sad but relieved face}</code>
	<code>\twemoji{dvd}</code>		<code>\twemoji{safety pin}</code>
	<code>\twemoji{e-mail}</code>		<code>\twemoji{safety vest}</code>
	<code>\twemoji{e50a}</code>		<code>\twemoji{Sagittarius}</code>
	<code>\twemoji{ear}*</code>		<code>\twemoji{sailboat}</code>
	<code>\twemoji{ear of corn}</code>		<code>\twemoji{Santa Claus}*</code>
	<code>\twemoji{ear with hearing aid}*</code>		<code>\twemoji{sari}</code>
	<code>\twemoji{eight-pointed star}</code>		<code>\twemoji{satellite antenna}</code>
	<code>\twemoji{eight-spoked asterisk}</code>		<code>\twemoji{saxophone}</code>
	<code>\twemoji{eject button}</code>		<code>\twemoji{scarf}</code>
	<code>\twemoji{electric plug}</code>		<code>\twemoji{school}</code>
	<code>\twemoji{elevator}</code>		<code>\twemoji{scientist}*</code>
	<code>\twemoji{elf}*</code>		<code>\twemoji{scissors}</code>
	<code>\twemoji{END arrow}</code>		<code>\twemoji{scorpius}</code>

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	<code>\twemoji{envelope}</code>		<code>\twemoji{screwdriver}</code>
	<code>\twemoji{envelope with arrow}</code>		<code>\twemoji{scroll}</code>
	<code>\twemoji{euro banknote}</code>		<code>\twemoji{seat}</code>
	<code>\twemoji{evergreen tree}</code>		<code>\twemoji{see-no-evil monkey}</code>
	<code>\twemoji{exclamation question mark}</code>		<code>\twemoji{seedling}</code>
	<code>\twemoji{exploding head}</code>		<code>\twemoji{selfie}*</code>
	<code>\twemoji{expressionless face}</code>		<code>\twemoji{sewing needle}</code>
	<code>\twemoji{eye}</code>		<code>\twemoji{shamrock}</code>
	<code>\twemoji{eye in speech bubble}</code>		<code>\twemoji{sheaf of rice}</code>
	<code>\twemoji{eyeglasses}</code>		<code>\twemoji{shield}</code>
	<code>\twemoji{eyes}</code>		<code>\twemoji{shinto shrine}</code>
	<code>\twemoji{face blowing a kiss}</code>		<code>\twemoji{shooting star}</code>
	<code>\twemoji{face savoring food}</code>		<code>\twemoji{shopping bags}</code>
	<code>\twemoji{face screaming in fear}</code>		<code>\twemoji{shopping cart}</code>
	<code>\twemoji{face vomiting}</code>		<code>\twemoji{shorts}</code>
	<code>\twemoji{face with hand over mouth}</code>		<code>\twemoji{shower}</code>
	<code>\twemoji{face with head-bandage}</code>		<code>\twemoji{shuffle tracks button}</code>
	<code>\twemoji{face with medical mask}</code>		<code>\twemoji{shushing face}</code>
	<code>\twemoji{face with monocle}</code>		<code>\twemoji{sign of the horns}*</code>
	<code>\twemoji{face with open mouth}</code>		<code>\twemoji{singer}*</code>
	<code>\twemoji{face with raised eyebrow}</code>		<code>\twemoji{skier}</code>
	<code>\twemoji{face with rolling eyes}</code>		<code>\twemoji{skis}</code>
	<code>\twemoji{face with steam from nose}</code>		<code>\twemoji{skull}</code>
	<code>\twemoji{face with symbols on mouth}</code>		<code>\twemoji{skull and crossbones}</code>
	<code>\twemoji{face with tears of joy}</code>		<code>\twemoji{sleeping face}</code>
	<code>\twemoji{face with thermometer}</code>		<code>\twemoji{sleepy face}</code>
	<code>\twemoji{face with tongue}</code>		<code>\twemoji{slightly frowning face}</code>
	<code>\twemoji{face without mouth}</code>		<code>\twemoji{slightly smiling face}</code>
	<code>\twemoji{factory}</code>		<code>\twemoji{slot machine}</code>
	<code>\twemoji{factory worker}*</code>		<code>\twemoji{small blue diamond}</code>
	<code>\twemoji{fairy}*</code>		<code>\twemoji{small orange diamond}</code>
	<code>\twemoji{fallen leaf}</code>		<code>\twemoji{smiling cat with heart-eyes}</code>
	<code>\twemoji{family}*</code>		<code>\twemoji{smiling face}</code>
	<code>\twemoji{farmer}*</code>		<code>\twemoji{smiling face with halo}</code>
	<code>\twemoji{fast down button}</code>		<code>\twemoji{smiling face with heart-eyes}</code>
	<code>\twemoji{fast reverse button}</code>		<code>\twemoji{smiling face with hearts}</code>
	<code>\twemoji{fast up button}</code>		<code>\twemoji{smiling face with horns}</code>
	<code>\twemoji{fast-forward button}</code>		<code>\twemoji{smiling face with smiling eyes}</code>
	<code>\twemoji{fax machine}</code>		<code>\twemoji{smiling face with sunglasses}</code>
	<code>\twemoji{fearful face}</code>		<code>\twemoji{smiling face with tear}</code>
	<code>\twemoji{feather}</code>		<code>\twemoji{smirking face}</code>

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	<code>\twemoji{female sign}</code>		<code>\twemoji{sneezing face}</code>
	<code>\twemoji{ferris wheel}</code>		<code>\twemoji{snow-capped mountain}</code>
	<code>\twemoji{ferry}</code>		<code>\twemoji{snowboarder}*</code>
	<code>\twemoji{field hockey}</code>		<code>\twemoji{snowflake}</code>
	<code>\twemoji{file cabinet}</code>		<code>\twemoji{snowman}</code>
	<code>\twemoji{file folder}</code>		<code>\twemoji{snowman without snow}</code>
	<code>\twemoji{film frames}</code>		<code>\twemoji{soap}</code>
	<code>\twemoji{film projector}</code>		<code>\twemoji{soccer ball}</code>
	<code>\twemoji{fire}</code>		<code>\twemoji{socks}</code>
	<code>\twemoji{fire extinguisher}</code>		<code>\twemoji{softball}</code>
	<code>\twemoji{firecracker}</code>		<code>\twemoji{SOON arrow}</code>
	<code>\twemoji{firefighter}*</code>		<code>\twemoji{SOS button}</code>
	<code>\twemoji{fireworks}</code>		<code>\twemoji{sparkle}</code>
	<code>\twemoji{fishing pole}</code>		<code>\twemoji{sparkler}</code>
	<code>\twemoji{flag in hole}</code>		<code>\twemoji{sparkles}</code>
	<code>\twemoji{flashlight}</code>		<code>\twemoji{sparkling heart}</code>
	<code>\twemoji{flat shoe}</code>		<code>\twemoji{speak-no-evil monkey}</code>
	<code>\twemoji{fleur-de-lis}</code>		<code>\twemoji{speaker high volume}</code>
	<code>\twemoji{flexed biceps}*</code>		<code>\twemoji{speaker low volume}</code>
	<code>\twemoji{floppy disk}</code>		<code>\twemoji{speaker medium volume}</code>
	<code>\twemoji{flower playing cards}</code>		<code>\twemoji{speaking head}</code>
	<code>\twemoji{flushed face}</code>		<code>\twemoji{speech balloon}</code>
	<code>\twemoji{flying disc}</code>		<code>\twemoji{spider}</code>
	<code>\twemoji{foggy}</code>		<code>\twemoji{spider web}</code>
	<code>\twemoji{folded hands}*</code>		<code>\twemoji{spiral calendar}</code>
	<code>\twemoji{foot}*</code>		<code>\twemoji{spiral notepad}</code>
	<code>\twemoji{footprints}</code>		<code>\twemoji{sponge}</code>
	<code>\twemoji{fountain}</code>		<code>\twemoji{spoon}</code>
	<code>\twemoji{fountain pen}</code>		<code>\twemoji{sports medal}</code>
	<code>\twemoji{four leaf clover}</code>		<code>\twemoji{squinting face with tongue}</code>
	<code>\twemoji{framed picture}</code>		<code>\twemoji{stadium}</code>
	<code>\twemoji{FREE button}</code>		<code>\twemoji{star}</code>
	<code>\twemoji{frowning face}</code>		<code>\twemoji{star and crescent}</code>
	<code>\twemoji{frowning face with open mouth}</code>		<code>\twemoji{star of David}</code>
	<code>\twemoji{fuel pump}</code>		<code>\twemoji{star-struck}</code>
	<code>\twemoji{funeral urn}</code>		<code>\twemoji{Statue of Liberty}</code>
	<code>\twemoji{game die}</code>		<code>\twemoji{stethoscope}</code>
	<code>\twemoji{gear}</code>		<code>\twemoji{stop button}</code>
	<code>\twemoji{gem stone}</code>		<code>\twemoji{stop sign}</code>
	<code>\twemoji{Gemini}</code>		<code>\twemoji{straight ruler}</code>
	<code>\twemoji{genie}</code>		<code>\twemoji{student}*</code>
	<code>\twemoji{ghost}</code>		<code>\twemoji{studio microphone}</code>
	<code>\twemoji{girl}*</code>		<code>\twemoji{sun with face}</code>
	<code>\twemoji{globe showing Americas}</code>		<code>\twemoji{sunflower}</code>

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	<code>\twemoji{globe showing Asia-Australia}</code>		<code>\twemoji{sunrise}</code>
	<code>\twemoji{globe showing Europe-Africa}</code>		<code>\twemoji{sunrise over mountains}</code>
	<code>\twemoji{globe with meridians}</code>		<code>\twemoji{sunset}</code>
	<code>\twemoji{gloves}</code>		<code>\twemoji{superhero}*</code>
	<code>\twemoji{glowing star}</code>		<code>\twemoji{supervillain}*</code>
	<code>\twemoji{goal net}</code>		<code>\twemoji{sweat droplets}</code>
	<code>\twemoji{goblin}</code>		<code>\twemoji{synagogue}</code>
	<code>\twemoji{goggles}</code>		<code>\twemoji{syringe}</code>
	<code>\twemoji{graduation cap}</code>		<code>\twemoji{t-shirt}</code>
	<code>\twemoji{green book}</code>		<code>\twemoji{tanabata tree}</code>
	<code>\twemoji{green circle}</code>		<code>\twemoji{Taurus}</code>
	<code>\twemoji{green heart}</code>		<code>\twemoji{teacher}*</code>
	<code>\twemoji{green square}</code>		<code>\twemoji{tear-off calendar}</code>
	<code>\twemoji{grimacing face}</code>		<code>\twemoji{technologist}*</code>
	<code>\twemoji{grinning cat}</code>		<code>\twemoji{teddy bear}</code>
	<code>\twemoji{grinning cat with smiling eyes}</code>		<code>\twemoji{telephone}</code>
	<code>\twemoji{grinning face}</code>		<code>\twemoji{telephone receiver}</code>
	<code>\twemoji{grinning face with big eyes}</code>		<code>\twemoji{telescope}</code>
	<code>\twemoji{grinning face with smiling eyes}</code>		<code>\twemoji{television}</code>
	<code>\twemoji{grinning face with sweat}</code>		<code>\twemoji{tennis}</code>
	<code>\twemoji{grinning squinting face}</code>		<code>\twemoji{tent}</code>
	<code>\twemoji{growing heart}</code>		<code>\twemoji{test tube}</code>
	<code>\twemoji{guard}*</code>		<code>\twemoji{thinking face}</code>
	<code>\twemoji{guitar}</code>		<code>\twemoji{thong sandal}</code>
	<code>\twemoji{hammer}</code>		<code>\twemoji{thought balloon}</code>
	<code>\twemoji{hammer and pick}</code>		<code>\twemoji{thread}</code>
	<code>\twemoji{hammer and wrench}</code>		<code>\twemoji{thumbs down}*</code>
	<code>\twemoji{hand with fingers splayed}*</code>		<code>\twemoji{thumbs up}*</code>
	<code>\twemoji{handbag}</code>		<code>\twemoji{ticket}</code>
	<code>\twemoji{handshake}</code>		<code>\twemoji{tired face}</code>
	<code>\twemoji{headphones}</code>		<code>\twemoji{toilet}</code>
	<code>\twemoji{headstone}</code>		<code>\twemoji{Tokyo tower}</code>
	<code>\twemoji{health worker}*</code>		<code>\twemoji{tongue}</code>
	<code>\twemoji{hear-no-evil monkey}</code>		<code>\twemoji{toolbox}</code>
	<code>\twemoji{heart decoration}</code>		<code>\twemoji{tooth}</code>
	<code>\twemoji{heart exclamation}</code>		<code>\twemoji{toothbrush}</code>
	<code>\twemoji{heart with arrow}</code>		<code>\twemoji{TOP arrow}</code>
	<code>\twemoji{heart with ribbon}</code>		<code>\twemoji{top hat}</code>
	<code>\twemoji{heavy dollar sign}</code>		<code>\twemoji{trackball}</code>
	<code>\twemoji{herb}</code>		<code>\twemoji{trade mark}</code>
	<code>\twemoji{hibiscus}</code>		<code>\twemoji{transgender symbol}</code>

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	<code>\twemoji{high voltage}</code>		<code>\twemoji{triangular flag}</code>
	<code>\twemoji{high-heeled shoe}</code>		<code>\twemoji{triangular ruler}</code>
	<code>\twemoji{hiking boot}</code>		<code>\twemoji{trident emblem}</code>
	<code>\twemoji{hindu temple}</code>		<code>\twemoji{trophy}</code>
	<code>\twemoji{hole}</code>		<code>\twemoji{trumpet}</code>
	<code>\twemoji{hollow red circle}</code>		<code>\twemoji{tulip}</code>
	<code>\twemoji{hook}</code>		<code>\twemoji{two hearts}</code>
	<code>\twemoji{horse racing}*</code>		<code>\twemoji{umbrella}</code>
	<code>\twemoji{hospital}</code>		<code>\twemoji{umbrella on ground}</code>
	<code>\twemoji{hot face}</code>		<code>\twemoji{umbrella with rain drops}</code>
	<code>\twemoji{hot springs}</code>		<code>\twemoji{unamused face}</code>
	<code>\twemoji{hotel}</code>		<code>\twemoji{unlocked}</code>
	<code>\twemoji{house}</code>		<code>\twemoji{up arrow}</code>
	<code>\twemoji{house with garden}</code>		<code>\twemoji{UP! button}</code>
	<code>\twemoji{houses}</code>		<code>\twemoji{up-down arrow}</code>
	<code>\twemoji{hugging face}</code>		<code>\twemoji{up-left arrow}</code>
	<code>\twemoji{hundred points}</code>		<code>\twemoji{up-right arrow}</code>
	<code>\twemoji{hushed face}</code>		<code>\twemoji{upside-down face}</code>
	<code>\twemoji{hut}</code>		<code>\twemoji{upwards button}</code>
	<code>\twemoji{ice hockey}</code>		<code>\twemoji{vampire}*</code>
	<code>\twemoji{ice skate}</code>		<code>\twemoji{vibration mode}</code>
	<code>\twemoji{ID button}</code>		<code>\twemoji{victory hand}*</code>
	<code>\twemoji{inbox tray}</code>		<code>\twemoji{video camera}</code>
	<code>\twemoji{incoming envelope}</code>		<code>\twemoji{video game}</code>
	<code>\twemoji{index pointing up}*</code>		<code>\twemoji{videocassette}</code>
	<code>\twemoji{infinity}</code>		<code>\twemoji{violin}</code>
	<code>\twemoji{information}</code>		<code>\twemoji{Virgo}</code>
	<code>\twemoji{input latin letters}</code>		<code>\twemoji{volcano}</code>
	<code>\twemoji{input latin lowercase}</code>		<code>\twemoji{volleyball}</code>
	<code>\twemoji{input latin uppercase}</code>		<code>\twemoji{VS button}</code>
	<code>\twemoji{input numbers}</code>		<code>\twemoji{vulcan salute}*</code>
	<code>\twemoji{input symbols}</code>		<code>\twemoji{warning}</code>
	<code>\twemoji{jack-o-lantern}</code>		<code>\twemoji{wastebasket}</code>
	<code>\twemoji{Japanese ‘‘acceptable’’ button}</code>		<code>\twemoji{watch}</code>
	<code>\twemoji{Japanese ‘‘application’’ button}</code>		<code>\twemoji{water closet}</code>
	<code>\twemoji{Japanese ‘‘bargain’’ button}</code>		<code>\twemoji{water pistol}</code>
	<code>\twemoji{Japanese ‘‘congratulations’’ button}</code>		<code>\twemoji{water wave}</code>
	<code>\twemoji{Japanese ‘‘discount’’ button}</code>		<code>\twemoji{waving hand}*</code>
	<code>\twemoji{Japanese ‘‘free of charge’’ button}</code>		<code>\twemoji{wavy dash}</code>
	<code>\twemoji{Japanese ‘‘here’’ button}</code>		<code>\twemoji{weary cat}</code>

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	<code>\twemoji{Japanese ‘monthly amount’ button}</code>		<code>\twemoji{weary face}</code>
	<code>\twemoji{Japanese ‘no vacancy’ button}</code>		<code>\twemoji{wedding}</code>
	<code>\twemoji{Japanese ‘not free of charge’ button}</code>		<code>\twemoji{wheel of dharma}</code>
	<code>\twemoji{Japanese ‘open for business’ button}</code>		<code>\twemoji{wheelchair symbol}</code>
	<code>\twemoji{Japanese ‘passing grade’ button}</code>		<code>\twemoji{white cane}</code>
	<code>\twemoji{Japanese ‘prohibited’ button}</code>		<code>\twemoji{white circle}</code>
	<code>\twemoji{Japanese ‘reserved’ button}</code>		<code>\twemoji{white exclamation mark}</code>
	<code>\twemoji{Japanese ‘secret’ button}</code>		<code>\twemoji{white flag}</code>
	<code>\twemoji{Japanese ‘service charge’ button}</code>		<code>\twemoji{white flower}</code>
	<code>\twemoji{Japanese ‘vacancy’ button}</code>		<code>\twemoji{white hair}</code>
	<code>\twemoji{Japanese castle}</code>		<code>\twemoji{white heart}</code>
	<code>\twemoji{Japanese dolls}</code>		<code>\twemoji{white large square}</code>
	<code>\twemoji{Japanese post office}</code>		<code>\twemoji{white medium square}</code>
	<code>\twemoji{Japanese symbol for beginner}</code>		<code>\twemoji{white medium-small square}</code>
	<code>\twemoji{jeans}</code>		<code>\twemoji{white question mark}</code>
	<code>\twemoji{joker}</code>		<code>\twemoji{white small square}</code>
	<code>\twemoji{joystick}</code>		<code>\twemoji{white square button}</code>
	<code>\twemoji{judge}*</code>		<code>\twemoji{wilted flower}</code>
	<code>\twemoji{kaaba}</code>		<code>\twemoji{wind chime}</code>
	<code>\twemoji{key}</code>		<code>\twemoji{window}</code>
	<code>\twemoji{keyboard}</code>		<code>\twemoji{winking face}</code>
	<code>\twemoji{keycap: 0}</code>		<code>\twemoji{winking face with tongue}</code>
	<code>\twemoji{keycap: 1}</code>		<code>\twemoji{woman}*</code>
	<code>\twemoji{keycap: 2}</code>		<code>\twemoji{woman and man holding hands}*</code>
	<code>\twemoji{keycap: 3}</code>		<code>\twemoji{woman artist}*</code>
	<code>\twemoji{keycap: 4}</code>		<code>\twemoji{woman astronaut}*</code>
	<code>\twemoji{keycap: 5}</code>		<code>\twemoji{woman bouncing ball}*</code>
	<code>\twemoji{keycap: 6}</code>		<code>\twemoji{woman bowing}*</code>
	<code>\twemoji{keycap: 7}</code>		<code>\twemoji{woman cartwheeling}*</code>
	<code>\twemoji{keycap: 8}</code>		<code>\twemoji{woman climbing}*</code>
	<code>\twemoji{keycap: 9}</code>		<code>\twemoji{woman construction worker}*</code>
	<code>\twemoji{keycap: 10}</code>		<code>\twemoji{woman cook}*</code>
	<code>\twemoji{keycap: *}</code>		<code>\twemoji{woman dancing}*</code>
	<code>\twemoji{keycap: #}</code>		<code>\twemoji{woman detective}*</code>

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	<code>\twemoji{kimono}</code>		<code>\twemoji{woman elf}*</code>
	<code>\twemoji{kiss}*</code>		<code>\twemoji{woman facepalming}*</code>
	<code>\twemoji{kissing cat}</code>		<code>\twemoji{woman factory worker}*</code>
	<code>\twemoji{kissing face}</code>		<code>\twemoji{woman fairy}*</code>
	<code>\twemoji{kissing face with closed eyes}</code>		<code>\twemoji{woman farmer}*</code>
	<code>\twemoji{kissing face with smiling eyes}</code>		<code>\twemoji{woman feeding baby}*</code>
	<code>\twemoji{kitchen knife}</code>		<code>\twemoji{woman firefighter}*</code>
	<code>\twemoji{kite}</code>		<code>\twemoji{woman frowning}*</code>
	<code>\twemoji{knocked-out face}</code>		<code>\twemoji{woman genie}</code>
	<code>\twemoji{knot}</code>		<code>\twemoji{woman gesturing NO}*</code>
	<code>\twemoji{lab coat}</code>		<code>\twemoji{woman gesturing OK}*</code>
	<code>\twemoji{label}</code>		<code>\twemoji{woman getting haircut}*</code>
	<code>\twemoji{lacrosse}</code>		<code>\twemoji{woman getting massage}*</code>
	<code>\twemoji{ladder}</code>		<code>\twemoji{woman golfing}*</code>
	<code>\twemoji{large blue diamond}</code>		<code>\twemoji{woman guard}*</code>
	<code>\twemoji{large orange diamond}</code>		<code>\twemoji{woman health worker}*</code>
	<code>\twemoji{last track button}</code>		<code>\twemoji{woman in lotus position}*</code>
	<code>\twemoji{latin cross}</code>		<code>\twemoji{woman in manual wheelchair}*</code>
	<code>\twemoji{leaf fluttering in wind}</code>		<code>\twemoji{woman in motorized wheelchair}*</code>
	<code>\twemoji{ledger}</code>		<code>\twemoji{woman in steamy room}*</code>
	<code>\twemoji{left arrow}</code>		<code>\twemoji{woman in tuxedo}*</code>
	<code>\twemoji{left arrow curving right}</code>		<code>\twemoji{woman judge}*</code>
	<code>\twemoji{left speech bubble}</code>		<code>\twemoji{woman juggling}*</code>
	<code>\twemoji{left-facing fist}*</code>		<code>\twemoji{woman kneeling}*</code>
	<code>\twemoji{left-right arrow}</code>		<code>\twemoji{woman lifting weights}*</code>
	<code>\twemoji{leg}*</code>		<code>\twemoji{woman mage}*</code>
	<code>\twemoji{Leo}</code>		<code>\twemoji{woman mechanic}*</code>
	<code>\twemoji{level slider}</code>		<code>\twemoji{woman office worker}*</code>
	<code>\twemoji{Libra}</code>		<code>\twemoji{woman pilot}*</code>
	<code>\twemoji{light bulb}</code>		<code>\twemoji{woman playing handball}*</code>
	<code>\twemoji{light skin tone}</code>		<code>\twemoji{woman playing water polo}*</code>
	<code>\twemoji{link}</code>		<code>\twemoji{woman police officer}*</code>
	<code>\twemoji{linked paperclips}</code>		<code>\twemoji{woman pouting}*</code>
	<code>\twemoji{lipstick}</code>		<code>\twemoji{woman raising hand}*</code>
	<code>\twemoji{litter in bin sign}</code>		<code>\twemoji{woman running}*</code>
	<code>\twemoji{locked}</code>		<code>\twemoji{woman scientist}*</code>
	<code>\twemoji{locked with key}</code>		<code>\twemoji{woman shrugging}*</code>
	<code>\twemoji{locked with pen}</code>		<code>\twemoji{woman singer}*</code>
	<code>\twemoji{long drum}</code>		<code>\twemoji{woman standing}*</code>
	<code>\twemoji{lotion bottle}</code>		<code>\twemoji{woman student}*</code>
	<code>\twemoji{loudly crying face}</code>		<code>\twemoji{woman superhero}*</code>
	<code>\twemoji{loudspeaker}</code>		<code>\twemoji{woman supervillain}*</code>

(continued on next page)

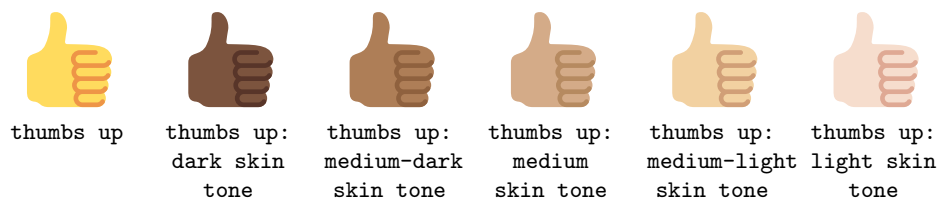
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	<code>\twemoji{love hotel}</code>		<code>\twemoji{woman surfing}*</code>
	<code>\twemoji{love letter}</code>		<code>\twemoji{woman swimming}*</code>
	<code>\twemoji{love-you gesture}*</code>		<code>\twemoji{woman teacher}*</code>
	<code>\twemoji{luggage}</code>		<code>\twemoji{woman technologist}*</code>
	<code>\twemoji{lungs}</code>		<code>\twemoji{woman tipping hand}*</code>
	<code>\twemoji{lying face}</code>		<code>\twemoji{woman vampire}*</code>
	<code>\twemoji{mage}*</code>		<code>\twemoji{woman walking}*</code>
	<code>\twemoji{magic wand}</code>		<code>\twemoji{woman wearing turban}*</code>
	<code>\twemoji{magnet}</code>		<code>\twemoji{woman with headscarf}*</code>
	<code>\twemoji{magnifying glass tilted left}</code>		<code>\twemoji{woman with veil}*</code>
	<code>\twemoji{magnifying glass tilted right}</code>		<code>\twemoji{woman with white cane}*</code>
	<code>\twemoji{mahjong red dragon}</code>		<code>\twemoji{woman zombie}</code>
	<code>\twemoji{male sign}</code>		<code>\twemoji{woman's boot}</code>
	<code>\twemoji{man}*</code>		<code>\twemoji{woman's clothes}</code>
	<code>\twemoji{man artist}*</code>		<code>\twemoji{woman's hat}</code>
	<code>\twemoji{man astronaut}*</code>		<code>\twemoji{woman's sandal}</code>
	<code>\twemoji{man bouncing ball}*</code>		<code>\twemoji{women holding hands}*</code>
	<code>\twemoji{man bowling}*</code>		<code>\twemoji{women with bunny ears}</code>
	<code>\twemoji{man cartwheeling}*</code>		<code>\twemoji{women wrestling}</code>
	<code>\twemoji{man climbing}*</code>		<code>\twemoji{women's room}</code>
	<code>\twemoji{man construction worker}*</code>		<code>\twemoji{wood}</code>
	<code>\twemoji{man cook}*</code>		<code>\twemoji{woozy face}</code>
	<code>\twemoji{man dancing}*</code>		<code>\twemoji{world map}</code>
	<code>\twemoji{man detective}*</code>		<code>\twemoji{worried face}</code>
	<code>\twemoji{man elf}*</code>		<code>\twemoji{wrapped gift}</code>
	<code>\twemoji{man facepalming}*</code>		<code>\twemoji{wrench}</code>
	<code>\twemoji{man factory worker}*</code>		<code>\twemoji{writing hand}*</code>
	<code>\twemoji{man fairy}*</code>		<code>\twemoji{yarn}</code>
	<code>\twemoji{man farmer}*</code>		<code>\twemoji{yawning face}</code>
	<code>\twemoji{man feeding baby}*</code>		<code>\twemoji{yellow circle}</code>
	<code>\twemoji{man firefighter}*</code>		<code>\twemoji{yellow heart}</code>
	<code>\twemoji{man frowning}*</code>		<code>\twemoji{yellow square}</code>
	<code>\twemoji{man genie}</code>		<code>\twemoji{yen banknote}</code>
	<code>\twemoji{man gesturing NO}*</code>		<code>\twemoji{yin yang}</code>
	<code>\twemoji{man gesturing OK}*</code>		<code>\twemoji{yo-yo}</code>
	<code>\twemoji{man getting haircut}*</code>		<code>\twemoji{zany face}</code>
	<code>\twemoji{man getting massage}*</code>		<code>\twemoji{zipper-mouth face}</code>
	<code>\twemoji{man golfing}*</code>		<code>\twemoji{zombie}</code>
	<code>\twemoji{man guard}*</code>		<code>\twemoji{zzz}</code>
	<code>\twemoji{man health worker}*</code>		

Most twemojis symbols have multiple names. Only the most descriptive name for each symbol is shown in this table.

All twemojis symbols are implemented as PDF graphics, not with a font. See also the hwemoji package, which enables direct Unicode entry of emoji characters in pdfL^AT_EX; the emoji package, which provides a LuaL^AT_EX interface to different underlying emoji fonts; and the emo package, which uses a font if possible, otherwise PDF graphics .

* Variants of this symbol portraying different colors and styles are not shown. For example, twemojis defines the following variants of “thumbs up”:



See the twemojis documentation for more information.

TABLE 633: fontawesome5 Faces

	<code>\faAngry</code>		<code>\faGrinWink</code>
	<code>\faAngry[regular]</code>		<code>\faGrinWink[regular]</code>
	<code>\faDizzy</code>		<code>\faKiss</code>
	<code>\faDizzy[regular]</code>		<code>\faKiss[regular]</code>
	<code>\faFlushed</code>		<code>\faKissBeam</code>
	<code>\faFlushed[regular]</code>		<code>\faKissBeam[regular]</code>
	<code>\faFrown</code>		<code>\faKissWinkHeart</code>
	<code>\faFrown[regular]</code>		<code>\faKissWinkHeart[regular]</code>
	<code>\faFrownOpen</code>		<code>\faLaugh</code>
	<code>\faFrownOpen[regular]</code>		<code>\faLaugh[regular]</code>
	<code>\faGrimace</code>		<code>\faLaughBeam</code>
	<code>\faGrimace[regular]</code>		<code>\faLaughBeam[regular]</code>
	<code>\faGrin*</code>		<code>\faLaughSquint</code>
	<code>\faGrin*</code>		<code>\faLaughSquint[regular]</code>
	<code>\faGrin</code>		<code>\faLaughWink</code>
	<code>\faGrin[regular]</code>		<code>\faLaughWink[regular]</code>
	<code>\faGrinBeam</code>		<code>\faMeh</code>
	<code>\faGrinBeam[regular]</code>		<code>\faMeh[regular]</code>
	<code>\faGrinBeamSweat</code>		<code>\faMehBlank</code>
	<code>\faGrinBeamSweat[regular]</code>		<code>\faMehBlank[regular]</code>

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	<code>\faGrinHearts</code>		<code>\faMehRollingEyes</code>
	<code>\faGrinHearts[regular]</code>		<code>\faMehRollingEyes[regular]</code>
	<code>\faGrinSquint</code>		<code>\faSadCry</code>
	<code>\faGrinSquint[regular]</code>		<code>\faSadCry[regular]</code>
	<code>\faGrinSquintTears</code>		<code>\faSadTear</code>
	<code>\faGrinSquintTears[regular]</code>		<code>\faSadTear[regular]</code>
	<code>\faGrinStars</code>		<code>\faSmile</code>
	<code>\faGrinStars[regular]</code>		<code>\faSmile[regular]</code>
	<code>\faGrinTears</code>		<code>\faSmileBeam</code>
	<code>\faGrinTears[regular]</code>		<code>\faSmileBeam[regular]</code>
	<code>\faGrinTongue</code>		<code>\faSmileWink</code>
	<code>\faGrinTongue[regular]</code>		<code>\faSmileWink[regular]</code>
	<code>\faGrinTongueSquint</code>		<code>\faSurprise</code>
	<code>\faGrinTongueSquint[regular]</code>		<code>\faSurprise[regular]</code>
	<code>\faGrinTongueWink</code>		<code>\faTired</code>
	<code>\faGrinTongueWink[regular]</code>		<code>\faTired[regular]</code>

TABLE 634: simpsons Characters from *The Simpsons*

	<code>\Bart</code>		<code>\Homer</code>		<code>\Maggie</code>		<code>\SNPP</code>
	<code>\Burns</code>		<code>\Lisa</code>		<code>\Marge</code>		

The location of the characters' pupils can be controlled with the `\Goofy` command. See *A METAFONT of 'Simpsons' characters* [Che98] for more information. Also, each of the above can be prefixed with `\Left` to make the character face left instead of right:

 `\Left\Bart`

TABLE 635: asapsym People

	<code>\asapCycling</code>		<code>\asapMaleAtDrinkingFountain</code>
	<code>\asapFemaleAdult</code>		<code>\asapMaleAtHelpDesk</code>
	<code>\asapFemaleAtDrinkingFountain</code>		<code>\asapMaleChild</code>
	<code>\asapFemaleAtHelpDesk</code>		<code>\asapMaleDiscardingTrash</code>
	<code>\asapFemaleChild</code>		<code>\asapMaleHoldingInfant</code>
	<code>\asapFemaleDiscardingTrash</code>		<code>\asapMaleWalking</code>
	<code>\asapFemaleHoldingInfant</code>		<code>\asapMaleWalkingDog</code>
	<code>\asapFemaleWalking</code>		<code>\asapMaleWalkingStroller</code>
	<code>\asapFemaleWalkingDog</code>		<code>\asapMaleWithChild</code>
	<code>\asapFemaleWalkingStroller</code>		<code>\asapMaleWithLuggageWaiting</code>
	<code>\asapFemaleWithChild</code>		<code>\asapMaleWithLuggageWaving</code>
	<code>\asapFemaleWithLuggageWaiting</code>		<code>\asapMaleWithServiceAnimal</code>
	<code>\asapFemaleWithLuggageWaving</code>		<code>\asapPregnant</code>
	<code>\asapFemaleWithServiceAnimal</code>		<code>\asapWaitingSeated</code>
	<code>\asapGroupMeeting</code>		<code>\asapWalkingCane</code>
	<code>\asapInfant</code>		<code>\asapWheelchairStationary</code>
	<code>\asapMaleAdult</code>		

asapsym requires either Lua $\text{\LaTeX}$ or X $\text{\LaTeX}$.

TABLE 636: utfsym People and Faces

	<code>\usym{1F464}</code>		<code>\usym{1F46C}</code>		<code>\usym{1F474}</code>		<code>\usym{1F47E}</code>
	<code>\usym{1F465}</code>		<code>\usym{1F46D}</code>		<code>\usym{1F475}</code>		<code>\usym{1F47F}</code>
	<code>\usym{1F466}</code>		<code>\usym{1F46E}</code>		<code>\usym{1F476}</code>		<code>\usym{1F480}</code>
	<code>\usym{1F467}</code>		<code>\usym{1F46F}</code>		<code>\usym{1F477}</code>		<code>\usym{1F481}</code>
	<code>\usym{1F468}</code>		<code>\usym{1F470}</code>		<code>\usym{1F478}</code>		<code>\usym{1F482}</code>
	<code>\usym{1F469}</code>		<code>\usym{1F471}</code>		<code>\usym{1F479}</code>		<code>\usym{1F483}</code>
	<code>\usym{1F46A}</code>		<code>\usym{1F472}</code>		<code>\usym{1F47A}</code>		<code>\usym{1F486}</code>
	<code>\usym{1F46B}</code>		<code>\usym{1F473}</code>		<code>\usym{1F47D}</code>		<code>\usym{1F487}</code>

All utfsym symbols are implemented with TikZ graphics, not with a font. In addition to `\usym`, the utfsym package defines `\usymH`, which renders a symbol at a given height, and `\usymW`, which renders a symbol at a given width. For example, “`\usymH{1F475}{36pt}`” produces



See the utfsym documentation for more information.

TABLE 637: sillypage Silly Walks

	<code>\sillystep{1}</code>		<code>\sillystep{5}</code>		<code>\sillystep{9}</code>
	<code>\sillystep{2}</code>		<code>\sillystep{6}</code>		<code>\sillystep{10}</code>
	<code>\sillystep{3}</code>		<code>\sillystep{7}</code>		<code>\sillystep{11}</code>
	<code>\sillystep{4}</code>		<code>\sillystep{8}</code>		<code>\sillystep{12}</code>

All sillypage symbols are implemented with PDF graphics, not with a font.

TABLE 638: typicons Users

	<code>\tiUser</code>		<code>\tiUserAddOutline</code>		<code>\tiUserDeleteOutline</code>
	<code>\tiUserAdd</code>		<code>\tiUserDelete</code>		<code>\tiUserOutline</code>

typicons requires either Lua_{TEX} or X_{TEX}.

TABLE 639: fontawesome5 Users

	<code>\faUser*</code>		<code>\faUserEdit</code>		<code>\faUsers</code>
	<code>\faUser</code>		<code>\faUserFriends</code>		<code>\faUsersCog</code>
	<code>\faUser[regular]</code>		<code>\faUserGraduate</code>		<code>\faUserSecret</code>
	<code>\faUserAltSlash</code>		<code>\faUserInjured</code>		<code>\faUserShield</code>
	<code>\faUserAstronaut</code>		<code>\faUserLock</code>		<code>\faUserSlash</code>
	<code>\faUserCheck</code>		<code>\faUserMd</code>		<code>\faUsersSlash</code>
	<code>\faUserCircle</code>		<code>\faUserMinus</code>		<code>\faUserTag</code>
	<code>\faUserCircle[regular]</code>		<code>\faUserNinja</code>		<code>\faUserTie</code>
	<code>\faUserClock</code>		<code>\faUserNurse</code>		<code>\faUserTimes</code>
	<code>\faUserCog</code>		<code>\faUserPlus</code>		

TABLE 640: scsnowman Snowmen

⌘ `\scsnowman`

* `\scsnowman` is drawn using TikZ. The command accepts a number of options for controlling the presence, appearance, and color of the snowman's body, eyes, nose, mouth, arms, hat, and more. See the `scsnowman` documentation for more information, but the following examples showcase a subset of the possibilities (drawn large for clarity):

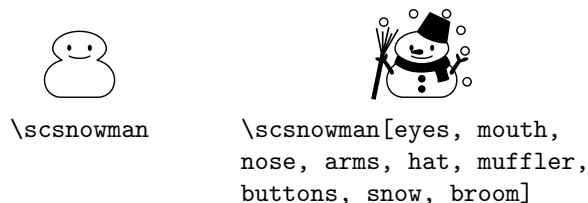


TABLE 641: typicons Files and Folders

	<code>\tiDocument</code>		<code>\tiDocumentText</code>		<code>\tiFolderDelete</code>
	<code>\tiDocumentAdd</code>		<code>\tiFolder</code>		<code>\tiFolderOpen</code>
	<code>\tiDocumentDelete</code>		<code>\tiFolderAdd</code>		

typicons requires either Lua $\text{\LaTeX}$ or X $\text{\LaTeX}$.

TABLE 642: fontawesome5 Files and Folders

	<code>\faFile*[regular]</code>		<code>\faFileExcel[regular]</code>		<code>\faFileSignature</code>
	<code>\faFile*</code>		<code>\faFileExport</code>		<code>\faFileUpload</code>
	<code>\faFile</code>		<code>\faFileImage</code>		<code>\faFileVideo</code>
	<code>\faFile[regular]</code>		<code>\faFileImage[regular]</code>		<code>\faFileVideo[regular]</code>
	<code>\faFileArchive</code>		<code>\faFileImport</code>		<code>\faFileWord</code>
	<code>\faFileArchive[regular]</code>		<code>\faFileInvoice</code>		<code>\faFileWord[regular]</code>
	<code>\faFileAudio</code>		<code>\faFileInvoiceDollar</code>		<code>\faFolder</code>
	<code>\faFileAudio[regular]</code>		<code>\faFileMedical*</code>		<code>\faFolder[regular]</code>
	<code>\faFileCode</code>		<code>\faFileMedical</code>		<code>\faFolderMinus</code>
	<code>\faFileCode[regular]</code>		<code>\faFilePdf</code>		<code>\faFolderOpen</code>
	<code>\faFileContract</code>		<code>\faFilePdf[regular]</code>		<code>\faFolderOpen[regular]</code>
	<code>\faFileCsv</code>		<code>\faFilePowerpoint</code>		<code>\faFolderPlus</code>
	<code>\faFileDownload</code>		<code>\faFilePowerpoint[regular]</code>		
	<code>\faFileExcel</code>		<code>\faFilePrescription</code>		

TABLE 643: fontawesome5 Religion

	<code>\faAnkh</code>		<code>\faKaaba</code>		<code>\faQuran</code>
	<code>\faBahai</code>		<code>\faKhanda</code>		<code>\faStarAndCrescent</code>
	<code>\faBible</code>		<code>\faMenorah</code>		<code>\faStarOfDavid</code>
	<code>\faChurch</code>		<code>\faMosque</code>		<code>\faSynagogue</code>
	<code>\faCross</code>		<code>\faOm</code>		<code>\faTorah</code>
	<code>\faDharmachakra</code>		<code>\faPastafarianism</code>		<code>\faToriiGate</code>
	<code>\faGopuram</code>		<code>\faPlaceOfWorship</code>		<code>\faVihara</code>
	<code>\faHamsa</code>		<code>\faPray</code>		<code>\faYinYang</code>
	<code>\faHanukiah</code>		<code>\faPrayingHands</code>		

TABLE 644: utfsym Religion

	<code>\usym{1F543}</code>		<code>\usym{1F545}</code>		<code>\usym{1F54B}</code>		<code>\usym{1F54D}</code>
	<code>\usym{1F544}</code>		<code>\usym{1F549}</code>		<code>\usym{1F54C}</code>		<code>\usym{1F54E}</code>

All `utfsym` symbols are implemented with `TikZ` graphics, not with a font. In addition to `\usym`, the `utfsym` package defines `\usymH`, which renders a symbol at a given height, and `\usymW`, which renders a symbol at a given width. For example, “`\usymH{1f54b}{36pt}`” produces



See the `utfsym` documentation for more information.

TABLE 645: asapsym Elevators, Escalators, and Stairs

	<code>\asapElevator</code>		<code>\asapEscalatorUp</code>		<code>\asapStairUp</code>
	<code>\asapEscalator</code>		<code>\asapStair</code>		
	<code>\asapEscalatorDown</code>		<code>\asapStairDown</code>		

`asapsym` requires either `LuaLATEX` or `XLLATEX`.

TABLE 646: Miscellaneous bclogo Symbols

	<code>\bcattention</code>		<code>\bcetoile</code>		<code>\bcpanchant</code>
	<code>\bcbombe</code>		<code>\bcfemme</code>		<code>\bcpeaceandlove</code>
	<code>\bcbook</code>		<code>\bcfeujaune</code>		<code>\bcpluie</code>
	<code>\bccalendrier</code>		<code>\bcfeurouge</code>		<code>\bcplume</code>
	<code>\bccle</code>		<code>\bcfeutricolore</code>		<code>\bcpoisson</code>
	<code>\bcclefa</code>		<code>\bcfeuvert</code>		<code>\bcquestion</code>
	<code>\bcclesol</code>		<code>\bcfleur</code>		<code>\bcrecyclage</code>
	<code>\bccoeur</code>		<code>\bchomme</code>		<code>\bcrosevents</code>
	<code>\bccrayon</code>		<code>\bchorloge</code>		<code>\bcsmbh</code>
	<code>\bccube</code>		<code>\bcicosaedre</code>		<code>\bcsmmh</code>
	<code>\bcdallemagne</code>		<code>\bcinfo</code>		<code>\bcsoleil</code>
	<code>\bcdanger</code>		<code>\bcinterdit</code>		<code>\bcspadesuit</code>
	<code>\bcdautriche</code>		<code>\bclampe</code>		<code>\bcstop</code>
	<code>\bcdbelgique</code>		<code>\bccloupe</code>		<code>\bctakecare</code>
	<code>\bcdbulgarie</code>		<code>\bcneige</code>		<code>\bctetraedre</code>
	<code>\bcdfrance</code>		<code>\bcnote</code>		<code>\bctrefle</code>
	<code>\bcditalie</code>		<code>\bcnucleaire</code>		<code>\bctrombone</code>
	<code>\bcdluxembourg</code>		<code>\bcocetaedre</code>		<code>\bcvaletcoeur</code>
	<code>\bcdodecaedre</code>		<code>\bcoeil</code>		<code>\bcvelo</code>
	<code>\bcdpaysbas</code>		<code>\bcorne</code>		<code>\bcyin</code>
	<code>\bcdz</code>		<code>\bcours</code>		

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 \bceclaircie  \bcoutil

All bclogo symbols are implemented with TikZ (or alternatively, PSTricks) graphics, not with a font. This is how the symbols shown above can include color.

TABLE 647: Miscellaneous utfsym Symbols

	\usym{1F300}		\usym{1F3EF}		\usym{1F4E3}		\usym{1F583}
	\usym{1F301}		\usym{1F3F0}		\usym{1F4E4}		\usym{1F584}
	\usym{1F302}		\usym{1F3F1}		\usym{1F4E5}		\usym{1F585}
	\usym{1F303}		\usym{1F3F2}		\usym{1F4E6}		\usym{1F586}
	\usym{1F304}		\usym{1F3F3}		\usym{1F4E7}		\usym{1F587}
	\usym{1F305}		\usym{1F3F4}		\usym{1F4E8}		\usym{1F588}
	\usym{1F306}		\usym{1F3F7}		\usym{1F4E9}		\usym{1F5A5}
	\usym{1F307}		\usym{1F3FA}		\usym{1F4EA}		\usym{1F5A6}
	\usym{1F308}		\usym{1F3FB}		\usym{1F4EB}		\usym{1F5A7}
	\usym{1F309}		\usym{1F3FC}		\usym{1F4EC}		\usym{1F5A8}
	\usym{1F30A}		\usym{1F3FD}		\usym{1F4ED}		\usym{1F5A9}
	\usym{1F30B}		\usym{1F3FE}		\usym{1F4EE}		\usym{1F5AA}
	\usym{1F30C}		\usym{1F3FF}		\usym{1F4EF}		\usym{1F5AB}
	\usym{1F30D}		\usym{1F43D}		\usym{1F4F0}		\usym{1F5AC}
	\usym{1F30E}		\usym{1F43E}		\usym{1F4F1}		\usym{1F5AD}
	\usym{1F30F}		\usym{1F440}		\usym{1F4F2}		\usym{1F5AE}
	\usym{1F310}		\usym{1F441}		\usym{1F4F3}		\usym{1F5AF}
	\usym{1F330}		\usym{1F442}		\usym{1F4F4}		\usym{1F5B0}
	\usym{1F358}		\usym{1F443}		\usym{1F4F5}		\usym{1F5B1}
	\usym{1F359}		\usym{1F444}		\usym{1F4F6}		\usym{1F5B2}
	\usym{1F380}		\usym{1F445}		\usym{1F4F7}		\usym{1F5B3}
	\usym{1F381}		\usym{1F463}		\usym{1F4F8}		\usym{1F5B5}
	\usym{1F383}		\usym{1F47B}		\usym{1F4F9}		\usym{1F5B6}
	\usym{1F384}		\usym{1F47C}		\usym{1F4FA}		\usym{1F5B7}
	\usym{1F385}		\usym{1F484}		\usym{1F4FB}		\usym{1F5B8}
	\usym{1F386}		\usym{1F485}		\usym{1F4FC}		\usym{1F5B9}
	\usym{1F387}		\usym{1F488}		\usym{1F4FD}		\usym{1F5BA}
	\usym{1F388}		\usym{1F489}		\usym{1F4FE}		\usym{1F5BB}
	\usym{1F389}		\usym{1F48A}		\usym{1F4FF}		\usym{1F5BC}
	\usym{1F38A}		\usym{1F4A0}		\usym{1F50B}		\usym{1F5BD}
	\usym{1F38B}		\usym{1F4A1}		\usym{1F50C}		\usym{1F5BE}
	\usym{1F38C}		\usym{1F4A2}		\usym{1F50D}		\usym{1F5BF}
	\usym{1F38D}		\usym{1F4A3}		\usym{1F50E}		\usym{1F5C0}

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	<code>\usym{1F38E}</code>		<code>\usym{1F4A4}</code>		<code>\usym{1F50F}</code>		<code>\usym{1F5C1}</code>
	<code>\usym{1F38F}</code>		<code>\usym{1F4A5}</code>		<code>\usym{1F510}</code>		<code>\usym{1F5C2}</code>
	<code>\usym{1F390}</code>		<code>\usym{1F4A6}</code>		<code>\usym{1F511}</code>		<code>\usym{1F5C3}</code>
	<code>\usym{1F391}</code>		<code>\usym{1F4A7}</code>		<code>\usym{1F512}</code>		<code>\usym{1F5C4}</code>
	<code>\usym{1F392}</code>		<code>\usym{1F4A8}</code>		<code>\usym{1F513}</code>		<code>\usym{1F5C5}</code>
	<code>\usym{1F393}</code>		<code>\usym{1F4A9}</code>		<code>\usym{1F514}</code>		<code>\usym{1F5C6}</code>
	<code>\usym{1F395}</code>		<code>\usym{1F4AA}</code>		<code>\usym{1F515}</code>		<code>\usym{1F5C7}</code>
	<code>\usym{1F396}</code>		<code>\usym{1F4AB}</code>		<code>\usym{1F516}</code>		<code>\usym{1F5C8}</code>
	<code>\usym{1F397}</code>		<code>\usym{1F4AC}</code>		<code>\usym{1F517}</code>		<code>\usym{1F5C9}</code>
	<code>\usym{1F398}</code>		<code>\usym{1F4AD}</code>		<code>\usym{1F518}</code>		<code>\usym{1F5CA}</code>
	<code>\usym{1F399}</code>		<code>\usym{1F4AE}</code>		<code>\usym{1F519}</code>		<code>\usym{1F5CB}</code>
	<code>\usym{1F39A}</code>		<code>\usym{1F4AF}</code>		<code>\usym{1F51A}</code>		<code>\usym{1F5CC}</code>
	<code>\usym{1F39B}</code>		<code>\usym{1F4B0}</code>		<code>\usym{1F51B}</code>		<code>\usym{1F5CD}</code>
	<code>\usym{1F39E}</code>		<code>\usym{1F4B1}</code>		<code>\usym{1F51C}</code>		<code>\usym{1F5CE}</code>
	<code>\usym{1F39F}</code>		<code>\usym{1F4B2}</code>		<code>\usym{1F51D}</code>		<code>\usym{1F5CF}</code>
	<code>\usym{1F3A0}</code>		<code>\usym{1F4B3}</code>		<code>\usym{1F51E}</code>		<code>\usym{1F5D0}</code>
	<code>\usym{1F3A1}</code>		<code>\usym{1F4B4}</code>		<code>\usym{1F51F}</code>		<code>\usym{1F5D1}</code>
	<code>\usym{1F3A2}</code>		<code>\usym{1F4B5}</code>		<code>\usym{1F520}</code>		<code>\usym{1F5D2}</code>
	<code>\usym{1F3A3}</code>		<code>\usym{1F4B6}</code>		<code>\usym{1F521}</code>		<code>\usym{1F5D3}</code>
	<code>\usym{1F3A4}</code>		<code>\usym{1F4B7}</code>		<code>\usym{1F522}</code>		<code>\usym{1F5D4}</code>
	<code>\usym{1F3A5}</code>		<code>\usym{1F4B8}</code>		<code>\usym{1F523}</code>		<code>\usym{1F5D6}</code>
	<code>\usym{1F3A6}</code>		<code>\usym{1F4B9}</code>		<code>\usym{1F524}</code>		<code>\usym{1F5D7}</code>
	<code>\usym{1F3A7}</code>		<code>\usym{1F4BA}</code>		<code>\usym{1F525}</code>		<code>\usym{1F5D8}</code>
	<code>\usym{1F3A8}</code>		<code>\usym{1F4BB}</code>		<code>\usym{1F526}</code>		<code>\usym{1F5D9}</code>
	<code>\usym{1F3A9}</code>		<code>\usym{1F4BC}</code>		<code>\usym{1F527}</code>		<code>\usym{1F5DA}</code>
	<code>\usym{1F3AA}</code>		<code>\usym{1F4BD}</code>		<code>\usym{1F528}</code>		<code>\usym{1F5DB}</code>
	<code>\usym{1F3AB}</code>		<code>\usym{1F4BE}</code>		<code>\usym{1F529}</code>		<code>\usym{1F5DC}</code>
	<code>\usym{1F3AC}</code>		<code>\usym{1F4BF}</code>		<code>\usym{1F52A}</code>		<code>\usym{1F5DD}</code>
	<code>\usym{1F3AD}</code>		<code>\usym{1F4C0}</code>		<code>\usym{1F52B}</code>		<code>\usym{1F5DE}</code>
	<code>\usym{1F3B4}</code>		<code>\usym{1F4C1}</code>		<code>\usym{1F52C}</code>		<code>\usym{1F5DF}</code>
	<code>\usym{1F3B7}</code>		<code>\usym{1F4C2}</code>		<code>\usym{1F52D}</code>		<code>\usym{1F5E0}</code>
	<code>\usym{1F3B8}</code>		<code>\usym{1F4C3}</code>		<code>\usym{1F52E}</code>		<code>\usym{1F5E1}</code>
	<code>\usym{1F3B9}</code>		<code>\usym{1F4C4}</code>		<code>\usym{1F530}</code>		<code>\usym{1F5E2}</code>
	<code>\usym{1F3BA}</code>		<code>\usym{1F4C5}</code>		<code>\usym{1F531}</code>		<code>\usym{1F5E3}</code>
	<code>\usym{1F3BB}</code>		<code>\usym{1F4C6}</code>		<code>\usym{1F532}</code>		<code>\usym{1F5E4}</code>
	<code>\usym{1F3BD}</code>		<code>\usym{1F4C7}</code>		<code>\usym{1F533}</code>		<code>\usym{1F5E5}</code>
	<code>\usym{1F3D4}</code>		<code>\usym{1F4C8}</code>		<code>\usym{1F53E}</code>		<code>\usym{1F5E6}</code>
	<code>\usym{1F3D5}</code>		<code>\usym{1F4C9}</code>		<code>\usym{1F53F}</code>		<code>\usym{1F5E7}</code>
	<code>\usym{1F3D6}</code>		<code>\usym{1F4CA}</code>		<code>\usym{1F540}</code>		<code>\usym{1F5E8}</code>
	<code>\usym{1F3D7}</code>		<code>\usym{1F4CB}</code>		<code>\usym{1F541}</code>		<code>\usym{1F5E9}</code>
	<code>\usym{1F3D8}</code>		<code>\usym{1F4CC}</code>		<code>\usym{1F542}</code>		<code>\usym{1F5EA}</code>
	<code>\usym{1F3D9}</code>		<code>\usym{1F4CD}</code>		<code>\usym{1F54F}</code>		<code>\usym{1F5EB}</code>
	<code>\usym{1F3DA}</code>		<code>\usym{1F4CE}</code>		<code>\usym{1F56B}</code>		<code>\usym{1F5EC}</code>
	<code>\usym{1F3DB}</code>		<code>\usym{1F4CF}</code>		<code>\usym{1F56C}</code>		<code>\usym{1F5ED}</code>
	<code>\usym{1F3DC}</code>		<code>\usym{1F4D0}</code>		<code>\usym{1F56D}</code>		<code>\usym{1F5EE}</code>
	<code>\usym{1F3DD}</code>		<code>\usym{1F4D1}</code>		<code>\usym{1F56E}</code>		<code>\usym{1F5EF}</code>

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	<code>\usym{1F3DE}</code>		<code>\usym{1F4D2}</code>		<code>\usym{1F56F}</code>		<code>\usym{1F5F0}</code>
	<code>\usym{1F3DF}</code>		<code>\usym{1F4D3}</code>		<code>\usym{1F571}</code>		<code>\usym{1F5F1}</code>
	<code>\usym{1F3E0}</code>		<code>\usym{1F4D4}</code>		<code>\usym{1F572}</code>		<code>\usym{1F5F2}</code>
	<code>\usym{1F3E1}</code>		<code>\usym{1F4D5}</code>		<code>\usym{1F574}</code>		<code>\usym{1F5F3}</code>
	<code>\usym{1F3E2}</code>		<code>\usym{1F4D6}</code>		<code>\usym{1F575}</code>		<code>\usym{1F5FA}</code>
	<code>\usym{1F3E3}</code>		<code>\usym{1F4D7}</code>		<code>\usym{1F577}</code>		<code>\usym{1F5FB}</code>
	<code>\usym{1F3E4}</code>		<code>\usym{1F4D8}</code>		<code>\usym{1F578}</code>		<code>\usym{1F5FC}</code>
	<code>\usym{1F3E5}</code>		<code>\usym{1F4D9}</code>		<code>\usym{1F579}</code>		<code>\usym{1F5FD}</code>
	<code>\usym{1F3E6}</code>		<code>\usym{1F4DA}</code>		<code>\usym{1F57A}</code>		<code>\usym{1F5FE}</code>
	<code>\usym{1F3E7}</code>		<code>\usym{1F4DB}</code>		<code>\usym{1F57B}</code>		<code>\usym{1F5FF}</code>
	<code>\usym{1F3E8}</code>		<code>\usym{1F4DC}</code>		<code>\usym{1F57C}</code>		<code>\usym{1F573}</code>
	<code>\usym{1F3E9}</code>		<code>\usym{1F4DD}</code>		<code>\usym{1F57D}</code>		<code>\usym{1F576}</code>
	<code>\usym{1F3EA}</code>		<code>\usym{1F4DE}</code>		<code>\usym{1F57E}</code>		<code>\usym{1F5B4}</code>
	<code>\usym{1F3EB}</code>		<code>\usym{1F4DF}</code>		<code>\usym{1F57F}</code>		<code>\usym{1F5D5}</code>
	<code>\usym{1F3EC}</code>		<code>\usym{1F4E0}</code>		<code>\usym{1F580}</code>		
	<code>\usym{1F3ED}</code>		<code>\usym{1F4E1}</code>		<code>\usym{1F581}</code>		
	<code>\usym{1F3EE}</code>		<code>\usym{1F4E2}</code>		<code>\usym{1F582}</code>		

All `utfsym` symbols are implemented with `TikZ` graphics, not with a font. In addition to `\usym`, the `utfsym` package defines `\usymH`, which renders a symbol at a given height, and `\usymW`, which renders a symbol at a given width. See the `utfsym` documentation for more information.

TABLE 648: typicons Brand Icons

	<code>\tiDropbox</code>		<code>\tiSocialLinkedinCircular</code>
	<code>\tiSocialAtCircular</code>		<code>\tiSocialPinterest</code>
	<code>\tiSocialDribbble</code>		<code>\tiSocialPinterestCircular</code>
	<code>\tiSocialDribbbleCircular</code>		<code>\tiSocialSkype</code>
	<code>\tiSocialFacebook</code>		<code>\tiSocialSkypeOutline</code>
	<code>\tiSocialFacebookCircular</code>		<code>\tiSocialTumbler</code>
	<code>\tiSocialFlickr</code>		<code>\tiSocialTumblerCircular</code>
	<code>\tiSocialFlickrCircular</code>		<code>\tiSocialTwitter</code>
	<code>\tiSocialGithub</code>		<code>\tiSocialTwitterCircular</code>
	<code>\tiSocialGithubCircular</code>		<code>\tiSocialVimeo</code>
	<code>\tiSocialGooglePlus</code>		<code>\tiSocialVimeoCircular</code>
	<code>\tiSocialGooglePlusCircular</code>		<code>\tiSocialYoutube</code>
	<code>\tiSocialInstagram</code>		<code>\tiSocialYoutubeCircular</code>
	<code>\tiSocialInstagramCircular</code>		<code>\tiVendorAndroid</code>
	<code>\tiSocialLastFm</code>		<code>\tiVendorApple</code>
	<code>\tiSocialLastFmCircular</code>		<code>\tiVendorMicrosoft</code>
	<code>\tiSocialLinkedin</code>		

`typicons` requires either `LuaATEX` or `XYLATEX`.

TABLE 649: fontawesome5 Brand Icons

	\faAccessibleIcon		\faGit		\faRaspberryPi
	\faAccusoft		\faGithub*		\faRavelry
	\faAcquisitionsIncorporated		\faGithub		\faReact
	\faAdn		\faGithubSquare		\faReactEurope
	\faAdversal		\faGitkraken		\faReadme
	\faAffiliatetheme		\faGitlab		\faRebel
	\faAirbnb		\faGitSquare		\faReddit
	\faAlgolia		\faGitter		\faRedditAlien
	\faAlipay		\faGlide		\faRedditSquare
	\faAmazon		\faGlideG		\faRedhat
	\faAmazonPay		\faGofore		\faRedRiver
	\faAmilia		\faGoodreads		\faRenren
	\faAndroid		\faGoodreadsG		\faReplyd
	\faAngellist		\faGoogle		\faResearchgate
	\faAngrycreative		\faGoogleDrive		\faResolving
	\faAngular		\faGooglePay		\faRev
	\faApper		\faGooglePlay		\faRocketchat
	\faApple		\faGooglePlus		\faRockrms
	\faApplePay		\faGooglePlusG		\faRProject
	\faAppStore		\faGooglePlusSquare		\faRust
	\faAppStoreIos		\faGoogleWallet		\faSafari
	\faArtstation		\faGratipay		\faSalesforce
	\faAsymmetrik		\faGrav		\faSass
	\faAtlassian		\faGripfire		\faSchlix
	\faAudible		\faGrunt		\faScribd
	\faAutoprefixer		\faGuilded		\faSearchengin
	\faAvianex		\faGulp		\faSellcast
	\faAviato		\faHackerNews		\faSellsy
	\faAws		\faHackerNewsSquare		\faServicestack
	\faBandcamp		\faHackerrank		\faShirtsinbulk
	\faBattleNet		\faHips		\faShopify
	\faBehance		\faHireAHelper		\faShopware
	\faBehanceSquare		\faHive		\faSimplybuilt
	\faBimobject		\faHooli		\faSistrix
	\faBitbucket		\faHornbill		\faSith
	\faBitcoin		\faHotjar		\faSketch
	\faBity		\faHouzz		\faSkyatlas
	\faBlackberry		\faHtml5		\faSkype
	\faBlackTie		\faHubspot		\faSlack
	\faBlogger		\faIcon{500px}		\faSlackHash
	\faBloggerB		\faIdeal		\faSlideshare
	\faBluetooth		\faImdb		\faSnapchat
	\faBluetoothB		\faInnosoft		\faSnapchatGhost

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	<code>\faBootstrap</code>		<code>\faInstagram</code>		<code>\faSnapchatSquare</code>
	<code>\faBuffer</code>		<code>\faInstagramSquare</code>		<code>\faSoundcloud</code>
	<code>\faBuromobelexperte</code>		<code>\faInstalod</code>		<code>\faSourcetree</code>
	<code>\faBuyNLarge</code>		<code>\faIntercom</code>		<code>\faSpeakap</code>
	<code>\faBuysellads</code>		<code>\faInternetExplorer</code>		<code>\faSpeakerDeck</code>
	<code>\faCanadianMapleLeaf</code>		<code>\faInvision</code>		<code>\faSpotify</code>
	<code>\faCcAmazonPay</code>		<code>\faIoxhost</code>		<code>\faSquarespace</code>
	<code>\faCcAmex</code>		<code>\faItchIo</code>		<code>\faStackExchange</code>
	<code>\faCcApplePay</code>		<code>\faItunes</code>		<code>\faStackOverflow</code>
	<code>\faCcDinersClub</code>		<code>\faItunesNote</code>		<code>\faStackpath</code>
	<code>\faCcDiscover</code>		<code>\faJava</code>		<code>\faStaylinked</code>
	<code>\faCcJcb</code>		<code>\faJedi</code>		<code>\faSteam</code>
	<code>\faCcMastercard</code>		<code>\faJediOrder</code>		<code>\faSteamSquare</code>
	<code>\faCcPaypal</code>		<code>\faJenkins</code>		<code>\faSteamSymbol</code>
	<code>\faCcStripe</code>		<code>\faJira</code>		<code>\faStickerMule</code>
	<code>\faCcVisa</code>		<code>\faJoget</code>		<code>\faStrava</code>
	<code>\faCentercode</code>		<code>\faJoomla</code>		<code>\faStripe</code>
	<code>\faCentos</code>		<code>\faJs</code>		<code>\faStripeS</code>
	<code>\faChrome</code>		<code>\faJsFiddle</code>		<code>\faStudiovinari</code>
	<code>\faChromecast</code>		<code>\faJsSquare</code>		<code>\faStumbleupon</code>
	<code>\faCloudflare</code>		<code>\faKaggle</code>		<code>\faStumbleuponCircle</code>
	<code>\faCloudscale</code>		<code>\faKeybase</code>		<code>\faSuperpowers</code>
	<code>\faCloudsmith</code>		<code>\faKeycdn</code>		<code>\faSupple</code>
	<code>\faCloudversify</code>		<code>\faKickstarter</code>		<code>\faSuse</code>
	<code>\faCodepen</code>		<code>\faKickstarterK</code>		<code>\faSwift</code>
	<code>\faCodiepie</code>		<code>\faKorvue</code>		<code>\faSymfony</code>
	<code>\faConfluence</code>		<code>\faLaravel</code>		<code>\faTeamspeak</code>
	<code>\faConnectdevelop</code>		<code>\faLastfm</code>		<code>\faTelegram</code>
	<code>\faContao</code>		<code>\faLastfmSquare</code>		<code>\faTelegramPlane</code>
	<code>\faCottonBureau</code>		<code>\faLeanpub</code>		<code>\faTencentWeibo</code>
	<code>\faCpanel</code>		<code>\faLess</code>		<code>\faThemeco</code>
	<code>\faCriticalRole</code>		<code>\faLine</code>		<code>\faThemeisle</code>
	<code>\faCss3</code>		<code>\faLinkedin</code>		<code>\faTheRedYeti</code>
	<code>\faCuttlefish</code>		<code>\faLinkedinIn</code>		<code>\faThinkPeaks</code>
	<code>\faDailymotion</code>		<code>\faLinode</code>		<code>\faTikTok</code>
	<code>\faDAndD</code>		<code>\faLinux</code>		<code>\faTradeFederation</code>
	<code>\faDAndDBeyond</code>		<code>\faLyft</code>		<code>\faTrello</code>
	<code>\faDashcube</code>		<code>\faMagento</code>		<code>\faTumblr</code>
	<code>\faDeezer</code>		<code>\faMailchimp</code>		<code>\faTumblrSquare</code>
	<code>\faDelicious</code>		<code>\faMandalorian</code>		<code>\faTwitch</code>
	<code>\faDeploydog</code>		<code>\faMarkdown</code>		<code>\faTwitter</code>
	<code>\faDeskpro</code>		<code>\faMastodon</code>		<code>\faTwitterSquare</code>
	<code>\faDev</code>		<code>\faMaxcdn</code>		<code>\faTypo3</code>
	<code>\faDeviantart</code>		<code>\faMdb</code>		<code>\faUber</code>
	<code>\faDhl</code>		<code>\faMedapps</code>		<code>\faUbuntu</code>

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	\faDiaspora		\faMedium		\faUIKit
	\faDigg		\faMediumM		\faUmbraco
	\faDigitalOcean		\faMedrt		\faUncharted
	\faDiscord		\faMeetup		\faUniregistry
	\faDiscourse		\faMegaport		\faUnity
	\faDochub		\faMendeley		\faUnsplash
	\faDocker		\faMicroblog		\faUntappd
	\faDraft2digital		\faMicrosoft		\faUps
	\faDropbox		\faMix		\faUsb
	\faDrupal		\faMixcloud		\faUsps
	\faDyalog		\faMixer		\faUssunnah
	\faEarlybirds		\faMizuni		\faVaadin
	\faEbay		\faModx		\faViacoin
	\faEdge		\faMonero		\faViadeo
	\faEdgeLegacy		\faNapster		\faViadeoSquare
	\faElementor		\faNeos		\faViber
	\faEllo		\faNimblr		\faVimeo
	\faEmber		\faNode		\faVimeoSquare
	\faEmpire		\faNodeJs		\faVimeoV
	\faEnvira		\faNpm		\faVine
	\faErlang		\faNs8		\faVk
	\faEthereum		\faNutritionix		\faVnv
	\faEtsy		\faOctopusDeploy		\faVuejs
	\faEvernote		\faOdnoklassniki		\faWatchmanMonitoring
	\faExpeditedssl		\faOdnoklassnikiSquare		\faWaze
	\faFacebook		\faOldRepublic		\faWeebly
	\faFacebookF		\faOpencart		\faWeibo
	\faFacebookMessenger		\faOpenid		\faWeixin
	\faFacebookSquare		\faOpera		\faWhatsapp
	\faFantasyFlightGames		\faOptinMonster		\faWhatsappSquare
	\faFedex		\faOrcid		\faWhmcs
	\faFedora		\faOsi		\faWikipediaW
	\faFigma		\faPage4		\faWindows
	\faFirefox		\faPagelines		\faWix
	\faFirefoxBrowser		\faPalfed		\faWizardsOfTheCoast
	\faFirstdraft		\faPatreon		\faWodu
	\faFirstOrder*		\faPaypal		\faWolfPackBattalion
	\faFirstOrder		\faPennyArcade		\faWordPress
	\faFlickr		\faPerbyte		\faWordPressSimple
	\faFlipboard		\faPeriscope		\faWpbeginner
	\faFly		\faPhabricator		\faWpexplorer
	\faFontAwesome*		\faPhoenixFramework		\faWpforms
	\faFontAwesome		\faPhoenixSquadron		\faWpressr
	\faFontAwesomeFlag		\faPhp		\faXbox
	\faFonticons		\faPiedPiper*		\faXing

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	<code>\faFonticonsFi</code>		<code>\faPiedPiper</code>		<code>\faXingSquare</code>
	<code>\faFortAwesome*</code>		<code>\faPiedPiperHat</code>		<code>\faYahoo</code>
	<code>\faFortAwesome</code>		<code>\faPiedPiperPp</code>		<code>\faYammer</code>
	<code>\faForumbee</code>		<code>\faPiedPiperSquare</code>		<code>\faYandex</code>
	<code>\faFoursquare</code>		<code>\faPinterest</code>		<code>\faYandexInternational</code>
	<code>\faFreebsd</code>		<code>\faPinterestP</code>		<code>\faYarn</code>
	<code>\faFreeCodeCamp</code>		<code>\faPinterestSquare</code>		<code>\faYCombinator</code>
	<code>\faFulcrum</code>		<code>\faPlaystation</code>		<code>\faYelp</code>
	<code>\faGalacticRepublic</code>		<code>\faProductHunt</code>		<code>\faYoast</code>
	<code>\faGalacticSenate</code>		<code>\faPushed</code>		<code>\faYoutube</code>
	<code>\faGetPocket</code>		<code>\faPython</code>		<code>\faYoutubeSquare</code>
	<code>\faGg</code>		<code>\faQq</code>		<code>\faZhihu</code>
	<code>\faGgCircle</code>		<code>\faQuinscape</code>		
	<code>\faGit*</code>		<code>\faQuora</code>		

TABLE 650: fontmizz Brand Icons

	<code>\mfAlpinelinux</code>		<code>\mfGoogle</code>		<code>\mfNpm</code>
	<code>\mfAngular</code>		<code>\mfGoogleAlt</code>		<code>\mfObjc</code>
	<code>\mfAngularAlt</code>		<code>\mfGoogleCode</code>		<code>\mfOpenshift</code>
	<code>\mfApache</code>		<code>\mfGoogleDevelopers</code>		<code>\mfOracle</code>
	<code>\mfArchlinux</code>		<code>\mfGradle</code>		<code>\mfOracleAlt</code>
	<code>\mfAws</code>		<code>\mfGrails</code>		<code>\mfOsx</code>
	<code>\mfAzure</code>		<code>\mfGrailsAlt</code>		<code>\mfPerl</code>
	<code>\mfBackbone</code>		<code>\mfGrunt</code>		<code>\mfPhp</code>
	<code>\mfBlackberry</code>		<code>\mfGulp</code>		<code>\mfPhpAlt</code>
	<code>\mfBootstrap</code>		<code>\mfGulpAlt</code>		<code>\mfPlayframework</code>
	<code>\mfC</code>		<code>\mfHadoop</code>		<code>\mfPlayframeworkAlt</code>
	<code>\mfCassandra</code>		<code>\mfHaskell</code>		<code>\mfPlone</code>
	<code>\mfCentos</code>		<code>\mfHeroku</code>		<code>\mfPostgres</code>
	<code>\mfClojure</code>		<code>\mfHtml</code>		<code>\mfPostgresAlt</code>
	<code>\mfCodeigniter</code>		<code>\mfHtmlfive</code>		<code>\mfPython</code>
	<code>\mfCodepen</code>		<code>\mfHtmlfiveAlt</code>		<code>\mfRaspberrypi</code>
	<code>\mfCoffeeBean</code>		<code>\mfJava</code>		<code>\mfReactjs</code>
	<code>\mfCplusplus</code>		<code>\mfJavaBold</code>		<code>\mfRedhat</code>
	<code>\mfCsharp</code>		<code>\mfJavaDuke</code>		<code>\mfRedis</code>
	<code>\mfCss</code>		<code>\mfJavascript</code>		<code>\mfRuby</code>

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	<code>\mfCssthree</code>		<code>\mfJavascriptAlt</code>		<code>\mfRubyOnRails</code>
	<code>\mfCssthreeAlt</code>		<code>\mfJetty</code>		<code>\mfRubyOnRailsAlt</code>
	<code>\mfDebian</code>		<code>\mfJquery</code>		<code>\mfRust</code>
	<code>\mfDocker</code>		<code>\mfKde</code>		<code>\mfSass</code>
	<code>\mfDreamhost</code>		<code>\mfLaravel</code>		<code>\mfSatellite</code>
	<code>\mfDthree</code>		<code>\mfLinuxMint</code>		<code>\mfScala</code>
	<code>\mfElixir</code>		<code>\mfLooking</code>		<code>\mfScalaAlt</code>
	<code>\mfElm</code>		<code>\mfMagento</code>		<code>\mfSitefinity</code>
	<code>\mfErlang</code>		<code>\mfMariadb</code>		<code>\mfSolaris</code>
	<code>\mfExherbo</code>		<code>\mfMaven</code>		<code>\mfSpring</code>
	<code>\mfFedora</code>		<code>\mfMongodb</code>		<code>\mfSuse</code>
	<code>\mfFireAlt</code>		<code>\mfMssql</code>		<code>\mfSvg</code>
	<code>\mfFreebsd</code>		<code>\mfMysql</code>		<code>\mfSymfony</code>
	<code>\mfFreecodecamp</code>		<code>\mfMysqlAlt</code>		<code>\mfThredprint</code>
	<code>\mfGentoo</code>		<code>\mfNetbsd</code>		<code>\mfTomcat</code>
	<code>\mfGit</code>		<code>\mfNginx</code>		<code>\mfUbuntu</code>
	<code>\mfGnome</code>		<code>\mfNginxAlt</code>		<code>\mfUnity</code>
	<code>\mfGo</code>		<code>\mfNginxAlttwo</code>		<code>\mfWordpress</code>
	<code>\mfGoAlt</code>		<code>\mfNodejs</code>		<code>\mfXe eleven</code>

fontmiffz requires either Lua $\text{\LaTeX}$ or X $\text{\LaTeX}$.

TABLE 651: fontawesome5 Medical Symbols

	<code>\faAllergies</code>		<code>\faFirstAid</code>		<code>\faPills</code>
	<code>\faAmbulance</code>		<code>\faHeadSideCough</code>		<code>\faPrescription</code>
	<code>\faBacteria</code>		<code>\faHeadSideCoughSlash</code>		<code>\faPrescriptionBottle*</code>
	<code>\faBacterium</code>		<code>\faHeadSideMask</code>		<code>\faPrescriptionBottle</code>
	<code>\faBandAid</code>		<code>\faHeadSideVirus</code>		<code>\faProcedures</code>
	<code>\faBiohazard</code>		<code>\faHeartbeat</code>		<code>\faPumpMedical</code>
	<code>\faBookMedical</code>		<code>\faHospital*</code>		<code>\faShieldVirus</code>
	<code>\faBrain</code>		<code>\faHospital</code>		<code>\faStethoscope</code>
	<code>\faBriefcaseMedical</code>		<code>\faHospital[regular]</code>		<code>\faSyringe</code>
	<code>\faCapsules</code>		<code>\faHospitalSymbol</code>		<code>\faTablets</code>
	<code>\faClinicMedical</code>		<code>\faHospitalUser</code>		<code>\faVirus</code>
	<code>\faCommentMedical</code>		<code>\faLaptopMedical</code>		<code>\faViruses</code>
	<code>\faCrutch</code>		<code>\faLungs</code>		<code>\faVirusSlash</code>
	<code>\faDiagnoses</code>		<code>\faLungsVirus</code>		<code>\faXRay</code>
	<code>\faDisease</code>		<code>\faMedkit</code>		
	<code>\faDna</code>		<code>\faNotesMedical</code>		

TABLE 652: fontawesome5 Disability Symbols

	<code>\faAmericanSignLanguageInterpreting</code>		<code>\faLowVision</code>
	<code>\faAssistiveListeningSystems</code>		<code>\faSignLanguage</code>
	<code>\faBlind</code>		<code>\faTty</code>
	<code>\faBraille</code>		<code>\faWheelchair</code>
	<code>\faDeaf</code>		

TABLE 653: asapsym Transportation Symbols

	<code>\asapAirplaneLanding</code>		<code>\asapBoat</code>
	<code>\asapAirplaneOverhead</code>		<code>\asapBus</code>
	<code>\asapAirplaneTakeoff</code>		<code>\asapHelicopter</code>
	<code>\asapAutomobile</code>		<code>\asapTaxi</code>
	<code>\asapAutomobileWithKey</code>		<code>\asapTrain</code>
	<code>\asapBicycle</code>		

asapsym requires either Lua^LA^TE^X or X^LA^TE^X.

TABLE 654: twemojis Transportation Emoji

	<code>\twemoji{1f6f0}</code>		<code>\twemoji{mountain railway}</code>
	<code>\twemoji{aerial tramway}</code>		<code>\twemoji{no bicycles}</code>
	<code>\twemoji{airplane}</code>		<code>\twemoji{oncoming automobile}</code>
	<code>\twemoji{airplane arrival}</code>		<code>\twemoji{oncoming bus}</code>
	<code>\twemoji{airplane departure}</code>		<code>\twemoji{oncoming police car}</code>
	<code>\twemoji{ambulance}</code>		<code>\twemoji{oncoming taxi}</code>
	<code>\twemoji{articulated lorry}</code>		<code>\twemoji{passenger ship}</code>
	<code>\twemoji{auto rickshaw}</code>		<code>\twemoji{passport control}</code>
	<code>\twemoji{automobile}</code>		<code>\twemoji{person biking}*</code>
	<code>\twemoji{baggage claim}</code>		<code>\twemoji{person mountain biking}*</code>
	<code>\twemoji{bicycle}</code>		<code>\twemoji{person rowing boat}*</code>
	<code>\twemoji{bullet train}</code>		<code>\twemoji{pickup truck}</code>
	<code>\twemoji{bus}</code>		<code>\twemoji{police car}</code>
	<code>\twemoji{bus stop}</code>		<code>\twemoji{police car light}</code>
	<code>\twemoji{canoe}</code>		<code>\twemoji{racing car}</code>
	<code>\twemoji{construction}</code>		<code>\twemoji{railway car}</code>
	<code>\twemoji{customs}</code>		<code>\twemoji{railway track}</code>
	<code>\twemoji{delivery truck}</code>		<code>\twemoji{rocket}</code>
	<code>\twemoji{fire engine}</code>		<code>\twemoji{roller skate}</code>

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	<code>\twemoji{flying saucer}</code>		<code>\twemoji{ship}</code>
	<code>\twemoji{helicopter}</code>		<code>\twemoji{skateboard}</code>
	<code>\twemoji{high-speed train}</code>		<code>\twemoji{sled}</code>
	<code>\twemoji{horizontal traffic light}</code>		<code>\twemoji{small airplane}</code>
	<code>\twemoji{kick scooter}</code>		<code>\twemoji{speedboat}</code>
	<code>\twemoji{left luggage}</code>		<code>\twemoji{sport utility vehicle}</code>
	<code>\twemoji{light rail}</code>		<code>\twemoji{station}</code>
	<code>\twemoji{locomotive}</code>		<code>\twemoji{suspension railway}</code>
	<code>\twemoji{man biking}*</code>		<code>\twemoji{taxi}</code>
	<code>\twemoji{man mountain biking}*</code>		<code>\twemoji{tractor}</code>
	<code>\twemoji{man rowing boat}*</code>		<code>\twemoji{train2}</code>
	<code>\twemoji{metro}</code>		<code>\twemoji{tram}</code>
	<code>\twemoji{minibus}</code>		<code>\twemoji{tram car}</code>
	<code>\twemoji{monorail}</code>		<code>\twemoji{trolleybus}</code>
	<code>\twemoji{motor boat}</code>		<code>\twemoji{vertical traffic light}</code>
	<code>\twemoji{motor scooter}</code>		<code>\twemoji{woman biking}*</code>
	<code>\twemoji{motorcycle}</code>		<code>\twemoji{woman mountain biking}*</code>
	<code>\twemoji{motorway}</code>		<code>\twemoji{woman rowing boat}*</code>
	<code>\twemoji{mountain cableway}</code>		

Most twemojis symbols have multiple names. Only the most descriptive name for each symbol is shown in this table.

All twemojis symbols are implemented as PDF graphics, not with a font. See also the `hwemoji` package, which enables direct Unicode entry of emoji characters in `pdfLATEX`; the `emoji` package, which provides a `LuaLATEX` interface to different underlying emoji fonts; and the `emo` package, which uses a font if possible, otherwise PDF graphics .

* Variants of this symbol portraying different colors and styles are not shown. An example is presented after Table 632 on page 290. See the `twemojis` documentation for more information.

TABLE 655: `asapsym` Everyday Objects

	<code>\asapBook</code>		<code>\asapHanger</code>		<code>\asapMug</code>
	<code>\asapCigarette</code>		<code>\asapMicroscope</code>		<code>\asapPhone</code>
	<code>\asapEnvelope</code>		<code>\asapMobilePhone</code>		<code>\asapTablet</code>
	<code>\asapGift</code>		<code>\asapMonitor</code>		<code>\asapUtensils</code>

`asapsym` requires either `LuaLATEX` or `XLLATEX`.

TABLE 656: typicons Everyday Objects

	<code>\tiAnchor</code>		<code>\tiFilm</code>		<code>\tiPinOutline</code>
	<code>\tiAnchorOutline</code>		<code>\tiFlag</code>		<code>\tiPiOutline</code>
	<code>\tiAttachment</code>		<code>\tiFlagOutline</code>		<code>\tiPipette</code>
	<code>\tiAttachmentOutline</code>		<code>\tiGift</code>		<code>\tiPlane</code>
	<code>\tiBeaker</code>		<code>\tiGlobe</code>		<code>\tiPlaneOutline</code>
	<code>\tiBeer</code>		<code>\tiGlobeOutline</code>		<code>\tiPlug</code>
	<code>\tiBell</code>		<code>\tiHeadphones</code>		<code>\tiPrinter</code>
	<code>\tiBook</code>		<code>\tiHome</code>		<code>\tiPuzzle</code>
	<code>\tiBriefcase</code>		<code>\tiHomeOutline</code>		<code>\tiPuzzleOutline</code>
	<code>\tiBrush</code>		<code>\tiKey</code>		<code>\tiScissors</code>
	<code>\tiBusinessCard</code>		<code>\tiKeyboard</code>		<code>\tiScissorsOutline</code>
	<code>\tiCalculator</code>		<code>\tiKeyOutline</code>		<code>\tiShoppingBag</code>
	<code>\tiCamera</code>		<code>\tiLeaf</code>		<code>\tiShoppingCart</code>
	<code>\tiCameraOutline</code>		<code>\tiLightbulb</code>		<code>\tiSpanner</code>
	<code>\tiClipboard</code>		<code>\tiLockClosed</code>		<code>\tiSpannerOutline</code>
	<code>\tiCoffee</code>		<code>\tiLockClosedOutline</code>		<code>\tiTag</code>
	<code>\tiCompass</code>		<code>\tiLockOpen</code>		<code>\tiTags</code>
	<code>\tiContacts</code>		<code>\tiLockOpenOutline</code>		<code>\tiTicket</code>
	<code>\tiCreditCard</code>		<code>\tiMail</code>		<code>\tiTrash</code>
	<code>\tiDeviceDesktop</code>		<code>\tiMap</code>		<code>\tiTree</code>
	<code>\tiDeviceLaptop</code>		<code>\tiMicrophone</code>		<code>\tiVideo</code>
	<code>\tiDevicePhone</code>		<code>\tiMicrophoneOutline</code>		<code>\tiVideoOutline</code>
	<code>\tiDeviceTablet</code>		<code>\tiMortarBoard</code>		<code>\tiWine</code>
	<code>\tiDirections</code>		<code>\tiNews</code>		<code>\tiWorld</code>
	<code>\tiEye</code>		<code>\tiPhone</code>		<code>\tiWorldOutline</code>
	<code>\tiEyeOutline</code>		<code>\tiPhoneOutline</code>		
	<code>\tiFeather</code>		<code>\tiPin</code>		

typicons requires either Lua^AT_EX or X_YL^AT_EX.

TABLE 657: fontawesome5 Everyday Objects

	<code>\faAirFreshener</code>		<code>\faGlassMartini</code>		<code>\faRocket</code>
	<code>\faAnchor</code>		<code>\faGlassWhiskey</code>		<code>\faRuler</code>
	<code>\faApple*</code>		<code>\faGraduationCap</code>		<code>\faRulerCombined</code>
	<code>\faArchive</code>		<code>\faGuitar</code>		<code>\faRulerHorizontal</code>
	<code>\faArchway</code>		<code>\faHamburger</code>		<code>\faRulerVertical</code>
	<code>\faAward</code>		<code>\faHammer</code>		<code>\faSatellite</code>
	<code>\faBaby</code>		<code>\faHardHat</code>		<code>\faSatelliteDish</code>
	<code>\faBabyCarriage</code>		<code>\faHatCowboy</code>		<code>\faSchool</code>
	<code>\faBacon</code>		<code>\faHatCowboySide</code>		<code>\faScrewdriver</code>
	<code>\faBath</code>		<code>\faHatWizard</code>		<code>\faScroll</code>
	<code>\faBed</code>		<code>\faHdd</code>		<code>\faSdCard</code>
	<code>\faBeer</code>		<code>\faHdd[regular]</code>		<code>\faSeedling</code>
	<code>\faBell</code>		<code>\faHeadphones*</code>		<code>\faShield*</code>
	<code>\faBell[regular]</code>		<code>\faHeadphones</code>		<code>\faShip</code>
	<code>\faBicycle</code>		<code>\faHeadset</code>		<code>\faShoePrints</code>
	<code>\faBinoculars</code>		<code>\faHelicopter</code>		<code>\faShoppingBag</code>
	<code>\faBirthdayCake</code>		<code>\faHome</code>		<code>\faShoppingBasket</code>
	<code>\faBlender</code>		<code>\faHotdog</code>		<code>\faShoppingCart</code>
	<code>\faBlenderPhone</code>		<code>\faHotel</code>		<code>\faShower</code>
	<code>\faBomb</code>		<code>\faHotTub</code>		<code>\faShuttleVan</code>
	<code>\faBone</code>		<code>\faIceCream</code>		<code>\faSign</code>
	<code>\faBong</code>		<code>\faIgloo</code>		<code>\faSimCard</code>
	<code>\faBox</code>		<code>\faJoint</code>		<code>\faSink</code>
	<code>\faBoxes</code>		<code>\faKey</code>		<code>\faSleigh</code>
	<code>\faBoxOpen</code>		<code>\faKeyboard</code>		<code>\faSmoking</code>
	<code>\faBoxTissue</code>		<code>\faKeyboard[regular]</code>		<code>\faSnowman</code>
	<code>\faBreadSlice</code>		<code>\faLandmark</code>		<code>\faSnowplow</code>
	<code>\faBriefcase</code>		<code>\faLaptop</code>		<code>\faSoap</code>
	<code>\faBroom</code>		<code>\faLeaf</code>		<code>\faSocks</code>
	<code>\faBrush</code>		<code>\faLemon</code>		<code>\faSolarPanel</code>
	<code>\faBuilding</code>		<code>\faLemon[regular]</code>		<code>\faSpaceShuttle</code>
	<code>\faBuilding[regular]</code>		<code>\faLifeRing</code>		<code>\faSprayCan</code>
	<code>\faBullhorn</code>		<code>\faLifeRing[regular]</code>		<code>\faStamp</code>
	<code>\faBus*</code>		<code>\faLightbulb</code>		<code>\faStickyNote</code>
	<code>\faBus</code>		<code>\faLightbulb[regular]</code>		<code>\faStickyNote[regular]</code>
	<code>\faCalculator</code>		<code>\faLock</code>		<code>\faStore*</code>
	<code>\faCamera</code>		<code>\faLockOpen</code>		<code>\faStore</code>
	<code>\faCameraRetro</code>		<code>\faLuggageCart</code>		<code>\faStroopwafel</code>
	<code>\faCandyCane</code>		<code>\faMagnet</code>		<code>\faSubway</code>
	<code>\faCannabis</code>		<code>\faMale</code>		<code>\faSuitcase</code>
	<code>\faCar*</code>		<code>\faMap</code>		<code>\faSuitcaseRolling</code>
	<code>\faCar</code>		<code>\faMap[regular]</code>		<code>\faSwatchbook</code>

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	<code>\faCaravan</code>		<code>\faMask</code>		<code>\faSwimmingPool</code>
	<code>\faCarBattery</code>		<code>\faMedal</code>		<code>\faTablet*</code>
	<code>\faCarrot</code>		<code>\faMemory</code>		<code>\faTablet</code>
	<code>\faCarSide</code>		<code>\faMeteor</code>		<code>\faTag</code>
	<code>\faCashRegister</code>		<code>\faMicrochip</code>		<code>\faTags</code>
	<code>\faChair</code>		<code>\faMicrophone*</code>		<code>\faTape</code>
	<code>\faChalkboard</code>		<code>\faMicrophone</code>		<code>\faTaxi</code>
	<code>\faCheese</code>		<code>\faMicroscope</code>		<code>\faTeeth</code>
	<code>\faChild</code>		<code>\faMitten</code>		<code>\faTeethOpen</code>
	<code>\faCity</code>		<code>\faMobile*</code>		<code>\faTheaterMasks</code>
	<code>\faCocktail</code>		<code>\faMobile</code>		<code>\faThermometer</code>
	<code>\faCoffee</code>		<code>\faMoneyBill*[regular]</code>		<code>\faThumbtack</code>
	<code>\faCoins</code>		<code>\faMoneyBill*</code>		<code>\faTicket*</code>
	<code>\faCompactDisc</code>		<code>\faMoneyBill</code>		<code>\faToilet</code>
	<code>\faCompass</code>		<code>\faMoneyBillWave*</code>		<code>\faToiletPaper</code>
	<code>\faCompass[regular]</code>		<code>\faMoneyBillWave</code>		<code>\faToolbox</code>
	<code>\faConciergeBell</code>		<code>\faMoneyCheck*</code>		<code>\faTools</code>
	<code>\faCookie</code>		<code>\faMoneyCheck</code>		<code>\faTooth</code>
	<code>\faCookieBite</code>		<code>\faMonument</code>		<code>\faTractor</code>
	<code>\faCouch</code>		<code>\faMoon</code>		<code>\faTrafficLight</code>
	<code>\faCreditCard</code>		<code>\faMoon[regular]</code>		<code>\faTrailer</code>
	<code>\faCreditCard[regular]</code>		<code>\faMortarPestle</code>		<code>\faTrain</code>
	<code>\faCrown</code>		<code>\faMotorcycle</code>		<code>\faTram</code>
	<code>\faDolly</code>		<code>\faMountain</code>		<code>\faTrash*[regular]</code>
	<code>\faDollyFlatbed</code>		<code>\faMouse</code>		<code>\faTrash*</code>
	<code>\faDoorClosed</code>		<code>\faMugHot</code>		<code>\faTrash</code>
	<code>\faDoorOpen</code>		<code>\faNewspaper</code>		<code>\faTree</code>
	<code>\faDraftingCompass</code>		<code>\faNewspaper[regular]</code>		<code>\faTrophy</code>
	<code>\faDrum</code>		<code>\faOilCan</code>		<code>\faTruck</code>
	<code>\faDrumSteelpan</code>		<code>\faPager</code>		<code>\faTruckLoading</code>
	<code>\faDrumstickBite</code>		<code>\faPaintBrush</code>		<code>\faTruckMonster</code>
	<code>\faDumpster</code>		<code>\faPaintRoller</code>		<code>\faTruckMoving</code>
	<code>\faDungeon</code>		<code>\faPalette</code>		<code>\faTruckPickup</code>
	<code>\faEgg</code>		<code>\faPallet</code>		<code>\faTshirt</code>
	<code>\faEyeDropper</code>		<code>\faPaperclip</code>		<code>\faTv</code>
	<code>\faFan</code>		<code>\faPaperPlane</code>		<code>\faUmbrella</code>
	<code>\faFaucet</code>		<code>\faPaperPlane[regular]</code>		<code>\faUmbrellaBeach</code>
	<code>\faFax</code>		<code>\faParachuteBox</code>		<code>\faUniversity</code>
	<code>\faFeather*</code>		<code>\faPencilRuler</code>		<code>\faUnlock*</code>
	<code>\faFeather</code>		<code>\faPepperHot</code>		<code>\faUnlock</code>
	<code>\faFemale</code>		<code>\faPhone*</code>		<code>\faUtensils</code>
	<code>\faFighterJet</code>		<code>\faPhone</code>		<code>\faUtensilSpoon</code>
	<code>\faFireExtinguisher</code>		<code>\faPiggyBank</code>		<code>\faVest</code>
	<code>\faFlask</code>		<code>\faPizzaSlice</code>		<code>\faVestPatches</code>

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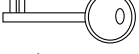
	<code>\faGamepad</code>		<code>\faPlane</code>		<code>\faVial</code>
	<code>\faGasPump</code>		<code>\faPlug</code>		<code>\faVials</code>
	<code>\faGavel</code>		<code>\faPumpSoap</code>		<code>\faVrCardboard</code>
	<code>\faGem</code>		<code>\faPuzzlePiece</code>		<code>\faWallet</code>
	<code>\faGem[regular]</code>		<code>\faRainbow</code>		<code>\faWarehouse</code>
	<code>\faGhost</code>		<code>\faReceipt</code>		<code>\faWeightHanging</code>
	<code>\faGift</code>		<code>\faRecordVinyl</code>		<code>\faWineBottle</code>
	<code>\faGifts</code>		<code>\faRibbon</code>		<code>\faWineGlass*</code>
	<code>\faGlassCheers</code>		<code>\faRing</code>		<code>\faWineGlass</code>
	<code>\faGlasses</code>		<code>\faRoad</code>		<code>\faWrench</code>
	<code>\faGlassMartini*</code>		<code>\faRobot</code>		

TABLE 658: figchild Everyday Objects

	<code>\fcAbajourA</code>		<code>\fcEar</code>		<code>\fcRazor</code>
	<code>\fcAbajourB</code>		<code>\fcExcavator</code>		<code>\fcRobe</code>
	<code>\fcAbajourC</code>		<code>\fcFaceTowel</code>		<code>\fcSandal</code>
	<code>\fcAbajourD</code>		<code>\fcFan</code>		<code>\fcSchoolbag</code>
	<code>\fcAlarmClockA</code>		<code>\fcFanA</code>		<code>\fcScissors</code>
	<code>\fcAlarmClockB</code>		<code>\fcFlashlight</code>		<code>\fcScooter</code>
	<code>\fcAppleTree</code>		<code>\fcFlower</code>		<code>\fcSeeds</code>
	<code>\fcBabe</code>		<code>\fcFlowerA</code>		<code>\fcSheet</code>
	<code>\fcBall</code>		<code>\fcFlowerB</code>		<code>\fcsheetA</code>
	<code>\fcBallA</code>		<code>\fcFlowerC</code>		<code>\fcsheetB</code>
	<code>\fcBallB</code>		<code>\fcFlowerD</code>		<code>\fcShip</code>
	<code>\fcBallC</code>		<code>\fcFlowerE</code>		<code>\fcShower</code>

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	<code>\fcBalloon</code>		<code>\fcFlowerF</code>		<code>\fcSleepingBag</code>
	<code>\fcBalloonsA</code>		<code>\fcFlowerG</code>		<code>\fcSnowflake</code>
	<code>\fcBalloonsB</code>		<code>\fcFlowerH</code>		<code>\fcSock</code>
	<code>\fcBarquet</code>		<code>\fcFlowerP</code>		<code>\fcSofaA</code>
	<code>\fcBaseballBat</code>		<code>\fcGlass</code>		<code>\fcSofaB</code>
	<code>\fcBed</code>		<code>\fcGloves</code>		<code>\fcSpray</code>
	<code>\fcBella</code>		<code>\fcHand</code>		<code>\fcSteamroller</code>
	<code>\fcBike</code>		<code>\fcHat</code>		<code>\fcStoolA</code>
	<code>\fcBinoculars</code>		<code>\fcHatA</code>		<code>\fcStoolB</code>
	<code>\fcBoat</code>		<code>\fcHelicopter</code>		<code>\fcStoolC</code>
	<code>\fcBonnet</code>		<code>\fcHouse</code>		<code>\fcSubmarineA</code>
	<code>\fcBookA</code>		<code>\fcHouseA</code>		<code>\fcTableLight</code>
	<code>\fcBookB</code>		<code>\fcHouseB</code>		<code>\fcTelevision</code>
	<code>\fcBroom</code>		<code>\fcJuicy</code>		<code>\fcTent</code>
	<code>\fcBud</code>		<code>\fcKey</code>		<code>\fcThroat</code>
	<code>\fcBus</code>		<code>\fcKite</code>		<code>\fcToiletPaper</code>
	<code>\fcCactoopuntia</code>		<code>\fcKiteA</code>		<code>\fcTornado</code>
	<code>\fcCactusA</code>		<code>\fcKnees</code>		<code>\fcTractorA</code>
	<code>\fcCactusB</code>		<code>\fcLamp</code>		<code>\fcTractorB</code>
	<code>\fcCandle</code>		<code>\fcLanguage</code>		<code>\fcTrain</code>
	<code>\fcCar</code>		<code>\fcLightBulb</code>		<code>\fcTree</code>
	<code>\fcCarA</code>		<code>\fcLightning</code>		<code>\fcTricycle</code>
	<code>\fcCart</code>		<code>\fcMailbox</code>		<code>\fcTruck</code>

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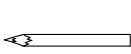
	<code>\fcCartA</code>		<code>\fcMailBoxA</code>		<code>\fcTruckA</code>
	<code>\fcCellPhone</code>		<code>\fcMat</code>		<code>\fcTruckB</code>
	<code>\fcChairA</code>		<code>\fcMeton</code>		<code>\fcTruckC</code>
	<code>\fcChairB</code>		<code>\fcMill</code>		<code>\fcTruckD</code>
	<code>\fcChairC</code>		<code>\fcMirror</code>		<code>\fcTruckE</code>
	<code>\fcChairD</code>		<code>\fcMonster</code>		<code>\fcTruckF</code>
	<code>\fcChristmasTree</code>		<code>\fcMotorcycle</code>		<code>\fcTruckG</code>
	<code>\fcChrysanthemum</code>		<code>\fcMotorcycleA</code>		<code>\fcTruckH</code>
	<code>\fcCoach</code>		<code>\fcNose</code>		<code>\fcTrunk</code>
	<code>\fcComb</code>		<code>\fcPalmTree</code>		<code>\fcTulip</code>
	<code>\fcComputer</code>		<code>\fcPencil</code>		<code>\fcUmbrella</code>
	<code>\fcCrane</code>		<code>\fcPencilA</code>		<code>\fcVan</code>
	<code>\fcCrownA</code>		<code>\fcPhone</code>		<code>\fcVase</code>
	<code>\fcCushion</code>		<code>\fcpink</code>		<code>\fcWagon</code>
	<code>\fcDaisy</code>		<code>\fcPlane</code>		<code>\fcWardrobe</code>
	<code>\fcDarts</code>		<code>\fcPlaneA</code>		<code>\fcWateringCan</code>
	<code>\fcData</code>		<code>\fcPumpkinA</code>		<code>\fcYoyo</code>
	<code>\fcDressingTable</code>		<code>\fcPyramid</code>		
	<code>\fcDryer</code>		<code>\fcRake</code>		

TABLE 659: Miscellaneous asapsym Symbols

	<code>\asapCross</code>		<code>\asapLocker</code>
	<code>\asapDog</code>		<code>\asapLostAndFound</code>

asapsym requires either Lua^LA^TE^X or X_Y^LA^TE^X.

TABLE 660: Miscellaneous typicons Symbols

@	\tiAt	♥	\tiHeartHalfOutline	⊗	\tiPointOfInterestOutline
⚡	\tiFlash	♡	\tiHeartOutline	⊙	\tiRadar
⚡	\tiFlashOutline	♪	\tiNotes	⊙	\tiRadarOutline
♥	\tiHeart	♪	\tiNotesOutline	⊙	\tiSpiral
♥	\tiHeartFullOutline	⊗	\tiPointOfInterest		

typicons requires either LuaL^AT_EX or X_LL^AT_EX.

TABLE 661: Miscellaneous fontawesome5 Symbols

	\faAtlas		\faGlobe		\faPersonBooth
	\faAtom		\faGlobeAfrica		\faPhoneSlash
	\faBalanceScale		\faGlobeAmericas		\faPhoneSquare*
	\faBalanceScaleLeft		\faGlobeAsia		\faPhoneSquare
	\faBalanceScaleRight		\faGlobeEurope		\faPhoneVolume
	\faBan		\faHeart		\faPlaneArrival
	\faBarcode		\faHeart[regular]		\faPlaneDeparture
	\faBezierCurve		\faHeartBroken		\faPlaneSlash
	\faBolt		\faHiking		\faPoo
	\faBook		\faHollyBerry		\faPoop
	\faBookDead		\faHouseDamage		\faPooStorm
	\faBookOpen		\faHouseUser		\faRadiation*
	\faBookReader		\faHSquare		\faRadiation
	\faBroadcastTower		\faIdBadge		\faRepublican
	\faBullseye		\faIdBadge[regular]		\faRestroom
	\faBurn		\faIdCard*		\faRunning
	\faCampground		\faIdCard		\faShippingFast
	\faCarCrash		\faIdCard[regular]		\faSkull
	\faCertificate		\faIndustry		\faSkullCrossbones
	\faChalkboardTeacher		\faJournalWhills		\faSmokingBan
	\faChargingStation		\faLaptopHouse		\faSpa
	\faClipboardList		\faMagic		\faSplotch
	\faCogs		\faMapSigns		\faToiletPaperSlash
	\faCube		\faMercury		\faVoteYea
	\faCubes		\faParking		\faWalking
	\faDemocrat		\faPassport		\faWater
	\faDirections		\faPaw		\faWaveSquare
	\faDumpsterFire		\faPeace		\faWeight
	\faFire		\faPeopleArrows		
	\faFunnelDollar		\faPeopleCarry		

TABLE 662: Miscellaneous fontmfizz Symbols

	<code>\mfAntenna</code>		<code>\mfLineGraph</code>		<code>\mfPhoneRetro</code>
	<code>\mfBomb</code>		<code>\mfMicroscope</code>		<code>\mfScript</code>
	<code>\mfDatabase</code>		<code>\mfMobileDevice</code>		<code>\mfScriptAlt</code>
	<code>\mfDatabaseAlt</code>		<code>\mfMobilePhoneAlt</code>		<code>\mfShell</code>
	<code>\mfDatabaseAlttwo</code>		<code>\mfMobilePhoneBroadcast</code>		<code>\mfSplatter</code>
	<code>\mfGhost</code>		<code>\mfPhoneAlt</code>		<code>\mfWireless</code>
	<code>\mfIphone</code>		<code>\mfPhoneGap</code>		

fontmfizz requires either Lua $\text{\LaTeX}$ or X $\text{\LaTeX}$.

TABLE 663: rubikcube Rubik’s Cube Rotations

	<code>\rrhD</code>		<code>\rrhF</code>		<code>\rrhLw</code>		<code>\rrhRw</code>		<code>\rrhU</code>
	<code>\rrhDa</code>		<code>\rrhFp</code>		<code>\rrhLwp</code>		<code>\rrhRwp</code>		<code>\rrhUa</code>
	<code>\rrhDap</code>		<code>\rrhFw</code>		<code>\rrhM</code>		<code>\rrhSd</code>		<code>\rrhUap</code>
	<code>\rrhDp</code>		<code>\rrhFwp</code>		<code>\rrhMp</code>		<code>\rrhSdp</code>		<code>\rrhUp</code>
	<code>\rrhDs</code>		<code>\rrhL</code>		<code>\rrhR</code>		<code>\rrhSl</code>		<code>\rrhUs</code>
	<code>\rrhDsp</code>		<code>\rrhLa</code>		<code>\rrhRa</code>		<code>\rrhSlp</code>		<code>\rrhUsp</code>
	<code>\rrhDw</code>		<code>\rrhLap</code>		<code>\rrhRap</code>		<code>\rrhSr</code>		<code>\rrhUw</code>
	<code>\rrhDwp</code>		<code>\rrhLp</code>		<code>\rrhRp</code>		<code>\rrhSrp</code>		<code>\rrhUwp</code>
	<code>\rrhE</code>		<code>\rrhLs</code>		<code>\rrhRs</code>		<code>\rrhSu</code>		
	<code>\rrhEp</code>		<code>\rrhLsp</code>		<code>\rrhRsp</code>		<code>\rrhSup</code>		

All rubikcube symbols are implemented with TikZ graphics, not with a font. In addition to the symbols shown above, the rubikcube package defines commands for combinations of textual and graphical representations of rotations (e.g., `\textRubikUa` produces “**Ua** TABLE 664: sacsymb Orchestrated Objective Reduction Symbols

	<code>\ca</code>		<code>\cd</code>		<code>\cg</code>		<code>\cj</code>		<code>\cm</code>		<code>\cq</code>		<code>\cu</code>
	<code>\cb</code>		<code>\ce</code>		<code>\ch</code>		<code>\ck</code>		<code>\cn</code>		<code>\cs</code>		<code>\cv</code>
	<code>\cc</code>		<code>\cf</code>		<code>\ci</code>		<code>\cl</code>		<code>\co</code>		<code>\ct</code>		<code>\cw</code>

All sacsymb symbols are implemented with TikZ graphics, not with a font.

TABLE 665: academicons Online Academic Profile Icons

	<code>\aiAcademia</code>		<code>\aiFigshare</code>		<code>\aiOrcid</code>
	<code>\aiAcademiaSquare</code>		<code>\aiFigshareSquare</code>		<code>\aiOrcidSquare</code>
	<code>\aiAcclaim</code>		<code>\aiGoogleScholar</code>		<code>\aiOSF</code>
	<code>\aiAcclaimSquare</code>		<code>\aiGoogleScholarSquare</code>		<code>\aiOSFSquare</code>
	<code>\aiACM</code>		<code>\aiHAL</code>		<code>\aiOverleaf</code>
	<code>\aiACMDL</code>		<code>\aiHALSquare</code>		<code>\aiOverleafSquare</code>
	<code>\aiACMDLSquare</code>		<code>\aiHypothesis</code>		<code>\aiPhilPapers</code>
	<code>\aiACMSquare</code>		<code>\aiHypothesisSquare</code>		<code>\aiPhilPapersSquare</code>
	<code>\aiADS</code>		<code>\aiIDEASRePEc</code>		<code>\aiPiazza</code>
	<code>\aiADSSquare</code>		<code>\aiIDEASRePEcSquare</code>		<code>\aiPiazzaSquare</code>
	<code>\aiAfricArXiv</code>		<code>\aiIEEE</code>		<code>\aiPreregistered</code>
	<code>\aiAfricArXivSquare</code>		<code>\aiIEEESquare</code>		<code>\aiPreregisteredSquare</code>
	<code>\aiArchive</code>		<code>\aiImpactstory</code>		<code>\aiProtocols</code>
	<code>\aiArchiveSquare</code>		<code>\aiImpactstorySquare</code>		<code>\aiProtocolsSquare</code>
	<code>\aiarXiv</code>		<code>\aiiNaturalist</code>		<code>\aiPsyArXiv</code>
	<code>\aiarXivSquare</code>		<code>\aiiNaturalistSquare</code>		<code>\aiPsyArXivSquare</code>
	<code>\aibioRxiv</code>		<code>\aiINPN</code>		<code>\aiPublons</code>
	<code>\aibioRxivSquare</code>		<code>\aiINPNSquare</code>		<code>\aiPublonsSquare</code>
	<code>\aiCEUR</code>		<code>\aiInspire</code>		<code>\aiPubMed</code>
	<code>\aiCEURSquare</code>		<code>\aiInspireSquare</code>		<code>\aiPubMedSquare</code>
	<code>\aiCIENCIAVITAE</code>		<code>\aiISIDORE</code>		<code>\aiPubPeer</code>
	<code>\aiCIENCIAVITAE Square</code>		<code>\aiISIDORESquare</code>		<code>\aiPubPeerSquare</code>
	<code>\aiClosedAccess</code>		<code>\aiJSTOR</code>		<code>\aiResearcherID</code>
	<code>\aiClosedAccessSquare</code>		<code>\aiJSTORSquare</code>		<code>\aiResearcherIDSquare</code>
	<code>\aiConversation</code>		<code>\aiLattes</code>		<code>\aiResearchGate</code>
	<code>\aiConversationSquare</code>		<code>\aiLattesSquare</code>		<code>\aiResearchGateSquare</code>
	<code>\aiCoursera</code>		<code>\aiMathOverflow</code>		<code>\aiROR</code>
	<code>\aiCourseraSquare</code>		<code>\aiMathOverflowSquare</code>		<code>\aiRORSquare</code>
	<code>\aiCrossref</code>		<code>\aiMendeley</code>		<code>\aiSciHub</code>
	<code>\aiCrossrefSquare</code>		<code>\aiMendeleySquare</code>		<code>\aiSciHubSquare</code>
	<code>\aiCV</code>		<code>\aiMoodle</code>		<code>\aiSciRate</code>
	<code>\aiCVSquare</code>		<code>\aiMoodleSquare</code>		<code>\aiSciRateSquare</code>
	<code>\aiDataCite</code>		<code>\aiMTMT</code>		<code>\aiScopus</code>
	<code>\aiDataCiteSquare</code>		<code>\aiMTMTSquare</code>		<code>\aiScopusSquare</code>
	<code>\aiDataverse</code>		<code>\aiNAKALA</code>		<code>\aiSemanticScholar</code>
	<code>\aiDataverseSquare</code>		<code>\aiNAKALASquare</code>		<code>\aiSemanticScholarSquare</code>
	<code>\aidblp</code>		<code>\aiOBP</code>		<code>\aiSpringer</code>
	<code>\aidblpSquare</code>		<code>\aiOBPSquare</code>		<code>\aiSpringerSquare</code>
	<code>\aiDepsy</code>		<code>\aiOpenAccess</code>		<code>\aiSSRN</code>
	<code>\aiDepsySquare</code>		<code>\aiOpenAccessSquare</code>		<code>\aiSSRNSquare</code>
	<code>\aiDoi</code>		<code>\aiOpenData</code>		<code>\aiStackOverflow</code>
	<code>\aiDoiSquare</code>		<code>\aiOpenDataSquare</code>		<code>\aiStackOverflowSquare</code>
	<code>\aiDryad</code>		<code>\aiOpenEdition</code>		<code>\aiZenodo</code>

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	<code>\aiDryadSquare</code>		<code>\aiOpenEditionSquare</code>		<code>\aiZenodoSquare</code>
	<code>\aiElsevier</code>		<code>\aiOpenMaterials</code>		<code>\aiZotero</code>
	<code>\aiElsevierquare</code>		<code>\aiOpenMaterialsSquare</code>		<code>\aiZoteroSquare</code>

academicons requires either Lua $\text{\LaTeX}$ or X $\text{\LaTeX}$.

TABLE 666: Miscellaneous figchild Symbols

	<code>\fcAngel</code>		<code>\fcGhost</code>		<code>\fcPassB</code>
	<code>\fcEyebrows</code>		<code>\fcLoveLetter</code>		<code>\fcWitchHat</code>
	<code>\fcEyes</code>		<code>\fcPassA</code>		

All figchild symbols are implemented with TikZ graphics, not with a font. Not shown above, each symbol takes three arguments: a scale factor, a line color, and a line thickness. See the figchild documentation for more information.

Chapter 11

Fonts with minimal L^AT_EX support

The symbol fonts shown in this chapter are provided without a corresponding L^AT_EX 2_ε style file that assigns a convenient name to each glyph. Consequently, each glyph must be accessed by number. To help with this, the `pifont` package defines a `\Pisymbol` command that typesets a specified character by number from a specified L^AT_EX font family. Alas, most of the fonts in this chapter do not even define a L^AT_EX font family. Hence, except where otherwise specified, a document will need to include code like the following in its preamble:

```
\usepackage{pifont}
\DeclareFontFamily{U}{⟨name⟩}{}
\DeclareFontShape{U}{⟨name⟩}{m}{n}{<-> ⟨font⟩}{}

```

where *⟨font⟩* is the name of the `.tfm` font file (or `.mf` font file, from which a `.tfm` font file can be generated automatically), and *⟨name⟩* is a name to use to refer to that font. It's generally good practice to use the name of the font file for *⟨name⟩*, as in the following:

```
\usepackage{pifont}
\DeclareFontFamily{U}{hands}{}
\DeclareFontShape{U}{hands}{m}{n}{<-> hands}{}

```

TABLE 667: hands Fists

	<code>\Pisymbol{hands}{65}</code>		<code>\Pisymbol{hands}{67}</code>
	<code>\Pisymbol{hands}{66}</code>		<code>\Pisymbol{hands}{68}</code>

TABLE 668: greenpoint Recycling Symbols

 `\Pisymbol{greenpoint}{71}`

TABLE 669: nkarta Map Symbols

	<code>\Pisymbol{nkarta}{33}</code>		<code>\Pisymbol{nkarta}{96}</code>		<code>\Pisymbol{nkarta}{193}</code>
	<code>\Pisymbol{nkarta}{34}</code>		<code>\Pisymbol{nkarta}{97}</code>		<code>\Pisymbol{nkarta}{194}</code>
	<code>\Pisymbol{nkarta}{35}</code>		<code>\Pisymbol{nkarta}{98}</code>		<code>\Pisymbol{nkarta}{195}</code>
	<code>\Pisymbol{nkarta}{36}</code>		<code>\Pisymbol{nkarta}{99}</code>		<code>\Pisymbol{nkarta}{196}</code>
	<code>\Pisymbol{nkarta}{37}</code>		<code>\Pisymbol{nkarta}{100}</code>		<code>\Pisymbol{nkarta}{197}</code>
	<code>\Pisymbol{nkarta}{38}</code>		<code>\Pisymbol{nkarta}{101}</code>		<code>\Pisymbol{nkarta}{198}</code>
	<code>\Pisymbol{nkarta}{39}</code>		<code>\Pisymbol{nkarta}{102}</code>		<code>\Pisymbol{nkarta}{199}</code>
	<code>\Pisymbol{nkarta}{40}</code>		<code>\Pisymbol{nkarta}{103}</code>		<code>\Pisymbol{nkarta}{200}</code>
	<code>\Pisymbol{nkarta}{41}</code>		<code>\Pisymbol{nkarta}{104}</code>		<code>\Pisymbol{nkarta}{201}</code>
	<code>\Pisymbol{nkarta}{42}</code>		<code>\Pisymbol{nkarta}{105}</code>		<code>\Pisymbol{nkarta}{202}</code>
	<code>\Pisymbol{nkarta}{43}</code>		<code>\Pisymbol{nkarta}{106}</code>		<code>\Pisymbol{nkarta}{203}</code>
	<code>\Pisymbol{nkarta}{44}</code>		<code>\Pisymbol{nkarta}{107}</code>		<code>\Pisymbol{nkarta}{204}</code>
	<code>\Pisymbol{nkarta}{45}</code>		<code>\Pisymbol{nkarta}{108}</code>		<code>\Pisymbol{nkarta}{205}</code>
	<code>\Pisymbol{nkarta}{46}</code>		<code>\Pisymbol{nkarta}{109}</code>		<code>\Pisymbol{nkarta}{206}</code>
	<code>\Pisymbol{nkarta}{47}</code>		<code>\Pisymbol{nkarta}{110}</code>		<code>\Pisymbol{nkarta}{207}</code>
	<code>\Pisymbol{nkarta}{48}</code>		<code>\Pisymbol{nkarta}{111}</code>		<code>\Pisymbol{nkarta}{208}</code>
	<code>\Pisymbol{nkarta}{49}</code>		<code>\Pisymbol{nkarta}{112}</code>		<code>\Pisymbol{nkarta}{209}</code>
	<code>\Pisymbol{nkarta}{50}</code>		<code>\Pisymbol{nkarta}{113}</code>		<code>\Pisymbol{nkarta}{210}</code>
	<code>\Pisymbol{nkarta}{51}</code>		<code>\Pisymbol{nkarta}{114}</code>		<code>\Pisymbol{nkarta}{211}</code>
	<code>\Pisymbol{nkarta}{52}</code>		<code>\Pisymbol{nkarta}{115}</code>		<code>\Pisymbol{nkarta}{212}</code>
	<code>\Pisymbol{nkarta}{53}</code>		<code>\Pisymbol{nkarta}{116}</code>		<code>\Pisymbol{nkarta}{213}</code>
	<code>\Pisymbol{nkarta}{54}</code>		<code>\Pisymbol{nkarta}{117}</code>		<code>\Pisymbol{nkarta}{214}</code>
	<code>\Pisymbol{nkarta}{55}</code>		<code>\Pisymbol{nkarta}{118}</code>		<code>\Pisymbol{nkarta}{215}</code>
	<code>\Pisymbol{nkarta}{56}</code>		<code>\Pisymbol{nkarta}{119}</code>		<code>\Pisymbol{nkarta}{216}</code>
	<code>\Pisymbol{nkarta}{57}</code>		<code>\Pisymbol{nkarta}{120}</code>		<code>\Pisymbol{nkarta}{217}</code>
	<code>\Pisymbol{nkarta}{58}</code>		<code>\Pisymbol{nkarta}{121}</code>		<code>\Pisymbol{nkarta}{218}</code>
	<code>\Pisymbol{nkarta}{59}</code>		<code>\Pisymbol{nkarta}{122}</code>		<code>\Pisymbol{nkarta}{219}</code>
	<code>\Pisymbol{nkarta}{60}</code>		<code>\Pisymbol{nkarta}{123}</code>		<code>\Pisymbol{nkarta}{220}</code>
	<code>\Pisymbol{nkarta}{61}</code>		<code>\Pisymbol{nkarta}{124}</code>		<code>\Pisymbol{nkarta}{221}</code>
	<code>\Pisymbol{nkarta}{62}</code>		<code>\Pisymbol{nkarta}{125}</code>		<code>\Pisymbol{nkarta}{222}</code>
	<code>\Pisymbol{nkarta}{63}</code>		<code>\Pisymbol{nkarta}{126}</code>		<code>\Pisymbol{nkarta}{223}</code>
	<code>\Pisymbol{nkarta}{64}</code>		<code>\Pisymbol{nkarta}{161}</code>		<code>\Pisymbol{nkarta}{224}</code>
	<code>\Pisymbol{nkarta}{65}</code>		<code>\Pisymbol{nkarta}{162}</code>		<code>\Pisymbol{nkarta}{225}</code>
	<code>\Pisymbol{nkarta}{66}</code>		<code>\Pisymbol{nkarta}{163}</code>		<code>\Pisymbol{nkarta}{226}</code>
	<code>\Pisymbol{nkarta}{67}</code>		<code>\Pisymbol{nkarta}{164}</code>		<code>\Pisymbol{nkarta}{227}</code>
	<code>\Pisymbol{nkarta}{68}</code>		<code>\Pisymbol{nkarta}{165}</code>		<code>\Pisymbol{nkarta}{228}</code>
	<code>\Pisymbol{nkarta}{69}</code>		<code>\Pisymbol{nkarta}{166}</code>		<code>\Pisymbol{nkarta}{229}</code>
	<code>\Pisymbol{nkarta}{70}</code>		<code>\Pisymbol{nkarta}{167}</code>		<code>\Pisymbol{nkarta}{230}</code>
	<code>\Pisymbol{nkarta}{71}</code>		<code>\Pisymbol{nkarta}{168}</code>		<code>\Pisymbol{nkarta}{231}</code>
	<code>\Pisymbol{nkarta}{72}</code>		<code>\Pisymbol{nkarta}{169}</code>		<code>\Pisymbol{nkarta}{232}</code>
	<code>\Pisymbol{nkarta}{73}</code>		<code>\Pisymbol{nkarta}{170}</code>		<code>\Pisymbol{nkarta}{233}</code>

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	<code>\Pisymbol{nkarta}{74}</code>		<code>\Pisymbol{nkarta}{171}</code>		<code>\Pisymbol{nkarta}{234}</code>
	<code>\Pisymbol{nkarta}{75}</code>		<code>\Pisymbol{nkarta}{172}</code>		<code>\Pisymbol{nkarta}{235}</code>
	<code>\Pisymbol{nkarta}{76}</code>		<code>\Pisymbol{nkarta}{173}</code>		<code>\Pisymbol{nkarta}{236}</code>
	<code>\Pisymbol{nkarta}{77}</code>		<code>\Pisymbol{nkarta}{174}</code>		<code>\Pisymbol{nkarta}{237}</code>
	<code>\Pisymbol{nkarta}{78}</code>		<code>\Pisymbol{nkarta}{175}</code>		<code>\Pisymbol{nkarta}{238}</code>
	<code>\Pisymbol{nkarta}{79}</code>		<code>\Pisymbol{nkarta}{176}</code>		<code>\Pisymbol{nkarta}{239}</code>
	<code>\Pisymbol{nkarta}{80}</code>		<code>\Pisymbol{nkarta}{177}</code>		<code>\Pisymbol{nkarta}{240}</code>
	<code>\Pisymbol{nkarta}{81}</code>		<code>\Pisymbol{nkarta}{178}</code>		<code>\Pisymbol{nkarta}{241}</code>
	<code>\Pisymbol{nkarta}{82}</code>		<code>\Pisymbol{nkarta}{179}</code>		<code>\Pisymbol{nkarta}{242}</code>
	<code>\Pisymbol{nkarta}{83}</code>		<code>\Pisymbol{nkarta}{180}</code>		<code>\Pisymbol{nkarta}{243}</code>
	<code>\Pisymbol{nkarta}{84}</code>		<code>\Pisymbol{nkarta}{181}</code>		<code>\Pisymbol{nkarta}{244}</code>
	<code>\Pisymbol{nkarta}{85}</code>		<code>\Pisymbol{nkarta}{182}</code>		<code>\Pisymbol{nkarta}{245}</code>
	<code>\Pisymbol{nkarta}{86}</code>		<code>\Pisymbol{nkarta}{183}</code>		<code>\Pisymbol{nkarta}{246}</code>
	<code>\Pisymbol{nkarta}{87}</code>		<code>\Pisymbol{nkarta}{184}</code>		<code>\Pisymbol{nkarta}{247}</code>
	<code>\Pisymbol{nkarta}{88}</code>		<code>\Pisymbol{nkarta}{185}</code>		<code>\Pisymbol{nkarta}{248}</code>
	<code>\Pisymbol{nkarta}{89}</code>		<code>\Pisymbol{nkarta}{186}</code>		<code>\Pisymbol{nkarta}{249}</code>
	<code>\Pisymbol{nkarta}{90}</code>		<code>\Pisymbol{nkarta}{187}</code>		<code>\Pisymbol{nkarta}{250}</code>
	<code>\Pisymbol{nkarta}{91}</code>		<code>\Pisymbol{nkarta}{188}</code>		<code>\Pisymbol{nkarta}{251}</code>
	<code>\Pisymbol{nkarta}{92}</code>		<code>\Pisymbol{nkarta}{189}</code>		<code>\Pisymbol{nkarta}{252}</code>
	<code>\Pisymbol{nkarta}{93}</code>		<code>\Pisymbol{nkarta}{190}</code>		<code>\Pisymbol{nkarta}{253}</code>
	<code>\Pisymbol{nkarta}{94}</code>		<code>\Pisymbol{nkarta}{191}</code>		<code>\Pisymbol{nkarta}{254}</code>
	<code>\Pisymbol{nkarta}{95}</code>		<code>\Pisymbol{nkarta}{192}</code>		

TABLE 670: moonphase Astronomical Symbols

	<code>\Pisymbol{moonphase}{0}</code>		<code>\Pisymbol{moonphase}{2}</code>
	<code>\Pisymbol{moonphase}{1}</code>		<code>\Pisymbol{moonphase}{3}</code>

TABLE 671: astrosym Astronomical Symbols

	<code>\Pisymbol{astrosym}{0}</code>		<code>\Pisymbol{astrosym}{132}</code>
	<code>\Pisymbol{astrosym}{1}</code>		<code>\Pisymbol{astrosym}{133}</code>
	<code>\Pisymbol{astrosym}{2}</code>		<code>\Pisymbol{astrosym}{134}</code>
	<code>\Pisymbol{astrosym}{3}</code>		<code>\Pisymbol{astrosym}{135}</code>
	<code>\Pisymbol{astrosym}{4}</code>		<code>\Pisymbol{astrosym}{136}</code>
	<code>\Pisymbol{astrosym}{5}</code>		<code>\Pisymbol{astrosym}{137}</code>
	<code>\Pisymbol{astrosym}{6}</code>		<code>\Pisymbol{astrosym}{138}</code>
	<code>\Pisymbol{astrosym}{7}</code>		<code>\Pisymbol{astrosym}{139}</code>
	<code>\Pisymbol{astrosym}{8}</code>		<code>\Pisymbol{astrosym}{140}</code>
	<code>\Pisymbol{astrosym}{9}</code>		<code>\Pisymbol{astrosym}{141}</code>
	<code>\Pisymbol{astrosym}{10}</code>		<code>\Pisymbol{astrosym}{142}</code>
	<code>\Pisymbol{astrosym}{11}</code>		<code>\Pisymbol{astrosym}{143}</code>
	<code>\Pisymbol{astrosym}{12}</code>		<code>\Pisymbol{astrosym}{144}</code>
	<code>\Pisymbol{astrosym}{13}</code>		<code>\Pisymbol{astrosym}{145}</code>
	<code>\Pisymbol{astrosym}{14}</code>		<code>\Pisymbol{astrosym}{146}</code>
	<code>\Pisymbol{astrosym}{15}</code>		<code>\Pisymbol{astrosym}{147}</code>
	<code>\Pisymbol{astrosym}{16}</code>		<code>\Pisymbol{astrosym}{148}</code>
	<code>\Pisymbol{astrosym}{17}</code>		<code>\Pisymbol{astrosym}{149}</code>
	<code>\Pisymbol{astrosym}{18}</code>		<code>\Pisymbol{astrosym}{150}</code>
	<code>\Pisymbol{astrosym}{19}</code>		<code>\Pisymbol{astrosym}{151}</code>
	<code>\Pisymbol{astrosym}{20}</code>		<code>\Pisymbol{astrosym}{152}</code>
	<code>\Pisymbol{astrosym}{21}</code>		<code>\Pisymbol{astrosym}{153}</code>
	<code>\Pisymbol{astrosym}{22}</code>		<code>\Pisymbol{astrosym}{154}</code>
	<code>\Pisymbol{astrosym}{23}</code>		<code>\Pisymbol{astrosym}{155}</code>
	<code>\Pisymbol{astrosym}{24}</code>		<code>\Pisymbol{astrosym}{156}</code>
	<code>\Pisymbol{astrosym}{25}</code>		<code>\Pisymbol{astrosym}{157}</code>
	<code>\Pisymbol{astrosym}{26}</code>		<code>\Pisymbol{astrosym}{158}</code>
	<code>\Pisymbol{astrosym}{27}</code>		<code>\Pisymbol{astrosym}{159}</code>
	<code>\Pisymbol{astrosym}{28}</code>		<code>\Pisymbol{astrosym}{160}</code>
	<code>\Pisymbol{astrosym}{29}</code>		<code>\Pisymbol{astrosym}{161}</code>
	<code>\Pisymbol{astrosym}{30}</code>		<code>\Pisymbol{astrosym}{162}</code>
	<code>\Pisymbol{astrosym}{31}</code>		<code>\Pisymbol{astrosym}{163}</code>
	<code>\Pisymbol{astrosym}{32}</code>		<code>\Pisymbol{astrosym}{164}</code>

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	<code>\Pisymbol{astrosym}{33}</code>		<code>\Pisymbol{astrosym}{165}</code>
	<code>\Pisymbol{astrosym}{34}</code>		<code>\Pisymbol{astrosym}{166}</code>
	<code>\Pisymbol{astrosym}{35}</code>		<code>\Pisymbol{astrosym}{167}</code>
	<code>\Pisymbol{astrosym}{36}</code>		<code>\Pisymbol{astrosym}{168}</code>
	<code>\Pisymbol{astrosym}{37}</code>		<code>\Pisymbol{astrosym}{169}</code>
	<code>\Pisymbol{astrosym}{38}</code>		<code>\Pisymbol{astrosym}{178}</code>
	<code>\Pisymbol{astrosym}{39}</code>		<code>\Pisymbol{astrosym}{179}</code>
	<code>\Pisymbol{astrosym}{40}</code>		<code>\Pisymbol{astrosym}{180}</code>
	<code>\Pisymbol{astrosym}{41}</code>		<code>\Pisymbol{astrosym}{181}</code>
	<code>\Pisymbol{astrosym}{42}</code>		<code>\Pisymbol{astrosym}{182}</code>
	<code>\Pisymbol{astrosym}{43}</code>		<code>\Pisymbol{astrosym}{183}</code>
	<code>\Pisymbol{astrosym}{44}</code>		<code>\Pisymbol{astrosym}{184}</code>
	<code>\Pisymbol{astrosym}{45}</code>		<code>\Pisymbol{astrosym}{185}</code>
	<code>\Pisymbol{astrosym}{46}</code>		<code>\Pisymbol{astrosym}{186}</code>
	<code>\Pisymbol{astrosym}{47}</code>		<code>\Pisymbol{astrosym}{187}</code>
	<code>\Pisymbol{astrosym}{48}</code>		<code>\Pisymbol{astrosym}{188}</code>
	<code>\Pisymbol{astrosym}{49}</code>		<code>\Pisymbol{astrosym}{189}</code>
	<code>\Pisymbol{astrosym}{50}</code>		<code>\Pisymbol{astrosym}{190}</code>
	<code>\Pisymbol{astrosym}{51}</code>		<code>\Pisymbol{astrosym}{191}</code>
	<code>\Pisymbol{astrosym}{52}</code>		<code>\Pisymbol{astrosym}{200}</code>
	<code>\Pisymbol{astrosym}{53}</code>		<code>\Pisymbol{astrosym}{201}</code>
	<code>\Pisymbol{astrosym}{54}</code>		<code>\Pisymbol{astrosym}{202}</code>
	<code>\Pisymbol{astrosym}{55}</code>		<code>\Pisymbol{astrosym}{203}</code>
	<code>\Pisymbol{astrosym}{56}</code>		<code>\Pisymbol{astrosym}{204}</code>
	<code>\Pisymbol{astrosym}{57}</code>		<code>\Pisymbol{astrosym}{205}</code>
	<code>\Pisymbol{astrosym}{58}</code>		<code>\Pisymbol{astrosym}{206}</code>
	<code>\Pisymbol{astrosym}{59}</code>		<code>\Pisymbol{astrosym}{207}</code>
	<code>\Pisymbol{astrosym}{60}</code>		<code>\Pisymbol{astrosym}{208}</code>
	<code>\Pisymbol{astrosym}{61}</code>		<code>\Pisymbol{astrosym}{209}</code>
	<code>\Pisymbol{astrosym}{62}</code>		<code>\Pisymbol{astrosym}{210}</code>
	<code>\Pisymbol{astrosym}{63}</code>		<code>\Pisymbol{astrosym}{211}</code>
	<code>\Pisymbol{astrosym}{64}</code>		<code>\Pisymbol{astrosym}{212}</code>
	<code>\Pisymbol{astrosym}{65}</code>		<code>\Pisymbol{astrosym}{213}</code>
	<code>\Pisymbol{astrosym}{66}</code>		<code>\Pisymbol{astrosym}{214}</code>
	<code>\Pisymbol{astrosym}{67}</code>		<code>\Pisymbol{astrosym}{215}</code>

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	<code>\Pisymbol{astroSYM}{68}</code>		<code>\Pisymbol{astroSYM}{216}</code>
	<code>\Pisymbol{astroSYM}{69}</code>		<code>\Pisymbol{astroSYM}{217}</code>
	<code>\Pisymbol{astroSYM}{90}</code>		<code>\Pisymbol{astroSYM}{218}</code>
	<code>\Pisymbol{astroSYM}{91}</code>		<code>\Pisymbol{astroSYM}{219}</code>
	<code>\Pisymbol{astroSYM}{92}</code>		<code>\Pisymbol{astroSYM}{220}</code>
	<code>\Pisymbol{astroSYM}{93}</code>		<code>\Pisymbol{astroSYM}{221}</code>
	<code>\Pisymbol{astroSYM}{94}</code>		<code>\Pisymbol{astroSYM}{222}</code>
	<code>\Pisymbol{astroSYM}{95}</code>		<code>\Pisymbol{astroSYM}{223}</code>
	<code>\Pisymbol{astroSYM}{100}</code>		<code>\Pisymbol{astroSYM}{224}</code>
	<code>\Pisymbol{astroSYM}{101}</code>		<code>\Pisymbol{astroSYM}{225}</code>
	<code>\Pisymbol{astroSYM}{102}</code>		<code>\Pisymbol{astroSYM}{226}</code>
	<code>\Pisymbol{astroSYM}{103}</code>		<code>\Pisymbol{astroSYM}{227}</code>
	<code>\Pisymbol{astroSYM}{104}</code>		<code>\Pisymbol{astroSYM}{228}</code>
	<code>\Pisymbol{astroSYM}{105}</code>		<code>\Pisymbol{astroSYM}{229}</code>
	<code>\Pisymbol{astroSYM}{106}</code>		<code>\Pisymbol{astroSYM}{230}</code>
	<code>\Pisymbol{astroSYM}{107}</code>		<code>\Pisymbol{astroSYM}{231}</code>
	<code>\Pisymbol{astroSYM}{108}</code>		<code>\Pisymbol{astroSYM}{232}</code>
	<code>\Pisymbol{astroSYM}{109}</code>		<code>\Pisymbol{astroSYM}{233}</code>
	<code>\Pisymbol{astroSYM}{110}</code>		<code>\Pisymbol{astroSYM}{234}</code>
	<code>\Pisymbol{astroSYM}{111}</code>		<code>\Pisymbol{astroSYM}{235}</code>
	<code>\Pisymbol{astroSYM}{112}</code>		<code>\Pisymbol{astroSYM}{236}</code>
	<code>\Pisymbol{astroSYM}{113}</code>		<code>\Pisymbol{astroSYM}{237}</code>
	<code>\Pisymbol{astroSYM}{114}</code>		<code>\Pisymbol{astroSYM}{238}</code>
	<code>\Pisymbol{astroSYM}{115}</code>		<code>\Pisymbol{astroSYM}{239}</code>
	<code>\Pisymbol{astroSYM}{116}</code>		<code>\Pisymbol{astroSYM}{240}</code>
	<code>\Pisymbol{astroSYM}{117}</code>		<code>\Pisymbol{astroSYM}{241}</code>
	<code>\Pisymbol{astroSYM}{118}</code>		<code>\Pisymbol{astroSYM}{242}</code>
	<code>\Pisymbol{astroSYM}{119}</code>		<code>\Pisymbol{astroSYM}{243}</code>
	<code>\Pisymbol{astroSYM}{120}</code>		<code>\Pisymbol{astroSYM}{244}</code>
	<code>\Pisymbol{astroSYM}{121}</code>		<code>\Pisymbol{astroSYM}{245}</code>
	<code>\Pisymbol{astroSYM}{122}</code>		<code>\Pisymbol{astroSYM}{246}</code>
	<code>\Pisymbol{astroSYM}{123}</code>		<code>\Pisymbol{astroSYM}{247}</code>
	<code>\Pisymbol{astroSYM}{124}</code>		<code>\Pisymbol{astroSYM}{248}</code>
	<code>\Pisymbol{astroSYM}{125}</code>		<code>\Pisymbol{astroSYM}{249}</code>
	<code>\Pisymbol{astroSYM}{126}</code>		<code>\Pisymbol{astroSYM}{250}</code>
	<code>\Pisymbol{astroSYM}{127}</code>		<code>\Pisymbol{astroSYM}{251}</code>

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	<code>\Pisymbol{astrosym}{128}</code>		<code>\Pisymbol{astrosym}{252}</code>
	<code>\Pisymbol{astrosym}{129}</code>		<code>\Pisymbol{astrosym}{253}</code>
	<code>\Pisymbol{astrosym}{130}</code>		<code>\Pisymbol{astrosym}{254}</code>
	<code>\Pisymbol{astrosym}{131}</code>		<code>\Pisymbol{astrosym}{255}</code>

TABLE 672: webomints Decorative Borders

	<code>\Pisymbol{WebOMintsGD}{47}</code>		<code>\Pisymbol{WebOMintsGD}{87}</code>
	<code>\Pisymbol{WebOMintsGD}{48}</code>		<code>\Pisymbol{WebOMintsGD}{88}</code>
	<code>\Pisymbol{WebOMintsGD}{49}</code>		<code>\Pisymbol{WebOMintsGD}{89}</code>
	<code>\Pisymbol{WebOMintsGD}{50}</code>		<code>\Pisymbol{WebOMintsGD}{90}</code>
	<code>\Pisymbol{WebOMintsGD}{51}</code>		<code>\Pisymbol{WebOMintsGD}{91}</code>
	<code>\Pisymbol{WebOMintsGD}{52}</code>		<code>\Pisymbol{WebOMintsGD}{93}</code>
	<code>\Pisymbol{WebOMintsGD}{53}</code>		<code>\Pisymbol{WebOMintsGD}{97}</code>
	<code>\Pisymbol{WebOMintsGD}{54}</code>		<code>\Pisymbol{WebOMintsGD}{98}</code>
	<code>\Pisymbol{WebOMintsGD}{55}</code>		<code>\Pisymbol{WebOMintsGD}{99}</code>
	<code>\Pisymbol{WebOMintsGD}{56}</code>		<code>\Pisymbol{WebOMintsGD}{100}</code>
	<code>\Pisymbol{WebOMintsGD}{57}</code>		<code>\Pisymbol{WebOMintsGD}{101}</code>
	<code>\Pisymbol{WebOMintsGD}{65}</code>		<code>\Pisymbol{WebOMintsGD}{102}</code>
	<code>\Pisymbol{WebOMintsGD}{66}</code>		<code>\Pisymbol{WebOMintsGD}{103}</code>
	<code>\Pisymbol{WebOMintsGD}{67}</code>		<code>\Pisymbol{WebOMintsGD}{104}</code>
	<code>\Pisymbol{WebOMintsGD}{68}</code>		<code>\Pisymbol{WebOMintsGD}{105}</code>
	<code>\Pisymbol{WebOMintsGD}{69}</code>		<code>\Pisymbol{WebOMintsGD}{106}</code>
	<code>\Pisymbol{WebOMintsGD}{70}</code>		<code>\Pisymbol{WebOMintsGD}{107}</code>
	<code>\Pisymbol{WebOMintsGD}{71}</code>		<code>\Pisymbol{WebOMintsGD}{108}</code>
	<code>\Pisymbol{WebOMintsGD}{72}</code>		<code>\Pisymbol{WebOMintsGD}{109}</code>
	<code>\Pisymbol{WebOMintsGD}{73}</code>		<code>\Pisymbol{WebOMintsGD}{110}</code>
	<code>\Pisymbol{WebOMintsGD}{74}</code>		<code>\Pisymbol{WebOMintsGD}{111}</code>
	<code>\Pisymbol{WebOMintsGD}{75}</code>		<code>\Pisymbol{WebOMintsGD}{112}</code>
	<code>\Pisymbol{WebOMintsGD}{76}</code>		<code>\Pisymbol{WebOMintsGD}{113}</code>
	<code>\Pisymbol{WebOMintsGD}{77}</code>		<code>\Pisymbol{WebOMintsGD}{114}</code>
	<code>\Pisymbol{WebOMintsGD}{78}</code>		<code>\Pisymbol{WebOMintsGD}{115}</code>
	<code>\Pisymbol{WebOMintsGD}{79}</code>		<code>\Pisymbol{WebOMintsGD}{116}</code>
	<code>\Pisymbol{WebOMintsGD}{80}</code>		<code>\Pisymbol{WebOMintsGD}{117}</code>
	<code>\Pisymbol{WebOMintsGD}{81}</code>		<code>\Pisymbol{WebOMintsGD}{118}</code>
	<code>\Pisymbol{WebOMintsGD}{82}</code>		<code>\Pisymbol{WebOMintsGD}{119}</code>

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	<code>\Pisymbol{WebOMintsGD}{83}</code>		<code>\Pisymbol{WebOMintsGD}{120}</code>
	<code>\Pisymbol{WebOMintsGD}{84}</code>		<code>\Pisymbol{WebOMintsGD}{121}</code>
	<code>\Pisymbol{WebOMintsGD}{85}</code>		<code>\Pisymbol{WebOMintsGD}{122}</code>
	<code>\Pisymbol{WebOMintsGD}{86}</code>		

`webomints` provides a `uwebo.fd` font-definition file. Instead of using `pifont` and `\Pisymbol` to typeset a glyph, a document can select the `webomints` font directly. For example, `{\usefont{U}{webo}{xl}{n}\char73\char74}`—alternatively, `{\usefont{U}{webo}{xl}{n}IJ}`—will typeset “”. This can be useful for typesetting a number of `webomints` glyphs in a row.

The `niceframe` package can be used to typeset decorative frames using fonts such as `webomints`.

TABLE 673: `umranda` Decorative Borders

	<code>\Pisymbol{umranda}{0}</code>		<code>\Pisymbol{umranda}{34}</code>		<code>\Pisymbol{umranda}{68}</code>
	<code>\Pisymbol{umranda}{1}</code>		<code>\Pisymbol{umranda}{35}</code>		<code>\Pisymbol{umranda}{69}</code>
	<code>\Pisymbol{umranda}{2}</code>		<code>\Pisymbol{umranda}{36}</code>		<code>\Pisymbol{umranda}{70}</code>
	<code>\Pisymbol{umranda}{3}</code>		<code>\Pisymbol{umranda}{37}</code>		<code>\Pisymbol{umranda}{71}</code>
	<code>\Pisymbol{umranda}{4}</code>		<code>\Pisymbol{umranda}{38}</code>		<code>\Pisymbol{umranda}{72}</code>
	<code>\Pisymbol{umranda}{5}</code>		<code>\Pisymbol{umranda}{39}</code>		<code>\Pisymbol{umranda}{73}</code>
	<code>\Pisymbol{umranda}{6}</code>		<code>\Pisymbol{umranda}{40}</code>		<code>\Pisymbol{umranda}{74}</code>
	<code>\Pisymbol{umranda}{7}</code>		<code>\Pisymbol{umranda}{41}</code>		<code>\Pisymbol{umranda}{75}</code>
	<code>\Pisymbol{umranda}{8}</code>		<code>\Pisymbol{umranda}{42}</code>		<code>\Pisymbol{umranda}{76}</code>
	<code>\Pisymbol{umranda}{9}</code>		<code>\Pisymbol{umranda}{43}</code>		<code>\Pisymbol{umranda}{77}</code>
	<code>\Pisymbol{umranda}{10}</code>		<code>\Pisymbol{umranda}{44}</code>		<code>\Pisymbol{umranda}{78}</code>
	<code>\Pisymbol{umranda}{11}</code>		<code>\Pisymbol{umranda}{45}</code>		<code>\Pisymbol{umranda}{79}</code>
	<code>\Pisymbol{umranda}{12}</code>		<code>\Pisymbol{umranda}{46}</code>		<code>\Pisymbol{umranda}{80}</code>
	<code>\Pisymbol{umranda}{13}</code>		<code>\Pisymbol{umranda}{47}</code>		<code>\Pisymbol{umranda}{81}</code>
	<code>\Pisymbol{umranda}{14}</code>		<code>\Pisymbol{umranda}{48}</code>		<code>\Pisymbol{umranda}{82}</code>
	<code>\Pisymbol{umranda}{15}</code>		<code>\Pisymbol{umranda}{49}</code>		<code>\Pisymbol{umranda}{83}</code>
	<code>\Pisymbol{umranda}{16}</code>		<code>\Pisymbol{umranda}{50}</code>		<code>\Pisymbol{umranda}{84}</code>

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	<code>\Pisymbol{umranda}{17}</code>		<code>\Pisymbol{umranda}{51}</code>		<code>\Pisymbol{umranda}{85}</code>
	<code>\Pisymbol{umranda}{18}</code>		<code>\Pisymbol{umranda}{52}</code>		<code>\Pisymbol{umranda}{86}</code>
	<code>\Pisymbol{umranda}{19}</code>		<code>\Pisymbol{umranda}{53}</code>		<code>\Pisymbol{umranda}{87}</code>
	<code>\Pisymbol{umranda}{20}</code>		<code>\Pisymbol{umranda}{54}</code>		<code>\Pisymbol{umranda}{88}</code>
	<code>\Pisymbol{umranda}{21}</code>		<code>\Pisymbol{umranda}{55}</code>		<code>\Pisymbol{umranda}{89}</code>
	<code>\Pisymbol{umranda}{22}</code>		<code>\Pisymbol{umranda}{56}</code>		<code>\Pisymbol{umranda}{90}</code>
	<code>\Pisymbol{umranda}{23}</code>		<code>\Pisymbol{umranda}{57}</code>		<code>\Pisymbol{umranda}{91}</code>
	<code>\Pisymbol{umranda}{24}</code>		<code>\Pisymbol{umranda}{58}</code>		<code>\Pisymbol{umranda}{92}</code>
	<code>\Pisymbol{umranda}{25}</code>		<code>\Pisymbol{umranda}{59}</code>		<code>\Pisymbol{umranda}{93}</code>
	<code>\Pisymbol{umranda}{26}</code>		<code>\Pisymbol{umranda}{60}</code>		<code>\Pisymbol{umranda}{94}</code>
	<code>\Pisymbol{umranda}{27}</code>		<code>\Pisymbol{umranda}{61}</code>		<code>\Pisymbol{umranda}{95}</code>
	<code>\Pisymbol{umranda}{28}</code>		<code>\Pisymbol{umranda}{62}</code>		<code>\Pisymbol{umranda}{96}</code>
	<code>\Pisymbol{umranda}{29}</code>		<code>\Pisymbol{umranda}{63}</code>		<code>\Pisymbol{umranda}{97}</code>
	<code>\Pisymbol{umranda}{30}</code>		<code>\Pisymbol{umranda}{64}</code>		<code>\Pisymbol{umranda}{98}</code>
	<code>\Pisymbol{umranda}{31}</code>		<code>\Pisymbol{umranda}{65}</code>		<code>\Pisymbol{umranda}{99}</code>
	<code>\Pisymbol{umranda}{32}</code>		<code>\Pisymbol{umranda}{66}</code>		<code>\Pisymbol{umranda}{100}</code>
	<code>\Pisymbol{umranda}{33}</code>		<code>\Pisymbol{umranda}{67}</code>		<code>\Pisymbol{umranda}{101}</code>

The niceframe package can be used to typeset decorative frames using fonts such as umranda.

TABLE 674: umrandb Decorative Borders

	<code>\Pisymbol{umrandb}{0}</code>		<code>\Pisymbol{umrandb}{42}</code>		<code>\Pisymbol{umrandb}{84}</code>
	<code>\Pisymbol{umrandb}{1}</code>		<code>\Pisymbol{umrandb}{43}</code>		<code>\Pisymbol{umrandb}{85}</code>
	<code>\Pisymbol{umrandb}{2}</code>		<code>\Pisymbol{umrandb}{44}</code>		<code>\Pisymbol{umrandb}{86}</code>
	<code>\Pisymbol{umrandb}{3}</code>		<code>\Pisymbol{umrandb}{45}</code>		<code>\Pisymbol{umrandb}{87}</code>
	<code>\Pisymbol{umrandb}{4}</code>		<code>\Pisymbol{umrandb}{46}</code>		<code>\Pisymbol{umrandb}{88}</code>
	<code>\Pisymbol{umrandb}{5}</code>		<code>\Pisymbol{umrandb}{47}</code>		<code>\Pisymbol{umrandb}{89}</code>
	<code>\Pisymbol{umrandb}{6}</code>		<code>\Pisymbol{umrandb}{48}</code>		<code>\Pisymbol{umrandb}{90}</code>
	<code>\Pisymbol{umrandb}{7}</code>		<code>\Pisymbol{umrandb}{49}</code>		<code>\Pisymbol{umrandb}{91}</code>
	<code>\Pisymbol{umrandb}{8}</code>		<code>\Pisymbol{umrandb}{50}</code>		<code>\Pisymbol{umrandb}{92}</code>

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	<code>\Pisymbol{umrandb}{9}</code>		<code>\Pisymbol{umrandb}{51}</code>		<code>\Pisymbol{umrandb}{93}</code>
	<code>\Pisymbol{umrandb}{10}</code>		<code>\Pisymbol{umrandb}{52}</code>		<code>\Pisymbol{umrandb}{94}</code>
	<code>\Pisymbol{umrandb}{11}</code>		<code>\Pisymbol{umrandb}{53}</code>		<code>\Pisymbol{umrandb}{95}</code>
	<code>\Pisymbol{umrandb}{12}</code>		<code>\Pisymbol{umrandb}{54}</code>		<code>\Pisymbol{umrandb}{96}</code>
	<code>\Pisymbol{umrandb}{13}</code>		<code>\Pisymbol{umrandb}{55}</code>		<code>\Pisymbol{umrandb}{97}</code>
	<code>\Pisymbol{umrandb}{14}</code>		<code>\Pisymbol{umrandb}{56}</code>		<code>\Pisymbol{umrandb}{98}</code>
	<code>\Pisymbol{umrandb}{15}</code>		<code>\Pisymbol{umrandb}{57}</code>		<code>\Pisymbol{umrandb}{99}</code>
	<code>\Pisymbol{umrandb}{16}</code>		<code>\Pisymbol{umrandb}{58}</code>		<code>\Pisymbol{umrandb}{100}</code>
	<code>\Pisymbol{umrandb}{17}</code>		<code>\Pisymbol{umrandb}{59}</code>		<code>\Pisymbol{umrandb}{101}</code>
	<code>\Pisymbol{umrandb}{18}</code>		<code>\Pisymbol{umrandb}{60}</code>		<code>\Pisymbol{umrandb}{102}</code>
	<code>\Pisymbol{umrandb}{19}</code>		<code>\Pisymbol{umrandb}{61}</code>		<code>\Pisymbol{umrandb}{103}</code>
	<code>\Pisymbol{umrandb}{20}</code>		<code>\Pisymbol{umrandb}{62}</code>		<code>\Pisymbol{umrandb}{104}</code>
	<code>\Pisymbol{umrandb}{21}</code>		<code>\Pisymbol{umrandb}{63}</code>		<code>\Pisymbol{umrandb}{105}</code>
	<code>\Pisymbol{umrandb}{22}</code>		<code>\Pisymbol{umrandb}{64}</code>		<code>\Pisymbol{umrandb}{106}</code>
	<code>\Pisymbol{umrandb}{23}</code>		<code>\Pisymbol{umrandb}{65}</code>		<code>\Pisymbol{umrandb}{107}</code>
	<code>\Pisymbol{umrandb}{24}</code>		<code>\Pisymbol{umrandb}{66}</code>		<code>\Pisymbol{umrandb}{108}</code>
	<code>\Pisymbol{umrandb}{25}</code>		<code>\Pisymbol{umrandb}{67}</code>		<code>\Pisymbol{umrandb}{109}</code>
	<code>\Pisymbol{umrandb}{26}</code>		<code>\Pisymbol{umrandb}{68}</code>		<code>\Pisymbol{umrandb}{110}</code>
	<code>\Pisymbol{umrandb}{27}</code>		<code>\Pisymbol{umrandb}{69}</code>		<code>\Pisymbol{umrandb}{111}</code>
	<code>\Pisymbol{umrandb}{28}</code>		<code>\Pisymbol{umrandb}{70}</code>		<code>\Pisymbol{umrandb}{112}</code>
	<code>\Pisymbol{umrandb}{29}</code>		<code>\Pisymbol{umrandb}{71}</code>		<code>\Pisymbol{umrandb}{113}</code>
	<code>\Pisymbol{umrandb}{30}</code>		<code>\Pisymbol{umrandb}{72}</code>		<code>\Pisymbol{umrandb}{114}</code>
	<code>\Pisymbol{umrandb}{31}</code>		<code>\Pisymbol{umrandb}{73}</code>		<code>\Pisymbol{umrandb}{115}</code>
	<code>\Pisymbol{umrandb}{32}</code>		<code>\Pisymbol{umrandb}{74}</code>		<code>\Pisymbol{umrandb}{116}</code>
	<code>\Pisymbol{umrandb}{33}</code>		<code>\Pisymbol{umrandb}{75}</code>		<code>\Pisymbol{umrandb}{117}</code>
	<code>\Pisymbol{umrandb}{34}</code>		<code>\Pisymbol{umrandb}{76}</code>		<code>\Pisymbol{umrandb}{118}</code>
	<code>\Pisymbol{umrandb}{35}</code>		<code>\Pisymbol{umrandb}{77}</code>		<code>\Pisymbol{umrandb}{119}</code>
	<code>\Pisymbol{umrandb}{36}</code>		<code>\Pisymbol{umrandb}{78}</code>		<code>\Pisymbol{umrandb}{120}</code>
	<code>\Pisymbol{umrandb}{37}</code>		<code>\Pisymbol{umrandb}{79}</code>		<code>\Pisymbol{umrandb}{121}</code>
	<code>\Pisymbol{umrandb}{38}</code>		<code>\Pisymbol{umrandb}{80}</code>		<code>\Pisymbol{umrandb}{122}</code>
	<code>\Pisymbol{umrandb}{39}</code>		<code>\Pisymbol{umrandb}{81}</code>		<code>\Pisymbol{umrandb}{123}</code>
	<code>\Pisymbol{umrandb}{40}</code>		<code>\Pisymbol{umrandb}{82}</code>		
	<code>\Pisymbol{umrandb}{41}</code>		<code>\Pisymbol{umrandb}{83}</code>		

The niceframe package can be used to typeset decorative frames using fonts such as umrandb.

TABLE 675: dingbat Decorative Borders

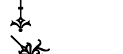
	<code>\Pisymbol{dingbat}{69}</code>		<code>\Pisymbol{dingbat}{97}</code>
	<code>\Pisymbol{dingbat}{70}</code>		<code>\Pisymbol{dingbat}{98}</code>
	<code>\Pisymbol{dingbat}{71}</code>		<code>\Pisymbol{dingbat}{99}</code>
	<code>\Pisymbol{dingbat}{72}</code>		<code>\Pisymbol{dingbat}{100}</code>
	<code>\Pisymbol{dingbat}{74}</code>		<code>\Pisymbol{dingbat}{101}</code>
	<code>\Pisymbol{dingbat}{75}</code>		<code>\Pisymbol{dingbat}{102}</code>
	<code>\Pisymbol{dingbat}{76}</code>		<code>\Pisymbol{dingbat}{103}</code>
	<code>\Pisymbol{dingbat}{77}</code>		<code>\Pisymbol{dingbat}{104}</code>

The preceding table is incomplete in that it includes only unnamed dingbat symbols. Named symbols are included in Table 403 and Table 451 (both intermixed with symbols from the `ark10` font).

The `dingbat` package includes a `udingbat.fd` file so a document does not need to specify the `\DeclareFontFamily` and `\DeclareFontShape` commands list at the beginning of Chapter 11.

The `niceframe` package can be used to typeset decorative frames using fonts such as `dingbat`.

TABLE 676: pgfornament Decorative Borders (Vintage)

	<code>\pgfornament{1}</code>		<code>\pgfornament{102}</code>
	<code>\pgfornament{2}</code>		<code>\pgfornament{103}</code>
	<code>\pgfornament{3}</code>		<code>\pgfornament{104}</code>
	<code>\pgfornament{4}</code>		<code>\pgfornament{105}</code>
	<code>\pgfornament{5}</code>		<code>\pgfornament{106}</code>
	<code>\pgfornament{6}</code>		<code>\pgfornament{107}</code>
	<code>\pgfornament{7}</code>		<code>\pgfornament{108}</code>
	<code>\pgfornament{8}</code>		<code>\pgfornament{109}</code>
	<code>\pgfornament{9}</code>		<code>\pgfornament{110}</code>
	<code>\pgfornament{10}</code>		<code>\pgfornament{111}</code>
	<code>\pgfornament{11}</code>		<code>\pgfornament{112}</code>
	<code>\pgfornament{12}</code>		<code>\pgfornament{113}</code>
	<code>\pgfornament{13}</code>		<code>\pgfornament{114}</code>
	<code>\pgfornament{14}</code>		<code>\pgfornament{115}</code>
	<code>\pgfornament{15}</code>		<code>\pgfornament{116}</code>
	<code>\pgfornament{16}</code>		<code>\pgfornament{117}</code>
	<code>\pgfornament{17}</code>		<code>\pgfornament{118}</code>
	<code>\pgfornament{18}</code>		<code>\pgfornament{119}</code>
	<code>\pgfornament{19}</code>		<code>\pgfornament{120}</code>
	<code>\pgfornament{20}</code>		<code>\pgfornament{121}</code>
	<code>\pgfornament{21}</code>		<code>\pgfornament{122}</code>
	<code>\pgfornament{22}</code>		<code>\pgfornament{123}</code>
	<code>\pgfornament{23}</code>		<code>\pgfornament{124}</code>
	<code>\pgfornament{24}</code>		<code>\pgfornament{125}</code>
	<code>\pgfornament{25}</code>		<code>\pgfornament{126}</code>
	<code>\pgfornament{26}</code>		<code>\pgfornament{127}</code>
	<code>\pgfornament{27}</code>		<code>\pgfornament{128}</code>
	<code>\pgfornament{28}</code>		<code>\pgfornament{129}</code>
	<code>\pgfornament{29}</code>		<code>\pgfornament{130}</code>
	<code>\pgfornament{30}</code>		<code>\pgfornament{131}</code>
	<code>\pgfornament{31}</code>		<code>\pgfornament{132}</code>
	<code>\pgfornament{32}</code>		<code>\pgfornament{133}</code>

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	<code>\pgfornament{33}</code>		<code>\pgfornament{134}</code>
	<code>\pgfornament{34}</code>		<code>\pgfornament{135}</code>
	<code>\pgfornament{35}</code>		<code>\pgfornament{136}</code>
	<code>\pgfornament{36}</code>		<code>\pgfornament{137}</code>
	<code>\pgfornament{37}</code>		<code>\pgfornament{138}</code>
	<code>\pgfornament{38}</code>		<code>\pgfornament{139}</code>
	<code>\pgfornament{39}</code>		<code>\pgfornament{140}</code>
	<code>\pgfornament{40}</code>		<code>\pgfornament{141}</code>
	<code>\pgfornament{41}</code>		<code>\pgfornament{142}</code>
	<code>\pgfornament{42}</code>		<code>\pgfornament{143}</code>
	<code>\pgfornament{43}</code>		<code>\pgfornament{144}</code>
	<code>\pgfornament{44}</code>		<code>\pgfornament{145}</code>
	<code>\pgfornament{45}</code>		<code>\pgfornament{146}</code>
	<code>\pgfornament{46}</code>		<code>\pgfornament{147}</code>
	<code>\pgfornament{47}</code>		<code>\pgfornament{148}</code>
	<code>\pgfornament{48}</code>		<code>\pgfornament{149}</code>
	<code>\pgfornament{49}</code>		<code>\pgfornament{150}</code>
	<code>\pgfornament{50}</code>		<code>\pgfornament{151}</code>
	<code>\pgfornament{51}</code>		<code>\pgfornament{152}</code>
	<code>\pgfornament{52}</code>		<code>\pgfornament{153}</code>
	<code>\pgfornament{53}</code>		<code>\pgfornament{154}</code>
	<code>\pgfornament{54}</code>		<code>\pgfornament{155}</code>
	<code>\pgfornament{55}</code>		<code>\pgfornament{156}</code>
	<code>\pgfornament{56}</code>		<code>\pgfornament{157}</code>
	<code>\pgfornament{57}</code>		<code>\pgfornament{158}</code>
	<code>\pgfornament{58}</code>		<code>\pgfornament{159}</code>
	<code>\pgfornament{59}</code>		<code>\pgfornament{160}</code>
	<code>\pgfornament{60}</code>		<code>\pgfornament{161}</code>
	<code>\pgfornament{61}</code>		<code>\pgfornament{162}</code>
	<code>\pgfornament{62}</code>		<code>\pgfornament{163}</code>
	<code>\pgfornament{63}</code>		<code>\pgfornament{164}</code>
	<code>\pgfornament{64}</code>		<code>\pgfornament{165}</code>
	<code>\pgfornament{65}</code>		<code>\pgfornament{166}</code>

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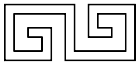
	<code>\pgfornament{66}</code>		<code>\pgfornament{167}</code>
	<code>\pgfornament{67}</code>		<code>\pgfornament{168}</code>
	<code>\pgfornament{68}</code>		<code>\pgfornament{169}</code>
	<code>\pgfornament{69}</code>		<code>\pgfornament{171}</code>
	<code>\pgfornament{70}</code>		<code>\pgfornament{172}</code>
	<code>\pgfornament{71}</code>		<code>\pgfornament{173}</code>
	<code>\pgfornament{72}</code>		<code>\pgfornament{174}</code>
	<code>\pgfornament{73}</code>		<code>\pgfornament{175}</code>
	<code>\pgfornament{74}</code>		<code>\pgfornament{176}</code>
	<code>\pgfornament{75}</code>		<code>\pgfornament{177}</code>
	<code>\pgfornament{76}</code>		<code>\pgfornament{178}</code>
	<code>\pgfornament{77}</code>		<code>\pgfornament{179}</code>
	<code>\pgfornament{78}</code>		<code>\pgfornament{180}</code>
	<code>\pgfornament{79}</code>		<code>\pgfornament{181}</code>
	<code>\pgfornament{81}</code>		<code>\pgfornament{182}</code>
	<code>\pgfornament{84}</code>		<code>\pgfornament{183}</code>
	<code>\pgfornament{87}</code>		<code>\pgfornament{184}</code>
	<code>\pgfornament{90}</code>		<code>\pgfornament{185}</code>
	<code>\pgfornament{91}</code>		<code>\pgfornament{186}</code>
	<code>\pgfornament{92}</code>		<code>\pgfornament{187}</code>
	<code>\pgfornament{93}</code>		<code>\pgfornament{188}</code>
	<code>\pgfornament{94}</code>		<code>\pgfornament{189}</code>
	<code>\pgfornament{95}</code>		<code>\pgfornament{190}</code>
	<code>\pgfornament{96}</code>		<code>\pgfornament{191}</code>
	<code>\pgfornament{97}</code>		<code>\pgfornament{192}</code>
	<code>\pgfornament{98}</code>		<code>\pgfornament{193}</code>
	<code>\pgfornament{99}</code>		<code>\pgfornament{194}</code>
	<code>\pgfornament{100}</code>		<code>\pgfornament{195}</code>
	<code>\pgfornament{101}</code>		<code>\pgfornament{196}</code>

The symbols in this table are selected with `\newpgfornamentfamily{vectorian}`. All `pgfornament` symbols are implemented with TikZ graphics, not with a font. The `\pgfornament` command supports resizing, coloring, and rotating symbols. See the `pgfornament` documentation for more information.

The following symbols are omitted from the table due to their width:

	<code>\pgfornament{80}</code>
	<code>\pgfornament{82}</code>
	<code>\pgfornament{83}</code>
	<code>\pgfornament{85}</code>
	<code>\pgfornament{86}</code>
	<code>\pgfornament{88}</code>

TABLE 677: `pgfornament` Decorative Borders (Traditional Chinese Motifs)

	<code>\pgfornament{1}</code>		<code>\pgfornament{42}</code>
	<code>\pgfornament{2}</code>		<code>\pgfornament{43}</code>
	<code>\pgfornament{3}</code>		<code>\pgfornament{44}</code>
	<code>\pgfornament{4}</code>		<code>\pgfornament{45}</code>
	<code>\pgfornament{5}</code>		<code>\pgfornament{46}</code>
	<code>\pgfornament{6}</code>		<code>\pgfornament{47}</code>
	<code>\pgfornament{7}</code>		<code>\pgfornament{48}</code>
	<code>\pgfornament{8}</code>		<code>\pgfornament{49}</code>
	<code>\pgfornament{9}</code>		<code>\pgfornament{50}</code>
	<code>\pgfornament{10}</code>		<code>\pgfornament{51}</code>
	<code>\pgfornament{11}</code>		<code>\pgfornament{52}</code>

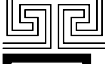
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	<code>\pgfornament{12}</code>		<code>\pgfornament{53}</code>
	<code>\pgfornament{13}</code>		<code>\pgfornament{54}</code>
	<code>\pgfornament{14}</code>		<code>\pgfornament{55}</code>
	<code>\pgfornament{15}</code>		<code>\pgfornament{56}</code>
	<code>\pgfornament{16}</code>		<code>\pgfornament{57}</code>
	<code>\pgfornament{17}</code>		<code>\pgfornament{58}</code>
	<code>\pgfornament{18}</code>		<code>\pgfornament{59}</code>
	<code>\pgfornament{19}</code>		<code>\pgfornament{60}</code>
	<code>\pgfornament{20}</code>		<code>\pgfornament{61}</code>
	<code>\pgfornament{21}</code>		<code>\pgfornament{62}</code>
	<code>\pgfornament{22}</code>		<code>\pgfornament{63}</code>
	<code>\pgfornament{23}</code>		<code>\pgfornament{64}</code>
	<code>\pgfornament{24}</code>		<code>\pgfornament{65}</code>
	<code>\pgfornament{25}</code>		<code>\pgfornament{66}</code>
	<code>\pgfornament{26}</code>		<code>\pgfornament{67}</code>
	<code>\pgfornament{27}</code>		<code>\pgfornament{68}</code>
	<code>\pgfornament{28}</code>		<code>\pgfornament{69}</code>
	<code>\pgfornament{33}</code>		<code>\pgfornament{70}</code>
	<code>\pgfornament{34}</code>		<code>\pgfornament{71}</code>
	<code>\pgfornament{35}</code>		<code>\pgfornament{72}</code>
	<code>\pgfornament{36}</code>		<code>\pgfornament{73}</code>

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	<code>\pgfornament{37}</code>		<code>\pgfornament{74}</code>
	<code>\pgfornament{38}</code>		<code>\pgfornament{75}</code>
	<code>\pgfornament{39}</code>		<code>\pgfornament{76}</code>
	<code>\pgfornament{40}</code>		<code>\pgfornament{77}</code>
	<code>\pgfornament{41}</code>		<code>\pgfornament{78}</code>

The symbols in this table are selected with `\newpgfornamentfamily{han}`. All `pgfornament` symbols are implemented with TikZ graphics, not with a font. The `\pgfornament` command supports resizing, coloring, and rotating symbols. See the `pgfornament` documentation for more information.

Not shown in the table due to their width are `\pgfornament{29}`, `\pgfornament{30}`, `\pgfornament{31}`, and `\pgfornament{32}`. These represent various horizontal rules (thick, double thin, double thick, and triple thin, respectively).

TABLE 678: knot Celtic Knots

	<code>\Pisymbol{knot1}{48}</code>		<code>\Pisymbol{knot1}{68}</code>		<code>\Pisymbol{knot1}{84}</code>
	<code>\Pisymbol{knot1}{49}</code>		<code>\Pisymbol{knot1}{69}</code>		<code>\Pisymbol{knot1}{85}</code>
	<code>\Pisymbol{knot1}{50}</code>		<code>\Pisymbol{knot1}{70}</code>		<code>\Pisymbol{knot1}{86}</code>
	<code>\Pisymbol{knot1}{51}</code>		<code>\Pisymbol{knot1}{71}</code>		<code>\Pisymbol{knot1}{87}</code>
	<code>\Pisymbol{knot1}{52}</code>		<code>\Pisymbol{knot1}{72}</code>		<code>\Pisymbol{knot1}{88}</code>
	<code>\Pisymbol{knot1}{53}</code>		<code>\Pisymbol{knot1}{73}</code>		<code>\Pisymbol{knot1}{96}</code>
	<code>\Pisymbol{knot1}{58}</code>		<code>\Pisymbol{knot1}{74}</code>		<code>\Pisymbol{knot1}{97}</code>
	<code>\Pisymbol{knot1}{59}</code>		<code>\Pisymbol{knot1}{75}</code>		<code>\Pisymbol{knot1}{98}</code>
	<code>\Pisymbol{knot1}{60}</code>		<code>\Pisymbol{knot1}{76}</code>		<code>\Pisymbol{knot1}{99}</code>
	<code>\Pisymbol{knot1}{61}</code>		<code>\Pisymbol{knot1}{77}</code>		<code>\Pisymbol{knot1}{100}</code>
	<code>\Pisymbol{knot1}{62}</code>		<code>\Pisymbol{knot1}{78}</code>		<code>\Pisymbol{knot1}{101}</code>
	<code>\Pisymbol{knot1}{63}</code>		<code>\Pisymbol{knot1}{79}</code>		<code>\Pisymbol{knot1}{102}</code>
	<code>\Pisymbol{knot1}{64}</code>		<code>\Pisymbol{knot1}{80}</code>		<code>\Pisymbol{knot1}{103}</code>

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	<code>\Pisymbol{knot1}{65}</code>		<code>\Pisymbol{knot1}{81}</code>		<code>\Pisymbol{knot1}{104}</code>
	<code>\Pisymbol{knot1}{66}</code>		<code>\Pisymbol{knot1}{82}</code>		<code>\Pisymbol{knot1}{105}</code>
	<code>\Pisymbol{knot1}{67}</code>		<code>\Pisymbol{knot1}{83}</code>		
	<code>\Pisymbol{knot2}{48}</code>		<code>\Pisymbol{knot2}{68}</code>		<code>\Pisymbol{knot2}{84}</code>
	<code>\Pisymbol{knot2}{49}</code>		<code>\Pisymbol{knot2}{69}</code>		<code>\Pisymbol{knot2}{85}</code>
	<code>\Pisymbol{knot2}{50}</code>		<code>\Pisymbol{knot2}{70}</code>		<code>\Pisymbol{knot2}{86}</code>
	<code>\Pisymbol{knot2}{51}</code>		<code>\Pisymbol{knot2}{71}</code>		<code>\Pisymbol{knot2}{87}</code>
	<code>\Pisymbol{knot2}{52}</code>		<code>\Pisymbol{knot2}{72}</code>		<code>\Pisymbol{knot2}{88}</code>
	<code>\Pisymbol{knot2}{53}</code>		<code>\Pisymbol{knot2}{73}</code>		<code>\Pisymbol{knot2}{89}</code>
	<code>\Pisymbol{knot2}{58}</code>		<code>\Pisymbol{knot2}{74}</code>		<code>\Pisymbol{knot2}{96}</code>
	<code>\Pisymbol{knot2}{59}</code>		<code>\Pisymbol{knot2}{75}</code>		<code>\Pisymbol{knot2}{97}</code>
	<code>\Pisymbol{knot2}{60}</code>		<code>\Pisymbol{knot2}{76}</code>		<code>\Pisymbol{knot2}{98}</code>
	<code>\Pisymbol{knot2}{61}</code>		<code>\Pisymbol{knot2}{77}</code>		<code>\Pisymbol{knot2}{99}</code>
	<code>\Pisymbol{knot2}{62}</code>		<code>\Pisymbol{knot2}{78}</code>		<code>\Pisymbol{knot2}{100}</code>
	<code>\Pisymbol{knot2}{63}</code>		<code>\Pisymbol{knot2}{79}</code>		<code>\Pisymbol{knot2}{101}</code>
	<code>\Pisymbol{knot2}{64}</code>		<code>\Pisymbol{knot2}{80}</code>		<code>\Pisymbol{knot2}{102}</code>
	<code>\Pisymbol{knot2}{65}</code>		<code>\Pisymbol{knot2}{81}</code>		<code>\Pisymbol{knot2}{103}</code>
	<code>\Pisymbol{knot2}{66}</code>		<code>\Pisymbol{knot2}{82}</code>		<code>\Pisymbol{knot2}{104}</code>
	<code>\Pisymbol{knot2}{67}</code>		<code>\Pisymbol{knot2}{83}</code>		<code>\Pisymbol{knot2}{105}</code>
	<code>\Pisymbol{knot3}{48}</code>		<code>\Pisymbol{knot3}{68}</code>		<code>\Pisymbol{knot3}{84}</code>
	<code>\Pisymbol{knot3}{49}</code>		<code>\Pisymbol{knot3}{69}</code>		<code>\Pisymbol{knot3}{85}</code>
	<code>\Pisymbol{knot3}{50}</code>		<code>\Pisymbol{knot3}{70}</code>		<code>\Pisymbol{knot3}{86}</code>
	<code>\Pisymbol{knot3}{51}</code>		<code>\Pisymbol{knot3}{71}</code>		<code>\Pisymbol{knot3}{87}</code>
	<code>\Pisymbol{knot3}{52}</code>		<code>\Pisymbol{knot3}{72}</code>		<code>\Pisymbol{knot3}{88}</code>
	<code>\Pisymbol{knot3}{53}</code>		<code>\Pisymbol{knot3}{73}</code>		<code>\Pisymbol{knot3}{89}</code>
	<code>\Pisymbol{knot3}{58}</code>		<code>\Pisymbol{knot3}{74}</code>		<code>\Pisymbol{knot3}{96}</code>
	<code>\Pisymbol{knot3}{59}</code>		<code>\Pisymbol{knot3}{75}</code>		<code>\Pisymbol{knot3}{97}</code>
	<code>\Pisymbol{knot3}{60}</code>		<code>\Pisymbol{knot3}{76}</code>		<code>\Pisymbol{knot3}{98}</code>
	<code>\Pisymbol{knot3}{61}</code>		<code>\Pisymbol{knot3}{77}</code>		<code>\Pisymbol{knot3}{99}</code>
	<code>\Pisymbol{knot3}{62}</code>		<code>\Pisymbol{knot3}{78}</code>		<code>\Pisymbol{knot3}{100}</code>
	<code>\Pisymbol{knot3}{63}</code>		<code>\Pisymbol{knot3}{79}</code>		<code>\Pisymbol{knot3}{101}</code>
	<code>\Pisymbol{knot3}{64}</code>		<code>\Pisymbol{knot3}{80}</code>		<code>\Pisymbol{knot3}{102}</code>
					<code>\Pisymbol{knot3}{103}</code>

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	<code>\Pisymbol{knot3}{65}</code>		<code>\Pisymbol{knot3}{81}</code>		<code>\Pisymbol{knot3}{104}</code>
	<code>\Pisymbol{knot3}{66}</code>		<code>\Pisymbol{knot3}{82}</code>		<code>\Pisymbol{knot3}{105}</code>
	<code>\Pisymbol{knot3}{67}</code>		<code>\Pisymbol{knot3}{83}</code>		
	<code>\Pisymbol{knot4}{48}</code>		<code>\Pisymbol{knot4}{68}</code>		<code>\Pisymbol{knot4}{84}</code>
	<code>\Pisymbol{knot4}{49}</code>		<code>\Pisymbol{knot4}{69}</code>		<code>\Pisymbol{knot4}{85}</code>
	<code>\Pisymbol{knot4}{50}</code>		<code>\Pisymbol{knot4}{70}</code>		<code>\Pisymbol{knot4}{86}</code>
	<code>\Pisymbol{knot4}{51}</code>		<code>\Pisymbol{knot4}{71}</code>		<code>\Pisymbol{knot4}{87}</code>
	<code>\Pisymbol{knot4}{52}</code>		<code>\Pisymbol{knot4}{72}</code>		<code>\Pisymbol{knot4}{88}</code>
	<code>\Pisymbol{knot4}{53}</code>		<code>\Pisymbol{knot4}{73}</code>		<code>\Pisymbol{knot4}{96}</code>
	<code>\Pisymbol{knot4}{58}</code>		<code>\Pisymbol{knot4}{74}</code>		<code>\Pisymbol{knot4}{97}</code>
	<code>\Pisymbol{knot4}{59}</code>		<code>\Pisymbol{knot4}{75}</code>		<code>\Pisymbol{knot4}{98}</code>
	<code>\Pisymbol{knot4}{60}</code>		<code>\Pisymbol{knot4}{76}</code>		<code>\Pisymbol{knot4}{99}</code>
	<code>\Pisymbol{knot4}{61}</code>		<code>\Pisymbol{knot4}{77}</code>		<code>\Pisymbol{knot4}{100}</code>
	<code>\Pisymbol{knot4}{62}</code>		<code>\Pisymbol{knot4}{78}</code>		<code>\Pisymbol{knot4}{101}</code>
	<code>\Pisymbol{knot4}{63}</code>		<code>\Pisymbol{knot4}{79}</code>		<code>\Pisymbol{knot4}{102}</code>
	<code>\Pisymbol{knot4}{64}</code>		<code>\Pisymbol{knot4}{80}</code>		<code>\Pisymbol{knot4}{103}</code>
	<code>\Pisymbol{knot4}{65}</code>		<code>\Pisymbol{knot4}{81}</code>		<code>\Pisymbol{knot4}{104}</code>
	<code>\Pisymbol{knot4}{66}</code>		<code>\Pisymbol{knot4}{82}</code>		<code>\Pisymbol{knot4}{105}</code>
	<code>\Pisymbol{knot4}{67}</code>		<code>\Pisymbol{knot4}{83}</code>		
	<code>\Pisymbol{knot5}{48}</code>		<code>\Pisymbol{knot5}{68}</code>		<code>\Pisymbol{knot5}{84}</code>
	<code>\Pisymbol{knot5}{49}</code>		<code>\Pisymbol{knot5}{69}</code>		<code>\Pisymbol{knot5}{85}</code>
	<code>\Pisymbol{knot5}{50}</code>		<code>\Pisymbol{knot5}{70}</code>		<code>\Pisymbol{knot5}{86}</code>
	<code>\Pisymbol{knot5}{51}</code>		<code>\Pisymbol{knot5}{71}</code>		<code>\Pisymbol{knot5}{87}</code>
	<code>\Pisymbol{knot5}{52}</code>		<code>\Pisymbol{knot5}{72}</code>		<code>\Pisymbol{knot5}{88}</code>
	<code>\Pisymbol{knot5}{53}</code>		<code>\Pisymbol{knot5}{73}</code>		<code>\Pisymbol{knot5}{96}</code>
	<code>\Pisymbol{knot5}{58}</code>		<code>\Pisymbol{knot5}{74}</code>		<code>\Pisymbol{knot5}{97}</code>
	<code>\Pisymbol{knot5}{59}</code>		<code>\Pisymbol{knot5}{75}</code>		<code>\Pisymbol{knot5}{98}</code>
	<code>\Pisymbol{knot5}{60}</code>		<code>\Pisymbol{knot5}{76}</code>		<code>\Pisymbol{knot5}{99}</code>
	<code>\Pisymbol{knot5}{61}</code>		<code>\Pisymbol{knot5}{77}</code>		<code>\Pisymbol{knot5}{100}</code>
	<code>\Pisymbol{knot5}{62}</code>		<code>\Pisymbol{knot5}{78}</code>		<code>\Pisymbol{knot5}{101}</code>
	<code>\Pisymbol{knot5}{63}</code>		<code>\Pisymbol{knot5}{79}</code>		<code>\Pisymbol{knot5}{102}</code>
	<code>\Pisymbol{knot5}{64}</code>		<code>\Pisymbol{knot5}{80}</code>		<code>\Pisymbol{knot5}{103}</code>

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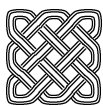
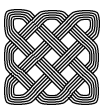
	<code>\Pisymbol{knot5}{65}</code>		<code>\Pisymbol{knot5}{81}</code>		<code>\Pisymbol{knot5}{104}</code>
	<code>\Pisymbol{knot5}{66}</code>		<code>\Pisymbol{knot5}{82}</code>		<code>\Pisymbol{knot5}{105}</code>
	<code>\Pisymbol{knot5}{67}</code>		<code>\Pisymbol{knot5}{83}</code>		
	<code>\Pisymbol{knot6}{48}</code>		<code>\Pisymbol{knot6}{68}</code>		<code>\Pisymbol{knot6}{84}</code>
	<code>\Pisymbol{knot6}{49}</code>		<code>\Pisymbol{knot6}{69}</code>		<code>\Pisymbol{knot6}{85}</code>
	<code>\Pisymbol{knot6}{50}</code>		<code>\Pisymbol{knot6}{70}</code>		<code>\Pisymbol{knot6}{86}</code>
	<code>\Pisymbol{knot6}{51}</code>		<code>\Pisymbol{knot6}{71}</code>		<code>\Pisymbol{knot6}{87}</code>
	<code>\Pisymbol{knot6}{52}</code>		<code>\Pisymbol{knot6}{72}</code>		<code>\Pisymbol{knot6}{88}</code>
	<code>\Pisymbol{knot6}{53}</code>		<code>\Pisymbol{knot6}{73}</code>		<code>\Pisymbol{knot6}{96}</code>
	<code>\Pisymbol{knot6}{58}</code>		<code>\Pisymbol{knot6}{74}</code>		<code>\Pisymbol{knot6}{97}</code>
	<code>\Pisymbol{knot6}{59}</code>		<code>\Pisymbol{knot6}{75}</code>		<code>\Pisymbol{knot6}{98}</code>
	<code>\Pisymbol{knot6}{60}</code>		<code>\Pisymbol{knot6}{76}</code>		<code>\Pisymbol{knot6}{99}</code>
	<code>\Pisymbol{knot6}{61}</code>		<code>\Pisymbol{knot6}{77}</code>		<code>\Pisymbol{knot6}{100}</code>
	<code>\Pisymbol{knot6}{62}</code>		<code>\Pisymbol{knot6}{78}</code>		<code>\Pisymbol{knot6}{101}</code>
	<code>\Pisymbol{knot6}{63}</code>		<code>\Pisymbol{knot6}{79}</code>		<code>\Pisymbol{knot6}{102}</code>
	<code>\Pisymbol{knot6}{64}</code>		<code>\Pisymbol{knot6}{80}</code>		<code>\Pisymbol{knot6}{103}</code>
	<code>\Pisymbol{knot6}{65}</code>		<code>\Pisymbol{knot6}{81}</code>		<code>\Pisymbol{knot6}{104}</code>
	<code>\Pisymbol{knot6}{66}</code>		<code>\Pisymbol{knot6}{82}</code>		<code>\Pisymbol{knot6}{105}</code>
	<code>\Pisymbol{knot6}{67}</code>		<code>\Pisymbol{knot6}{83}</code>		
	<code>\Pisymbol{knot7}{48}</code>		<code>\Pisymbol{knot7}{68}</code>		<code>\Pisymbol{knot7}{84}</code>
	<code>\Pisymbol{knot7}{49}</code>		<code>\Pisymbol{knot7}{69}</code>		<code>\Pisymbol{knot7}{85}</code>
	<code>\Pisymbol{knot7}{50}</code>		<code>\Pisymbol{knot7}{70}</code>		<code>\Pisymbol{knot7}{86}</code>
	<code>\Pisymbol{knot7}{51}</code>		<code>\Pisymbol{knot7}{71}</code>		<code>\Pisymbol{knot7}{87}</code>
	<code>\Pisymbol{knot7}{52}</code>		<code>\Pisymbol{knot7}{72}</code>		<code>\Pisymbol{knot7}{88}</code>
	<code>\Pisymbol{knot7}{53}</code>		<code>\Pisymbol{knot7}{73}</code>		<code>\Pisymbol{knot7}{96}</code>
	<code>\Pisymbol{knot7}{58}</code>		<code>\Pisymbol{knot7}{74}</code>		<code>\Pisymbol{knot7}{97}</code>
	<code>\Pisymbol{knot7}{59}</code>		<code>\Pisymbol{knot7}{75}</code>		<code>\Pisymbol{knot7}{98}</code>
	<code>\Pisymbol{knot7}{60}</code>		<code>\Pisymbol{knot7}{76}</code>		<code>\Pisymbol{knot7}{99}</code>
	<code>\Pisymbol{knot7}{61}</code>		<code>\Pisymbol{knot7}{77}</code>		<code>\Pisymbol{knot7}{100}</code>
	<code>\Pisymbol{knot7}{62}</code>		<code>\Pisymbol{knot7}{78}</code>		<code>\Pisymbol{knot7}{101}</code>
	<code>\Pisymbol{knot7}{63}</code>		<code>\Pisymbol{knot7}{79}</code>		<code>\Pisymbol{knot7}{102}</code>
	<code>\Pisymbol{knot7}{64}</code>		<code>\Pisymbol{knot7}{80}</code>		<code>\Pisymbol{knot7}{103}</code>

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	<code>\Pisymbol{knot7}{65}</code>		<code>\Pisymbol{knot7}{81}</code>		<code>\Pisymbol{knot7}{104}</code>
	<code>\Pisymbol{knot7}{66}</code>		<code>\Pisymbol{knot7}{82}</code>		<code>\Pisymbol{knot7}{105}</code>
	<code>\Pisymbol{knot7}{67}</code>		<code>\Pisymbol{knot7}{83}</code>		

The following is an example of a basic knot, using `\usefont{U}{knot<number>}{m}{n}` to change fonts for multiple characters instead of `\Pisymbol` to typeset one character at a time. Note that all of the characters in the knot fonts lie conveniently within the range of printable ASCII characters.

Input	knot1	knot2	knot3	knot4	knot5	knot6	knot7
CDB							
FHG							
@EA							

The `niceframe` package can be used to typeset decorative frames using fonts such as `knot`, especially using characters 48–63 of each font variant.

TABLE 679: dancers Dancing Men

	<code>\Pisymbol{dancers}{0}</code>		<code>\Pisymbol{dancers}{86}</code>		<code>\Pisymbol{dancers}{172}</code>
	<code>\Pisymbol{dancers}{1}</code>		<code>\Pisymbol{dancers}{87}</code>		<code>\Pisymbol{dancers}{173}</code>
	<code>\Pisymbol{dancers}{2}</code>		<code>\Pisymbol{dancers}{88}</code>		<code>\Pisymbol{dancers}{174}</code>
	<code>\Pisymbol{dancers}{3}</code>		<code>\Pisymbol{dancers}{89}</code>		<code>\Pisymbol{dancers}{175}</code>
	<code>\Pisymbol{dancers}{4}</code>		<code>\Pisymbol{dancers}{90}</code>		<code>\Pisymbol{dancers}{176}</code>
	<code>\Pisymbol{dancers}{5}</code>		<code>\Pisymbol{dancers}{91}</code>		<code>\Pisymbol{dancers}{177}</code>
	<code>\Pisymbol{dancers}{6}</code>		<code>\Pisymbol{dancers}{92}</code>		<code>\Pisymbol{dancers}{178}</code>
	<code>\Pisymbol{dancers}{7}</code>		<code>\Pisymbol{dancers}{93}</code>		<code>\Pisymbol{dancers}{179}</code>
	<code>\Pisymbol{dancers}{8}</code>		<code>\Pisymbol{dancers}{94}</code>		<code>\Pisymbol{dancers}{180}</code>
	<code>\Pisymbol{dancers}{9}</code>		<code>\Pisymbol{dancers}{95}</code>		<code>\Pisymbol{dancers}{181}</code>
	<code>\Pisymbol{dancers}{10}</code>		<code>\Pisymbol{dancers}{96}</code>		<code>\Pisymbol{dancers}{182}</code>
	<code>\Pisymbol{dancers}{11}</code>		<code>\Pisymbol{dancers}{97}</code>		<code>\Pisymbol{dancers}{183}</code>

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	<code>\Pisymbol{dancers}{12}</code>		<code>\Pisymbol{dancers}{98}</code>		<code>\Pisymbol{dancers}{184}</code>
	<code>\Pisymbol{dancers}{13}</code>		<code>\Pisymbol{dancers}{99}</code>		<code>\Pisymbol{dancers}{185}</code>
	<code>\Pisymbol{dancers}{14}</code>		<code>\Pisymbol{dancers}{100}</code>		<code>\Pisymbol{dancers}{186}</code>
	<code>\Pisymbol{dancers}{15}</code>		<code>\Pisymbol{dancers}{101}</code>		<code>\Pisymbol{dancers}{187}</code>
	<code>\Pisymbol{dancers}{16}</code>		<code>\Pisymbol{dancers}{102}</code>		<code>\Pisymbol{dancers}{188}</code>
	<code>\Pisymbol{dancers}{17}</code>		<code>\Pisymbol{dancers}{103}</code>		<code>\Pisymbol{dancers}{189}</code>
	<code>\Pisymbol{dancers}{18}</code>		<code>\Pisymbol{dancers}{104}</code>		<code>\Pisymbol{dancers}{190}</code>
	<code>\Pisymbol{dancers}{19}</code>		<code>\Pisymbol{dancers}{105}</code>		<code>\Pisymbol{dancers}{191}</code>
	<code>\Pisymbol{dancers}{20}</code>		<code>\Pisymbol{dancers}{106}</code>		<code>\Pisymbol{dancers}{192}</code>
	<code>\Pisymbol{dancers}{21}</code>		<code>\Pisymbol{dancers}{107}</code>		<code>\Pisymbol{dancers}{193}</code>
	<code>\Pisymbol{dancers}{22}</code>		<code>\Pisymbol{dancers}{108}</code>		<code>\Pisymbol{dancers}{194}</code>
	<code>\Pisymbol{dancers}{23}</code>		<code>\Pisymbol{dancers}{109}</code>		<code>\Pisymbol{dancers}{195}</code>
	<code>\Pisymbol{dancers}{24}</code>		<code>\Pisymbol{dancers}{110}</code>		<code>\Pisymbol{dancers}{196}</code>
	<code>\Pisymbol{dancers}{25}</code>		<code>\Pisymbol{dancers}{111}</code>		<code>\Pisymbol{dancers}{197}</code>
	<code>\Pisymbol{dancers}{26}</code>		<code>\Pisymbol{dancers}{112}</code>		<code>\Pisymbol{dancers}{198}</code>
	<code>\Pisymbol{dancers}{27}</code>		<code>\Pisymbol{dancers}{113}</code>		<code>\Pisymbol{dancers}{199}</code>
	<code>\Pisymbol{dancers}{28}</code>		<code>\Pisymbol{dancers}{114}</code>		<code>\Pisymbol{dancers}{200}</code>
	<code>\Pisymbol{dancers}{29}</code>		<code>\Pisymbol{dancers}{115}</code>		<code>\Pisymbol{dancers}{201}</code>
	<code>\Pisymbol{dancers}{30}</code>		<code>\Pisymbol{dancers}{116}</code>		<code>\Pisymbol{dancers}{202}</code>
	<code>\Pisymbol{dancers}{31}</code>		<code>\Pisymbol{dancers}{117}</code>		<code>\Pisymbol{dancers}{203}</code>
	<code>\Pisymbol{dancers}{32}</code>		<code>\Pisymbol{dancers}{118}</code>		<code>\Pisymbol{dancers}{204}</code>
	<code>\Pisymbol{dancers}{33}</code>		<code>\Pisymbol{dancers}{119}</code>		<code>\Pisymbol{dancers}{205}</code>
	<code>\Pisymbol{dancers}{34}</code>		<code>\Pisymbol{dancers}{120}</code>		<code>\Pisymbol{dancers}{206}</code>
	<code>\Pisymbol{dancers}{35}</code>		<code>\Pisymbol{dancers}{121}</code>		<code>\Pisymbol{dancers}{207}</code>
	<code>\Pisymbol{dancers}{36}</code>		<code>\Pisymbol{dancers}{122}</code>		<code>\Pisymbol{dancers}{208}</code>
	<code>\Pisymbol{dancers}{37}</code>		<code>\Pisymbol{dancers}{123}</code>		<code>\Pisymbol{dancers}{209}</code>
	<code>\Pisymbol{dancers}{38}</code>		<code>\Pisymbol{dancers}{124}</code>		<code>\Pisymbol{dancers}{210}</code>
	<code>\Pisymbol{dancers}{39}</code>		<code>\Pisymbol{dancers}{125}</code>		<code>\Pisymbol{dancers}{211}</code>
	<code>\Pisymbol{dancers}{40}</code>		<code>\Pisymbol{dancers}{126}</code>		<code>\Pisymbol{dancers}{212}</code>
	<code>\Pisymbol{dancers}{41}</code>		<code>\Pisymbol{dancers}{127}</code>		<code>\Pisymbol{dancers}{213}</code>

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	<code>\Pisymbol{dancers}{42}</code>		<code>\Pisymbol{dancers}{128}</code>		<code>\Pisymbol{dancers}{214}</code>
	<code>\Pisymbol{dancers}{43}</code>		<code>\Pisymbol{dancers}{129}</code>		<code>\Pisymbol{dancers}{215}</code>
	<code>\Pisymbol{dancers}{44}</code>		<code>\Pisymbol{dancers}{130}</code>		<code>\Pisymbol{dancers}{216}</code>
	<code>\Pisymbol{dancers}{45}</code>		<code>\Pisymbol{dancers}{131}</code>		<code>\Pisymbol{dancers}{217}</code>
	<code>\Pisymbol{dancers}{46}</code>		<code>\Pisymbol{dancers}{132}</code>		<code>\Pisymbol{dancers}{218}</code>
	<code>\Pisymbol{dancers}{47}</code>		<code>\Pisymbol{dancers}{133}</code>		<code>\Pisymbol{dancers}{219}</code>
	<code>\Pisymbol{dancers}{48}</code>		<code>\Pisymbol{dancers}{134}</code>		<code>\Pisymbol{dancers}{220}</code>
	<code>\Pisymbol{dancers}{49}</code>		<code>\Pisymbol{dancers}{135}</code>		<code>\Pisymbol{dancers}{221}</code>
	<code>\Pisymbol{dancers}{50}</code>		<code>\Pisymbol{dancers}{136}</code>		<code>\Pisymbol{dancers}{222}</code>
	<code>\Pisymbol{dancers}{51}</code>		<code>\Pisymbol{dancers}{137}</code>		<code>\Pisymbol{dancers}{223}</code>
	<code>\Pisymbol{dancers}{52}</code>		<code>\Pisymbol{dancers}{138}</code>		<code>\Pisymbol{dancers}{224}</code>
	<code>\Pisymbol{dancers}{53}</code>		<code>\Pisymbol{dancers}{139}</code>		<code>\Pisymbol{dancers}{225}</code>
	<code>\Pisymbol{dancers}{54}</code>		<code>\Pisymbol{dancers}{140}</code>		<code>\Pisymbol{dancers}{226}</code>
	<code>\Pisymbol{dancers}{55}</code>		<code>\Pisymbol{dancers}{141}</code>		<code>\Pisymbol{dancers}{227}</code>
	<code>\Pisymbol{dancers}{56}</code>		<code>\Pisymbol{dancers}{142}</code>		<code>\Pisymbol{dancers}{228}</code>
	<code>\Pisymbol{dancers}{57}</code>		<code>\Pisymbol{dancers}{143}</code>		<code>\Pisymbol{dancers}{229}</code>
	<code>\Pisymbol{dancers}{58}</code>		<code>\Pisymbol{dancers}{144}</code>		<code>\Pisymbol{dancers}{230}</code>
	<code>\Pisymbol{dancers}{59}</code>		<code>\Pisymbol{dancers}{145}</code>		<code>\Pisymbol{dancers}{231}</code>
	<code>\Pisymbol{dancers}{60}</code>		<code>\Pisymbol{dancers}{146}</code>		<code>\Pisymbol{dancers}{232}</code>
	<code>\Pisymbol{dancers}{61}</code>		<code>\Pisymbol{dancers}{147}</code>		<code>\Pisymbol{dancers}{233}</code>
	<code>\Pisymbol{dancers}{62}</code>		<code>\Pisymbol{dancers}{148}</code>		<code>\Pisymbol{dancers}{234}</code>
	<code>\Pisymbol{dancers}{63}</code>		<code>\Pisymbol{dancers}{149}</code>		<code>\Pisymbol{dancers}{235}</code>
	<code>\Pisymbol{dancers}{64}</code>		<code>\Pisymbol{dancers}{150}</code>		<code>\Pisymbol{dancers}{236}</code>
	<code>\Pisymbol{dancers}{65}</code>		<code>\Pisymbol{dancers}{151}</code>		<code>\Pisymbol{dancers}{237}</code>
	<code>\Pisymbol{dancers}{66}</code>		<code>\Pisymbol{dancers}{152}</code>		<code>\Pisymbol{dancers}{238}</code>
	<code>\Pisymbol{dancers}{67}</code>		<code>\Pisymbol{dancers}{153}</code>		<code>\Pisymbol{dancers}{239}</code>
	<code>\Pisymbol{dancers}{68}</code>		<code>\Pisymbol{dancers}{154}</code>		<code>\Pisymbol{dancers}{240}</code>
	<code>\Pisymbol{dancers}{69}</code>		<code>\Pisymbol{dancers}{155}</code>		<code>\Pisymbol{dancers}{241}</code>
	<code>\Pisymbol{dancers}{70}</code>		<code>\Pisymbol{dancers}{156}</code>		<code>\Pisymbol{dancers}{242}</code>
	<code>\Pisymbol{dancers}{71}</code>		<code>\Pisymbol{dancers}{157}</code>		<code>\Pisymbol{dancers}{243}</code>

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	<code>\Pisymbol{dancers}{72}</code>		<code>\Pisymbol{dancers}{158}</code>		<code>\Pisymbol{dancers}{244}</code>
	<code>\Pisymbol{dancers}{73}</code>		<code>\Pisymbol{dancers}{159}</code>		<code>\Pisymbol{dancers}{245}</code>
	<code>\Pisymbol{dancers}{74}</code>		<code>\Pisymbol{dancers}{160}</code>		<code>\Pisymbol{dancers}{246}</code>
	<code>\Pisymbol{dancers}{75}</code>		<code>\Pisymbol{dancers}{161}</code>		<code>\Pisymbol{dancers}{247}</code>
	<code>\Pisymbol{dancers}{76}</code>		<code>\Pisymbol{dancers}{162}</code>		<code>\Pisymbol{dancers}{248}</code>
	<code>\Pisymbol{dancers}{77}</code>		<code>\Pisymbol{dancers}{163}</code>		<code>\Pisymbol{dancers}{249}</code>
	<code>\Pisymbol{dancers}{78}</code>		<code>\Pisymbol{dancers}{164}</code>		<code>\Pisymbol{dancers}{250}</code>
	<code>\Pisymbol{dancers}{79}</code>		<code>\Pisymbol{dancers}{165}</code>		<code>\Pisymbol{dancers}{251}</code>
	<code>\Pisymbol{dancers}{80}</code>		<code>\Pisymbol{dancers}{166}</code>		<code>\Pisymbol{dancers}{252}</code>
	<code>\Pisymbol{dancers}{81}</code>		<code>\Pisymbol{dancers}{167}</code>		<code>\Pisymbol{dancers}{253}</code>
	<code>\Pisymbol{dancers}{82}</code>		<code>\Pisymbol{dancers}{168}</code>		<code>\Pisymbol{dancers}{254}</code>
	<code>\Pisymbol{dancers}{83}</code>		<code>\Pisymbol{dancers}{169}</code>		<code>\Pisymbol{dancers}{255}</code>
	<code>\Pisymbol{dancers}{84}</code>		<code>\Pisymbol{dancers}{170}</code>		
	<code>\Pisymbol{dancers}{85}</code>		<code>\Pisymbol{dancers}{171}</code>		

Fans of Sherlock Holmes mysteries will recognize these glyphs as forming the substitution cipher featured in Sir Arthur Conan Doyle's *The Adventure of the Dancing Men* (1903).

TABLE 680: semaphor Semaphore Alphabet

	<code>\Pisymbol{smfpr10}{34}</code>		<code>\Pisymbol{smfpr10}{116}</code>		<code>\Pisymbol{smfpr10}{184}</code>
	<code>\Pisymbol{smfpr10}{35}</code>		<code>\Pisymbol{smfpr10}{117}</code>		<code>\Pisymbol{smfpr10}{185}</code>
	<code>\Pisymbol{smfpr10}{36}</code>		<code>\Pisymbol{smfpr10}{118}</code>		<code>\Pisymbol{smfpr10}{186}</code>
	<code>\Pisymbol{smfpr10}{42}</code>		<code>\Pisymbol{smfpr10}{119}</code>		<code>\Pisymbol{smfpr10}{187}</code>
	<code>\Pisymbol{smfpr10}{46}</code>		<code>\Pisymbol{smfpr10}{120}</code>		<code>\Pisymbol{smfpr10}{192}</code>
	<code>\Pisymbol{smfpr10}{48}</code>		<code>\Pisymbol{smfpr10}{121}</code>		<code>\Pisymbol{smfpr10}{193}</code>
	<code>\Pisymbol{smfpr10}{49}</code>		<code>\Pisymbol{smfpr10}{122}</code>		<code>\Pisymbol{smfpr10}{194}</code>
	<code>\Pisymbol{smfpr10}{50}</code>		<code>\Pisymbol{smfpr10}{126}</code>		<code>\Pisymbol{smfpr10}{195}</code>
	<code>\Pisymbol{smfpr10}{51}</code>		<code>\Pisymbol{smfpr10}{128}</code>		<code>\Pisymbol{smfpr10}{196}</code>
	<code>\Pisymbol{smfpr10}{52}</code>		<code>\Pisymbol{smfpr10}{129}</code>		<code>\Pisymbol{smfpr10}{197}</code>
	<code>\Pisymbol{smfpr10}{53}</code>		<code>\Pisymbol{smfpr10}{130}</code>		<code>\Pisymbol{smfpr10}{199}</code>

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	<code>\Pisymbol{smfpr10}{54}</code>		<code>\Pisymbol{smfpr10}{131}</code>		<code>\Pisymbol{smfpr10}{200}</code>
	<code>\Pisymbol{smfpr10}{55}</code>		<code>\Pisymbol{smfpr10}{132}</code>		<code>\Pisymbol{smfpr10}{201}</code>
	<code>\Pisymbol{smfpr10}{56}</code>		<code>\Pisymbol{smfpr10}{133}</code>		<code>\Pisymbol{smfpr10}{202}</code>
	<code>\Pisymbol{smfpr10}{57}</code>		<code>\Pisymbol{smfpr10}{134}</code>		<code>\Pisymbol{smfpr10}{203}</code>
	<code>\Pisymbol{smfpr10}{65}</code>		<code>\Pisymbol{smfpr10}{135}</code>		<code>\Pisymbol{smfpr10}{204}</code>
	<code>\Pisymbol{smfpr10}{66}</code>		<code>\Pisymbol{smfpr10}{136}</code>		<code>\Pisymbol{smfpr10}{205}</code>
	<code>\Pisymbol{smfpr10}{67}</code>		<code>\Pisymbol{smfpr10}{137}</code>		<code>\Pisymbol{smfpr10}{206}</code>
	<code>\Pisymbol{smfpr10}{68}</code>		<code>\Pisymbol{smfpr10}{138}</code>		<code>\Pisymbol{smfpr10}{207}</code>
	<code>\Pisymbol{smfpr10}{69}</code>		<code>\Pisymbol{smfpr10}{139}</code>		<code>\Pisymbol{smfpr10}{209}</code>
	<code>\Pisymbol{smfpr10}{70}</code>		<code>\Pisymbol{smfpr10}{140}</code>		<code>\Pisymbol{smfpr10}{210}</code>
	<code>\Pisymbol{smfpr10}{71}</code>		<code>\Pisymbol{smfpr10}{142}</code>		<code>\Pisymbol{smfpr10}{211}</code>
	<code>\Pisymbol{smfpr10}{72}</code>		<code>\Pisymbol{smfpr10}{143}</code>		<code>\Pisymbol{smfpr10}{212}</code>
	<code>\Pisymbol{smfpr10}{73}</code>		<code>\Pisymbol{smfpr10}{144}</code>		<code>\Pisymbol{smfpr10}{213}</code>
	<code>\Pisymbol{smfpr10}{74}</code>		<code>\Pisymbol{smfpr10}{145}</code>		<code>\Pisymbol{smfpr10}{214}</code>
	<code>\Pisymbol{smfpr10}{75}</code>		<code>\Pisymbol{smfpr10}{146}</code>		<code>\Pisymbol{smfpr10}{216}</code>
	<code>\Pisymbol{smfpr10}{76}</code>		<code>\Pisymbol{smfpr10}{147}</code>		<code>\Pisymbol{smfpr10}{217}</code>
	<code>\Pisymbol{smfpr10}{77}</code>		<code>\Pisymbol{smfpr10}{148}</code>		<code>\Pisymbol{smfpr10}{218}</code>
	<code>\Pisymbol{smfpr10}{78}</code>		<code>\Pisymbol{smfpr10}{149}</code>		<code>\Pisymbol{smfpr10}{219}</code>
	<code>\Pisymbol{smfpr10}{79}</code>		<code>\Pisymbol{smfpr10}{150}</code>		<code>\Pisymbol{smfpr10}{220}</code>
	<code>\Pisymbol{smfpr10}{80}</code>		<code>\Pisymbol{smfpr10}{151}</code>		<code>\Pisymbol{smfpr10}{221}</code>
	<code>\Pisymbol{smfpr10}{81}</code>		<code>\Pisymbol{smfpr10}{152}</code>		<code>\Pisymbol{smfpr10}{224}</code>
	<code>\Pisymbol{smfpr10}{82}</code>		<code>\Pisymbol{smfpr10}{153}</code>		<code>\Pisymbol{smfpr10}{225}</code>
	<code>\Pisymbol{smfpr10}{83}</code>		<code>\Pisymbol{smfpr10}{154}</code>		<code>\Pisymbol{smfpr10}{226}</code>
	<code>\Pisymbol{smfpr10}{84}</code>		<code>\Pisymbol{smfpr10}{155}</code>		<code>\Pisymbol{smfpr10}{227}</code>
	<code>\Pisymbol{smfpr10}{85}</code>		<code>\Pisymbol{smfpr10}{157}</code>		<code>\Pisymbol{smfpr10}{228}</code>
	<code>\Pisymbol{smfpr10}{86}</code>		<code>\Pisymbol{smfpr10}{158}</code>		<code>\Pisymbol{smfpr10}{229}</code>
	<code>\Pisymbol{smfpr10}{87}</code>		<code>\Pisymbol{smfpr10}{160}</code>		<code>\Pisymbol{smfpr10}{231}</code>
	<code>\Pisymbol{smfpr10}{88}</code>		<code>\Pisymbol{smfpr10}{161}</code>		<code>\Pisymbol{smfpr10}{232}</code>
	<code>\Pisymbol{smfpr10}{89}</code>		<code>\Pisymbol{smfpr10}{162}</code>		<code>\Pisymbol{smfpr10}{233}</code>
	<code>\Pisymbol{smfpr10}{90}</code>		<code>\Pisymbol{smfpr10}{163}</code>		<code>\Pisymbol{smfpr10}{234}</code>
	<code>\Pisymbol{smfpr10}{97}</code>		<code>\Pisymbol{smfpr10}{164}</code>		<code>\Pisymbol{smfpr10}{235}</code>
	<code>\Pisymbol{smfpr10}{98}</code>		<code>\Pisymbol{smfpr10}{165}</code>		<code>\Pisymbol{smfpr10}{236}</code>
	<code>\Pisymbol{smfpr10}{99}</code>		<code>\Pisymbol{smfpr10}{166}</code>		<code>\Pisymbol{smfpr10}{237}</code>
	<code>\Pisymbol{smfpr10}{100}</code>		<code>\Pisymbol{smfpr10}{167}</code>		<code>\Pisymbol{smfpr10}{238}</code>
	<code>\Pisymbol{smfpr10}{101}</code>		<code>\Pisymbol{smfpr10}{168}</code>		<code>\Pisymbol{smfpr10}{239}</code>
	<code>\Pisymbol{smfpr10}{102}</code>		<code>\Pisymbol{smfpr10}{169}</code>		<code>\Pisymbol{smfpr10}{241}</code>
	<code>\Pisymbol{smfpr10}{103}</code>		<code>\Pisymbol{smfpr10}{170}</code>		<code>\Pisymbol{smfpr10}{242}</code>
	<code>\Pisymbol{smfpr10}{104}</code>		<code>\Pisymbol{smfpr10}{171}</code>		<code>\Pisymbol{smfpr10}{243}</code>
	<code>\Pisymbol{smfpr10}{105}</code>		<code>\Pisymbol{smfpr10}{172}</code>		<code>\Pisymbol{smfpr10}{244}</code>
	<code>\Pisymbol{smfpr10}{106}</code>		<code>\Pisymbol{smfpr10}{174}</code>		<code>\Pisymbol{smfpr10}{245}</code>
	<code>\Pisymbol{smfpr10}{107}</code>		<code>\Pisymbol{smfpr10}{175}</code>		<code>\Pisymbol{smfpr10}{246}</code>
	<code>\Pisymbol{smfpr10}{108}</code>		<code>\Pisymbol{smfpr10}{176}</code>		<code>\Pisymbol{smfpr10}{248}</code>
	<code>\Pisymbol{smfpr10}{109}</code>		<code>\Pisymbol{smfpr10}{177}</code>		<code>\Pisymbol{smfpr10}{249}</code>
	<code>\Pisymbol{smfpr10}{110}</code>		<code>\Pisymbol{smfpr10}{178}</code>		<code>\Pisymbol{smfpr10}{250}</code>
	<code>\Pisymbol{smfpr10}{111}</code>		<code>\Pisymbol{smfpr10}{179}</code>		<code>\Pisymbol{smfpr10}{251}</code>

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	<code>\Pisymbol{smfpr10}{112}</code>		<code>\Pisymbol{smfpr10}{180}</code>		<code>\Pisymbol{smfpr10}{252}</code>
	<code>\Pisymbol{smfpr10}{113}</code>		<code>\Pisymbol{smfpr10}{181}</code>		<code>\Pisymbol{smfpr10}{253}</code>
	<code>\Pisymbol{smfpr10}{114}</code>		<code>\Pisymbol{smfpr10}{182}</code>		
	<code>\Pisymbol{smfpr10}{115}</code>		<code>\Pisymbol{smfpr10}{183}</code>		

`semaphor` provides a `semaf.fd` font-definition file. Instead of using `pifont` and `\Pisymbol` to typeset a glyph, a document can select the `semaphor` fonts directly, although this does require putting `\input{semaf.fd}` in the document's preamble. For example, `{\usefont{OT1}{smfp}{m}{n}Hello}` will typeset “ ”. This can be useful for typesetting complete messages. Roman, bold, monospace, slanted, and bold+slanted styles are all supported.

In addition, `semaphor` provides three variations of each font: a “person” version (`smfpr10`), which is what is illustrated in the preceding table, a “pillar” version (`smfr10`), which shows the flags on a pillar rather than being held by a person, and an “empty” version (`smfer10`), which shows only the flags and no pillar or person. Contrast these variations of the letter “H”:



TABLE 681: lcircuit Logic Gates and VLSI Symbols

	<code>\usebox{\ande}</code>		<code>\usebox{\nfete}</code>		<code>\usebox{\ots}</code>
	<code>\usebox{\andn}</code>		<code>\usebox{\nfetn}</code>		<code>\usebox{\otw}</code>
	<code>\usebox{\ands}</code>		<code>\usebox{\nfets}</code>		<code>\usebox{\pfete}</code>
	<code>\usebox{\andw}</code>		<code>\usebox{\nfetw}</code>		<code>\usebox{\pfetn}</code>
	<code>\usebox{\capew}</code>		<code>\usebox{\nore}</code>		<code>\usebox{\pfets}</code>
	<code>\usebox{\capns}</code>		<code>\usebox{\norn}</code>		<code>\usebox{\pfetw}</code>
	<code>\usebox{\exore}</code>		<code>\usebox{\nors}</code>		<code>\usebox{\resew}</code>
	<code>\usebox{\exorn}</code>		<code>\usebox{\norw}</code>		<code>\usebox{\resns}</code>
	<code>\usebox{\exors}</code>		<code>\usebox{\note}</code>		<code>\usebox{\tgateew}</code>
	<code>\usebox{\exorw}</code>		<code>\usebox{\notn}</code>		<code>\usebox{\tgateens}</code>
	<code>\usebox{\nande}</code>		<code>\usebox{\nots}</code>		<code>\usebox{\tje}</code>
	<code>\usebox{\nandn}</code>		<code>\usebox{\notw}</code>		<code>\usebox{\tjn}</code>
	<code>\usebox{\nands}</code>		<code>\usebox{\ore}</code>		<code>\usebox{\tjs}</code>

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	<code>\usebox{\nandw}</code>		<code>\usebox{\orn}</code>		<code>\usebox{\tjw}</code>
	<code>\usebox{\nexore}</code>		<code>\usebox{\ors}</code>		<code>\usebox{\vddpin}</code>
	<code>\usebox{\nexorn}</code>		<code>\usebox{\orw}</code>		<code>\usebox{\vsspin}</code>
	<code>\usebox{\nexors}</code>		<code>\usebox{\ote}</code>		
	<code>\usebox{\nexorw}</code>		<code>\usebox{\otn}</code>		

Each of these symbols first must be defined via an `\input` of the corresponding `.mac` file. For example, before a document can invoke `\usebox{\nande}` it first must `\input{nande.mac}`.

All lcircuit symbols are defined using a L^AT_EX `picture` environment, not a font.

TABLE 682: cryst Crystallography Symbols

	<code>\Pisymbol{cryst}{0}</code>		<code>\Pisymbol{cryst}{63}</code>		<code>\Pisymbol{cryst}{138}</code>
	<code>\Pisymbol{cryst}{2}</code>		<code>\Pisymbol{cryst}{64}</code>		<code>\Pisymbol{cryst}{139}</code>
	<code>\Pisymbol{cryst}{3}</code>		<code>\Pisymbol{cryst}{65}</code>		<code>\Pisymbol{cryst}{140}</code>
	<code>\Pisymbol{cryst}{4}</code>		<code>\Pisymbol{cryst}{66}</code>		<code>\Pisymbol{cryst}{141}</code>
	<code>\Pisymbol{cryst}{5}</code>		<code>\Pisymbol{cryst}{75}</code>		<code>\Pisymbol{cryst}{142}</code>
	<code>\Pisymbol{cryst}{6}</code>		<code>\Pisymbol{cryst}{77}</code>		<code>\Pisymbol{cryst}{143}</code>
	<code>\Pisymbol{cryst}{7}</code>		<code>\Pisymbol{cryst}{78}</code>		<code>\Pisymbol{cryst}{145}</code>
	<code>\Pisymbol{cryst}{8}</code>		<code>\Pisymbol{cryst}{79}</code>		<code>\Pisymbol{cryst}{147}</code>
	<code>\Pisymbol{cryst}{9}</code>		<code>\Pisymbol{cryst}{80}</code>		<code>\Pisymbol{cryst}{148}</code>
	<code>\Pisymbol{cryst}{10}</code>		<code>\Pisymbol{cryst}{81}</code>		<code>\Pisymbol{cryst}{149}</code>
	<code>\Pisymbol{cryst}{12}</code>		<code>\Pisymbol{cryst}{82}</code>		<code>\Pisymbol{cryst}{155}</code>
	<code>\Pisymbol{cryst}{15}</code>		<code>\Pisymbol{cryst}{83}</code>		<code>\Pisymbol{cryst}{157}</code>
	<code>\Pisymbol{cryst}{20}</code>		<code>\Pisymbol{cryst}{84}</code>		<code>\Pisymbol{cryst}{158}</code>
	<code>\Pisymbol{cryst}{21}</code>		<code>\Pisymbol{cryst}{85}</code>		<code>\Pisymbol{cryst}{159}</code>
	<code>\Pisymbol{cryst}{22}</code>		<code>\Pisymbol{cryst}{87}</code>		<code>\Pisymbol{cryst}{175}</code>
	<code>\Pisymbol{cryst}{24}</code>		<code>\Pisymbol{cryst}{88}</code>		<code>\Pisymbol{cryst}{177}</code>
	<code>\Pisymbol{cryst}{25}</code>		<code>\Pisymbol{cryst}{89}</code>		<code>\Pisymbol{cryst}{178}</code>
	<code>\Pisymbol{cryst}{27}</code>		<code>\Pisymbol{cryst}{95}</code>		<code>\Pisymbol{cryst}{179}</code>
	<code>\Pisymbol{cryst}{28}</code>		<code>\Pisymbol{cryst}{97}</code>		<code>\Pisymbol{cryst}{185}</code>
	<code>\Pisymbol{cryst}{29}</code>		<code>\Pisymbol{cryst}{98}</code>		<code>\Pisymbol{cryst}{187}</code>
	<code>\Pisymbol{cryst}{30}</code>		<code>\Pisymbol{cryst}{99}</code>		<code>\Pisymbol{cryst}{188}</code>
	<code>\Pisymbol{cryst}{31}</code>		<code>\Pisymbol{cryst}{102}</code>		<code>\Pisymbol{cryst}{189}</code>
	<code>\Pisymbol{cryst}{32}</code>		<code>\Pisymbol{cryst}{103}</code>		<code>\Pisymbol{cryst}{195}</code>
	<code>\Pisymbol{cryst}{35}</code>		<code>\Pisymbol{cryst}{104}</code>		<code>\Pisymbol{cryst}{197}</code>
	<code>\Pisymbol{cryst}{36}</code>		<code>\Pisymbol{cryst}{105}</code>		<code>\Pisymbol{cryst}{198}</code>

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	<code>\Pisymbol{cryst}{37}</code>		<code>\Pisymbol{cryst}{107}</code>		<code>\Pisymbol{cryst}{199}</code>
	<code>\Pisymbol{cryst}{38}</code>		<code>\Pisymbol{cryst}{108}</code>		<code>\Pisymbol{cryst}{202}</code>
	<code>\Pisymbol{cryst}{39}</code>		<code>\Pisymbol{cryst}{109}</code>		<code>\Pisymbol{cryst}{203}</code>
	<code>\Pisymbol{cryst}{40}</code>		<code>\Pisymbol{cryst}{112}</code>		<code>\Pisymbol{cryst}{204}</code>
	<code>\Pisymbol{cryst}{41}</code>		<code>\Pisymbol{cryst}{113}</code>		<code>\Pisymbol{cryst}{210}</code>
	<code>\Pisymbol{cryst}{42}</code>		<code>\Pisymbol{cryst}{120}</code>		<code>\Pisymbol{cryst}{212}</code>
	<code>\Pisymbol{cryst}{43}</code>		<code>\Pisymbol{cryst}{121}</code>		<code>\Pisymbol{cryst}{213}</code>
	<code>\Pisymbol{cryst}{44}</code>		<code>\Pisymbol{cryst}{123}</code>		<code>\Pisymbol{cryst}{220}</code>
	<code>\Pisymbol{cryst}{45}</code>		<code>\Pisymbol{cryst}{124}</code>		<code>\Pisymbol{cryst}{221}</code>
	<code>\Pisymbol{cryst}{47}</code>		<code>\Pisymbol{cryst}{125}</code>		<code>\Pisymbol{cryst}{223}</code>
	<code>\Pisymbol{cryst}{48}</code>		<code>\Pisymbol{cryst}{127}</code>		<code>\Pisymbol{cryst}{224}</code>
	<code>\Pisymbol{cryst}{49}</code>		<code>\Pisymbol{cryst}{128}</code>		<code>\Pisymbol{cryst}{230}</code>
	<code>\Pisymbol{cryst}{50}</code>		<code>\Pisymbol{cryst}{129}</code>		<code>\Pisymbol{cryst}{231}</code>
	<code>\Pisymbol{cryst}{55}</code>		<code>\Pisymbol{cryst}{130}</code>		<code>\Pisymbol{cryst}{232}</code>
	<code>\Pisymbol{cryst}{57}</code>		<code>\Pisymbol{cryst}{131}</code>		<code>\Pisymbol{cryst}{233}</code>
	<code>\Pisymbol{cryst}{58}</code>		<code>\Pisymbol{cryst}{132}</code>		<code>\Pisymbol{cryst}{236}</code>
	<code>\Pisymbol{cryst}{59}</code>		<code>\Pisymbol{cryst}{133}</code>		<code>\Pisymbol{cryst}{240}</code>
	<code>\Pisymbol{cryst}{60}</code>		<code>\Pisymbol{cryst}{135}</code>		<code>\Pisymbol{cryst}{241}</code>
	<code>\Pisymbol{cryst}{61}</code>		<code>\Pisymbol{cryst}{136}</code>		<code>\Pisymbol{cryst}{242}</code>
	<code>\Pisymbol{cryst}{62}</code>		<code>\Pisymbol{cryst}{137}</code>		<code>\Pisymbol{cryst}{243}</code>

TABLE 683: dice Dice

	<code>\Pisymbol{dice3d}{49}</code>		<code>\Pisymbol{dice3d}{101}</code>		<code>\Pisymbol{dice3d}{111}</code>
	<code>\Pisymbol{dice3d}{50}</code>		<code>\Pisymbol{dice3d}{102}</code>		<code>\Pisymbol{dice3d}{112}</code>
	<code>\Pisymbol{dice3d}{51}</code>		<code>\Pisymbol{dice3d}{103}</code>		<code>\Pisymbol{dice3d}{113}</code>
	<code>\Pisymbol{dice3d}{52}</code>		<code>\Pisymbol{dice3d}{104}</code>		<code>\Pisymbol{dice3d}{114}</code>
	<code>\Pisymbol{dice3d}{53}</code>		<code>\Pisymbol{dice3d}{105}</code>		<code>\Pisymbol{dice3d}{115}</code>
	<code>\Pisymbol{dice3d}{54}</code>		<code>\Pisymbol{dice3d}{106}</code>		<code>\Pisymbol{dice3d}{116}</code>
	<code>\Pisymbol{dice3d}{97}</code>		<code>\Pisymbol{dice3d}{107}</code>		<code>\Pisymbol{dice3d}{117}</code>
	<code>\Pisymbol{dice3d}{98}</code>		<code>\Pisymbol{dice3d}{108}</code>		<code>\Pisymbol{dice3d}{118}</code>
	<code>\Pisymbol{dice3d}{99}</code>		<code>\Pisymbol{dice3d}{109}</code>		<code>\Pisymbol{dice3d}{119}</code>
	<code>\Pisymbol{dice3d}{100}</code>		<code>\Pisymbol{dice3d}{110}</code>		<code>\Pisymbol{dice3d}{120}</code>

dice defines its symbols at a very small design size. The glyphs shown above were scaled up by a factor of four using `\DeclareFontShape{U}{dice3d}{m}{n}{<->s*[4] dice3d}{}`.

An alternative to using `\Pisymbol` to select a die rotation is to rely on some cleverness in the kerning tables provided by the dice font. The individual digits “1” through “6” each produce the corresponding (2D) die face: `{\usefont{U}{dice3d}{m}{n}2 2 1}` produces “ ”, for example. When followed by a letter “a” through “d”, those pairs are kerned to produce a 3D die rotation with the digit specifying by the top face and the letter specifying one of the four possible front faces, sorted by increasing value. For example, `{\usefont{U}{dice3d}{m}{n}2a 2b 1d}` produces “ ”.

TABLE 684: figbas Figured-Bass Ligatures

2	<code>\Pisymbol{figbas}{50}</code>	6	<code>\Pisymbol{figbas}{54}</code>
4	<code>\Pisymbol{figbas}{52}</code>	Q	<code>\Pisymbol{figbas}{57}</code>
5	<code>\Pisymbol{figbas}{53}</code>		

Shown here are the figured-bass ligatures based on Computer Modern. figbas additionally provides versions of these symbols based on Computer Modern Sans and Palatino/Palladio.

`{\usefont{U}{figbas}{m}{n}2 4 5 6 9}` is an equivalent means of producing these symbols.

TABLE 685: magic Trading Card Symbols

①	<code>\Pisymbol{magic}{48}</code>	⑥	<code>\Pisymbol{magic}{54}</code>	☯	<code>\Pisymbol{magic}{82}</code>
②	<code>\Pisymbol{magic}{49}</code>	⑦	<code>\Pisymbol{magic}{55}</code>	⌘	<code>\Pisymbol{magic}{84}</code>
③	<code>\Pisymbol{magic}{50}</code>	⑧	<code>\Pisymbol{magic}{56}</code>	♁	<code>\Pisymbol{magic}{85}</code>
④	<code>\Pisymbol{magic}{51}</code>	⑨	<code>\Pisymbol{magic}{57}</code>	⚙	<code>\Pisymbol{magic}{87}</code>
⑤	<code>\Pisymbol{magic}{52}</code>	♁	<code>\Pisymbol{magic}{66}</code>	⊗	<code>\Pisymbol{magic}{88}</code>
	<code>\Pisymbol{magic}{53}</code>	♣	<code>\Pisymbol{magic}{71}</code>	⑩	<code>\Pisymbol{magic}{90}</code>

The preceding symbols resemble those from Wizards of the Coast’s *Magic: The Gathering* trading-card game. An alternative to entering symbols numerically using `\Pisymbol` is to switch to the `magic` font with `\usefont{U}{magic}{m}{n}` and employ the following mnemonic characters:

①–⑨	0–9	Circled numerals 0–9
♁	B	Black magic symbol
♣	G	Green magic symbol
☯	R	Red magic symbol
⌘	T	Tap symbol (tilted “T” in a circle)
♁	U	Blue magic symbol
⚙	W	White magic symbol
⊗	X	Circled “X” (for mana cost, e.g., Fireball)
⑩	Z	Circled “10” (for mana cost, e.g., Aladdin’s Lamp)

TABLE 686: bartel-chess-fonts Chess Pieces and Chessboard Squares

	<code>\Pisymbol{fselch}{0}</code>		<code>\Pisymbol{fselch}{55}</code>		<code>\Pisymbol{fselch}{110}</code>
	<code>\Pisymbol{fselch}{1}</code>		<code>\Pisymbol{fselch}{56}</code>		<code>\Pisymbol{fselch}{111}</code>
	<code>\Pisymbol{fselch}{2}</code>		<code>\Pisymbol{fselch}{57}</code>		<code>\Pisymbol{fselch}{112}</code>
	<code>\Pisymbol{fselch}{3}</code>		<code>\Pisymbol{fselch}{58}</code>		<code>\Pisymbol{fselch}{113}</code>
	<code>\Pisymbol{fselch}{4}</code>		<code>\Pisymbol{fselch}{59}</code>		<code>\Pisymbol{fselch}{114}</code>
	<code>\Pisymbol{fselch}{5}</code>		<code>\Pisymbol{fselch}{60}</code>		<code>\Pisymbol{fselch}{115}</code>
	<code>\Pisymbol{fselch}{6}</code>		<code>\Pisymbol{fselch}{61}</code>		<code>\Pisymbol{fselch}{116}</code>
	<code>\Pisymbol{fselch}{7}</code>		<code>\Pisymbol{fselch}{62}</code>		<code>\Pisymbol{fselch}{117}</code>
	<code>\Pisymbol{fselch}{8}</code>		<code>\Pisymbol{fselch}{63}</code>		<code>\Pisymbol{fselch}{118}</code>
	<code>\Pisymbol{fselch}{9}</code>		<code>\Pisymbol{fselch}{64}</code>		<code>\Pisymbol{fselch}{119}</code>
	<code>\Pisymbol{fselch}{10}</code>		<code>\Pisymbol{fselch}{65}</code>		<code>\Pisymbol{fselch}{120}</code>
	<code>\Pisymbol{fselch}{11}</code>		<code>\Pisymbol{fselch}{66}</code>		<code>\Pisymbol{fselch}{121}</code>
	<code>\Pisymbol{fselch}{12}</code>		<code>\Pisymbol{fselch}{67}</code>		<code>\Pisymbol{fselch}{122}</code>

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	<code>\Pisymbol{fselch}{13}</code>		<code>\Pisymbol{fselch}{68}</code>		<code>\Pisymbol{fselch}{123}</code>
	<code>\Pisymbol{fselch}{14}</code>		<code>\Pisymbol{fselch}{69}</code>		<code>\Pisymbol{fselch}{124}</code>
	<code>\Pisymbol{fselch}{15}</code>		<code>\Pisymbol{fselch}{70}</code>		<code>\Pisymbol{fselch}{125}</code>
	<code>\Pisymbol{fselch}{16}</code>		<code>\Pisymbol{fselch}{71}</code>		<code>\Pisymbol{fselch}{126}</code>
	<code>\Pisymbol{fselch}{17}</code>		<code>\Pisymbol{fselch}{72}</code>		<code>\Pisymbol{fselch}{127}</code>
	<code>\Pisymbol{fselch}{18}</code>		<code>\Pisymbol{fselch}{73}</code>		<code>\Pisymbol{fselch}{128}</code>
	<code>\Pisymbol{fselch}{19}</code>		<code>\Pisymbol{fselch}{74}</code>		<code>\Pisymbol{fselch}{129}</code>
	<code>\Pisymbol{fselch}{20}</code>		<code>\Pisymbol{fselch}{75}</code>		<code>\Pisymbol{fselch}{130}</code>
	<code>\Pisymbol{fselch}{21}</code>		<code>\Pisymbol{fselch}{76}</code>		<code>\Pisymbol{fselch}{131}</code>
	<code>\Pisymbol{fselch}{22}</code>		<code>\Pisymbol{fselch}{77}</code>		<code>\Pisymbol{fselch}{132}</code>
	<code>\Pisymbol{fselch}{23}</code>		<code>\Pisymbol{fselch}{78}</code>		<code>\Pisymbol{fselch}{133}</code>
	<code>\Pisymbol{fselch}{24}</code>		<code>\Pisymbol{fselch}{79}</code>		<code>\Pisymbol{fselch}{134}</code>
	<code>\Pisymbol{fselch}{25}</code>		<code>\Pisymbol{fselch}{80}</code>		<code>\Pisymbol{fselch}{135}</code>
	<code>\Pisymbol{fselch}{26}</code>		<code>\Pisymbol{fselch}{81}</code>		<code>\Pisymbol{fselch}{136}</code>
	<code>\Pisymbol{fselch}{27}</code>		<code>\Pisymbol{fselch}{82}</code>		<code>\Pisymbol{fselch}{137}</code>
	<code>\Pisymbol{fselch}{28}</code>		<code>\Pisymbol{fselch}{83}</code>		<code>\Pisymbol{fselch}{138}</code>
	<code>\Pisymbol{fselch}{29}</code>		<code>\Pisymbol{fselch}{84}</code>		<code>\Pisymbol{fselch}{139}</code>
	<code>\Pisymbol{fselch}{30}</code>		<code>\Pisymbol{fselch}{85}</code>		<code>\Pisymbol{fselch}{140}</code>
	<code>\Pisymbol{fselch}{31}</code>		<code>\Pisymbol{fselch}{86}</code>		<code>\Pisymbol{fselch}{141}</code>
	<code>\Pisymbol{fselch}{32}</code>		<code>\Pisymbol{fselch}{87}</code>		<code>\Pisymbol{fselch}{142}</code>
	<code>\Pisymbol{fselch}{33}</code>		<code>\Pisymbol{fselch}{88}</code>		<code>\Pisymbol{fselch}{143}</code>
	<code>\Pisymbol{fselch}{34}</code>		<code>\Pisymbol{fselch}{89}</code>		<code>\Pisymbol{fselch}{144}</code>
	<code>\Pisymbol{fselch}{35}</code>		<code>\Pisymbol{fselch}{90}</code>		<code>\Pisymbol{fselch}{145}</code>
	<code>\Pisymbol{fselch}{36}</code>		<code>\Pisymbol{fselch}{91}</code>		<code>\Pisymbol{fselch}{151}</code>
	<code>\Pisymbol{fselch}{37}</code>		<code>\Pisymbol{fselch}{92}</code>		<code>\Pisymbol{fselch}{157}</code>
	<code>\Pisymbol{fselch}{38}</code>		<code>\Pisymbol{fselch}{93}</code>		<code>\Pisymbol{fselch}{163}</code>
	<code>\Pisymbol{fselch}{39}</code>		<code>\Pisymbol{fselch}{94}</code>		<code>\Pisymbol{fselch}{169}</code>
	<code>\Pisymbol{fselch}{40}</code>		<code>\Pisymbol{fselch}{95}</code>		<code>\Pisymbol{fselch}{175}</code>
	<code>\Pisymbol{fselch}{41}</code>		<code>\Pisymbol{fselch}{96}</code>		<code>\Pisymbol{fselch}{180}</code>
	<code>\Pisymbol{fselch}{42}</code>		<code>\Pisymbol{fselch}{97}</code>		<code>\Pisymbol{fselch}{186}</code>
	<code>\Pisymbol{fselch}{43}</code>		<code>\Pisymbol{fselch}{98}</code>		<code>\Pisymbol{fselch}{192}</code>
	<code>\Pisymbol{fselch}{44}</code>		<code>\Pisymbol{fselch}{99}</code>		<code>\Pisymbol{fselch}{198}</code>
	<code>\Pisymbol{fselch}{45}</code>		<code>\Pisymbol{fselch}{100}</code>		<code>\Pisymbol{fselch}{204}</code>
	<code>\Pisymbol{fselch}{46}</code>		<code>\Pisymbol{fselch}{101}</code>		<code>\Pisymbol{fselch}{210}</code>
	<code>\Pisymbol{fselch}{47}</code>		<code>\Pisymbol{fselch}{102}</code>		<code>\Pisymbol{fselch}{216}</code>
	<code>\Pisymbol{fselch}{48}</code>		<code>\Pisymbol{fselch}{103}</code>		<code>\Pisymbol{fselch}{222}</code>
	<code>\Pisymbol{fselch}{49}</code>		<code>\Pisymbol{fselch}{104}</code>		<code>\Pisymbol{fselch}{228}</code>
	<code>\Pisymbol{fselch}{50}</code>		<code>\Pisymbol{fselch}{105}</code>		<code>\Pisymbol{fselch}{234}</code>
	<code>\Pisymbol{fselch}{51}</code>		<code>\Pisymbol{fselch}{106}</code>		<code>\Pisymbol{fselch}{240}</code>
	<code>\Pisymbol{fselch}{52}</code>		<code>\Pisymbol{fselch}{107}</code>		<code>\Pisymbol{fselch}{246}</code>

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	<code>\Pisymbol{fselch}{53}</code>		<code>\Pisymbol{fselch}{108}</code>
	<code>\Pisymbol{fselch}{54}</code>		<code>\Pisymbol{fselch}{109}</code>

In addition to the `fselch` font showcased above, `bartel-chess-fonts` also provides a `pkelch` font which includes the same symbol set (minus some of the higher-numbered characters) but drawn in a slightly different style.

`bartel-chess-fonts` provides the `fselch` and `pkelch` fonts in various sizes (optically scaled). See “L^AT_EX 2_ε Font Selection” [LAT19] for advice on how to expose these sorts of fonts to L^AT_EX using `\DeclareFontFamily` and `\DeclareFontShape`.

Chapter 12

Additional Information

Unlike the previous chapters of this document, Chapter 12 does not contain new symbol tables. Rather, it provides additional help in using the Comprehensive L^AT_EX Symbol List. First, it draws attention to symbol names used by multiple packages. Next, it provides some guidelines for finding symbols and gives some examples regarding how to construct missing symbols out of existing ones. Then, it comments on the spacing surrounding symbols in math mode. After that, it presents an ASCII and Latin 1 quick-reference guide, showing how to enter all of the standard ASCII/Latin 1 symbols in L^AT_EX. And finally, it lists some statistics about this document itself.

12.1 Symbol Name Clashes

Unfortunately, a number of symbol names are not unique; they appear in more than one package. Depending on how the symbols are defined in each package, L^AT_EX will either output an error message or replace an earlier-defined symbol with a later-defined symbol. Table 687 on page 365 presents a selection of name clashes that appear in this document.

Using multiple symbols with the same name in the same document—or even merely loading conflicting symbol packages—can be tricky but, as evidenced by the existence of Table 687, not impossible. The general procedure is to load the first package, rename the conflicting symbols, and then load the second package. Examine the L^AT_EX source for this document (`symbols.tex`) for examples of this and other techniques for handling symbol conflicts. Note that `symbols.tex`'s `\savesymbol` and `\restoresymbol` macros have been extracted into the `savesym` package, which can be downloaded from CTAN.

`txfonts` and `pxfonts` redefine a huge number of symbols—essentially, all of the symbols defined by `latexsym`, `textcomp`, the various $\mathcal{AMS}$ symbol sets, and L^AT_EX 2_ε itself. Similarly, `mathabx` redefines a vast number of math symbols in an attempt to improve their look. The `txfonts`, `pxfonts`, and `mathabx` conflicts are not listed in Table 687 because they are designed to be compatible with the symbols they replace. Table 688 on page 366 illustrates what “compatible” means in this context.

To use the new `txfonts`/`pxfonts` symbols without altering the document's main font, merely reset the default font families back to their original values after loading one of those packages:

```
\renewcommand\rmdefault{cmr}  
\renewcommand\sfddefault{cmss}  
\renewcommand\ttdefault{cmtt}
```

TABLE 687: Symbol Name Clashes

Symbol	L ^A T _E X 2 _ε	A _M S	stmaryrd	wasysym	mathabx	marvosym	bbding	ifsym	dingbat	wsuipa
<code>\baro</code>			ϕ							ϑ
<code>\bigtriangledown</code>	▽		▽							
<code>\bigtriangleup</code>	△		△							
<code>\checkmark</code>		✓							✓	
<code>\Circle</code>				○				○		
<code>\Cross</code>						†	†	×		
<code>\ggg</code>		»»			»					
<code>\Letter</code>						⊠		⊠		
<code>\lightning</code>			⚡	⚡						
<code>\Lightning</code>						⚡		⚡		
<code>\lll</code>		««			«					
<code>\Square</code>				□			□	□		
<code>\Sun</code>					☉	☉		☀		
<code>\TriangleDown</code>							▼	▽		
<code>\TriangleUp</code>							▲	△		

TABLE 688: Example of a Benign Name Clash

Symbol	Default (Computer Modern)	txfonts (Times Roman)
<code>R</code>	$\mathcal{R}$	$\mathbf{R}$
<code>\textrecipe</code>	$\mathcal{R}_{\mathcal{C}}$	$\mathbf{R}$

12.2 Resizing symbols

Mathematical symbols listed in this document as “variable-sized” are designed to stretch vertically. Each variable-sized symbol comes in one or more basic sizes plus a variation comprising both stretchable and nonstretchable segments. Table 689 on page 366 presents the symbols `\}` and `\uparrow` in their default size, in their `\big`, `\Big`, `\bigg`, and `\Bigg` sizes, in an even larger size achieved using `\left/\right`, and—for contrast—in a large size achieved by changing the font size using L^AT_EX 2_ε’s `\fontsize` command. Because the symbols shown belong to the Computer Modern family, the `typelcm` package needs to be loaded to support font sizes larger than 24.88 pt.

TABLE 689: Sample resized delimiters

Symbol	Default size	<code>\big</code>	<code>\Big</code>	<code>\bigg</code>	<code>\Bigg</code>	<code>\left/\right</code>	<code>\fontsize</code>
<code>\}</code>	}	}	}	}	}	}	}
<code>\uparrow</code>	↑	↑	↑	↑	↑	↑	↑

Note how `\fontsize` makes the symbol wider and thicker. (The `graphicx` package’s `\scalebox` or `\resizebox` commands would produce a similar effect.) Also, the `\fontsize`-enlarged symbol is vertically centered relative to correspondingly large text, unlike the symbols enlarged using `\big` et al. or `\left/\right`, which all use the same math axis regardless of symbol size. However, `\fontsize` is not limited to mathematical delimiters. Also, `\scalebox` and `\resizebox` are more robust to poorly composed symbols (e.g., two symbols made to overlap by backspacing a fixed distance) but do not work with every T_EX backend and will produce jagged symbols when scaling a bitmapped font.

All variable-sized delimiters are defined (by the corresponding `.tfm` file) in terms of up to five segments, as illustrated by Figure 12.1 on the following page. The top, middle, and bottom segments are of a fixed size.

The top-middle and middle-bottom segments (which are constrained to be the same character) are repeated as many times as necessary to achieve the desired height.

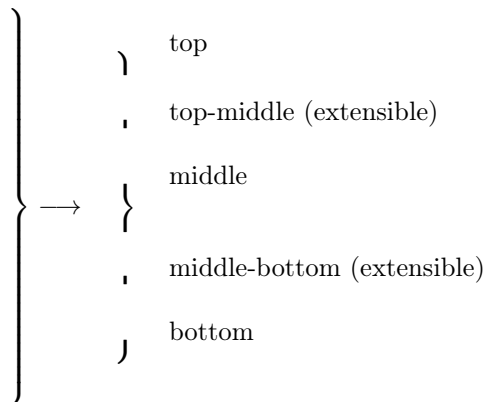


Figure 12.1: Implementation of variable-sized delimiters

12.3 Where can I find the symbol for ...?

If you can't find some symbol you're looking for in this document, there are a few possible explanations:

- The symbol isn't intuitively named. As a few examples, the `ifsym` command to draw dice is “`\Cube`”; a plus sign with a circle around it (“exclusive or” to computer engineers) is “`\oplus`”; and lightning bolts in fonts designed by German speakers may have “blitz” in their names as in the `ulsy` package. The moral of the story is to be creative with synonyms when searching the index.
- The symbol is defined by some package that I overlooked (or deemed unimportant). If there's some symbol package that you think should be included in the Comprehensive L^AT_EX Symbol List, please send me e-mail at the address listed on the title page.
- The symbol isn't defined in any package whatsoever.

Even in the last case, all is not lost. Sometimes, a symbol exists in a font, but there is no L^AT_EX binding for it. For example, the PostScript Symbol font contains a “`\l`” symbol, which may be useful for representing a carriage return, but there is no package (as far as I know) for accessing that symbol. To produce an unnamed symbol, you need to switch to the font explicitly with L^AT_EX 2_ε's low-level font commands [AT19] and use T_EX's primitive `\char` command [Knu86a] to request a specific character number in the font. For example, one can define a command to typeset a long s (“f”) using character 115 from the Latin Modern fonts in the TS1 font encoding:¹

```
\newcommand{\textlongsf}{\%
  \fontencoding{TS1}\fontfamily{lmr}\selectfont\char115%
}
```

Then, “`\textlongsf ucce\textlongsf sful`” will produce “fuccefsful”—in the current font style (roman, italic, bold, etc.)

In fact, `\char` is not strictly necessary in all cases; the character can often be entered symbolically. For example, the symbol for an impulse train or Tate-Shafarevich group (“III”) is actually an uppercase *sha* in

¹Since January 2020, the `wasysym` package provides a `\longsf` symbol. See Table 48.

the Cyrillic alphabet. (Cyrillic is supported by the OT2 font encoding, for instance). While a *sha* can be defined numerically as “`\fontencoding{OT2}\selectfont\char88`” it may be more intuitive to use the OT2 font encoding’s “SH” ligature: “`\fontencoding{OT2}\selectfont SH`”. Another possibility is to use the T2A font encoding’s `\CYRSH` command: “`\fontencoding{T2A}\selectfont\CYRSH`”.

For the specific case of the U font encoding, which is used for symbol or “pi” fonts, the `pifont` package defines a convenient `\Pisymbol` command. `\Pisymbol` typesets a specified character (by number) in a specified font family. For example, “`\Pisymbol{psy}{191}`” produces the aforementioned “ $\lrcorner$ ” symbol by typesetting character number 191 in the `psy` (PostScript Symbol) font family.

12.3.1 Reflecting and rotating existing symbols

A common request on `comp.text.tex` is for a reversed or rotated version of an existing symbol. As a last resort, these effects can be achieved with the `graphicx` (or `graphics`) package’s `\reflectbox` and `\rotatebox` macros. For example, `\textsuperscript{\reflectbox{?}}` produces an irony mark (“ $?$ ”), and `\rotatebox[origin=c]{180}{\mathrel{\mathfrak{iota}}}` produces the definite-description operator (“ $\mathrel{\mathfrak{iota}}$ ”). As noted by Marc Olschok in a July 2011 post on `comp.text.tex`, Project Gutenberg uses `\reflectbox` to typeset the part (“3”) and whole (“ ε ”) relations used in Dedekind’s set notation:

```
\newcommand\partof{\mathrel{\raisebox{0.45ex}{\mathfrak{3}}}}
\newcommand\wholeof{\mathrel{\reflectbox{\mathfrak{3}}}}
```

The disadvantage of the `graphicx/graphics` approach is that not every $\text{\TeX}$ backend handles graphical transformations.² Far better is to find a suitable font that contains the desired symbol in the correct orientation. For instance, if the `phonetic` package is available, then `\textit{\riota}` will yield a backend-independent “ $\mathfrak{iota}$ ”. Similarly, `tipa`’s `\textreversepsilon` (“3”) or `wsuipa`’s `\reversepsilon` (“3”) may be used to express the mathematical notion of “such that” in a cleaner manner than with `\reflectbox` or `\rotatebox`.³

12.3.2 Joining and overlapping existing symbols

Symbols that do not exist in any font can sometimes be fabricated out of existing symbols. The $\text{\LaTeX}$ 2 ε source file `fontdef.dtx` contains a number of such definitions. For example, `\models` (see Table 98 on page 67) is defined in that file with:

```
\def\models{\mathrel{\joinrel=}}
```

where `\mathrel` and `\joinrel` are used to control the horizontal spacing. `\def` is the $\text{\TeX}$ primitive upon which $\text{\LaTeX}$ ’s `\newcommand` is based. See The $\text{\TeX}$ book [Knu86a] for more information on all three of those commands.

With some simple pattern-matching, one can easily define a backward `\models` sign (“ $\models$ ”):

```
\def\ismodeledby{=\joinrel\mathrel{}}
```

In general, arrows/harpoons, horizontal lines (“ $=$ ”, “ $-$ ”, “`\relbar`”, and “`\Relbar`”), and the various math-extension characters can be combined creatively with miscellaneous other characters to produce a variety of new symbols. Of course, new symbols can be composed from *any* set of existing characters. For instance, $\text{\LaTeX}$ defines `\hbar` (“ $\hbar$ ”) as a “ $-$ ” character (`\mathchar'26`) followed by a backspace of 9 math units (`\mkern-9mu`), followed by the letter “*h*”:

```
\def\hbar{\mathchar'26\mkern-9mu h}
```

²As an example, Xdvi ignores both `\reflectbox` and `\rotatebox`.

³More common symbols for representing “such that” include “ $\models$ ”, “ $\models$ ”, and “`s.t.`”.

We can just as easily define other barred letters:

```
\def\bbar{{\mathchar'26\mkern-9mu b}}
\def\dbar{{\mathchar'26\mkern-12mu d}}
```

(The space after the “mu” is optional but is added for clarity.) `\bbar` and `\dbar` define “ $\bar{b}$ ” and “ $\bar{d}$ ”, respectively. Note that `\dbar` requires a greater backward math kern than `\bbar`; a -9μ kern would have produced the less-attractive “ $\bar{d}$ ” glyph.

The `amsmath` package provides `\overset` and `\underset` commands for placing one symbol respectively above or below another. For example, `\overset{G}{\sim}`⁴ produces “ $\overset{G}{\sim}$ ” (sometimes used for “equidecomposable with respect to G ”).

Sometimes an ordinary `tabular` environment can be co-opted into juxtaposing existing symbols into a new symbol. Consider the following definition of `\asterism` (“ $\ast$ ”) from a June 2007 post to `comp.text.tex` by Peter Flynn:

```
\newcommand{\asterism}{\smash{%
  \raisebox{-.5ex}{%
    \setlength{\tabcolsep}{-.5pt}%
    \begin{tabular}{@{}cc@{}}%
      \multicolumn{2}{\[-2ex\]*\&*\}%
    \end{tabular}}}}
```

Note how the space between columns (`\tabcolsep`) and rows (`\[-2ex\]`) is made negative to squeeze the asterisks closer together.

There is a $\TeX$ primitive called `\mathaccent` that centers one mathematical symbol atop another. For example, one can define `\dotcup` (“ $\dot{\cup}$ ”)—the composition of a `\cup` and a `\cdot`—as follows:

```
\newcommand{\dotcup}{\ensuremath{\mathaccent\cdot\cup}}
```

The catch is that `\mathaccent` requires the accent to be a “math character”. That is, it must be a character in a math font as opposed to a symbol defined in terms of other symbols. See *The $\TeX$ book* [Knu86a] for more information.

Another $\TeX$ primitive that is useful for composing symbols is `\vcenter`. `\vcenter` is conceptually similar to “`\begin{tabular}{l}`” in $\LaTeX$ but takes a list of vertical material instead of `\-`-separated rows. Also, it vertically centers the result on the math axis. (Many operators, such as “ $+$ ” and “ $-$ ” are also vertically centered on the math axis.) Enrico Gregorio posted the following symbol definition to `comp.text.tex` in March 2004 in response to a query about an alternate way to denote equivalence:

```
\newcommand*\threesim{%
  \mathrel{\vcenter{\offinterlineskip
    \hbox{$\sim$}\vskip-.35ex\hbox{$\sim$}\vskip-.35ex\hbox{$\sim$}}}}
```

The `\threesim` symbol, which vertically centers three `\sim` (“ $\sim$ ”) symbols with $0.35x$ -heights of space between them, is rendered as “ $\approx$ ”. `\offinterlineskip` is a macro that disables implicit interline spacing. Without it, `\threesim` would have a full line of vertical spacing between each `\sim`. Because of `\vcenter`, `\threesim` aligns properly with other math operators: $a \div b \approx c \times d$.

A related $\LaTeX$ command, borrowed from Plain $\TeX$, is `\oalign`. `\oalign` vertically overlaps symbols and works both within and outside of math mode. Essentially, it creates a single-column `tabular` environment with zero vertical distance between rows. However, because it is based directly on $\TeX$ ’s `\ialign`

⁴ $\LaTeX$ ’s `\stackrel` command is similar but is limited to placing a symbol above a binary relation.

primitive, `\oalign` uses $\TeX$'s tabular syntax instead of $\LaTeX$'s (i.e., with `\cr` as the row terminator instead of `\\`). The following example of `\oalign`, a macro that defines a standard-state symbol (`\stst`, “ $\ominus$ ”) as a superscripted Plimsoll line (`\barcirc`, “ $\circ$ ”),⁵ is due to an October 2007 `comp.text.tex` post by Donald Arseneau:

```
\makeatletter
\providecommand\barcirc{\mathpalette\@barred\circ}
\def\@barred#1#2{\oalign{\hfil$#1-$\hfil\cr\hfil$#1#2$\hfil\cr}}
\newcommand\stst{\protect\barcirc}
\makeatother
```

In the preceding code, note the `\oalign` call's use of `\hfil` to horizontally center a minus sign (“ $-$ ”) and a `\circ` (“ $\circ$ ”).

As another example of `\oalign`, consider the following code (due to Enrico Gregorio in a June 2007 post to `comp.text.tex`) that overlaps a `\ni` (“ $\ni$ ”) and two minus signs (“ $-$ ”) to produce “ $\ni$ ”, an obscure variation on the infrequently used “ $\ni$ ” symbol for “such that” discussed on page 368:

```
\newcommand{\suchthat}{%
\mathrel{\oalign{$\ni$\cr\kern-1pt$-$\kern-6.5pt$-$\}}}

```

The `slashed` package, although originally designed for producing Feynman slashed-character notation, in fact facilitates the production of *arbitrary* overlapped symbols. The default behavior is to overwrite a given character with “/”. For example, `\slashed{D}` produces “ $\not{D}$ ”. However, the `\declareslashed` command provides the flexibility to specify the mathematical context of the composite character (operator, relation, punctuation, etc., as will be discussed in Section 12.4), the overlapping symbol, horizontal and vertical adjustments in symbol-relative units, and the character to be overlapped. Consider, for example, the symbol for reduced quadrupole moment (“ $\not{F}$ ”). This can be declared as follows:

```
\newcommand{\rqm}{%
\declareslashed{\text{-}}{0.04}{0}{I}\slashed{I}}

```

`\declareslashed{\text{-}}{0.04}{0}{I}\slashed{I}` affects the meaning of all subsequent `\slashed{I}` commands in the same scope. The preceding definition of `\rqm` therefore uses an extra set of curly braces to limit that scope to a single `\slashed{I}`. In addition, `\rqm` uses `amstext`'s `\text` macro (described on page 372) to make `\declareslashed` use a text-mode hyphen (“ $-$ ”) instead of a math-mode minus sign (“ $-$ ”) and to ensure that the hyphen scales properly in size in subscripts and superscripts. See `slashed`'s documentation (located in `slashed.sty` itself) for a detailed usage description of the `\slashed` and `\declareslashed` commands.

Somewhat simpler than `slashed` is the `centernot` package. `centernot` provides a single command, `\centernot`, which, like `\not`, puts a slash over the subsequent mathematical symbol. However, instead of putting the slash at a fixed location, `\centernot` centers the slash over its argument. `\centernot` might be used, for example, to create a “does not imply” symbol:

$$\not\Rightarrow \quad \backslash\mathrm{not}\backslash\mathrm{Longrightarrow}$$

vs.

$$\centernot\Rightarrow \quad \backslash\mathrm{centernot}\backslash\mathrm{Longrightarrow}$$

See the `centernot` documentation for more information.

⁵While `\barcirc` illustrates how to combine symbols using `\oalign`, the `plimsoll` package's `\plimsoll` command (Table 353 on page 165) and the `stmaryrd` package's `\minuso` command (Table 55 on page 38) provide a similar glyph ($\ominus$) as a single, indivisible symbol.

12.3.3 Making new symbols work in superscripts and subscripts

To make composite symbols work properly within subscripts and superscripts, you may need to use $\TeX$'s `\mathchoice` primitive. `\mathchoice` evaluates one of four expressions, based on whether the current math style is display, text, script, or scriptscript. (See The $\TeX$ book [Knu86a] for a more complete description.) For example, the following $\LaTeX$ code—posted to `comp.text.tex` by Torsten Bronger—composes a sub/superscriptable “ $\top$ ” symbol out of `\top` and `\bot` (“ $\top$ ” and “ $\bot$ ”):

```
\def\topbotatom#1{\hbox{\hbox to 0pt{$#1\bot$\hss}$#1\top$}}
\newcommand*\topbot{\mathrel{\mathchoice{\topbotatom\displaystyle}
{\topbotatom\textstyle}
{\topbotatom\scriptstyle}
{\topbotatom\scriptscriptstyle}}}
```

The following is another example that uses `\mathchoice` to construct symbols in different math modes. The code defines a principal value integral symbol, which is an integral sign with a line through it.

```
\def\Xint#1{\mathchoice
{\XXint\displaystyle\textstyle{#1}}%
{\XXint\textstyle\scriptstyle{#1}}%
{\XXint\scriptstyle\scriptscriptstyle{#1}}%
{\XXint\scriptscriptstyle\scriptscriptstyle{#1}}%
{!\int}}
\def\XXint#1#2#3{\setbox0=\hbox{$#1{#2#3}{\int}$}
\vcenter{\hbox{$#2#3$}}\kern-.5\wd0}}
\def\ddashint{\Xint=}
\def\dashint{\Xint-}
```

(The preceding code was taken verbatim from <http://www.texfaq.org/FAQ-prinvalint.html>.) `\dashint` produces a single-dashed integral sign (“ $\int$ ”), while `\ddashint` produces a double-dashed one (“ $\int$ ”). The `\Xint` macro defined above can also be used to generate a wealth of new integrals: “ $\oint$ ” (`\Xint\circlearrowright`), “ $\oint$ ” (`\Xint\circlearrowleft`), “ $\subset$ ” (`\Xint\subset`), “ ∞ ” (`\Xint\infty`), and so forth.

$\LaTeX 2_{\epsilon}$ provides a simple wrapper for `\mathchoice` that sometimes helps produce terser symbol definitions. The macro is called `\mathpalette` and it takes two arguments. `\mathpalette` invokes the first argument, passing it one of “`\displaystyle`”, “`\textstyle`”, “`\scriptstyle`”, or “`\scriptscriptstyle`”, followed by the second argument. `\mathpalette` is useful when a symbol macro must know which math style is currently in use (e.g., to set it explicitly within an `\mbox`). Donald Arseneau posted the following `\mathpalette`-based definition of a probabilistic-independence symbol (“ $\perp$ ”) to `comp.text.tex` in June 2000:

```
\newcommand\independent{\protect\mathpalette{\protect\independentT}\perp}
\def\independentT#1#2{\mathrel{\rlap{$#1#2$}\mkern2mu{#1#2}}}
```

The `\independent` macro uses `\mathpalette` to pass the `\independentT` helper macro both the current math style and the `\perp` symbol. `\independentT` typesets `\perp` in the current math style, moves two math units to the right, and finally typesets a second—overlapping—copy of `\perp`, again in the current math style. `\rlap`, which enables text overlap, is described on page 372.

Some people like their square-root signs with a trailing “hook” (i.e., “ $\sqrt{}$ ”) as this helps visually distinguish expressions like “ $\sqrt{3x}$ ” from those like “ $\sqrt{3}x$ ”. In March 2002, Dan Luecking posted a `\mathpalette`-based definition of a hooked square-root symbol to `comp.text.tex`. This code was subsequently refined by Max Dohse and Scott Pakin into the version shown below, which accepts a root as an optional argument, for consistency with `\sqrt`.

```

\newcommand{\hksqrt}[2][\mathpalette\DHLhksqrt{#1}{#2\,}]{%
\def\DHLhksqrt#1#2{\setbox0=\hbox{#1\sqrt{#2}}\dimen0=\ht0
\advance\dimen0-0.2\ht0
\setbox2=\hbox{\vrule height\ht0 depth-\dimen0}%
{\box0\lower0.4pt\box2}}

```

Notice how `\hksqrt` uses `\mathpalette` to pass the current math style (`\displaystyle`, `\textstyle`, etc.) to `\DHLhksqrt` as argument #1. `\DHLhksqrt` subsequently uses that style within an `\hbox`. The rest of the code is simply using TeX primitives to position a hook of height 0.2 times the `\sqrt` height at the right of the `\sqrt`. See The TeXbook [Knu86a] for more understanding of TeX “boxes” and “dimens”.

Sometimes, however, `amstext`’s `\text` macro is all that is necessary to make composite symbols appear correctly in subscripts and superscripts, as in the following definitions of `\neswarrow` (“↗”) and `\nwsearrow` (“↖”):⁶

```

\newcommand{\neswarrow}{\mathrel{\text{$\nearrow$\llap{$\swarrow$}}}}
\newcommand{\nwsearrow}{\mathrel{\text{$\nwarrow$\llap{$\searrow$}}}}

```

`\text` resembles L^AT_EX’s `\mbox` command but shrinks its argument appropriately when used within a subscript or superscript. `\llap` (“left overlap”) and its counterpart, `\rlap` (“right overlap”), appear frequently when creating composite characters. `\llap` outputs its argument to the left of the current position, overlapping whatever text is already there. Similarly, `\rlap` overlaps whatever text would normally appear to the right of its argument. For example, “`A\llap{B}`” and “`\rlap{A}B`” each produce “**A**”. However, the result of the former is the width of “A”, and the result of the latter is the width of “B”—`\llap{...}` and `\rlap{...}` take up zero space.

In a June 2002 post to `comp.text.tex`, Donald Arseneau presented a general macro for aligning an arbitrary number of symbols on their horizontal centers and vertical baselines:

```

\makeatletter
\def\moverlay{\mathpalette\mov@rlay}
\def\mov@rlay#1#2{\leavevmode\vtop{%
\baselineskip\z@skip\lineskiplimit-\maxdimen
\ialign{\hfil$#1##$\hfil\cr#2\crcr}}}
\makeatother

```

The `\makeatletter` and `\makeatother` commands are needed to coerce L^AT_EX into accepting “@” as part of a macro name. `\moverlay` takes a list of symbols separated by `\cr` (TeX’s equivalent of L^AT_EX’s `\\`). For example, the `\topbot` command defined above could have been expressed as “`\moverlay{\top\cr\bot}`” and the `\neswarrow` command defined above could have been expressed as “`\moverlay{\nearrow\cr\swarrow}`”.

The basic concept behind `\moverlay`’s implementation is that `\moverlay` typesets the given symbols in a table that utilizes a zero `\baselineskip`. This causes every row to be typeset at the same vertical position. See The TeXbook [Knu86a] for explanations of the TeX primitives used by `\moverlay`.

Steven B. Segletes answered a question on TeX Stack Exchange, “AMS inequalities: a variant of `\gtrsim` and `\lesssim`” on typesetting `\gtrsim` (“ $\gtrsim$ ”) and `\lesssim` (“ $\lesssim$ ”) with the `\sim` symbol slanted to match the angle of the greater-than/less-than sign. His solution incorporates the `graphicx` package’s `\rotatebox` for rotating the “ $\sim$ ”, the `stackengine` package’s `\stackengine` command for stacking two symbols on top of each other, and the `scalrel` package’s `\ThisStyle`, `\SavedStyle`, and `\LMex` commands for scaling the symbol based on the surrounding context. The following code due to Segletes defines the `\gtrsimslant` (“ $\gtrsim$ ”) and `\lesssimslant` (“ $\lesssim$ ”) symbols:⁷

⁶Note that if your goal is to typeset commutative diagrams or pushout/pullback diagrams, then you should probably be using `Xy-pic`.

⁷The code as posted on TeX Stack Exchange named these `\vargtrsim` and `\varlesssim`. They are renamed here for naming consistency with symbols such as `\geqslant` (“ $\geq$ ”).

```

\newcommand\lessmslant{\mathrel{\ensurestackMath{\ThisStyle{%
\stackengine{-0.4\LMex}{\SavedStyle<}{\U}{r}{F}{T}{S}}}}
\rotatebox{-25}{\SavedStyle\sim$}}{\U}{r}{F}{T}{S}}}}
\newcommand\gtrmslant{\mathrel{\ensurestackMath{\ThisStyle{%
\stackengine{-0.4\LMex}{\SavedStyle>}{\U}{l}{F}{T}{S}}}}
\rotatebox{25}{\SavedStyle\sim$}}{\U}{l}{F}{T}{S}}}}

```

12.3.4 Modifying L^AT_EX-generated symbols

Oftentimes, symbols composed in the L^AT_EX 2_ε source code can be modified with minimal effort to produce useful variations. For example, `fontdef.dtx` composes the `\ddots` symbol (see Table 306 on page 151) out of three periods, raised 7 pt., 4 pt., and 1 pt., respectively:

```

\def\ddots{\mathinner{\mkern1mu\raise7\p@
\ vbox{\kern7\p@\hbox{.}}\mkern2mu
\raise4\p@\hbox{.}}\mkern2mu\raise\p@\hbox{.}}\mkern1mu}}

```

`\p@` is a L^AT_EX 2_ε shortcut for “pt” or “1.0pt”. The remaining commands are defined in The T_EXbook [Knu86a]. To draw a version of `\ddots` with the dots going along the opposite diagonal, we merely have to reorder the `\raise7\p@`, `\raise4\p@`, and `\raise\p@`:

```

\makeatletter
\def\revddots{\mathinner{\mkern1mu\raise\p@
\ vbox{\kern7\p@\hbox{.}}\mkern2mu
\raise4\p@\hbox{.}}\mkern2mu\raise7\p@\hbox{.}}\mkern1mu}}
\makeatother

```

`\revddots` is essentially identical to the `mathdots` package’s `\iddots` command or the `yhmath` package’s `\adots` command.

12.3.5 Encircling symbols

A simple, special case of combining existing symbols is to overlay a circle atop a given symbol. L^AT_EX’s built-in `\textcircled` (Table 19 on page 26) does exactly that: `\textcircled{A}` produces “ $\textcircled{A}$ ”. The `circledsteps` package enhances this capability by using T_ikZ to draw circles—rather, ovals—that extend to fit their content, that can be colored, and that can align either the original symbol or the circled symbol on the baseline. As a simple example, `f\Circled{ghi}j` produces “ $f\textcircled{ghi}j$ ”, in contrast with `f\textcircled{ghi}j`, which produces “ $f\textcircled{ghij}$ ”.

12.3.6 Producing complex accents

Accents are another special case of combining existing symbols to make new symbols. While various tables in this document show how to add an accent to an existing symbol, some applications, such as transliterations from non-Latin alphabets, require *multiple* accents per character. For instance, the creator of pdfT_EX writes his name as “Hàn Thê Thành”. The `dblaccnt` package enables L^AT_EX to stack accents, as in “H\‘an Th\’{\^e} Th\‘anh” (albeit not in the OT1 font encoding). In addition, the `wsuipa` package defines `\diatop` and `\diaunder` macros for putting one or more diacritics or accents above or below a given character. For example, `\diaunder[\diatop[\'|\=]]\textsubdot{r}` produces “ $\textsubdot{r}$ ”. See the `wsuipa` documentation for more information.

The `accents` package facilitates the fabrication of accents in math mode. Its `\accentset` command enables *any* character to be used as an accent. For instance, `\accentset{\star}{f}` produces “ $\overset{\star}{f}$ ” and `\accentset{e}{X}` produces “ $\overset{e}{X}$ ”. `\underaccent` does the same thing, but places the accent beneath the

character. This enables constructs like `\underaccent{\tilde}{V}`, which produces “ $\tilde{V}$ ”. `accents` provides other accent-related features as well; see the documentation for more information.

12.3.7 Creating extensible symbols

A relatively simple example of creating extensible symbols stems from a `comp.text.tex` post by Donald Arseneau (June 2003). The following code defines an equals sign that extends as far to the right as possible, just like L^AT_EX’s `\hrulefill` command:

```
\makeatletter
\def\equalsfill{$\m@th\mathord=\mkern-7mu
\cleaders\hbox{$\!\mathord=\!\$}\hfill
\mkern-7mu\mathord=$}
\makeatother
```

T_EX’s `\cleaders` and `\hfill` primitives are the key to understanding `\equalsfill`’s extensibility. Essentially, `\equalsfill` repeats a box containing “=” plus some negative space until it fills the maximum available horizontal space. `\equalsfill` is intended to be used with L^AT_EX’s `\stackrel` command, which stacks one mathematical expression (slightly reduced in size) atop another. Hence, “`\stackrel{a}{\rightarrow}`” produces “ $\overset{a}{\rightarrow}$ ” and “`X \stackrel{\text{definition}}{\hbox{\equalsfill}} Y`” produces “ $X \overset{\text{definition}}{\hspace{\fill}} Y$ ”.

If all that needs to extend are horizontal and vertical lines—as opposed to repeated symbols such as the “=” in the previous example—L^AT_EX’s `array` or `tabular` environments may suffice. Consider the following code (due to a February 1999 `comp.text.tex` post by Donald Arseneau and subsequent modifications by Billy Yu and Scott Pakin) for typesetting annuity and life-insurance symbols:

```
\DeclareRobustCommand{\actuarial}[2][]{%
\def\arraystretch{0}%
\setlength\arraycolsep{0.5pt}%
\setlength\arrayrulewidth{0.5pt}%
\setbox0=\hbox{$\scriptstyle#1#2$}%
\begin{array}[b]{*2{@{}>\scriptstyle c}}|}
\cline{2-2}%
\rule[1.25pt]{0pt}{\ht0}%
#1 & #2%
\end{array}%
}
```

Using the preceding definition, one can type, e.g., “`$a_{\actuarial{n}}$`” to produce “ $a_{\overline{n}}$ ” and “`$a_{\actuarial[x:]n}$`” to produce “ $a_{x:\overline{n}}$ ”. This is similar in concept to how the `actuarialangle` package defines its `\actuarialangle` command (Table 287). For a more complete solution for typesetting actuarial symbols see the `actuarialsymbol` package.

A more complex example of composing accents is the following definition of extensible `\overbracket`, `\underbracket`, `\overparenthesis`, and `\underparenthesis` symbols, taken from a May 2002 `comp.text.tex` post by Donald Arseneau:

```
\makeatletter
\def\overbracket#1{\mathop{\vbox{\ialign{##\cr\cr\noalign{\kern3\p@}
\downbracketfill\cr\cr\noalign{\kern3\p@\nointerlineskip}
$\hfil\displaystyle{#1}\hfil$\cr}}}\limits}
\def\underbracket#1{\mathop{\vtop{\ialign{##\cr\cr
$\hfil\displaystyle{#1}\hfil$\cr\cr\noalign{\kern3\p@\nointerlineskip}
\upbracketfill\cr\cr\noalign{\kern3\p@}}}\limits}
```

```

\def\overparenthesis#1{\mathop{\vbox{\ialign{##\crcr\noalign{\kern3\p@}
\downparenthfill\crcr\noalign{\kern3\p@\nointerlineskip}
$\hfil\displaystyle{#1}\hfil$\crcr}}}\limits}
\def\upparenthesis#1{\mathop{\vtop{\ialign{##\crcr
$\hfil\displaystyle{#1}\hfil$\crcr\noalign{\kern3\p@\nointerlineskip}
\upparenthfill\crcr\noalign{\kern3\p@}}}\limits}
\def\downparenthfill{$\m@th\bracedl\leaders\vrule\hfill\bracerd$}
\def\upparenthfill{$\m@th\braceru\leaders\vrule\hfill\braceru$}
\def\upbracketfill{$\m@th\makesm@sh{\llap{\vrule\@height3\p@\@width.7\p@}}%
\leaders\vrule\@height.7\p@\hfill
\makesm@sh{\rlap{\vrule\@height3\p@\@width.7\p@}}$}
\def\downbracketfill{$\m@th
\makesm@sh{\llap{\vrule\@height.7\p@\@depth2.3\p@\@width.7\p@}}%
\leaders\vrule\@height.7\p@\hfill
\makesm@sh{\rlap{\vrule\@height.7\p@\@depth2.3\p@\@width.7\p@}}$}
\makeatother

```

Table 690 showcases these accents. The $\text{\TeX}$ book [Knu86a] or another book on $\text{\TeX}$ primitives is indispensable for understanding how the preceding code works. The basic idea is that $\text{\downparenthfill}$, $\text{\upparenthfill}$, $\text{\downbracketfill}$, and $\text{\upbracketfill}$ do all of the work; they output a left symbol (e.g., $\text{\bracedl}$ [“ $\l$ ”] for $\text{\downparenthfill}$), a horizontal rule that stretches as wide as possible, and a right symbol (e.g., $\text{\bracerd}$ [“ $\r$ ”] for $\text{\downparenthfill}$). $\text{\overbracket}$, $\text{\underbracket}$, $\text{\overparenthesis}$, and $\text{\underparenthesis}$ merely create a table whose width is determined by the given text, thereby constraining the width of the horizontal rules.

TABLE 690: Manually Composed Extensible Accents

$\overline{abc}$	$\text{\overbracket{abc}}$	$\widehat{abc}$	$\text{\overparenthesis{abc}}$
$\underline{abc}$	$\text{\underbracket{abc}}$	$\widetilde{abc}$	$\text{\underparenthesis{abc}}$

Note that the `simplewick` package provides mechanisms for typesetting Wick contractions, which utilize $\text{\overbracket}$ - and $\text{\underbracket}$ -like brackets of variable width *and* height (or depth). For example, “ $\text{\acontraction}\{\}\{A\}\{B\}\{C\}\text{\acontraction}[2ex]\{A\}\{B\}\{C\}\{D\}\text{\bcontraction}\{\}\{A\}\{BC\}\{D\}ABCD$ ” produces



See the `simplewick` documentation for more information.

12.3.8 Developing new symbols from scratch

Sometimes it is simply not possible to define a new symbol in terms of existing symbols. Fortunately, most, if not all, $\text{\TeX}$ distributions are shipped with a tool called METAFONT which is designed specifically for creating fonts to be used with $\text{\TeX}$. The METAFONTbook [Knu86b] is the authoritative text on METAFONT. If you plan to design your own symbols with METAFONT, The METAFONTbook is essential reading. You may also want to read the freely available METAFONT primer located at <http://metafont.tutorial.free.fr/>. The following is an extremely brief tutorial on how to create a new $\text{\LaTeX}$ symbol using METAFONT. Its primary purpose is to cover the $\text{\LaTeX}$ -specific operations not mentioned in The METAFONTbook and to demonstrate that symbol-font creation is not necessarily a difficult task.

Suppose we need a symbol to represent a light bulb (“ $\mathcal{Q}$ ”).⁸ The first step is to draw this in METAFONT.

⁸I’m not a very good artist; you’ll have to pretend that “ $\mathcal{Q}$ ” looks like a light bulb.

It is common to separate the font into two files: a size-dependent file, which specifies the design size and various font-specific parameters that are a function of the design size; and a size-independent file, which draws characters in the given size. Figure 12.2 shows the METAFONT code for `lightbulb10.mf`. `lightbulb10.mf` specifies various parameters that produce a 10 pt. light bulb then loads `lightbulb.mf`. Ideally, one should produce `lightbulb<size>.mf` files for a variety of $\langle size \rangle$ s. This is called “optical scaling”. It enables, for example, the lines that make up the light bulb to retain the same thickness at different font sizes, which looks much nicer than the alternative—and default—“mechanical scaling”. When a `lightbulb<size>.mf` file does not exist for a given size $\langle size \rangle$, the computer mechanically produces a wider, taller, thicker symbol:

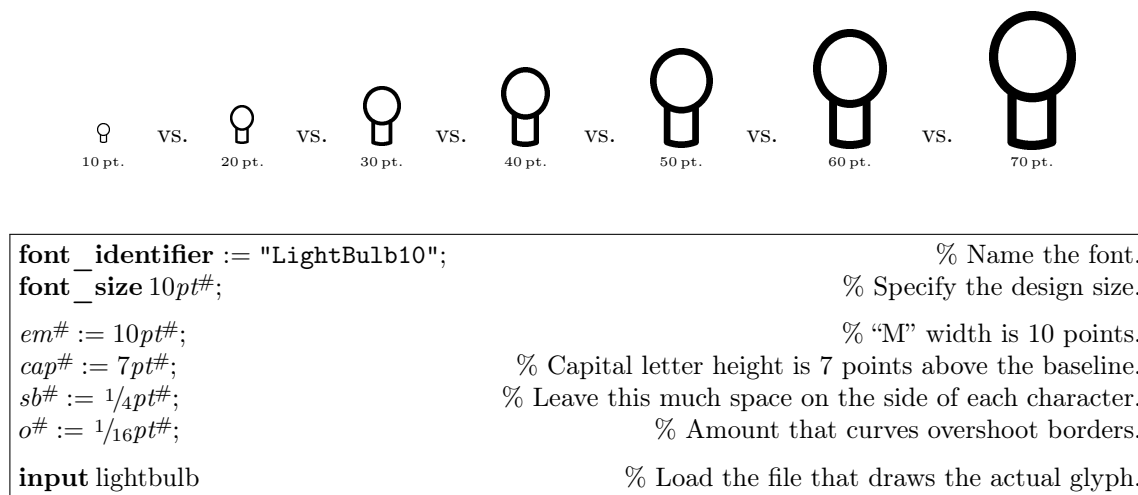


Figure 12.2: Sample METAFONT size-specific file (`lightbulb10.mf`)

`lightbulb.mf`, shown in Figure 12.3, draws a light bulb using the parameters defined in `lightbulb10.mf`. Note that the filenames “`lightbulb10.mf`” and “`lightbulb.mf`” do not follow the Berry font-naming scheme [Ber01]; the Berry font-naming scheme is largely irrelevant for symbol fonts, which generally lack bold, italic, small-caps, slanted, and other such variants.

The code in Figures Figure 12.2 and Figure 12.3 is heavily commented and should demonstrate some of the basic concepts behind METAFONT usage: declaring variables, defining points, drawing lines and curves, and preparing to debug or fine-tune the output. Again, The METAFONTbook [Knu86b] is the definitive reference on METAFONT programming.

METAFONT can produce “proofs” of fonts—large, labeled versions that showcase the logical structure of each character. In fact, proof mode is METAFONT’s default mode. To produce a proof of `lightbulb10.mf`, issue the following commands at the operating-system prompt:

```

prompt> mf lightbulb10.mf           ⇐ Produces lightbulb10.2602gf
prompt> gftodvi lightbulb10.2602gf  ⇐ Produces lightbulb10.dvi

```

You can then view `lightbulb10.dvi` with any DVI viewer. The result is shown in Figure 12.4. Observe how the grid defined with `makegrid` at the bottom of Figure 12.3 draws vertical lines at positions 0, sb , $w/2$, and $w - sb$ and horizontal lines at positions 0, $-1pt$, y_2 , and h . Similarly, observe how the `penlabels` command labels all of the important coordinates: $z_1, z_2, \dots, z_8$ and z_{67} , which `lightbulb.mf` defines to lie between z_6 and z_7 .

Most, if not all, $\text{\TeX}$ distributions include a Plain $\text{\TeX}$ file called `testfont.tex` that is useful for testing new fonts in a variety of ways. One useful routine produces a table of all of the characters in the font:

```

prompt> tex testfont

```

```

mode_setup;                                % Target a given printer.
define_pixels(em, cap, sb);                 % Convert to device-specific units.
define_corrected_pixels(o);                 % Same, but add a device-specific fudge factor.
%% Define a light bulb at the character position for "A"
%% with width  $\frac{1}{2}em\#$ , height  $cap\#$ , and depth  $1pt\#$ .
beginchar("A",  $\frac{1}{2}em\#$ ,  $cap\#$ ,  $1pt\#$ ); "A light bulb";
  pickup pencircle scaled  $\frac{1}{2}pt$ ;           % Use a pen with a small, circular tip.

  %% Define the points we need.
  top  $z_1 = (w/2, h + o)$ ;                    %  $z_1$  is at the top of a circle.
  rt  $z_2 = (w + sb + o - x_4, y_4)$ ;          %  $z_2$  is at the same height as  $z_4$  but the opposite side.
  bot  $z_3 = (z_1 - (0, w - sb - o))$ ;          %  $z_3$  is at the bottom of the circle.
  lft  $z_4 = (sb - o, \frac{1}{2}[y_1, y_3])$ ;      %  $z_4$  is on the left of the circle.
  path bulb;                                % Define a path for the bulb itself.
  bulb =  $z_1 \dots z_2 \dots z_3 \dots z_4 \dots$  cycle; % The bulb is a closed path.

   $z_5 = \text{point } 2 - \frac{1}{3} \text{ of } bulb$ ;          %  $z_5$  lies on the bulb, a little to the right of  $z_3$ .
   $z_6 = (x_5, 0)$ ;                               %  $z_6$  is at the bottom, directly under  $z_5$ .
   $z_7 = (x_8, 0)$ ;                               %  $z_7$  is at the bottom, directly under  $z_8$ .
   $z_8 = \text{point } 2 + \frac{1}{3} \text{ of } bulb$ ;          %  $z_8$  lies on the bulb, a little to the left of  $z_3$ .
  bot  $z_{67} = (\frac{1}{2}[x_6, x_7], pen\_bot - o - \frac{1}{8}pt)$ ; %  $z_{67}$  lies halfway between  $z_6$  and  $z_7$  but a jot lower.

  %% Draw the bulb and the base.
  draw bulb;                                % Draw the bulb proper.
  draw  $z_5 \text{ -- } z_6 \dots z_{67} \dots z_7 \text{ -- } z_8$ ; % Draw the base of the bulb.

  %% Display key positions and points to help us debug.
  makegrid(0, sb,  $w/2$ ,  $w - sb$ )(0,  $-1pt$ ,  $y_2$ ,  $h$ ); % Label "interesting"  $x$  and  $y$  coordinates.
  penlabels(1, 2, 3, 4, 5, 6, 67, 7, 8); % Label control points for debugging.
endchar;
end

```

Figure 12.3: Sample METAFONT size-independent file (lightbulb.mf)

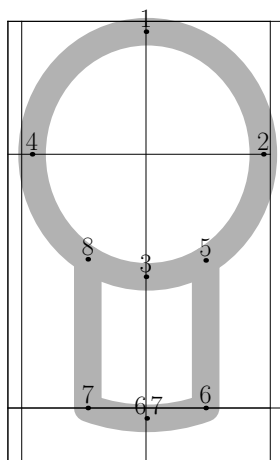


Figure 12.4: Proof diagram of lightbulb10.mf

```

This is TeX, Version 3.14159 (Web2C 7.3.1)
(/usr/share/texmf/tex/plain/base/testfont.tex
Name of the font to test = lightbulb10
Now type a test command (\help for help):)
*\table

*\bye
[1]
Output written on testfont.dvi (1 page, 1516 bytes).
Transcript written on testfont.log.

```

The resulting table, stored in `testfont.dvi` and illustrated in Figure 12.5, shows every character in the font. To understand how to read the table, note that the character code for “A”—the only character defined by `lightbulb10.mf`—is 41 in hexadecimal (base 16) and 101 in octal (base 8).

	0	1	2	3	4	5	6	7	
10x		8							4x
11x									
	8	9	A	B	C	D	E	F	

Figure 12.5: Font table produced by `testfont.tex`

The LightBulb10 font is now usable by $\text{\TeX}$. $\text{\LaTeX 2}_{\epsilon}$, however, needs more information before documents can use the font. First, we create a font-description file that tells $\text{\LaTeX 2}_{\epsilon}$ how to map fonts in a given font family and encoding to a particular font in a particular font size. For symbol fonts, this mapping is fairly simple. Symbol fonts almost always use the “U” (“Unknown”) font encoding and frequently occur in only one variant: normal weight and non-italicized. The filename for a font-description file is important; it must be of the form “ $\langle encoding \rangle \langle family \rangle .fd$ ”, where $\langle encoding \rangle$ is the lowercase version of the encoding name (typically “u” for symbol fonts) and $\langle family \rangle$ is the name of the font family. For LightBulb10, let’s call this “bulb”. Figure 12.6 lists the contents of `ubulb.fd`. The document “ $\text{\LaTeX 2}_{\epsilon}$ Font Selection” [AT19] describes `\DeclareFontFamily` and `\DeclareFontShape` in detail, but the gist of `ubulb.fd` is first to declare a U-encoded version of the `bulb` font family and then to specify that a $\text{\LaTeX 2}_{\epsilon}$ request for a U-encoded version of `bulb` with a (m)edium font series (as opposed to, e.g., bold) and a (n)ormal font shape (as opposed to, e.g., italic) should translate into a $\text{\TeX}$ request for `lightbulb10.tfm` mechanically scaled to the current font size.

```

\DeclareFontFamily{U}{bulb}{}
\DeclareFontShape{U}{bulb}{m}{n}{<-> lightbulb10}{}

```

Figure 12.6: $\text{\LaTeX 2}_{\epsilon}$ font-description file (`ubulb.fd`)

The final step is to write a $\text{\LaTeX 2}_{\epsilon}$ style file that defines a name for each symbol in the font. Because we have only one symbol our style file, `lightbulb.sty` (Figure 12.7), is rather trivial. Note that instead of typesetting “A” we could have had `\lightbulb typeset “\char65”`, “`\char41`”, or “`\char101`” (respectively, decimal, hexadecimal, and octal character offsets into the font). For a simple, one-character symbol font such as LightBulb10 it would be reasonable to merge `ubulb.fd` into `lightbulb.sty` instead of maintaining

two separate files. In either case, a document need only include “`\usepackage{lightbulb}`” to make the `\lightbulb` symbol available.

`\newcommand{\lightbulb}{\usefont{U}{bulb}{m}{n}A}}`

Figure 12.7: L^AT_EX 2_ε style file (`lightbulb.sty`)

METAFONT normally produces bitmapped fonts. However, it is also possible, with the help of some external tools, to produce PostScript Type 1 fonts. These have the advantages of rendering better in Adobe[®] Acrobat[®] (at least in versions prior to 6.0) and of being more memory-efficient when handled by a PostScript interpreter. See <http://www.texfaq.org/FAQ-texttrace.html> for pointers to tools that can produce Type 1 fonts from METAFONT.

12.4 Math-mode spacing

Terms such as “binary operators”, “relations”, and “punctuation” in Chapter 3 primarily regard the surrounding spacing. (See the Short Math Guide for L^AT_EX [Dow00] for a nice exposition on the subject.) To use a symbol for a different purpose, you can use the T_EX commands `\mathord`, `\mathop`, `\mathbin`, `\mathrel`, `\mathopen`, `\mathclose`, and `\mathpunct`. For example, if you want to use `\downarrow` as a variable (an “ordinary” symbol) instead of a delimiter, you can write “`$3x + \mathord{\downarrow}$`” to get the properly spaced “ $3x + \downarrow$ ” rather than the awkward-looking “ $3x + \downarrow$ ”. Similarly, to create a dotted-union symbol (“ $\dot{\cup}$ ”) that spaces like the ordinary set-union symbol (`\cup`) it must be defined with `\mathbin`, just as `\cup` is. Contrast “`$A \dot{\cup} B$`” (“ $A \dot{\cup} B$ ”) with “`$A \mathbin{\dot{\cup}} B$`” (“ $A \dot{\cup} B$ ”). See The T_EXbook [Knu86a] for the definitive description of math-mode spacing.

The purpose of the “log-like symbols” in Table 203 and Table 204 is to provide the correct amount of spacing around and within multiletter function names. Table 691 on page 379 contrasts the output of the log-like symbols with various, naïve alternatives. In addition to spacing, the log-like symbols also handle subscripts properly. For example, “`\max_{p \in P}`” produces “ $\max_{p \in P}$ ” in text, but “ $\max$ ” as part of a displayed formula.

TABLE 691: Spacing Around/Within Log-like Symbols

L ^A T _E X expression	Output
<code>\$r \sin \theta\$</code>	$r \sin \theta$ (best)
<code>\$r \sin \theta\$</code>	$rsin\theta$
<code>\$r \mbox{sin} \theta\$</code>	$rsin\theta$
<code>\$r \mathrm{sin} \theta\$</code>	$rsin\theta$

The `amsmath` package makes it straightforward to define new log-like symbols:

```
\DeclareMathOperator{\atan}{atan}
\DeclareMathOperator*{\lcm}{lcm}
```

The difference between `\DeclareMathOperator` and `\DeclareMathOperator*` involves the handling of subscripts. With `\DeclareMathOperator*`, subscripts are written beneath log-like symbols in display style and to the right in text style. This is useful for limit operators (e.g., `\lim`) and functions that tend to map over a set (e.g., `\min`). In contrast, `\DeclareMathOperator` tells T_EX that subscripts should always be displayed to the right of the operator, as is common for functions that take a single parameter (e.g., `\log` and `\cos`).

Table 692 contrasts symbols declared with `\DeclareMathOperator` and `\DeclareMathOperator*` in both text style (`$. . . $`) and display style (`\[ . . . \]`).⁹

TABLE 692: Defining new log-like symbols

Declaration function	<code>\$\newlogsym_{p \in P}\$</code>	<code>\[\newlogsym_{p \in P} \]</code>
<code>\DeclareMathOperator</code>	$\text{newlogsym}_{p \in P}$	$\text{newlogsym}_{p \in P}$
<code>\DeclareMathOperator*</code>	$\text{newlogsym}_{p \in P}$	$\text{newlogsym}_{p \in P}$

It is common to use a thin space (`\,`) between the words of a multiword operators, as in `"\DeclareMathOperator*{\argmax}{arg\,max}"`. `\liminf`, `\limsup`, and all of the log-like symbols shown in Table 204 utilize this spacing convention.

12.5 Bold mathematical symbols

$\text{\LaTeX}$ does not normally use bold symbols when typesetting mathematics. However, bold symbols are occasionally needed, for example when naming vectors. Any of the approaches described at <http://www.texfaq.org/FAQ-boldgreek.html> can be used to produce bold mathematical symbols. Table 693 contrasts the output produced by these various techniques. As the table illustrates, these techniques exhibit variation in their formatting of Latin letters (upright vs. italic), formatting of Greek letters (bold vs. normal), formatting of operators and relations (bold vs. normal), and spacing. `xfakebold`'s `\setBold` command is unique in that it takes a thickness argument and supports arbitrary symbol thickness, although it works only with vector fonts, not bitmapped fonts.

TABLE 693: Producing bold mathematical symbols

Package	Code	Output	
<i>none</i>	<code>\$\alpha + b = \Gamma \div D\$</code>	$\alpha + b = \Gamma \div D$	(no bold)
<i>none</i>	<code>\$\mathbf{\alpha + b = \Gamma \div D}\$</code>	$\alpha + b = \Gamma \div D$	
<i>none</i>	<code>\boldmath\$\alpha + b = \Gamma \div D\$</code>	$\alpha + b = \Gamma \div D$	
<code>amsbsy</code>	<code>\$\pmb{\alpha + b = \Gamma \div D}\$</code>	$\alpha + b = \Gamma \div D$	(faked bold)
<code>amsbsy</code>	<code>\$\boldsymbol{\alpha + b = \Gamma \div D}\$</code>	$\alpha + b = \Gamma \div D$	
<code>bm</code>	<code>\$\bm{\alpha + b = \Gamma \div D}\$</code>	$\alpha + b = \Gamma \div D$	
<code>fixmath</code>	<code>\$\mathbfbold{\alpha + b = \Gamma \div D}\$</code>	$\alpha + b = \Gamma \div D$	
<code>xfakebold</code>	<code>\setBold[0.3]</code> <code>\$\alpha + b = \Gamma \div D\$</code> <code>\unsetBold</code>	$\alpha + b = \Gamma \div D$	(faked bold)

12.6 ASCII and Latin 1 quick reference

Table 694 on page 381 amalgamates data from various other tables in this document into a convenient reference for $\text{\LaTeX}$ typesetting of ASCII characters, i.e., the characters available on a typical U.S. computer

⁹Note that `\displaystyle` can be used to force display style within `$. . . $` and `\textstyle` can be used to force text style within `\[ . . . \]`.

keyboard. The first two columns list the character’s ASCII code in decimal and hexadecimal. The third column shows what the character looks like. The fourth column lists the $\text{\LaTeX} 2_{\epsilon}$ command to typeset the character as a text character. And the fourth column lists the $\text{\LaTeX} 2_{\epsilon}$ command to typeset the character within a $\text{\texttt{\texttt{...}}}$ command (or, more generally, when $\text{\texttt{ttfamily}}$ is in effect).

TABLE 694: $\text{\LaTeX} 2_{\epsilon}$ ASCII Table

Dec	Hex	Char	Body text	$\text{\texttt{\texttt{...}}}$	Dec	Hex	Char	Body text	$\text{\texttt{\texttt{...}}}$
33	21	!	!	!	62	3E	>	$\text{\texttt{\texttt{greater}}}$	>
34	22	"	$\text{\texttt{\texttt{quotedbl}}}$	"	63	3F	?	?	?
35	23	#	$\text{\texttt{\texttt{#}}}$	$\text{\texttt{\texttt{#}}}$	64	40	@	@	@
36	24	\$	$\text{\texttt{\texttt{$}}}$	$\text{\texttt{\texttt{$}}}$	65	41	A	A	A
37	25	%	$\text{\texttt{\texttt{%}}}$	$\text{\texttt{\texttt{%}}}$	66	42	B	B	B
38	26	&	$\text{\texttt{\texttt{&}}}$	$\text{\texttt{\texttt{&}}}$	67	43	C	C	C
39	27	,	,	,	:	:	:	:	:
40	28	(	(	(	90	5A	Z	Z	Z
41	29	)	)	)	91	5B	[	[	[
42	2A	*	*	*	92	5C	\	$\text{\texttt{\texttt{backslash}}}$	$\text{\texttt{\texttt{char'\'{\\}}}}$
43	2B	+	+	+	93	5D	]	]	]
44	2C	,	,	,	94	5E	^	$\text{\texttt{\texttt{asciicircum}}}$	$\text{\texttt{\texttt{asciicircum}}}$
45	2D	-	-	-	95	5F	_	$\text{\texttt{\texttt{asciitilde}}}$	$\text{\texttt{\texttt{char'\'{_}}}}$
46	2E	.	.	.	96	60	'	'	'
47	2F	/	/	/	97	61	a	a	a
48	30	0	0	0	98	62	b	b	b
49	31	1	1	1	99	63	c	c	c
50	32	2	2	2	:	:	:	:	:
:	:	:	:	:	122	7A	z	z	z
57	39	9	9	9	123	7B	{	$\text{\texttt{\texttt{asciicircum}}}$	$\text{\texttt{\texttt{char'\'{{}}}}$
58	3A	:	:	:	124	7C		$\text{\texttt{\texttt{bar}}}$	
59	3B	;	;	;	125	7D	}	$\text{\texttt{\texttt{asciitilde}}}$	$\text{\texttt{\texttt{char'\'{}}}}$
60	3C	<	$\text{\texttt{\texttt{less}}}$	<	126	7E	~	$\text{\texttt{\texttt{asciitilde}}}$	$\text{\texttt{\texttt{asciitilde}}}$
61	3D	=	=	=					

The following are some additional notes about the contents of Table 694:

- “” is not available in the OT1 font encoding.
- Table 694 shows a close quote for character 39 for consistency with the open quote shown for character 96. A straight quote can be typeset using $\text{\texttt{\texttt{quotesingle}}}$ (cf. Table 47).
- The characters “<”, “>”, and “|” do work as expected in math mode, although they produce, respectively, “|”, “|”, and “|” in text mode when using the OT1 font encoding.¹⁰ The following are some alternatives for typesetting “<”, “>”, and “|”:
 - Specify a document font encoding other than OT1 (as described on page 16).
 - Use the appropriate symbol commands from Table 2 on page 19, viz. $\text{\texttt{\texttt{less}}}$, $\text{\texttt{\texttt{greater}}}$, and $\text{\texttt{\texttt{bar}}}$.

¹⁰Donald Knuth didn’t think such symbols were important outside of mathematics so he omitted them from his text fonts.

- Enter the symbols in math mode instead of text mode, i.e., $\$<\$, \$>\$, and \$! \$$.

Note that for typesetting metavariables many people prefer `\textlangle` and `\textrangle` to `\textless` and `\textgreater`; i.e., “`\langle filename \rangle`” instead of “`<filename>`”.

- Although “/” does not require any special treatment, L^AT_EX additionally defines a `\slash` command which outputs the same glyph but permits a line break afterwards. That is, “`increase/decrease`” is always typeset as a single entity while “`increase\slash{}decrease`” may be typeset with “`increase/`” on one line and “`decrease`” on the next.
- `\textasciicircum` can be used instead of `\~{}`, and `\textasciitilde` can be used instead of `\~{}`. Note that `\textasciitilde` and `\~{}` produce raised, diacritic tildes. “Text” (i.e., vertically centered) tildes can be generated with either the math-mode `\sim` command (shown in Table 98 on page 67), which produces a somewhat wide “`~`”, or the `textcomp` package’s `\texttildelow` (shown in Table 47 on page 34), which produces a vertically centered “`~`” in most fonts but a baseline-oriented “`~`” in Computer Modern, `txfonts`, `pxfonts`, and various other fonts originating from the T_EX world. If your goal is to typeset tildes in URLs or Unix filenames, your best bet is to use the `url` package, which has a number of nice features such as proper line-breaking of such names.
- The various `\char` commands within `\texttt` are necessary only in the OT1 font encoding. In other encodings (e.g., T1), commands such as `\{`, `\}`, `\_`, and `\textbackslash` all work properly.
- The code page 437 (IBM PC) version of ASCII characters 1 to 31 can be typeset using the `ascii` package. See Table 368 on page 170.
- To replace “`“`” and “`”`” with the more computer-like (and more visibly distinct) “`“`” and “`”`” within a `verbatim` environment, use the `upquote` package. Outside of `verbatim`, you can use `\char18` and `\char13` to get the modified quote characters. (The former is actually a grave accent.)

Similar to Table 694, Table 695 on the following page is an amalgamation of data from other tables in this document. While Table 694 shows how to typeset the 7-bit ASCII character set, Table 695 shows the Latin 1 (Western European) character set, also known as ISO-8859-1.

The following are some additional notes about the contents of Table 695:

- A “(tc)” after a symbol name means that the `textcomp` package must be loaded to access that symbol. A “(T1)” means that the symbol requires the T1 font encoding. The `fontenc` package can change the font encoding document-wide.
- Many of the `\text...` accents can also be produced using the accent commands shown in Table 19 on page 26 plus an empty argument. For instance, `\={}` is essentially the same as `\textasciimacron`.
- The commands in the “L^AT_EX 2_ε” columns work both in body text and within a `\texttt{...}` command (or, more generally, when `\ttfamily` is in effect).
- The “ $\pounds$ ” and “ $\$$ ” glyphs occupy the same slot (36) of the OT1 font encoding, with “ $\pounds$ ” appearing in italic fonts and “ $\$$ ” appearing in roman fonts. A problem with L^AT_EX’s default handling of this double-mapping is that “`\sffamily\slshape\pounds`” produces “ $\$$ ”, not “ $\pounds$ ”. Other font encodings use separate slots for the two characters and are therefore robust to the problem of “ $\pounds$ ”/“ $\$$ ” conflicts. Authors who use `\pounds` should select a font encoding other than OT1 (as explained on page 16) or use the `textcomp` package, which redefines `\pounds` to use the TS1 font encoding.
- Character 173, `\-`, is shown as “`-`” but is actually a discretionary hyphen; it appears only at the end of a line.

TABLE 695: L^AT_EX 2_ε Latin 1 Table

Dec	Hex	Char	L ^A T _E X 2 _ε	Dec	Hex	Char	L ^A T _E X 2 _ε
161	A1	¡	!‘	209	D1	Ñ	\~{N}
162	A2	¢	\textcent (tc)	210	D2	Ò	\‘{O}
163	A3	£	\pounds	211	D3	Ó	\’{O}
164	A4	¤	\textcurrency (tc)	212	D4	Ô	\ˆ{O}
165	A5	¥	\textyen (tc)	213	D5	Õ	\~{O}
166	A6	¦	\textbrokenbar (tc)	214	D6	Ö	\" {O}
167	A7	§	\S	215	D7	×	\texttimes (tc)
168	A8	¨	\textasciidieresis (tc)	216	D8	Ø	\O
169	A9	©	\textcopyright	217	D9	Ù	\‘{U}
170	AA	ª	\textordfeminine	218	DA	Ú	\’{U}
171	AB	«	\guillemetleft (T1)	219	DB	Û	\ˆ{U}
172	AC	¬	\textlnot (tc)	220	DC	Ü	\" {U}
173	AD	-	\-	221	DD	Ý	\’{Y}
174	AE	®	\textregistered	222	DE	Þ	\TH (T1)
175	AF	°	\textasciimacron (tc)	223	DF	ß	\ss
176	B0	º	\textdegree (tc)	224	E0	à	\‘{a}
177	B1	±	\textpm (tc)	225	E1	á	\’{a}
178	B2	²	\texttwosuperior (tc)	226	E2	â	\ˆ{a}
179	B3	³	\textthreesuperior (tc)	227	E3	ã	\~{a}
180	B4	´	\textasciiacute (tc)	228	E4	ä	\" {a}
181	B5	µ	\textmu (tc)	229	E5	å	\aa
182	B6	¶	\P	230	E6	æ	\ae
183	B7	·	\textperiodcentered	231	E7	ç	\c{c}
184	B8	¸	\c{}	232	E8	è	\‘{e}
185	B9	¹	\textonesuperior (tc)	233	E9	é	\’{e}
186	BA	º	\textordmasculine	234	EA	ê	\ˆ{e}
187	BB	»	\guillemetright (T1)	235	EB	ë	\" {e}
188	BC	¼	\textonequarter (tc)	236	EC	ì	\‘{i}
189	BD	½	\textonehalf (tc)	237	ED	í	\’{i}
190	BE	¾	\textthreequarters (tc)	238	EE	î	\ˆ{i}
191	BF	¿	?‘	239	EF	ï	\" {i}
192	C0	À	\‘{A}	240	F0	ð	\dh (T1)
193	C1	Á	\’{A}	241	F1	ñ	\~{n}
194	C2	Â	\ˆ{A}	242	F2	ò	\‘{o}
195	C3	Ã	\~{A}	243	F3	ó	\’{o}
196	C4	Ä	\" {A}	244	F4	ô	\ˆ{o}
197	C5	Å	\AA	245	F5	õ	\~{o}
198	C6	Æ	\AE	246	F6	ö	\" {o}
199	C7	Ç	\c{C}	247	F7	÷	\textdiv (tc)
200	C8	È	\‘{E}	248	F8	ø	\o
201	C9	É	\’{E}	249	F9	ù	\‘{u}
202	CA	Ê	\ˆ{E}	250	FA	ú	\’{u}
203	CB	Ë	\" {E}	251	FB	û	\ˆ{u}
204	CC	Ì	\‘{I}	252	FC	ü	\" {u}
205	CD	Í	\’{I}	253	FD	ý	\’{y}
206	CE	Î	\ˆ{I}	254	FE	þ	\th (T1)
207	CF	Ï	\" {I}	255	FF	ÿ	\" {y}
208	D0	Ð	\DH (T1)				

TABLE 696: L^AT_EX 2_ε Code Page 1252 Table

Dec	Hex	Char	L ^A T _E X 2 _ε		Dec	Hex	Char	L ^A T _E X 2 _ε
128	80	€	\texteuro	(tc)	145	91	‘	‘
130	82	,	\quotesinglbase	(T1)	146	92	,’	,’
131	83	<i>f</i>	\textit{f}		147	93	“	“
132	84	„	\quotedblbase	(T1)	148	94	”	”
133	85	...	\dots		149	95	•	\textbullet
134	86	†	\dag		150	96	—	—
135	87	‡	\ddag		151	97	—	--
136	88	^	\~{ }		152	98	~	\~{ }
137	89	‰	\textperthousand	(tc)	153	99	™	\texttrademark
138	8A	Š	\v{S}		154	9A	š	\v{s}
139	8B	<	\guilsinglleft	(T1)	155	9B	>	\guilsinglright (T1)
140	8C	Œ	\OE		156	9C	œ	\oe
142	8E	Ž	\v{Z}		158	9E	ž	\v{z}
					159	9F	Ÿ	\v{Y}

Microsoft® Windows® normally uses a superset of Latin 1 called “Code Page 1252” or “CP1252” for short. CP1252 introduces symbols in the Latin 1 “invalid” range (characters 128–159). Table 696 presents the characters with which CP1252 augments the standard Latin 1 table.

The following are some additional notes about the contents of Table 696:

- As in Table 695, a “(tc)” after a symbol name means that the `textcomp` package must be loaded to access that symbol. A “(T1)” means that the symbol requires the T1 font encoding. The `fontenc` package can change the font encoding document-wide.
- Not all characters in the 128–159 range are defined.
- Look up “euro signs” in the index for alternatives to `\texteuro`.

While too large to incorporate into this document, a listing of ISO 8879:1986 SGML/XML character entities and their L^AT_EX equivalents is available from <http://www.bitjungle.com/isoent/>. Some of the characters presented there make use of `isoent`, a L^AT_EX 2_ε package (available from the same URL) that fakes some of the missing ISO glyphs using the L^AT_EX `picture` environment.¹¹

12.7 Unicode characters

Unicode is a “universal character set”—a standard for encoding (i.e., assigning unique numbers to) the symbols appearing in many of the world’s languages. While ASCII can represent 128 symbols and Latin 1 can represent 256 symbols, Unicode can represent an astonishing 1,114,112 symbols.

Because T_EX and L^AT_EX predate the Unicode standard and Unicode fonts by almost a decade, support for Unicode has had to be added to the base T_EX and L^AT_EX systems. Note first that L^AT_EX distinguishes between *input* encoding—the characters used in the `.tex` file—and *output* encoding—the characters that appear in the generated `.dvi`, `.pdf`, etc. file.

¹¹`isoent` is not featured in this document, because it is not available from CTAN and because the faked symbols are not “true” characters; they exist in only one size, regardless of the body text’s font size.

12.7.1 Inputting Unicode characters

To include Unicode characters in a `.tex` file, load the `ucs` package and load the `inputenc` package with the `utf8x` (“UTF-8 extended”) option.¹² These packages enable $\text{\LaTeX}$ to translate UTF-8 sequences to $\text{\LaTeX}$ commands, which are subsequently processed as normal. For example, the UTF-8 text “Copyright © 2024”—“©” is not an ASCII character and therefore cannot be input directly without packages such as `ucs/inputenc`—is converted internally by `inputenc` to “Copyright `\textcopyright` 2024” and therefore typeset as “Copyright © 2024”.

The `ucs/inputenc` combination supports only a tiny subset of Unicode’s million-plus symbols. Additional symbols can be added manually using the `\DeclareUnicodeCharacter` command. `\DeclareUnicodeCharacter` takes two arguments: a Unicode number and a $\text{\LaTeX}$ command to execute when the corresponding Unicode character is encountered in the input. For example, the Unicode character “degree celsius” (“°C”) appears at character position U+2103.¹³ However, “°C” is not one of the characters that `ucs` and `inputenc` recognize. The following document shows how to use `\DeclareUnicodeCharacter` to tell $\text{\LaTeX}$ that the “°C” character should be treated as a synonym for `\textcelsius`:

```
\documentclass{article}
\usepackage{ucs}
\usepackage[utf8x]{inputenc}
\usepackage{textcomp}

\DeclareUnicodeCharacter{"2103}{\textcelsius}    % Enable direct input of U+2103.

\begin{document}
It was a balmy 21°C.
\end{document}
```

which produces

It was a balmy 21°C.

See the `ucs` documentation for more information and for descriptions of the various options that control `ucs`’s behavior.

12.7.2 Outputting Unicode characters

Orthogonal to the ability to include Unicode characters in a $\text{\LaTeX}$ input file is the ability to include a given Unicode character in the corresponding output file. By far the easiest approach is to use $\text{\LaTeX}$ or $\text{\XeTeX}$ instead of $\text{\pdfLaTeX}$ or ordinary $\text{\LaTeX}$. $\text{\LaTeX}$ and $\text{\XeTeX}$ handle Unicode input and output natively and can utilize system fonts directly without having to expose them via `.tfm`, `.fd`, and other such files. To output a Unicode character, a $\text{\LaTeX}$ or $\text{\XeTeX}$ document can either include that character directly as UTF-8 text or use $\text{\TeX}$ ’s `\char` primitive, which $\text{\LaTeX}$ / $\text{\XeTeX}$ extends to accept numbers larger than 255.

Suppose we want to output the symbols for versicle (“ ”) and response (“ ”) in a document. The Unicode charts list “versicle” at position U+2123 and “response” at position U+211F. We therefore need to install a font that contains those characters at their proper positions. One such font that is freely available from CTAN is Junicode (`Junicode.ttf`) from the `junicode` package. The `fontspec` package makes it easy for a $\text{\LaTeX}$ / $\text{\XeTeX}$ document to utilize a system font. The following example defines a `\textjuni` command that uses `fontspec` to typeset its argument in Junicode:

¹²UTF-8 is the 8-bit Unicode Transformation Format, a popular mechanism for representing Unicode symbol numbers as sequences of one to four bytes.

¹³The Unicode convention is to express character positions as “U+*hexadecimal number*”.

```

\documentclass{article}
\usepackage{fontspec}

\newcommand{\textjuni}[1]{\fontspec{Junicode}#1}

\begin{document}
We use ‘‘\textjuni{\char"2123}’’ for a versicle
and ‘‘\textjuni{\char"211F}’’ for a response.
\end{document}

```

which produces

We use “ŷ” for a versicle and “ꝛ” for a response.

(Typesetting the entire document in Junicode would be even easier. See the `fontspec` documentation for more information regarding font selection.) Note how the preceding example uses `\char` to specify a Unicode character by number. The double quotes before the number indicate that the number is represented in hexadecimal instead of decimal.

12.8 About this document

History David Carlisle wrote the first version of this document in October, 1994. It originally contained all of the native $\text{\LaTeX}$ symbols (Table 53, Table 79, Table 98, Table 153, Table 203, Table 208, Table 244, Table 245, Table 259, Table 270, Table 334, and a few tables that have since been reorganized) and was designed to be nearly identical to the tables in Chapter 3 of Leslie Lamport’s book [Lam86]. Even the table captions and the order of the symbols within each table matched! The $\mathcal{AMS}$ symbols (Table 54, Table 99, Table 100, Table 156, Table 157, Table 209, Table 218, Table 238, and Table 335) and an initial Math Alphabets table (Table 348) were added thereafter. Later, Alexander Holt provided the `stmaryrd` tables (Table 55, Table 81, Table 101, Table 159, Table 199, and Table 239).

In January, 2001, Scott Pakin took responsibility for maintaining the symbol list and has since implemented a complete overhaul of the document. The result, now called, “The Comprehensive $\text{\LaTeX}$ Symbol List”, includes the following new features:

- the addition of a handful of new math alphabets, dozens of new font tables, and thousands of new symbols
- the categorization of the symbol tables into body-text symbols, mathematical symbols, science and technology symbols, dingbats, ancient languages, and other symbols, to provide a more user-friendly document structure
- an index, table of contents, hyperlinks, and a frequently-requested symbol list, to help users quickly locate symbols
- symbol tables rewritten to list the symbols in alphabetical order
- appendices providing additional information relevant to using symbols in $\text{\LaTeX}$
- tables showing how to typeset all of the characters in the ASCII and Latin 1 font encodings

Furthermore, the internal structure of the document has been completely altered from David Carlisle’s original version. Most of the changes are geared towards making the document easier to extend, modify, and reformat.

Build characteristics Table 697 on page 387 lists some of this document’s build characteristics. Most important is the list of packages that L^AT_EX couldn’t find, but that `symbols.tex` otherwise would have been able to take advantage of. Complete, prebuilt versions of this document are available from CTAN via <https://www.ctan.org/pkg/comprehensive/>. Table 698 shows the package date (specified in the `.sty` file with `\ProvidesPackage`) for each package that was used to build this document and that specifies a package date. Packages are not listed in any particular order in either Table 697 or Table 698.

TABLE 697: Document Characteristics

Characteristic	Value
Source file:	<code>symbols.tex</code>
Build date:	January 3, 2024
Symbols documented:	20323
Packages included:	textcomp latexsym amssymb stmaryrd euscript wasysym pifont manfnt bbding undertilde ifsym tipa tipx extraipa wsuipa phonetic ulsy ar metre txfonts mathabx fclfont skak ascii dingbat skull eurosym esvect yfonts yhmath esint mathdots trsym universa upgreek overrightarrow chemarr chemarrow nath trfsigns abracas mathtools phaistos arcs vietnam t4phonet holtpolt semtrans dictsym extarrows protosem harmony hieroglf ccllicenses mathdesign arev MnSymbol fdsymbol boisik cml extpfeil keystroke fge turnstile simpsons epsdice feyn staves igo colonequals shuffle fourier dozenal pmbboxdraw pigpen clock teubner linearA linearb cypriot sarabian GtA2e harpoon steinmetz milstd recycle DotArrow ushort hhcount ogonek combelow musixtex ccicons adfsymbols adorn bigints soyombo tfruppee knitting textgreek begriff frege countriesofeurope cookingsymbols prodint epiolmec mdwmath rsfso fontawesome5 stix hands greenpoint nkarta astrosym webomints moonphase dancers semaphor umranda umrandb cryst starfont tikzsymbols dice apl go magic bartel-chess-fonts actuarialangle <i>lilyglyphs</i> knot bclogo bullcntr rubikcube svrsymbols halloweenmath old-arrows allrunes emf esrelation oplotsymb cmupint realhats euflag scsnowman endofproofwd mismath musicography rojud utfsym worldflags plimsoll twemojis sacsymb overarrows resmes pdfmsym sillypage academicons typicons figbas asapsym fontmfizz hamnosys figchild logix pgfornament lcircuit quantikz accents nicefrac xfakebold junicode mathrsfs chancery urwchancal calligra bbold mbboard dsfont bbm dsserif
Packages omitted:	<i>none</i>

TABLE 698: Package versions used in the preparation of this document

Name	Date	Name	Date	Name	Date
textcomp	2020-02-02	latexsym	1998-08-17	amssymb	2013-01-14
stmaryrd	1994-03-03	euscript	2009-06-22	wasysym	2020-01-19
pifont	2020-03-25	manfnt	1999-07-01	bbding	1999-04-15
undertilde	2000-08-08	ifsym	2000-04-18	tipa	2002-08-08
tipx	2003-01-01	wsuipa	1994-07-16	ar	2012-01-23
metre	2001-12-05	txfonts	2008-01-22	mathabx	2003-07-29
skak	2018-01-08	ascii	2006-05-30	dingbat	2001-04-27
skull	2002-01-23	eurosym	1998-08-06	yfonts	2019-04-04
mathdots	2014-06-11	trsym	2000-06-25	universa	2019-08-26
upgreek	2003-02-12	chemarr	2016-05-16	abraces	2022-11-06
mathtools	2022-06-29	phaistos	2004-04-23	arcs	2004-05-09
t4phonet	2004-06-01	semtrans	1998-02-10	dictsym	2004-07-26
extarrows	2020-03-12	protosem	2005-03-18	harmony	2007-05-04
hieroglf	2015-06-02	ccllicenses	2005-05-20	MnSymbol	2007-01-21
fdsymbol	2011-11-01	boisik	2009-08-21	extpfeil	2009-10-31
keystroke	2010-04-23	fge	2015-05-19	turnstile	2007-06-23
epsdice	2007-02-15	feyn	2022-07-20	colonequals	2016-05-16
shuffle	2008-10-27	dozenal	2018-05-11	pmboxdraw	2019-12-05
pigpen	2008-12-07	clock	2001-04-10	teubner	2023-08-25
linearA	2006-03-13	linearb	2005-06-22	cyriot	2009-05-22
sarabian	2005-11-12	QitA2e	1997-06-01	harpoon	1994-11-02
steinmetz	2009-06-14	milstd	2009-06-25	DotArrow	2007-02-12
ushort	2001-06-13	hhcount	1995-03-31	ogonek	1995-07-17
combelow	2010-05-02	musixtex	2001-07-08	ccicons	2017-10-30
adorn	2019-10-13	bigints	2010-02-15	soyombo	1996-09-01
tfrupee	2010-12-15	knitting	2019-04-03	textgreek	2011-10-09
frege	2012-08-04	countriesofeuropa	2018-12-29	cookingsymbols	2014-12-28
epiilmec	2003-11-05	mdwmath	1996-04-11	fontawesome5	2022-05-02
stix	2018-04-17	starfont	2010-09-29	tikzsymbols	2021-12-14
actuarialangle	2019-06-13	bclogo	2016-01-10	bullcntr	2007-04-02
rubikcube	2018-02-25	svrsymbols	2019-02-12	halloweenmath	2019-11-01
emf	2016-09-09	oplotsymb	2017-08-04	cmupint	2020-04-13
realhats	2022-06-13	euflag	2020-05-22	scsnowman	2023-02-23
musicography	2023-09-08	rojud	2020-10-25	utfsym	2022-04-17
plimsoll	2020-10-09	twemojis	2021-04-19	sacsymb	2023-02-06
overarrows	2023-02-15	resmes	2022-12-27	sillypage	2023-03-04
academicons	2021-11-26	typicons	2015-05-20	asapsym	2016-03-20
fontmfizz	2017-03-19	hamnosys	2022-02-08	figchild	2022-03-22
logix	2022-06-22	pgfornament	2020-05-26	quantikz	2023-05-24
accents	2006-05-12	nicefrac	1998-08-04	xfakebold	2023-11-21
calligra	2012-04-10				

12.9 Copyright and license

The Comprehensive L^AT_EX Symbol List
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<http://www.latex-project.org/lppl.txt>

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This work has the LPPL maintenance status “maintained”.

The current maintainer of this work is Scott Pakin.

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Bibliography

- [AMS99] American Mathematical Society. *User's Guide for the `amsmath` Package (Version 2.0)*, December 13, 1999. Available from <ftp://ftp.ams.org/pub/tex/doc/amsmath/amslldoc.pdf>.
- [Ber01] Karl Berry. Fontname: Filenames for $\text{T}_{\text{E}}\text{X}$ fonts, June 2001. Available from <https://www.ctan.org/pkg/fontname>.
- [Che98] Raymond Chen. A METAFONT of ‘Simpsons’ characters. *Baskerville*, 4(4):19, February 1998. ISSN 1354-5930. Available from <http://uk.tug.org/wp-installed-content/uploads/2008/12/44.pdf>.
- [Dow00] Michael Downes. Short math guide for $\text{\LaTeX}$, July 19, 2000. Version 1.07. Available from <http://www.ams.org/tex/short-math-guide.html>.
- [Gib97] Jeremy Gibbons. Hey—it works! *TUGboat*, 18(2):75–78, June 1997. Available from <http://www.tug.org/TUGboat/Articles/tb18-2/tb55works.pdf>.
- [Gre09] Enrico Gregorio. *Appunti di programmazione in $\text{\LaTeX}$ e $\text{T}_{\text{E}}\text{X}$* , second edition, June 2009. Available from <http://profs.sci.univr.it/~gregorio/introtex.pdf>.
- [Knu86a] Donald E. Knuth. *The $\text{T}_{\text{E}}\text{X}$ book*, volume A of *Computers and Typesetting*. Addison-Wesley, Reading, MA, USA, 1986.
- [Knu86b] Donald E. Knuth. *The METAFONTbook*, volume C of *Computers and Typesetting*. Addison-Wesley, Reading, MA, USA, 1986.
- [Lam86] Leslie Lamport. *$\text{\LaTeX}$: A document preparation system*. Addison-Wesley, Reading, MA, USA, 1986.
- [LAT98] $\text{\LaTeX}$ 3 Project Team. A new math accent. *$\text{\LaTeX}$ News*. Issue 9, June 1998. Available from <https://www.latex-project.org/news/latex2e-news/ltnews09.pdf> and also included in many $\text{T}_{\text{E}}\text{X}$ distributions.
- [LAT19] $\text{\LaTeX}$ 3 Project Team. $\text{\LaTeX}$ 2 $_{\epsilon}$ font selection, October 2019. Available from <http://mirrors.ctan.org/macros/latex/base/fntguide.pdf> and also included in many $\text{T}_{\text{E}}\text{X}$ distributions.

Index

Similar-looking glyphs are compressed into a single index entry with a superscript “+” indicating that glyph variations exist. For example, the entry “integral, contour ($\oint$)⁺” presents only “ $\oint$ ” but indicates that variations also are available. In this case, those variations are “ $\oint$ ”, “ $\oint$ ”, “ $\oint$ ”, “ $\oint$ ”, “ $\oint$ ”, and “ $\oint$ ”—essentially font differences along the lines of “A” vs. “A” vs. “A”. Substantially different glyphs with the same name are not merged. For example, both “ $\times$ ” and “ $\prod$ ” are presented for “product”.

Accents are shown over/under a gray box (e.g., “ $\acute{\text{a}}$ ” for “accents, acute”). Symbols appearing in a table that spans pages sometimes are associated with all of the pages that table covers. The author hopes to correct this issue in a future version of the Comprehensive L^AT_EX Symbol List.

Numbers		
0 ($\emptyset$)	154	
boxed, blue ($\textcircled{0}$)	302	
Epi-Olmec ($\textcircled{\text{Epi-Olmec}}$)	210	
old style (o)	34	
1	154	
$\text{\textbf{1}}$	270	
boxed, blue ($\textcircled{1}$)	302	
circled ($\textcircled{1}$)	189	
circled, filled ($\textcircled{\bullet}$) ⁺	189	
Epi-Olmec ($\textcircled{\text{Epi-Olmec}}$)	210	
hieroglyphic (i)	202	
Linear B ($\textcircled{\text{L}}$)	205	
old style (1)	34	
superior (1)	160, 383	
tally		
	268	
•	269	
2	154	
$\text{\textbf{2}}$	270	
barred ($\text{\textbf{2}}$)	22	
boxed, blue ($\textcircled{2}$)	302	
circled ($\textcircled{2}$)	189	
circled, filled ($\textcircled{\bullet}$) ⁺	189	
Epi-Olmec ($\textcircled{\text{Epi-Olmec}}$)	210	
Linear B ($\textcircled{\text{L}}$)	205	
old style (2)	34	
rotated ($\text{\textbf{2}}$) ⁺	24, 155	
superior (2)	160, 383	
tally		
	268	
••	269	
3	154	
$\text{\textbf{3}}$	270	
boxed, blue ($\textcircled{3}$)	302	
circled ($\textcircled{3}$)	189	
circled, filled ($\textcircled{\bullet}$) ⁺	189	
Epi-Olmec ($\textcircled{\text{Epi-Olmec}}$)	210	
Linear B ($\textcircled{\text{L}}$)	205	
old style (3)	34	
rotated ($\text{\textbf{3}}$) ⁺	24, 155	
runic ($\text{\textbf{3}}$)	211	
superior (3)	160, 383	
tally		
	268	
•••	269	
4	154	
$\text{\textbf{4}}$	270	
boxed, blue ($\textcircled{4}$)	302	
circled ($\textcircled{4}$)	189	
circled, filled ($\textcircled{\bullet}$) ⁺	189	
Epi-Olmec ($\textcircled{\text{Epi-Olmec}}$)	210	
hooked (4)	23	
Linear B ($\textcircled{\text{L}}$)	205	
old style (4)	34	
runic ($\text{\textbf{4}}$)	211	
tally		
	268	
5	154	
$\text{\textbf{5}}$	270	
boxed, blue ($\textcircled{5}$)	302	
circled ($\textcircled{5}$)	189	
circled, filled ($\textcircled{\bullet}$) ⁺	189	
Epi-Olmec ($\textcircled{\text{Epi-Olmec}}$)	210	
Linear B ($\textcircled{\text{L}}$)	205	
old style (5)	34	
runic ($\text{\textbf{5}}$)	211	
tally		
	268	
••••	269	
6	154	
$\text{\textbf{6}}$	270	
boxed, blue ($\textcircled{6}$)	302	
circled ($\textcircled{6}$)	189	
circled, filled ($\textcircled{\bullet}$) ⁺	189	
Epi-Olmec ($\textcircled{\text{Epi-Olmec}}$)	210	
Linear B ($\textcircled{\text{L}}$)	205	
old style (6)	34	
runic ($\text{\textbf{6}}$)	211	
tally ($\text{\textbf{6}}$)	269	
7	154	
$\text{\textbf{7}}$	270	
boxed, blue ($\textcircled{7}$)	302	
circled ($\textcircled{7}$)	189	

- circled, filled (●)⁺ . . . 189
 Epi-Olmec (𐄀) . . . 210
 Linear B (𐀀) . . . 205
 old style (7) . . . 34
 runic (ᚖ) . . . 211
 tally (⦿) . . . 269
- 8
- 8 . . . 154
 . . . 270
 8 ball (Ⓢ) . . . 296
 boxed, blue (𐀈) . . . 302
 circled (Ⓢ) . . . 189
 circled, filled (Ⓢ)⁺ . . . 189
 Epi-Olmec (𐄁) . . . 210
 Linear B (𐀁) . . . 205
 old style (8) . . . 34
 runic (ᚖ) . . . 211
 tally (⦿) . . . 269
- 9
- 9 . . . 154
 . . . 270
 boxed, blue (𐀉) . . . 302
 circled (Ⓣ) . . . 189
 circled, filled (Ⓣ)⁺ . . . 189
 Epi-Olmec (𐄂) . . . 210
 Linear B (𐀂) . . . 205
 old style (9) . . . 34
 tally (⦿) . . . 269
- 10
- 10 (10) . . . 270
 boxed (𐀊) . . . 313
 boxed, blue (𐀋) . . . 302
 circled (Ⓤ) . . . 189
 circled, filled (Ⓤ)⁺ . . . 189
 Epi-Olmec (𐄃) . . . 210
 hieroglyphic (𐎒) . . . 202
 Linear B (𐀃) . . . 205
- 11
- Epi-Olmec (𐄄) . . . 210
- 12
- Epi-Olmec (𐄅) . . . 210
- 13
- Epi-Olmec (𐄆) . . . 210
- 14
- Epi-Olmec (𐄇) . . . 210
- 15
- Epi-Olmec (𐄈) . . . 210
- 16
- Epi-Olmec (𐄉) . . . 210
- 17
- Epi-Olmec (𐄊) . . . 210
- 18
- Epi-Olmec (𐄋) . . . 210
- 19
- Epi-Olmec (𐄌) . . . 210
- 20
- Epi-Olmec (𐄍) . . . 210
 Linear B (𐀄) . . . 205
- 30
- Linear B (𐀄) . . . 205
- 40
- Linear B (𐀅) . . . 205
- 50
- Linear B (𐀆) . . . 205
- 60
- Linear B (𐀇) . . . 205
- 70
- Linear B (𐀈) . . . 205
- 80
- Linear B (𐀉) . . . 205
- 90
- Linear B (𐀊) . . . 205
- 100
- hieroglyphic (𐎓) . . . 202
 Linear B (𐀋) . . . 205
- 200
- Linear B (𐀌) . . . 205
- 300
- Linear B (𐀍) . . . 205
- 400
- Linear B (𐀎) . . . 205
- 500
- 500px (𐀏) . . . 315–318
 Linear B (𐀏) . . . 205
- 600
- Linear B (𐀐) . . . 205
- 700
- Linear B (𐀑) . . . 205
- 800
- Linear B (𐀒) . . . 205
- 900
- Linear B (𐀓) . . . 205
- 1000
- hieroglyphic
 . . . 202
 . . . 202
 . . . 202
 Linear B (𐀔) . . . 205
- 1000000
- hieroglyphic (𐎔) . . . 202
- A
- A (A) . . . 162
 a (a)⁺ . . . 22, 24, 25
- A with ring
 lowercase (å) . . . 20
 math mode . . . *see* accents,
 ring
 uppercase (Å)⁺ . . . 20, 124
- abacus (𐀀) . . . 292
- abajour
 . . . 325–327
 . . . 325–327
 . . . 325–327
 . . . 325–327
- abracas (package) . 144, 387, 388
- absent/void bunch (∅) . . . 82
- absolute value (|x|) . . . *see*
 delimiters, vertical bar
- abzüglich (%) . . . *see* minus,
 commercial
- Academia
 A . . . 330–331
 A . . . 330–331
- academic profile symbols 330–331
- academicons (package) 330, 331,
 387, 388
- accents (package)⁺ . . . 26–
 31, 136–139, 141–145, 217,
 373–375, 387, 388
- accents
 acute (´)⁺ 26–29, 31, 136,
 137
 acute below, inverted (̀) 27
 acute, double (ˆ)⁺ . 26, 31
 almost equal to (≈) . . . 28
 angle below, left (⤵) . . . 28
 angle, left (↖) . . . 137
 any character as . . . 374
 arc (⤵)⁺ . . . 26–30, 139–142
 arc below, inverted (⤵)⁺ 26,
 30
 arch below, inverted double
 (⤵) . . . 28
 arch, inverted double (⤵) 27
 arrow below, double-ended
 (↔)⁺ . . . 28, 138, 143
 arrow below, left (↵)⁺ 138,
 143
 arrow below, right (↵)⁺ 28,
 138, 143
 arrow below, up (↗) . . . 28
 arrow, curved right (↷) 142

- arrow, double-ended ($\overleftrightarrow{\text{A}}$)⁺ 138, 143
 arrow, left ($\overleftarrow{\text{A}}$)⁺ . 137, 138, 143
 arrow, right ($\overrightarrow{\text{A}}$)⁺ 136–138, 142, 143
 arrowhead below, left ($\text{A}\downarrow$) 28
 arrowhead below, right ($\downarrow\text{A}$) 28
 asterisk (A^*) 137
 bar (A)⁺ 36, 136, 139, 141, 144
 bar below (A_bar)⁺ 26, 27, 139, 144, 145
 bar below, double (A_{barbar})⁺ 28, 145
 bat (A^bat)⁺ 138, 150
 bat below ($\text{A}^\text{bat}_\text{below}$)⁺ . . 138, 150
 brace ($\text{A}\{\}$)⁺ . 139–141, 144
 brace below, inverted ($\text{A}\}_\text{below}$)⁺ 139–141, 144
 bracket ($\text{A}[\]$)⁺ 141, 374, 375
 bracket below, inverted ($\text{A}[\]_\text{below}$)⁺ 141, 374, 375
 breve (A^breve)⁺ 26–29, 31, 136, 137
 breve below, inverted ($\text{A}^\text{breve}_\text{below}$)⁺ 27–29
 breve, below (A_breve) 30
 breve, Cyrillic (A^Cyrillic)⁺ . . . 26
 breve, inverted ($\text{A}^\text{breve}_\text{inv}$)⁺ 26, 27, 29
 bridge (A^bridge)⁺ 28, 137
 bridge above and below ($\text{A}^\text{bridge}_{\text{above\&below}}$)⁺ 28
 bridge below ($\text{A}^\text{bridge}_\text{below}$)⁺ . . 27, 28
 bridge below, inverted ($\text{A}^\text{bridge}_\text{below}_\text{inv}$)⁺ 27
 broom below, left ($\text{A}\swarrow$) . 149
 broom below, right ($\searrow\text{A}$) 149
 broom, left ($\swarrow\text{A}$) 149
 broom, right ($\searrow\text{A}$) 149
 candrabindu ($\text{A}^\text{candrabindu}$)⁺ 137
 caron (A^caron)⁺ 26, 31, 136, 137, 141, 143
 caron below (A_caron) 28
 cedilla (A^cedilla)⁺ 26, 383
 cedilla, reversed ($\text{A}^\text{cedilla}_\text{rev}$)⁺ . . 29
 circle overlay ($\text{A}^\text{circle overlay}$)⁺ 168
 circumflex ($\text{A}^\text{circumflex}$)⁺ 26–28, 136, 137, 139–141, 143
 circumflex below ($\text{A}^\text{circumflex}_\text{below}$)⁺ . . 27
 combination acute and caron ($\text{A}^\text{acute\&caron}$)⁺ 26
 combination acute and macron ($\text{A}^\text{acute\¯on}$)⁺ 26
 combination breve and macron ($\text{A}^\text{breve\¯on}$)⁺ 26
 combination circumflex and acute ($\text{A}^\text{circumflex\´}$)⁺ 26
 combination circumflex and dot ($\text{A}^\text{circumflex\&dot}$)⁺ 26
 combination dot and acute ($\text{A}^\text{dot\´}$)⁺ 27
 combination dot and breve ($\text{A}^\text{dot\&breve}$)⁺ 27
 combination grave and circumflex ($\text{A}^\text{grave\&circumflex}$)⁺ 27
 combination grave and dot ($\text{A}^\text{grave\&dot}$)⁺ 27
 combination grave and macron ($\text{A}^\text{grave\¯on}$)⁺ 27
 combination macron and acute ($\text{A}^\text{macron\´}$)⁺ 27
 combination ring and arc ($\text{A}^\text{ring\&arc}$)⁺ 139, 141, 142
 combination ring and macron ($\text{A}^\text{ring\¯on}$)⁺ 27
 combination tilde and dot ($\text{A}^\text{tilde\&dot}$)⁺ 28
 comma (A^comma)⁺ 137
 comma below (A_comma)⁺ . . . 30
 comma, inverted ($\text{A}^\text{comma}_\text{inv}$)⁺ . . 137
 decorative hat 138
 diæresis ($\text{A}^\text{diæresis}$)⁺ . . 26, 29, 31, 136, 163
 diæresis below ($\text{A}^\text{diæresis}_\text{below}$)⁺ 28–30
 dot (A^dot)⁺ . . . 26, 136, 137
 dot below (A_dot)⁺ 26, 27
 dot, double ($\text{A}^\text{double dot}$)⁺ . 136, 137
 dot, quadruple ($\text{A}^\text{quadruple dot}$)⁺ 136, 137
 dot, triple ($\text{A}^\text{triple dot}$)⁺ . 136, 137
 extensible . 139–142, 144, 145, 151, 171, 374–375
 falling and rising tone ($\text{A}^\text{falling\&rising tone}$)⁺ 27
 fang (A^fang)⁺ 26
 fang, double ($\text{A}^\text{double fang}$)⁺ 26
 fermata (A^fermata)⁺ 217
 ghost (A^ghost)⁺ 150
 ghost below ($\text{A}^\text{ghost}_\text{below}$)⁺ . . . 150
 grave (A^grave)⁺ 26–29, 31, 136, 137
 grave below, inverted ($\text{A}^\text{grave}_\text{below}_\text{inv}$)⁺ 27
 grave, double ($\text{A}^\text{double grave}$)⁺ 26, 27, 29
 group (A^group)⁺ 140, 141
 group below, inverted ($\text{A}^\text{group}_\text{below}_\text{inv}$)⁺ 140, 141
 háček ($\text{A}^\text{háček}$)⁺ . . . *see* accents, caron
 half ring below, left ($\text{A}^\text{half ring}_\text{below}_\text{left}$)⁺ 27
 half ring below, right ($\text{A}^\text{half ring}_\text{below}_\text{right}$)⁺ 27
 harpoon below, left down ($\text{A}^\text{harpoon}_\text{below}_\text{left down}$)⁺ 144, 148
 harpoon below, left up ($\text{A}^\text{harpoon}_\text{below}_\text{left up}$)⁺ . . . 138, 141, 143, 148
 harpoon below, left up, right down ($\text{A}^\text{harpoon}_\text{below}_\text{left up, right down}$)⁺ 138, 143
 harpoon below, right down ($\text{A}^\text{harpoon}_\text{below}_\text{right down}$)⁺ 144, 148
 harpoon below, right up ($\text{A}^\text{harpoon}_\text{below}_\text{right up}$)⁺ . . 138, 141, 143, 148
 harpoon below, right up, left down ($\text{A}^\text{harpoon}_\text{below}_\text{right up, left down}$)⁺ 138, 143
 harpoon, left down ($\text{A}^\text{harpoon}_\text{left down}$)⁺ 140, 144, 148
 harpoon, left up ($\text{A}^\text{harpoon}_\text{left up}$)⁺ 137, 138, 140, 141, 143, 144, 148
 harpoon, left up, right down ($\text{A}^\text{harpoon}_\text{left up, right down}$)⁺ 138, 143
 harpoon, right down ($\text{A}^\text{harpoon}_\text{right down}$)⁺ 144, 148
 harpoon, right up ($\text{A}^\text{harpoon}_\text{right up}$)⁺ 137, 138, 140, 141, 143, 144, 148
 harpoon, right up, left down ($\text{A}^\text{harpoon}_\text{right up, left down}$)⁺ 138, 143
 hat (A^hat)⁺ *see* accents, circumflex
 hat, literal 138
 high rising tone ($\text{A}^\text{high rising tone}$)⁺ . . . 27
 homothetic ($\text{A}^\text{homothetic}$)⁺ 28
 hook (A^hook)⁺ 26, 137
 hook below, inverted and reversed ($\text{A}^\text{hook}_\text{below}_\text{inv\&rev}$)⁺ 27
 Hungarian umlaut ($\text{A}^\text{Hungarian umlaut}$)⁺ *see* accents, acute, double
 krouzek (A^krouzek)⁺ . . . *see* accents, ring
 line segment ($\text{A}^\text{line segment}$)⁺ . . . 140
 line segment below ($\text{A}^\text{line segment}_\text{below}$)⁺ 140
 low rising tone ($\text{A}^\text{low rising tone}$)⁺ . . . 27
 macron (A^macron)⁺ . . 26–29, 31, 136, 137, 139, 141
 macron overlay ($\text{A}^\text{macron overlay}$)⁺ . . . 137
 multiple per character 26–28, 373
 ogonek (A^ogonek)⁺ 26–30

parenthesis below, inverted () ⁺ 141, 374, 375	voiceless consonant, partial () ⁺ 28	adfor (package) 180, 190, 191, 197, 198, 387, 388
pitchfork below, left ()	witch on broom () ⁺ 150	adfsymbols (package) . . 180, 186, 190, 196, 387
pitchfork below, right ()	witch on broom below () ⁺ 150	adhesive bandage () ⁺ 292
pitchfork, left ()	witch on pitchfork () ⁺ 150	adjoint (†) <i>see</i> dagger
pitchfork, right ()	witch on pitchfork below () ⁺ 150	adjust brightness () ⁺ . . 171–172
plus below ()	X () ⁺ 27	adjust contrast  173–175
ring () ⁺ . . 26–28, 31, 136, 137	accessibility () ⁺ 173–175	 171–172
ring below () ⁺ . . . 27, 29	Accessible () ⁺ 315–318	Admetus () ⁺ 168
rising and falling tone ()	Acclaim  330–331	admission tickets  292
seagull below ()	 330–331	 313
solidus overlay () ⁺ . . 137, 217	accordion () ⁺ 292	ADN () ⁺ 315–318
spiritus asper ()	accordion notation 220	Adobe Acrobat 379
spiritus lenis ()	 220	ADS  330–331
square below ()	 220	 330–331
tack below, down ()	 220	adsorbate () ⁺ 177
tack below, left ()	 220	adsorbent () ⁺ 177
tack below, right ()	 220	Adversal () ⁺ 315–318
tack below, up ()	 220	aerial tramway  320
tie ()	 220	 254
tilde () ⁺ 26, 29, 136, 137, 139–141, 143, 144, 217, 374	Accusoft () ⁺ 315–318	aeronautics () ⁺ 275
tilde below () ⁺ 27, 29, 144	acid-free paper () ⁺ 155	affiliate theme () ⁺ . . 315–318
tilde overlay () ⁺ . . 28, 168	ACM  330–331	AfricArXiv  330–331
tilde, crossed ()	 330–331	after () ⁺ 208–210
tréma () ⁺ . . . <i>see</i> accents, diæresis	 330–331	agriculture () ⁺ 275
triangle ()	ACM Digital Library  330–331	air () ⁺ 168
umlaut () ⁺ . . <i>see</i> accents, diæresis	 330–331	air freshener () ⁺ 323–325
vertical line () ⁺ . . 28, 29	 330–331	Airbnb () ⁺ 315–318
vertical line below () ⁺ 28, 29	Acquisitions Incorporated () ⁺ 315–318	airplane 25

- military
  254
  323–325
 paper () 323–325
 slashed () 328–329
 taking off ()⁺ . 254, 320, 328–329
 Albania (.) 242
 alembic () 292
 aleph (ℵ)⁺ 122, 123, 157
 Algolia () 315–318
 alien *see* extraterrestrial
 alif (ʾ) 25
 align center () 173–175
 align justify () 173–175
 align left () 173–175
 align right () 173–175
 Alipay () 315–318

 alla breve ()⁺ 214, 216, 217, 219, 220
 reversed () 214
 alligator
  264–267
  264–267
 allrunes (package) ... 211, 387
 alpha
 lowercase (α)⁺ 20, 24, 120, 121
 uppercase (Α)⁺ .. 20, 120
 alphabets 20–25, 120–123, 163, 201, 202, 205, 207, 208, 270, 368
 African 21
 Cypriot 207
 Cyrillic 368
 Greek 20, 120–122, 163, 208
 Hebrew 122, 123, 163
 hieroglyphic 202
 Linear A 202
 Linear B 205
 math 162
 phonetic 22–25
 proto-Semitic 201
 South Arabian 207
 Vietnamese 21
 Alpine Linux () ... 318–319
 alpine symbols 259
 alternating current
 ~ 164
 ~ 159

 alternative denial
 ↑ *see* arrow
 | *see* vertical bar
 Amazon () 315–318
 Amazon Pay
  315–318
  315–318
 Amazon Web Services
  315–318
  318–319
 ambulance
  319
  320
  254
 American Express () 315–318
 Amilia () 315–318
 Amor () 168
 ampersand (&)⁺ 18, 37, 38, 41, 44, 67, 161, 381
 inverted ()⁺ . 38, 39, 41, 42, 44, 67, 161
 amphora
  206
  292
  312
 $\mathcal{AMS}$ (package) 16, 20, 38, 54, 68, 82, 85, 91, 94, 95, 112, 119, 120, 122, 123, 126, 128, 136, 140, 145, 151, 155, 157, 163, 364, 365, 386
 amsbsy (package) 380
 amsfonds (package) ... 157, 162
 amsmath (package) 16, 65, 136, 369, 379
 amssymb (package) 16, 136, 157, 162, 208, 387, 388
 amstext (package) ... 370, 372
 anaclasis (÷)⁺ 271
 anchor
  284
  198
  323–325
  343–346
  322
  292
 ancient-language symbols . 200–211
 and (Λ) *see* wedge
 AND gates 170, 357–358
 and then () 208–210
 Andorra () 242
 Android
  315–318

 314
 angel
  331
  292
  312
 AngelList () 315–318
 anger ()⁺ 292, 312
 angle (∠)⁺ 155–157
 3-D (∟) 156
 measured, with arrow (↗)⁺ 156
 obtuse (∖)⁺ 156
 right
 ⁺ 156
 ⁺ 156
 ⁺ 156, 160
 ⁺ 156
 spherical (◁)⁺ .. 154–158
 with S (♢) 156
 with underbar (⌞)⁺ .. 156
 angle brackets .. *see* delimiters
 blackboard bold (< >) 163
 Anglo-Frisian runes 211
 Angry Creative () . 315–318
 Ångström unit (Å) . *see* A with ring
 Angular
  315–318
  318–319
  318–319
 angular minutes *see* prime
 angular seconds *see* prime, double
 animals 200, 202, 206, 262–263, 268, 327, 343–346
 ankh
 † 257
 ♀ 310
 annuity symbols () .. 137, 145, 374
 answering machine (☎) 171
 ant
  264–267
  264–267
  262
  268
 antelope () 264–267
 antenna () 329
 antidiple
 <⁺ 271

- $\lessgtr^+$ 271
 antilabe ($::$) 153
 antimuon (μ^+) 177
 antineutrino ($\bar{\nu}$) 177
 antineutron ($\bar{n}$) 177
 antiproton (p^-) 177
 antiquark ($\bar{q}$) 177
 b ($\bar{b}$) 177
 c ($\bar{c}$) 177
 d ($\bar{d}$) 177
 s ($\bar{s}$)⁺ 177–178
 t ($\bar{t}$) 177
 u ($\bar{u}$) 178
 antisigma ($\supset$)⁺ 271
 anyon (π) 178
 Apache () 318–319
 apl (package) 169, 387
 Apollo () 168
 App Store
  315–318
  315–318
 appear () 208–210
 append ($\triangleright$) 161
 Apper (^{upper}) 315–318
 Apple ()⁺ 314–318
 apple
  286–287
  285
  285
  287
  287
 Apple Pay
  315–318
  315–318
 approximately equal to
 $\approx^+$ 67, 68, 70, 73, 76, 77
 $\cong^+$ 68, 70, 73, 76, 77
 $\equiv$ 77
 colon ($\approx:$) 81
 colon, double ($\approx::$) 81
 hat ($\hat{\approx}$) 77
 negated
 $\not\approx^+$ 69, 70, 72, 74, 78
 $\not\cong^+$ 69, 72, 74
 $\not\equiv$ 78
 reversed
 $\approx$ 70
 $\cong$ 70
 reversed, negated
 $\not\approx$ 72
 $\not\cong$ 72
 approximately equivalent to ($\approx$)⁺
 71, 73, 74, 77, 369
 negated ($\not\approx$)⁺ 72, 75
 reversed ($\approx$) 70
 reversed, negated ($\not\approx$) 72
 Aquarius ($\approx$)⁺ 166–168, 292,
 335–338
 ar (package) 165, 387, 388
 arc
  160
 ⁺ *see* accents, arc
 lower left ($\curvearrowleft$) 159
 lower right ($\curvearrowright$) 159
 upper left ($\curvearrowleft$)⁺ 159, 255
 upper right ($\curvearrowright$)⁺ 159, 255
 Arch Linux () 318–319
 architecture () 275
 Archive
  330–331
  330–331
 archive () 171–172
 archway () 323–325
 arcminutes *see* prime
 arcs (package) ... 30, 387, 388
 arcseconds .. *see* prime, double
 area chart
  173–175
  171–172
  171–172
 arev (package) .. 180, 183, 184,
 187, 213, 234, 284, 387
 Aries (Υ)⁺ 166–168, 292,
 335–338
 arm
 mechanical () 291
 armadillo () .. 264–267
 arrow ($\rightarrow$)⁺
 23–24, 31, 36–38, 81, 90,
 94–114, 127, 130, 131, 139,
 145–148, 168–170, 173–175,
 179–182, 193, 200, 206, 219,
 221, 231, 253, 255, 274–
 275, 282, 290–305, 333–334,
 358–359, 366–368, 370–372,
 379
 accents 112, 137, 139–141,
 144–148
 bent ($\rightharpoonup$)⁺ 94–96, 100, 101,
 105–108
 buttons ()⁺ 295–297, 301,
 303
 circle centered ($\Rightarrow$)⁺ .. 107
 circular ($\curvearrowright$)⁺ 94, 95,
 97–103, 105–107, 109, 193,
 194, 253
 crossing ($\bowtie$)⁺ .. 107, 108
 crossing, dingbat () 173–
 175
 curved ($\curvearrowright$)⁺ 94–105,
 107–109, 171
 dashed ($\dashrightarrow$)⁺ .. 94–109, 113
 diagonal, for reducing subex-
 pressions 139
 dingbat 179–182
  154
  179
  179
  179
  179
  179
  181
  181
  181
  181
  181
  181
  181
  181
  181
  181
  181
  181
  181
  181
  181
  181
  181
 dotted ($\dot{\rightarrow}$)⁺ 108, 147
 double bodied ($\Rightarrow$)⁺ .. 36,
 94–103, 105–109, 111, 127,
 130, 132
 double ended ($\leftrightarrow$)⁺ .. 36,
 37, 94–103, 106–109, 111–
 113, 127, 130, 132, 170, 372
 double ended, bar under ($\bar{\leftrightarrow}$)
 170
 double ended, double bodied
 ($\Leftrightarrow$)⁺ 94, 96–103, 106,
 108, 109, 127, 130, 132
 double headed ($\Rrightarrow$)⁺ .. 23,
 69, 94, 97, 98, 100–103, 106,
 108–110, 372
 double tailed ($\Rrightarrow$) 206
 extensible 139–142,
 144–148
 filled ($\blackrightarrow$)⁺ .. 105, 106, 181,
 193
 fish headed ($\rightharpoonrightarrow$)⁺ 113
 flat ($\rightarrow$)⁺ 113
 fletched 111, 179
  111
  181
  181

	181	filled ($\blacktriangleright$) ⁺	49, 52, 181		190
	181	half filled ($\triangleright$) ⁺	180, 181		190
	181	hollow ($\triangleright$) ⁺	48, 51		190
	181	outlined ($\triangleright$) ⁺	48, 49		190
	370–372, 374	Arseneau, Donald	370–372, 374		190
	292, 302, 304	artist () ⁺	292, 302, 304		190
	292	artist palette			190
	315–318	ArtStation ()	315–318		190
	330–331	arXiv			190
	181, 271, 307, 310, 320, 321, 327, 387, 388	asapsym (package)	181, 271, 307, 310, 320, 321, 327, 387, 388		190
	168	ascendant ($\mathcal{A}^{\text{sc}}$)	168		190
	166, 167, 335–338	ascending node (Ω) ⁺	166, 167, 335–338		190
	17, 20, 170, 352, 364, 381–382, 384–386	ASCII	17, 20, 170, 352, 364, 381–382, 384–386		190
	170, 382, 387, 388	ascii (package)	170, 382, 387, 388		190
	138	Ash Ketchum's hat, as math-mode accent ()	138		190
	165	aspect ratio ($\mathcal{R}$)	165		190
	see turnstile	assertion	see turnstile		190
	320	assistive listening system ()	320		190
	see star, pentagram	assumption ($\star$) ⁺	see star, pentagram		190
	19, 22, 37, 39–42, 45–46, 55–56, 159–160, 189, 190, 290–305	asterisk (*) ⁺	19, 22, 37, 39–42, 45–46, 55–56, 159–160, 189, 190, 290–305		190
	38, 45, 47, 55–56	boxed ($\boxtimes$) ⁺	38, 45, 47, 55–56		
		dingbat			
	22		22		
	39		39		
	39		39		
	42		42		
	160		160		
	187		187		
	187		187		
	187		187		
	187		187		
	189		189		
	189		189		
	189		189		
	189		189		
	189		189		

 325–327
 325–327
 320
 320
 321
 254
 254
 254
 crash () 328–329
 with key () 320
 Autoprefixer () ... 315–318
 average 36
 Avianex () 315–318
 Aviato () 315–318
 avocado () 284
 award () 323–325
 axe
 200
 292
 axes () 156
 ayn () 25
 Azure () 318–319

B

B (B) 21, 162
 babe () 325–327
 babel (package) 20, 120, 121, 208
 baby
 307
 323–325
 292
 292
 307
 254
 baby carriage () ... 323–325
 Bachmann–Landau notation 119
 BACK with arrow ()⁺ 292, 313
 Backbone () 318–319
 backpack () 293
 backslash (\)⁺ 19, 22, 37, 40, 41,
 61, 127, 129–131, 157, 159,
 381, 382
 hollow (\)⁺ 38, 76
 negated (\)⁺ 43, 168
 backspace
 173–175
 171–172
 171–172
 bacon
 323–325
 284

bacteria
 319
 319
 badger () 262
 badminton
 293
 241
 bag membership (€)⁺ .. 76, 77
 bagel () 284
 baggage claim
 320
 254
 baguette bread () 284
 Bahá'í () 310
 baht (฿) 31
 baking plate () 288
 balance scale () 293
 bald () 293
 ball
 325–327
 325–327
 325–327
 325–327
 325–327
 balloon
 293
 312
 balloons
 325–327
 325–327
 ballot box with ballot
 293
 314
 banana
 284
 287
 banana brackets *see* delimiters
 Bandcamp () 315–318
 banjo () 293
 bank
 293
 314
 banknote
 dollar
 297
 313
 euro
 298
 313

pound
 296
 313
 yen
 304
 313
 bar chart
 173–175
 173–175
 171–172
 171–172
 293
 313
 barbecue () .. 286–287
 barber pole
 293
 312
 barcode () 328–329
 barley (𐀀) 206
 barred letters 24–25, 369
 b (b)⁺ 22, 24
 c (c) 22
 D (D) 20
 d (d)⁺ .. 20, 22, 24, 25, 369
 esh, double (f) 23
 g (g)⁺ 22
 h (h)⁺ 22, 24, 25, 123, 124,
 368
 i (i)⁺ 22, 24, 25
 i, dotless (i) 25
 j (j) 25
 j, dotless (j)⁺ 22
 l (l)⁺ 22, 24
 o (o)⁺ .. 22, 24, 38, 41, 47,
 365
 p (p) 24
 u (u)⁺ 22, 24, 25
 Z (Z) 124
 bars (≡) 173–175
 Bart () 306
 bartel-chess-fonts (package) 361,
 363, 387
 base twelve 155, 269
 numerals 155
 tally markers 269
 baseball
 240
 293
 baseball bat () . 325–327
 baseball cap () *see* billed cap

basket (🍷) 293
 basketball
 🏀 240
 🏆 293
 basketball and hoop (🏀) . . . 241
 bat
 🦇⁺ 52
 🦎 257
 🦇 264–267
 🦎 262
 as math-mode accent (🦇)⁺
 . . . see accents, bat
 bathtub
 🛁 323–325
 🚿 293
 🚿 254
 🚿 254
 battery (🔋)⁺ 293, 312
 car (🚗) 323–325
 charge (🔋) 171–172
 empty (🔋) 173–175
 full (🔋)⁺ 171–175
 half (🔋) 173–175
 high (🔋) 171–172
 low (🔋) 171–172
 mid (🔋) 171–172
 quarter (🔋) 173–175
 three quarters (🔋) 173–175
 Battle.net (🎮) 315–318
 Bauhaus forms (🏠) 257
 bbding (package) 179,
 182–184, 186, 187, 189, 195,
 198, 365, 387, 388
 bbm (package) 162, 387
 bbold (package) 162, 387
 bclogo (package) 311, 312, 387,
 388
 beach with umbrella
 🏖️ 293
 🏖️ 313
 beaker (🧴) 322
 beam (—) 171
 bear
 🐻 311–312
 🐻 264–267
 🐻 264–267
 🐻 264–267
 🐻 264–267

 🐻 264–267
 🐻 262
 🐻 268
 beard mask
 👤 208–210
 👤 208–210
 bearing (⚙️) 171
 fixed (⚙️) 171
 loose (⚙️) 171
 bears (🐻) 264–267
 beaver (🦫) 262
 because (∴)⁺ . . . see therefore,
 down
 bed
 🛏️ 290
 🛏️ 323–325
 🛏️ 325–327
 🛏️ 254
 bedeck (🛏️) 208–210
 bee
 🐝 200
 🐝 264–267
 🐝 264–267
 beehive (🐝) 200
 beer mug
 🍺 323–325
 🍺 322
 🍺 284
 🍺 287
 two, clinking
 🍺 284
 🍺 287
 beginner
 🌱 302
 🌱 313
 begriff (package) 153, 387
 Begriffsschrift symbols 153, 154
 Behance
 Be 315–318
 Bē 315–318
 Belarus (🇧🇪) 242
 Belgium (.) 242
 bell
 🔔 253
 🔔 323–325
 🔔 323–325

 🔔 325–327
 🔔 322
 🔔 293
 🔔 293
 🔔 313
 🔔 313
 🔔 254
 slashed
 🔪 293
 🔪 313
 bell pepper
 🌶️ 286–287
 🌶️ 284
 bento box
 🍱 284
 🍱 287
 benzene (⊞) 193
 beret, as math-mode accent (🎩)
 138
 Berry, Karl 390
 beta
 lowercase (β)⁺ 20, 22, 24,
 120, 121
 lowercase variant (β) 122
 uppercase (B)⁺ 20, 120
 beth (𐤁)⁺ 122, 123
 between (⋈)⁺ 68–70, 73, 76, 77
 beverage box (🍷) 284
 Bézier curve (🎨) 328–329
 Bible (📖) 310
 biconditional
 ≡⁺ see equivalence
 ↔⁺ see arrow, double
 ended
 bicycle 254, 320
 🚲 257
 🚲 320
 🚲 311–312
 🚲 323–325
 🚲 325–327
 🚲 320
 🚲 254
 big O notation see also
 alphabets, math, 119
 O 119
 O 119
 bigints (package) 58, 387, 388
 biking see cycling
 bikini
 👙 293
 👙 281

- billed cap () 293
 billiards () 241
 billy () 206
 BIM objects () 315–318
 binary operators 37–52
 binary relations 68–71, 73–74,
 76–91, 115–117
 negated 68–70, 72–76, 78
 binoculars
  323–325
  325–327
 biohazard
  284
  176
  319
  293
 biological symbols 176
 biology () 275
 bioRxiv
  330–331
  330–331
 bird
  264–267
  264–267
  264–267
  264–267
  264–267
  264–267
  343–346
  343–346
  202
  202
  202
  202
  202
  201
  262
  268
 birthday cake
  323–325
  293
  287
- birthday hat, as math-mode ac-
 cent () 138
 bishop () 238–240, 361–363
 bison () 293
 Bitbucket () 315–318
 Bitcoin
  315–318
  32
 Bity () 315–318
 black droplet () 258
 black folder () 312
 black rosette () 281
 black square button
  293
  313
 black tie () 315–318
 BlackBerry ()⁺ 315–319
 blackboard () *see* chalkboard
 blackboard bold *see* alphabets,
 math
 blackboard bold letters
 A, umlaut () 163
 C ()⁺ 119, 162
 k ()⁺ 123, 124
 N ()⁺ 119
 O, umlaut () 163
 Q ()⁺ 119
 R ()⁺ 119
 U, umlaut () 163
 Z ()⁺ 119
 blank () 34
 bleach () 257
 blender
  288
  323–325
 blind () 320
 block-element symbols 276
 blog () 173–175
 Blogger
  315–318
  315–318
 blood
  208–210
  297
 letting () 208–210
 blood type
 A () 292
 AB () 292
 B () 292
 O () 293
 blowfish
  262
-  268
 blueberries () 284
 Bluetooth
  315–318
  315–318
 bm (package) 380
 boar
  206
  262
  268
 boat 254, 320
  200
  325–327
  325–327
  321
  321
  297
  254
  254
 body-text symbols 18–35
 boisik (package) 41, 47,
 60, 76, 84, 89, 93, 105–107,
 122–124, 126, 137, 156, 159,
 192, 208, 213, 233, 387, 388
 boko letters
 B () 25
 b () 25
 D () 25
 d () 25
 K () 25
 k () 25
 bold () 173–175
 bold symbols 380
 bomb
  311–312
  257
  323–325
  329
  294
  312
 bond, chemical () 178
 covalent () 178
 covalent, double () 178
 covalent, triple () 178
 h () 177
 ionic () 178
 metal () 178
 bone
  323–325
  294

- bong (🍷) 323–325
- book
- 📖 321
 - 📖 275
 - 📖 328–329
 - 📖 328–329
 - 📖 328–329
 - 📖 325–327
 - 📖 325–327
 - 📖 343–346
 - 📖 322
 - 📖 300
 - 📖 294
 - 📖 294
 - 📖 314
 - 📖 314
 - 📖 314
 - 📖 313
- book reader (📖) 328–329
- bookmark
- 🔖 173–175
 - 🔖 173–175
 - 🔖 171–172
 - 🔖 294
 - 🔖 313
- bookmark tabs
- 🔖 294
 - 🔖 313
- books
- 📖 294
 - 📖 314
- Boolean domain ($\mathbb{B}$) *see* alphabets, math
- Boolean logic gates 170, 357–358
- boomerang
- 🏹 200
 - 🏹 294
- boot (👢) 304
- hiking (👢) 301
 - multiple (👢) 281
 - ski (👢) 241
- Bootstrap
- 🔢 315–318
 - 🔢 318–319
- border 198, 338–352
- all (🔲) 173–175
 - decorative 338–352
 - none (🔲) 173–175
 - S (🔲) 198
 - style (🔲) 173–175
 - Z (🔲) 198
- born (★) 253
- Bose distribution (🌀) 178
- Bosnia (🇸🇦) 242
- boson (🌀) 177–178
- Higgs (🌀) 177
 - loop
 - 🌀 177
 - 🌀 177 - loop, A
 - 🌀 177
 - 🌀 177 - loop, V
 - 🌀 177
 - 🌀 177 - W (W) 178
 - W minus (W^-) 178
 - W plus (W^+) 178
 - Z (Z) 178
- both true and false ($\mathbb{F}$) 125
- bottle (🍷) 288
- baby
- 👶 287
 - 👶 292
- champagne
- 🍷 284
 - 🍷 287
- lotion (🍷) 303
- prescription (📖) 319
- sake, with cup
- 🍷 285
 - 🍷 287
- spray (🍷) 325–327
- wine (🍷) 323–325
- bottom ($\perp$)⁺ *see* turnstile, up
- bouncing ball (🏀)⁺ 294, 302, 304
- bouquet
- 🌸 257
 - 🌸 294
 - 🌸 313
 - 🌸 290
- bow
- 🏹 200
 - 🏹 201
- bow and arrow
- 🏹 294
 - 🏹 241
- bow tie
- 🎻⁺ 41, 77
 - 🎻⁺ 41, 77
 - 🎻⁺ 42, 78
 - 🎻⁺ 39–41, 67, 73, 77, 253
 - 🎻⁺ 40, 41
- bowling (🏹)⁺ 289, 294, 302, 304
- bowl (🍽) 288
- of hygieia (🍽) 313
 - steaming
 - 🍽 284
 - 🍽 287 - with chopsticks (🍽) 285
 - with spoon (🍽) 284
- bowling
- 🏹 294
 - 🏹 241
- bowling ball (🏹) 240
- box (📦) 323–325
- box-drawing symbols 276
- boxed symbols 38, 45–47, 55–56
- backslash ($\backslash$)⁺ 38, 45–47, 55
 - bar ($\square$)⁺ 38, 45–47
 - bottom ($\square$)⁺ 45, 47, 55
 - box ($\square$)⁺ 38, 45–47
 - circle ($\square$)⁺ 38, 45, 47, 55
 - division ($\square$)⁺ 45, 47, 56
 - dot ($\square$)⁺ 38, 45–47, 56
 - empty ($\square$)⁺ 38, 45, 55
 - left ($\square$)⁺ 45, 47, 56
 - minus ($\square$)⁺ 38, 45–47, 56
 - plus ($\square$)⁺ 38, 45–47, 56, 173–175
 - right ($\square$)⁺ 45, 47, 56
 - slash ($\square$)⁺ 38, 45–47, 55
 - times ($\square$)⁺ 38, 45–47, 55
 - top ($\square$)⁺ 45, 47, 55
 - triangle ($\square$)⁺ 45, 47, 55
- boxing glove (🥊) 294
- boy
- 👦 294
 - 👦 307
- bra ($\langle \square \rangle$)⁺ 127, 171
- bra-ket ($\langle \square | \square \rangle$) 171
- brace (🔗) 208–210
- braces *see* delimiters, 18, 19, 127–131, 366, 382
- asymmetric 144
 - decorative 199
 - extensible 139–141, 144, 171
 - multiline 144
- brackets *see* delimiters
- blackboard bold ($\llbracket \rrbracket$) 163
- braille (⠠⠠⠠⠠) 320
- brain
- 🧠 319
 - 🧠 294
- braket (package) 127

brand symbols 314–319

bread



breast-feeding () 294

breve



see accents, breve

bricks () 294

bride with veil () 307

bridge at night



briefcase



briefs () 294

bright () 294

broadcast tower () 328–329

broccoli () 284

Bronger, Torsten 371

bronze () 206

broom 117, 149, 150



bubble tea () 284

Bucharest 246

bucket () 294



bud () 325–327

Buffer () 315–318

buffers 170, 357–358

bug *see* insect

building



Bulgaria () 242

bulk mail () 173–175

bull



bull leg () 200

bullcntr (package) 269, 387, 388

bullenum (package) 269

-  261
 261
 261
 261
 261
 261
 300
 299
 313
 313
 313
 marked day () 261
 marked week () 261
 with check ()⁺ 261
 with minus ()⁺ 261
 with plus ()⁺ 261
 with times ()⁺ 261
- calf () 264–267
 calligra (package) . 163, 387, 388
 Calligra (font) 163
 callouts 312–314
 calrsfs (package) 162
 camel
 bactrian ()⁺ . . . 263, 268
 dromedary ()⁺ . 262, 268
- camera
  323–325
  322
  294
  294
  312
  312
- campground () . . . 328–329
 camping
  294
  313
- cancel (package) 139
 cancel
  171–172
  171–172
- Cancer ()⁺ . . . 166–168, 294, 335–338
- candle
  290
  325–327
  294
  314
- candy
  286–287
  284
  287
- candy cane () 323–325
 cannabis () 323–325
 canned food () 284
 canoe
  320
  254
- cap
 $\cap$ ⁺ *see* intersection
  325–327
- Capricorn 335–338
  166
  168
  168
  166
  294
  167
- captive () 200
 car *see* automobile
 card file box
  294
  313
- card index
  294
  313
- card index dividers
  294
  313
- card suits *see* playing card suits
 cardinality ($\aleph$)⁺ . . . *see* aleph
 care of (c/o) 160
 caret
 $\wedge$ 37
  . . *see* accents, circumflex
 $\hat{}$ *see* diacritics, circumflex
 insertion ($\wedge$) 159
- Carlisle, David 1, 386
 caron ()⁺ . *see* accents, caron
 carp streamer
  294
  313
- carpentry plane () 200
 carpentry saw () 295
 carriage return . 105–111, 169, 170, 198, 367, 368
  105
  107
  109
  198
- carrot
  323–325
  286–287
-  286–287
 284
 Cartesian product ($\times$)⁺ . . . *see* times
 cartwheeling ()⁺ 294, 302, 304
 cash register () 323–325
 Cassandra () 318–319
 castle 238, 239, 361–363
  240
  302
  295
  312
  312
- cat
  200
  263
  264–267
  262
  268
 black () 262
 crying ()⁺ 289, 296
 grinning () 300
 grinning, with smiling eyes ()⁺ 289, 300
 kissing () 303
 kissing, with closed eyes () 289
 pouting ()⁺ . . . 289, 296
 Schroedinger's () . . . 288
 smiling, with heart-shaped eyes ()⁺ 289, 298
 smiling, with open mouth () 289
 weary ()⁺ . . . 289, 301
 catalexis ($\wedge$)⁺ 271
 catamorphism . . *see* delimiters
- caterpillar () . 264–267
 cauldron ()⁺ 206
 caution *see* warning
 ccicons (package) . 34, 387, 388
 ccllicenses (package) 34, 387, 388
 CE mark (**CE**) 176
 cedi (**C**) 31
 cedilla ()⁺ *see* accents, cedilla
 celestial bodies . 166–168, 278, 279, 335–338
 cell phone
  171
  321
  323–325

-  325–327
 329
 329
 329
 322
 292
 312
 312–314
multiple () 329
off
 292
 312
with arrow
 292
 312
celsius (°C) . 154, 164, 165, 385
Celtic knots 348–352
cent
¢ 32
¢ 31, 383
¢ 31
math mode (¢) 123
Centercode () 315–318
centernot (package) 370
centigrade (°C) *see* celsius
centipede () 264–267
CentOS
 315–318
 318–319
Ceres () 168, 335–338
certificate () 328–329
CEUR
 330–331
 330–331
chains () 295
chair
 290
 323–325
 325–327
 325–327
 325–327
 325–327
 325–327
 295
chalkboard () 323–325
with teacher () 328–329
chancery (package) 387
\char . . 17, 367, 368, 378, 382, 385, 386
charging station () . 328–329
chariot () 206
chart
decreasing () 295
increasing () 295
increasing with yen () 295
with downwards trend () 313
with upwards trend () 313
with upwards trend and yen sign () 313
Charter (font) 32, 65
chassis () 206
check (financial)
 324
 324
check box
checked ()⁺ . . . 187, 188
checked, blue () . . . 295
checked, circular () . 188
checked, circular, filled () 188
checked, filled () . . . 188
checked, green () . . . 295
crossed ()⁺ . . . 187, 188
crossed, circular () . 188
crossed, circular, filled () 188
crossed, green () . . . 296
empty () . . . 187, 188
check mark ()⁺ 20, 158–160, 187, 188, 198, 253, 295, 365
double () 188
hollow ()⁺ 188
check out () 173–175
cheese
 323–325
 286–287
 284
chemarr (package) 146, 387, 388
chemarrow (package) . 111, 146, 387
chemistry () 275
Chen, Raymond 390
cherries
 284
 287
cherry () 286–287
cherry blossom
 295
 281
chess 238–240, 290–305, 361–363
bishop ()⁺ 238–240
black square () . . 239
board () 240
king ()⁺ 238–240
knight ()⁺ . . . 238–240, 361–363
notation 239
pawn ()⁺ . 238–240, 295, 361–363
pieces () 240
queen ()⁺ . . . 238–240
rook ()⁺ . . . 238–240, 361–363
white square () . . 239
chestnut ()⁺ 295, 312
chevrons 256
chi
lowercase (χ)⁺ . 20, 22, 24, 120, 121
uppercase (X)⁺ . . 20, 120
chick
 264–267
 262
 262
 268
 268
multiple () 264–267
chicken
 264–267
 262
 268
roasted () 286–287
thigh
 285
 286–287
 287
 323–325
child
 200
 323–325
 295
children crossing
 295
 254
China2e (package) . 32, 119, 162, 163, 278, 279, 281, 387, 388

- chipmunk
 262
 268
 Chiron () 168
 chocolate bar
 284
 287
 choice (τ)⁺ 161
 chop () 208–210
 chopsticks () 284
 Chrome () 315–318
 Chromecast () 315–318
 chron () 208–210
 Chronos () 168
 chrysanthemum () 325–327
 church
 310
 295
 CIENCIAVITAE
 330–331
 330–331
 cigarette
 321
 295
 cinema
 295
 313
 cipher symbols 278
 circle ($\bigcirc$)⁺ 19, 34, 37–40, 45–52, 55, 58, 159–160, 168, 170, 192–198, 240, 282, 333–334, 339–340, 358–359
 arrow
 $\leftarrow \bigcirc$ 95
 $\bigcirc \rightarrow$ 95
 black ($\bullet$) 293
 blue ($\bullet$) 294
 brown ($\bullet$) 294
 concentric ($\odot$) 255
 containing filled circle ($\odot$)⁺ 50–52
 crossed ($\otimes$) 196
 dotted ($\odot$)⁺ 50, 51, 196
 enclosing
 26, 373
 193
 217
 equals ($\ominus$) 194
 error bars ($\hat{\odot}$) 193
 fifths ($\oplus$) 68
 filled ($\bullet$)⁺ 46–50, 52, 192–196
 filled, arrow ($\bullet$) 193
 filled, error bars ($\hat{\bullet}$) 193
 filled, half ($\bullet$)⁺ 192, 193, 195
 filled, quarter ($\blacksquare$) 255
 green ($\bullet$) 300
 half
 $\bigcirc$ 192
 $\bigcirc$ 192
 half filled
 192, 193, 196
 192, 193, 196
 193, 196
 193, 196
 hollow red ($\bigcirc$) 301
 horizontally divided ($\ominus$)⁺ 48, 51, 52, 196, 370
 of dots ($\odot$) 194
 orange ($\bullet$) 294
 outlined ($\odot$)⁺ 48, 49
 purple ($\bullet$) 296
 quarter filled ($\bullet$) 194
 quarter marked
 $\odot$ 193
 $\odot$ 193
 $\odot$ 194
 $\odot$ 194
 quartered ($\oplus$)⁺ 49, 196
 red ($\bullet$) 296
 shadowed ($\bigcirc$)⁺ 195, 199, 313
 striped
 194, 196
 196
 three quarters filled ($\bullet$) 193
 vertically divided ($\oplus$)⁺ 50, 196
 white ($\bullet$) 302
 white on black ($\blacksquare$)⁺ 170, 193
 white on black, half
 193
 193
 with small circle ($\odot$) 194
 yellow ($\bullet$) 304
 circled symbols
 A ($\textcircled{A}$) 257
 asterisk ($\textcircled{*}$)⁺ 37, 38, 45–47, 55–56, 59, 60
 backslash ($\textcircled{/}$)⁺ 38, 39, 45–47, 55, 59
 bar ($\textcircled{|}$)⁺ 39, 46, 48
 bottom ($\textcircled{\ominus}$)⁺ 44, 45, 47, 56
 bullet ($\textcircled{\bullet}$) 193
 circle ($\textcircled{\odot}$)⁺ 38, 45–47, 56, 59
 dash ($\textcircled{-}$)⁺ 38, 45–47
 division ($\textcircled{\div}$)⁺ 37, 45, 47, 56
 dot ($\textcircled{\odot}$)⁺ 37, 38, 45–47, 54, 59–61
 dot, slash, dot ($\textcircled{\odot}$) 47
 dot, with left arrow ($\textcircled{\leftarrow}$) 95
 dot, with right arrow ($\textcircled{\rightarrow}$) 95
 equal ($\textcircled{=}$)⁺ 46, 47, 76, 91
 greater than ($\textcircled{>}$)⁺ 38, 47, 69, 91
 greater than or equal ($\textcircled{\geq}$) 91
 information ($\textcircled{i}$) 254
 inverted negation ($\textcircled{\ominus}$) 44
 left ($\textcircled{\oplus}$)⁺ 45, 47, 56
 less than ($\textcircled{<}$)⁺ 38, 47, 48, 69, 91
 less than or equal ($\textcircled{\leq}$) 91
 logical negation ($\textcircled{\ominus}$) 44
 M ($\textcircled{M}$) 295
 minus ($\textcircled{-}$)⁺ 37, 38, 45–48, 56, 58
 minus or plus ($\textcircled{\pm}$) 37
 multiplication ($\textcircled{\times}$)⁺ 37, 38, 45–48, 50, 54, 58, 60, 61, 161
 multiplication, double circled ($\textcircled{\otimes}$) 47
 multiplication, with hat ($\textcircled{\hat{\otimes}}$) 47
 numerals 188, 189, 240, 361
 parallel ($\textcircled{\parallel}$) 48
 perpendicular ($\textcircled{\perp}$) 48
 plus ($\textcircled{+}$)⁺ 36–38, 45–47, 54, 58, 60, 61, 161, 173–175, 367
 plus or minus ($\textcircled{\pm}$) 37
 pommee cross ($\textcircled{\oplus}$) 313
 question mark ($\textcircled{?}$)⁺ 173–175
 R ($\textcircled{R}$)⁺ 20, 123, 124
 right ($\textcircled{\oplus}$)⁺ 45, 47, 55
 right dot ($\textcircled{\odot}$) 193
 right dot, inverse ($\textcircled{\bullet}$) 193
 S ($\textcircled{S}$)⁺ 123, 124
 similar or equal to ($\textcircled{\approx}$) 91
 slash ($\textcircled{/}$)⁺ 37, 38, 45–47, 49–51, 55, 58
 square ($\textcircled{\square}$) 240
 star ($\textcircled{\star}$)⁺ 45, 58, 161, 189, 190, 193

sun (☀️)⁺ 190, 198

telephone handset (📞)⁺ 198, 199

tilde (˜) 44

top (⊕)⁺ 45, 47, 55

triangle (△)⁺ 45, 47, 55, 58, 92

two dots (⋯) 193

two dots, inverse (⋈) 193

user (👤)⁺ 308

vee (∨)⁺ 38, 39, 44, 47

vertical line (⦶)⁺ 38, 45, 46, 58

wedge (⋈)⁺ 38, 39, 44, 47

white bullet (⦿) 193

circledsteps (package) 26, 373

circumflex (̂)⁺ *see accents, circumflex*

circus tent
🎪 295

city (🏙️) 313

cityscape
🏙️ 295

🏙️ 313

at dusk
🌆 295

🌆 312

CL (📌) 295

clamp (🔗)⁺ 295

clapper board
🎬 295

🎬 313

classical building
🏛️ 295

🏛️ 313

clefs 214–215, 218, 224, 311–312

alto (🎵)⁺ 214, 218

bass (🎵)⁺ 214, 218, 311–312

drum (🥁) 215

Gregorian C (🎵) 215

Gregorian F (🎵) 215

old G (🎵) 215

treble (🎵)⁺ 214, 218, 311–312

clicks

🖱️ 24

⌂ 24

ı 24

climbing (🧗)⁺ 294, 302, 304

clipboard
📋 173–175

📋 328–329

📋 173–175

📋 173–175

📋 322

📋 295

📋 313

clock (package) 260, 387, 388

clock 253, 260, 261, 311–312

🕒 257

🕒 260

🕒 260

🕒 260

🕒 260

🕒 260

🕒 260

🕒 253

🕒 260

🕒 311–312

🕒 325–327

🕒 325–327

🕒 343–346

🕒 260

🕒 260

🕒 260

🕒 260

🕒 261

🕒 261

🕒 261

🕒 261

🕒 261

🕒 261

🕒 261

🕒 260

showing a specific time 260, 261

without a frame 260

Clojure (🔗) 318–319

clone
📋 173–175

📋 173–175

Closed Access (🔒)⁺ 330–331

closed book
📖 295

📖 314

closed captioning (🗣️)⁺ 173–175

closure (⌋)⁺ 74, 77, 117

negated (⌋)⁺ 75, 117

cloth
👕 208–210

👕 206

clothes
👕 304

👕 281

cloud 52, 258, 259, 311–312

☁️ 52

☁️ 52

☁️ 258

☁️ 258

☁️ 259

☁️ 259

☁️ 259

☁️ 259

☁️ 259

☁️ 259

☁️ 259

☁️ 259

☁️ 259

☁️ 258

download (📶) 173–175

storage (📶)⁺ 171–172, 172

upload (📶) 173–175

with lightning (⚡)⁺ 258

with lightning and rain (⚡🌧️) 258

with meatball (🍖) 259

with moon (🌙) 259

with moon and rain (🌙🌧️) 259

with rain (🌧️)⁺ 258, 259, 311–312

with snow (❄️)⁺ 258

with sun (☀️)⁺ 258, 259

with sun and rain (☀️🌧️) 259

with tornado (🌀) 258

Cloudflare (☁️) 315–318

Cloudscale.ch (☁️) 315–318

Cloudsmith (☁️) 315–318

Cloudversify (☁️) 315–318

clover 189, 190

☘️ 189

☘️ 189

☘️ 311–312

-  299
-  281
- clown () 295
- club
 -  . *see* playing card suits,
 - club
 -  200
- clutch bag () 295
- cmll (package) . . . 37, 44, 67, 81, 125, 387
- cmupint (package) . . 64, 65, 387, 388
- coach () 325–327
- coat
 -  343–346
 -  295
- cobra () 264–267
- cockroach () 262
- cocktail
 -  323–325
 -  285
 -  287
- coconut () 285
- coda
 -  214
 -  214
- code
 -  173–175
 -  173–175
 -  171–172
 -  171–172
- code branch () 173–175
- code page 1252 384
- code page 437 170, 276, 382
- code page table 384
- CodeIgniter () 318–319
- CodePen
 -  315–318
 -  318–319
- CodiePie () 315–318
- Coffee Bean () 318–319
- coffin () 295
- cog *see* gear
- coherence ()⁺ . *see* smiles and frowns, both
- coin () 295
- multiple ()⁺ 32, 323–325
- collision
 -  296
 -  313
- colon ()⁺ 151–153
- approximately equal to ()⁺ 69, 79, 81
- double ()⁺ . . . 79, 81, 152
- double, approximately equal to ()⁺ 69, 79, 81
- double, equals ()⁺ 69, 77, 79, 81
- double, minus ()⁺ 69, 79, 81
- double, similar to ()⁺ 69, 79, 81
- equals ()⁺ 36, 69, 70, 73, 74, 77, 79, 81, 125
- four dot () 153
- hollow () 42
- math mode ()⁺ . . . 81, 152, 153
- minus ()⁺ . . . 69, 79, 81
- similar to ()⁺ 69, 79, 81
- three dot ()⁺ . . . 42, 153
- vertically centered () . . . 79
- colonequals (package) . . 36, 81, 387, 388
- column () 200
- columns () 173–175
- comb
 -  200
 -  325–327
- combelow (package) 30, 387, 388
- combinatorial logic gates . . 170, 357–358
- comet () 296, 335–338
- comma () 37
- sans serif () 154
- comment
 -  173–175
 -  173–175
 -  173–175
 -  173–175
- comment with dollar () . 173–175
- comment with ellipsis
 -  173–175
 -  173–175
- comments
 -  173–175
 -  173–175
- comments off () . . . 173–175
- comments with dollar () 173–175
- commerce () 275
- commercial logos 314–319
- common time ()⁺ . . . 216, 219
- forward and reversed () 214
- communication symbols . . . 171
- communism () . *see* hammer, and sickle
- commutative diagrams 372
- comp.text.tex (newsgroup) 17, 36, 38, 368–372, 374
- compact disc
 -  323–325
 -  294
 -  313
 -  312
- compass 333–334
-  311–312
-  323–325
-  322
-  296
- drawing () 275
- complement ()⁺ . . . 55, 58, 123, 124
- complex numbers () *see* alphabets, math
- composited accents 26
- Comprehensive T_EX Archive Network 1, 16, 139, 163, 170, 364, 384, 385, 387
- compress
 -  173–175
 -  173–175
 -  173–175
- compression () 313
- computer
 -  323–325
 -  325–327
 -  322
 -  322
 -  296
 -  297
 -  313
 -  312
 -  312
 - multiple, networked () 312
- computer disk () 296
- computer hardware symbols 169, 290–305, 312–314
- computer keys . . . *see* keyboard symbols
- Computer Modern (font) . . 112, 360, 366, 382

- Computer Modern Sans (font) 360
- concatenation
 $\#$ 161
 $\parallel$ 161
- conclusion ($\Rightarrow$) 154
- condiments () 286–287
- conductivity ($\otimes$) 178
- cone ($\triangleright$) 255
- confetti ball
 296
 312
- Confluence ($\bowtie$) 315–318
- congruent ($\cong$) *see similar, or equal to*
- conic taper ($\triangleright$) *see triangle, bar through*
- conjunction
 astronomical (σ)⁺ 166–168, 335–338
 logical ($\wedge$) *see wedge*
- Connect Develop () 315–318
- consequence relation 79–80
 $\models$ ⁺ 79, 80
 $\models$ 81
 denied ($\nmodels$) 81
- constellation () 279
- construction
 294
 313
- construction sign
 320
 254
- construction worker
⁺ 296, 302, 304
 307
- Contao () 315–318
- contingency ($\blacktriangledown$) 50
 deontic ($\triangledown$) 50
 doxastic ($\triangledown$) 51
 factual ($\triangledown$) 51
 logical ($\triangledown$) 52
 temporal ($\triangledown$) 49
- contradiction symbols 36, 118
- control characters 170
- control knobs
 296
 313
- convenience store
 296
 314
- Conversation
 330–331
 330–331
- converse implication
 $\leftarrow$ ⁺ *see arrow*
 $\subset$ ⁺ *see subset, strict*
- converse nonimplication
 $\nleftarrow$ ⁺ *see arrow*
 $\not\subset$ ⁺ *see subset, strict, negated*
- convolution ($\ast$)⁺ 39, 42
- cook ()⁺ 296, 302, 304
- cooker () 288
- cookie
 323–325
 285
 287
- cooking
 285
 287
- cooking symbols 286–288
- cooking symbols (package) 287, 387, 388
- COOL () 296
- axes ($\angle$) 156
- coppa
 lowercase ($\wp$) 208
 lowercase variant ($\wp$) 208
 uppercase ($\P$) 208
- coproduct ($\amalg$)⁺ 36, 37, 39–42, 54, 58–61
- copy
 173–175
 173–175
- copyleft ($\C$) *see legal symbols, copyleft*
- copyright ($\copyright$)⁺ *see legal symbols, copyright*
- corn
 297
 281
- corner
 $\llcorner$ ⁺ 170, 240
 $\lrcorner$ ⁺ 23, 240
 $\llcorner$ 240
 $\lrcorner$ ⁺ 22, 240
 $\lrcorner$ 201
 $\llcorner$ 201
 both top and bottom
 $\lrcorner$ ⁺ 129, 130
 $\lrcorner$ ⁺ 129, 130
 $\lrcorner$ 129, 130
- corporate logos 314–319
- corresponds ($\triangleq$)⁺ 69, 76, 154
- cotton bureau () 315–318
- couch () 323–325
- couch and lamp
 296
 254
- counties
 Romanian 245–246
- countries
 European 242–244
- countriesofeuropa (package) 242, 387, 388
- couple with heart
 296
 296
 290
- Courier (font) 32
- Coursera
 330–331
 330–331
- cover ($\prec$) 161
- cow
 264–267
 343–346
 $\nwarrow$ ⁺ 206
 262
 262
 268
 268
- cowboy hat, as math-mode accent
 138
- CP1252 *see code page 1252*
- CP437 *see code page 437*
- cPanel () 315–318
- crab
 264–267
 264–267
 343–346
 262
- crane () 325–327
- crayon
 296
 184
- Creative Commons licenses 33, 34
- credit card
 323–325
 322
 296
 313

- credit cards . 290–305, 315–318, 322–325
 Amazon Pay () 315–318
 American Express () 315–318
 Apple Pay () . 315–318
 Diners Club () 315–318
 Discover () . . . 315–318
 JCB () 315–318
 Mastercard () . 315–318
 PayPal () 315–318
 Stripe () 315–318
 Visa () 315–318
- crescendo () 220
- cricket () 262
- cricket bat and ball
 296
 241
- Critical Role () 315–318
- Croatia (€) 242
- crocodile
 262
 268
- croissant () 285
- crop
 173–175
 173–175
- cross (crucifix) 47–48, 186, 187, 198, 225–230, 240, 257, 274, 310, 327, 333–334, 365
 † 257
 † 135
 † 259
 † 135
 † 186
 † 310
 † 303
 † 187
 † 187
 † 187
 Celtic (†)⁺ 187, 257
 clover tipped (†) 186
 Eastern (†) 187
 Greek, bold (†) 187
 Greek, outlined (†) . . 187
 hollow (†) 187
 open center (†) 187
 open center, bold (†) . 187
 Orthodox (†) 294
 outlined (†)⁺ 186, 187
 outlined, bold (†) 186
 pattée (†)⁺ 20, 158, 159, 186, 187, 253
 pommee (†) 313
- pommee, with half-circle below () 313
 shadowed (†)⁺ . . . 186, 187
 Western (†) 187
- cross mark . 159–160, 187, 188
 × 211
 × 194
 × 187
 × 187
 ×⁺ 187, 194, 195
 × 313
 × 188
 × 199
 double (×) 211
 red (×) 296
 triple (×) 211
 white on black (×) . . . 199
- cross product (×)⁺ see times
- crossed letters see barred letters
- crosshairs () 173–175
- crossing
 diagonal
 71
 72
 horizontal (×)⁺ 70, 73
 plus (×) 198
 vertical (×)⁺ 71, 198
- Crossref
 330–331
 330–331
- crow () 263
- crown
 323–325
 325–327
 343–346
 296
 281
 as math-mode accent (̂) 138
- crucifix see cross (crucifix)
- crutch () 319
- cryst (package) 358, 387
- crystal ball
 296
 313
- crystallography symbols 358–359
- CSS
 318–319
 171–172
- CSS3
 318–319
 318–319
- CTAN see Comprehensive T_EX Archive Network
- cube
 311–312
 328–329
 255
 impossible () 255
- cube root ($\sqrt[3]{\square}$) see square root
- cube rotations 329
- cubes () 328–329
- cucumber
 286–287
 285
- cup
 see union
 206
- coffee
 257, 290
 322
 323–325
 with straw () 285
- cupcake
 286–287
 286–287
 286–287
 286–287
 285
- Cupid () 168
- curling stone () 296
- curly pi (π)⁺ see pi, lowercase variant
- currency (¤)⁺ 31, 32, 383
- currency exchange
 296
 313
- currency symbols 31–33, 37, 159–160, 163, 290–305, 312–318
 ancient 32
- curry
 285
 287
- cushion () 325–327
- custard
 285
 287

- customs
 320
 254
- cut time () .. *see* alla breve
 cutoff subtraction ($\pm$)⁺ ... *see* minus, dot
- cutting board () 286–287
 Cuttlefish () 315–318
 CV
 330–331
 330–331
- cycling
 307
 240
 321
 321
 320
 321
 320
 254
 254
- cyclone
 296
 312
- Cypriot 207
 cypriot (package) . 207, 387, 388
 Czechia () 242
- ## D
- d'Alembert operator
 159
 159
 D3 () 318–319
 dagger
 19, 37, 42, 43, 384
 296
 313
 double horizontal ($\dagger\dagger$) . 37
 double horizontal and vertical ($\ddagger$) 37
 double vertical ($\ddagger$)⁺ 19, 37, 42, 43, 384
- Daigramotion () 315–318
 dal segno ()⁺ *see* segno
 dalet ()⁺ 122, 123
 dancer () 307
 dancers (package) 352, 387
 dancing ()⁺ ... 302, 304, 314
 dancing men 352–355
 D&D () 315–318
 D&D Beyond () 315–318
 danger *see* warning
- dangerous bend
 159
 311–312
 255
 255
 255
- dango
 285
 287
- Danish runes . *see* normal runes
 dark skin tone () 296
 dash (punctuation mark)
 em (—) 19
 en (–) 19
 three quarters em (—) . 34
 twelve u (—) 34
 DashCube () 315–318
 dashing away
 296
 313
- Data Cite
 330–331
 330–331
- database
 173–175
 329
 329
 329
 171–172
- database join *see* join (database)
 database symbols 39–41, 67–69, 73–74, 159–160
- Dataverse
 330–331
 330–331
- date ( 17) 296
 dblacnt (package) 373
 DBLP
 330–331
 330–331
- deaf () 320
 deal with () 208–210
 Debian () 318–319
 $\backslash\text{DeclareMathOperator}$... 380
 $\backslash\text{DeclareMathOperator*}$... 380
 decrease font size () 313
 decrescendo (>) 220
 Dedekind, Richard 368
- deer
 208–210
 262
 Deezer () 315–318
 definite-description operator ($\imath$) 368
 definition symbols 36, 374
 degree ($\circ$)⁺ . 158, 160, 164, 383
 del.icio.us () 315–318
 deleatur *see* denarius
 delete
 188
 188
- delimiters 126–135
 angle bracket ($\langle \rangle$) 36, 127, 129, 130, 132, 134, 135, 382
 angle bracket with bar ($\langle \rangle$) 129, 134
 angle bracket with dot ($\langle \rangle$) 126, 130
 arrow brace ($\langle \rangle$) ... 134
 bag ($\langle \rangle$) 41, 126
 brace with bar ($\langle \rangle$) . 134
 bracket with bar ($\langle \rangle$) 128, 129, 131, 133, 134
 broken brace with bar ($\langle \rangle$) 134
 broken bracket with bar ($\langle \rangle$) 134
 ceiling ($\langle \rangle$) 127, 128, 130, 131, 134
 circle brace with bar ($\langle \rangle$) 134
 circle bracket with bar ($\langle \rangle$) 134
 corners ($\langle \rangle$) 126
 curly brace ($\langle \rangle$) 128, 130, 131, 134, 135
 curly brace with bar ($\langle \rangle$) 131
 curly bracket with bar ($\langle \rangle$) 134
 curly broken brace ($\langle \rangle$) 134
 curly circle brace ($\langle \rangle$) 134
 curved angle bracket ($\langle \rangle$) 126, 134
 double angle bracket ($\langle \rangle$) ... 130, 131, 133, 134
 double bar ($\langle \rangle$) 127–129, 131, 132
 double ceiling ($\langle \rangle$) . 126, 133, 135
 double curly brace ($\langle \rangle$) 135

- double floor ($\llbracket \blacksquare \rrbracket$) . . . 126, 133, 135
- double group brace ($\llbracket \blacksquare \rrbracket$) 135
- double parenthesis ($\langle \blacksquare \rangle$) 126, 135
- double parenthesis with greater/less than ($\langle \blacksquare \rangle$) 126
- double vertical bar ($\llbracket \blacksquare \rrbracket$) 128, 130, 133, 134
- double wavy line ($\langle \blacksquare \rangle$) 129
- double zigzag ($\langle \blacksquare \rangle$) . . . 126
- floor ($\lfloor \blacksquare \rfloor$) . . . 127, 129, 130, 132, 135
- group brace ($\langle \blacksquare \rangle$) 127, 129, 130, 132, 135
- lower corners ($\lfloor \blacksquare \rfloor$) . . . 126, 127, 129, 130
- moustache ($\langle \blacksquare \rangle$) 127, 129, 131, 132
- parenthesis ($\langle \blacksquare \rangle$) 127, 129, 131, 132, 135
- parenthesis with bar ($\langle \blacksquare \rangle$) 132, 135, 163
- parenthesis with less/greater than ($\langle \blacksquare \rangle$) 126
- quill ($\langle \blacksquare \rangle$) 135
- square bracket ($\llbracket \blacksquare \rrbracket$) . . . 130, 131, 134
- square bracket with bar ($\llbracket \blacksquare \rrbracket$) . . . 130, 131, 133, 135
- square bracket with lower tick ($\llbracket \blacksquare \rrbracket$) 126
- square bracket with underbar ($\llbracket \blacksquare \rrbracket$) 126
- square bracket with upper tick ($\llbracket \blacksquare \rrbracket$) 126
- square brackets ($\llbracket \blacksquare \rrbracket$) . . . 127, 129, 131, 132
- square broken bracket ($\langle \blacksquare \rangle$) 134
- square circle bracket ($\langle \blacksquare \rangle$) 134
- square curly bracket ($\langle \blacksquare \rangle$) 134
- square parenthesis ($\llbracket \blacksquare \rrbracket$) 135
- text-mode 135
- tortoise shell ($\llbracket \blacksquare \rrbracket$) 131, 135
- tortoise shell with bar ($\llbracket \blacksquare \rrbracket$) 126, 135
- tortoise shell, filled ($\llbracket \blacksquare \rrbracket$) 126
- triple angle bracket ($\langle \langle \blacksquare \rangle \rangle$) 133
- triple square bracket ($\llbracket \blacksquare \rrbracket$) 133
- triple vertical bar ($\llbracket \blacksquare \rrbracket$) 128, 130–133, 135
- turn ($\langle \blacksquare \rangle$) 135
- upper corners ($\langle \blacksquare \rangle$) . . . 126, 129, 130
- variable-sized 127–135
- vertical bar ($\llbracket \blacksquare \rrbracket$) . . . 127–132, 134
- wavy line ($\langle \blacksquare \rangle$) . . . 128–132
- zigzag ($\langle \blacksquare \rangle$) 126
- delivery truck  320
-  254
- delta
- lowercase (δ)⁺ 20, 120, 121
- uppercase (Δ)⁺ . . . 20, 23, 120, 121, 159
- Democrat () 328–329
- denarius  32
-  32
- Denmark () 243
- department store  297
-  314
- Deploydog () 315–318
- Depsy  330–331
-  330–331
- derivative, partial (∂)⁺ . . . *see* partial derivative
- Descartes’s equal sign ($\propto$)⁺ *see* proportionality, reversed
- descendant (D^{sc}) 168
- descending node (Υ)⁺ 166, 167, 335–338
- desert  297
-  313
- desk light () 325–327
- Deskpro () 315–318
- desktop  173–175
-  322
- desktop window () 313
- detective ()⁺ . . . 297, 302, 304
- DEV () 315–318
- DeviantArt () 315–318
- dharmachakra  310
-  206
-  302
- DHL () 315–318
- diacritics *see also* accents
- acute (‘)⁺ 31, 383
- acute, double (‘‘) 31
- apostrophe, reversed (‘)⁺ 23, 31
- arrow down ($\downarrow$) 23
- arrow up ($\uparrow$) 23
- breve (˘) 31
- caron (ˇ) 31
- Celtic palatal (‘) 22
- circumflex (ˆ)⁺ . . . 19, 382
- corner (˘) 31
- diæresis (¨)⁺ 31, 383
- dots below (˙) 31
- down bracket, below ($\rfloor$) 160
- grave (˘) 31
- grave, double (˘˘) 31
- greater than (>) 23
- half length (◌̣) 31
- half ring, left (◌̣) *see* diacritics, open
- half-length vowel (◌̣) . . . 22
- hat (ˆ)⁺ . . . *see* diacritics, circumflex
- hook (◌̣) 22
- hook right (◌̣) 22
- hook right, long (◌̣) 23
- less than (<) 22
- macron (ˉ)⁺ 31, 382, 383
- open (◌̣) 31
- palatal hook
- ◌̣ 23
- ◌̣ 24
- ◌̣ 24
- pointer down (◌̣) 31
- pointer left (◌̣) 31
- pointer right (◌̣) 31
- pointer up (◌̣) 31
- Polish hook (◌̣) 31
- primary stress (ˈ) 23
- rectangle (◌̣) 24
- retracting (◌̣) 24
- rhoticity (◌̣) 23
- ring (◌̣) 31
- ring below (◌̣) 31
- secondary stress (ˊ)⁺ 22, 31
- stress (ˈ) 31
- syllabic (◌̣) 31
- tack down (◌̣) 31

- | | | | | | |
|--|--|---|---|---|---|
| tack left (⌊) | 31 | digital signals | | Discover (🔍) | 315–318 |
| tack right (⌋) | 31 | falling edge (⌋) | 164 | discretionary hyphen | 382 |
| tack up (⌌) | 31 | high (⌋) ⁺ | 164 | dish (🍽) | 287 |
| tilde | | low (⌋) ⁺ | 164 | disjoint union | |
| ~ | 19, 382 | rising edge (⌋) | 164 | II | 36 |
| ~ | 19, 382 | digits | <i>see</i> numerals | II | 36 |
| tilde below (⌋) | 31 | dim (🔦) | 297 | ⊃ | 36 |
| tilde, middle (˜) | 31 | Diners Club (🍷) | 315–318 | ⊕ | 36 |
| up bracket, above (⌈) | 159 | \ding | 21, 179, 182, 184, 186–188, 190, 195, 198 | ⊖ | 36 |
| wedge below (⌋) | 31 | dingautolist | 188, 189 | ⊗ | 36 |
| diæresis (ï) ⁺ | <i>see</i> accents, diæresis | dingbat (package) | 183, 184, 198, 342, 365, 387, 388 | disjunction, logical (∨) | <i>see</i> vec |
| diagonal line | | dingbat symbols | 179–199 | \displaystyle | 371, 372, 374, 380 |
| down (⌋) ⁺ | 71, 157–159 | dinosaur | | ditto marks (") ⁺ | <i>see</i> quotation marks, straight double |
| down, double (⌋) | 71 |  | 264–267 | divides | |
| down, double, negated (⌋) | 72 |  | 264–267 | ⌋ | 43 |
| down, negated (×) ⁺ | 72, 73 |  | 264–267 | ⁺ | <i>see</i> vertical bar, negated |
| two, crossed (×) ⁺ | 159, 160 |  | 264–267 | ⌋ ⁺ | <i>see</i> vertical bar, negated |
| up (⌋) ⁺ | 70, 71, 157–159 |  | 264–267 | ⌋ | 43 |
| up, double (⌋) | 70 |  | 264–267 | diving mask (🤿) | 297 |
| up, double, negated (⌋) | 72 |  | 264–267 | division | 37 |
| up, negated (×) ⁺ | 72, 73 |  | 264–267 | ÷ ⁺ | 37, 40–43, 160 |
| diameter (ø) ⁺ | 36, 158, 159, 253 |  | 264–267 | / ⁺ | 37, 41, 154 |
| reversed (⌋) | 253 |  | 264–267 | diagonal | |
| diamond (◊) ⁺ | <i>see</i> rhombus |  | 264–267 | × | 39 |
| diamond suit (♠) | <i>see</i> playing card suits, diamond |  | 264–267 | × | 39 |
| Diaspora (✳) | 315–318 |  | 264–267 | dingbat (÷) ⁺ | 156, 157, 199, 297 |
| dice (package) | 360, 387 |  | 264–267 | hollow (⊕) | 156 |
| dice (🎲) ⁺ | 235, 236, 241, 360, 367 |  | 264–267 | long (⌋) ⁺ | 139, 141 |
| 20-sided (🎲) | 236 |  | 264–267 | non-commutative | 151 |
| 3D | 236, 360 |  | 264–267 | polynomial | 139 |
|  | 236 |  | 264–267 | single dot | |
|  ⁺ | 236, 241 |  | 262 | · | 39 |
|  | 299 |  | 263 | ÷ | 39 |
|  | 325–327 | diple | | times (×) ⁺ | 38, 39, 41–43 |
| dictionary symbols | 22–25, 275 | > | 271 | vertical (⋅) | 40 |
| dictsym (package) | 275, 387, 388 | > | 271 | division times (×) ⁺ | <i>see</i> division, times |
| died (†) | 253 | > | 271 | divorced (👉) | 253 |
| difference between (≅) | <i>see</i> equal, bump | > | 271 | diya lamp (🪔) | 297 |
| differential, inexact (d) ⁺ | <i>see</i> barred letters, d | > | 271 | dizzy | |
| digamma | | dipole (d) | 178 |  | 297 |
| lowercase (f) ⁺ | 120, 124, 208 | Dirac notation | 127, 171 |  | 313 |

do not litter () 254
do not tumble dry () 257
do not walk () 271
do not wash () 257
DocHub () 315–318
Docker ()⁺ 315–319
document

 309
 313
 313
add () 309
delete () 309
picture () 312
text ()⁺ 309, 312
text and picture () 312

dodecaedron () 311–312

dodo () 262

dog

 327
 263
 264–267
 262
 262
 268
 268

Dohse, Max 371

DOI

 330–331
 330–331

dolium () 200

dollar banknote . *see* banknote,
dollar

dollar sign

$\$^+$ 18, 19, 31, 381
 $\$$ 37
 $\$$ 32
 $\$$ 271
 $\$$ 32
 $\$$ 31
 $\$$ 300
 $\$$ 313
blackboard bold ($\$$) 163
math mode 36, 124
negated ($\$$) 271

dolls

 302
 313

dolphin

 264–267
 264–267

 262

 268

dominance ($\prec$)⁺ . *see* precedes

negative ($\nprec$)⁺ *see*

precedes, negated

negative weak ($\preccurlyeq$)⁺ . *see* pre-

cedes, or equal to, negated

strict ($\ll$)⁺ . . *see* precedes,

double

weak ($\preccurlyeq$)⁺ . *see* precedes, or

equal to

domino tiles 237

donate () 173–175

dong () 31

door

 323–325

 323–325

 297

 254

dot *see also* colon

five ($\therefore$)⁺ 39, 152, 211

four ($\therefore$)⁺ 40, 152, 211

lower ($\cdot$)⁺ 19, 151–153, 211,

373

middle ($\cdot$)⁺ 38–40, 42, 152,

153, 211

three ($\cdot$)⁺ 211

two ($\cdot$)⁺ 211

dot symbols 19, 151–153, 373

DotArrow (package) 147, 387,

388

dotless *i* (*i*) 26, 136, 157

math mode 136, 157

text mode 26

dotless *j* (*j*) 26, 136, 157

math mode 136, 157

text mode 26

double thumb () 214

doughnut

 285

 287

dove

 200

 263

 343–346

 297

down bow () 214

Downes, Michael J. 119, 390

download

 173–175

 171–172

 171–172

downpour () 259

Doyle, Sir Arthur Conan 355

dozenal (package) 155, 269, 387,
388

dozenal (base 12) 155, 269

numerals 155

tally markers 269

dracma (₯) 32

dragon 268

 263

 262

 262

 268

 268

dragonfly () 264–267

DreamHost () 318–319

dress

 297

 281

dressing table () 325–327

Dribbble

 314

 314

Dropbox ()⁺ 314–318

droplet

 297

 313

drum

 323–325

 297

Drupal () 315–318

dry cleaning

any solvent (Ⓐ) 257

hydrocarbon solvents (HCS)

only (Ⓔ) 257

hydrocarbon solvents (HCS)

only, delicate (Ⓔ) 257

tetrachloroethylene (PCE)

only (Ⓔ) 257

tetrachloroethylene (PCE)

only, delicate (Ⓔ) 257

Dryad

 330–331

 330–331

dryer () 325–327

dsfont (package) 162, 387

ds serif (package) 162, 387

duck

 264–267

 264–267

-  264–267
 264–267
 262
- due volte  214
 dumbbell () 240
 dumpling () 285
 dumpster () 323–325
 dumpster fire () ... 328–329
 dunce cap, as math-mode accent
 () 138
 dungeon () 323–325
 Dungeons and Dragons *see* D&D
 duodecimal (base 12) . 155, 269
 numerals 155
 tally markers 269
 DVD
  297
  313
 DVI 34, 169, 376
 .dvi files 384
 Dyalog () 315–318
- ### E
- e (e) 124
 e-commerce (€) 32
 e-mail *see* envelope
 ε-TeX 127
 eagle
  200
  343–346
  343–346
  343–346
  343–346
  262
 ear
  325–327
  297
  312
 with hearing aid () . 297
 EarlyBirds () 315–318
 Earth . *see also* globe, 166, 168,
 312–314, 335–338
 ⊕⁺ 166, 168
 ▽ 168
 ♂⁺ 166–168
 east point (E²) 168
- eat () 208–210
 eBay () 315–318
 Edge () 315–318
 Edge Legacy (e) 315–318
 edit ()⁺ 171–175
 egg
  323–325
  286–287
  286–287
  286–287
  286–287
  285
 eggbeater () 288
 eggplant
  286–287
  285
  287
- eighth note (♩)⁺ 212, 213,
 215–218
 dotted (♩.)⁺ 216–218
 double dotted (♩..)⁺ . 217,
 218
 rest (|)⁺ 214, 215, 219
 rest, dotted (♩.)⁺ 219
- eject
  256
  255
  255
  255
  255
  297
 ejective (ɾ) 25
 electric plug
  297
  312
 electrical impulse 164
 electrical intersection (⋈) . 160
 electrical symbols 164
 electromotive force 165
 ℰ 165
 ℰ 165
 ℰ 165
 ℰ 165
 ℰ 165
 ℰ 165
 ℰ 165
 ℰ 165
 ℰ 165
 ℰ 165
- electron (e[−]) 178
 electrostatic discharge () . 176
 element of (∈)⁺ *see* set
 membership
 Elementor (E) 315–318
 elements 168
 air (Δ) 168
 earth (▽) 168
 fire (Δ) 168
 water (▽) 168
- elephant
  264–267
  264–267
  264–267
  343–346
  262
  268
- elevator () 297, 310
 elf ()⁺ 297, 303, 304
 Elixir () 318–319
 ellipse (○)⁺ 193–196, 225–230,
 333–334, 339–340, 358–359
 filled (●)⁺ 193, 195
 shadowed (⊖) 195
 vertical (○) 194
 vertical, filled (●) 193
 ellipsis (...) ⁺ 19, 22, 36,
 151–153, 157, 373, 384
 anti-diagonal (⋅)⁺ . 152,
 153, 373
 anti-diagonal, two (⋅)⁺ 40,
 41, 152
 centered (⋯)⁺ . 151–153
 centered, two (⋯)⁺ 39, 40,
 152
 diagonal (⋅⋅)⁺ . 151–153,
 373
 diagonal, two (⋅)⁺ 40, 41,
 152
 two (..) 152
 vertical (⋮)⁺ 41, 78,
 151–153, 211
 vertical, five (⋮) 211
 vertical, four (⋮)⁺ 152, 211
 vertical, two (⋮)⁺ . 40, 41,
 152, 211
 Ello () 315–318
 Elm () 318–319
 Elsevier (E) 330–331
 Elsevierquare (E) ... 330–331

email *see* envelope
 Ember () 315–318
 emergency sign () 271
 emf (package) . . . 165, 387, 388
 emgma ()⁺ 24, 25
 Emmentaler (font) 219
 emo (package) 234, 252, 258, 261, 263, 278, 283, 285, 305, 321
 emoji (package) . 234, 252, 258, 261, 263, 278, 283, 285, 305, 321
 emoji 234, 249–252, 258, 261–263, 278, 284–285, 288–305, 320–321
 3D 288
 modifiers 312
 Empire () 315–318
 empty note () 313
 empty note pad () 313
 empty note page () 313
 empty page () 313
 empty pages () 313
 empty set ($\emptyset$)⁺ . . . 36, 82, 155, 157–159
 reversed ()⁺ . . . 155, 159
 with bar () 155
 with circle () 155
 with left arrow () . . . 155
 with right arrow () . . 155
 end of proof . . . 125, 126, 157, 159–160
 □ 125
 ■⁺ 125, 159
 ▨ 126
 END with arrow ()⁺ 297, 313
 endofproofwd (package) 126, 387
 engineering symbols . . 159–160, 164, 171
 engma
 lowercase ()⁺ . 20, 24, 25
 uppercase () 20
 entailment ()⁺ 113
 not ()⁺ 114
 not weak ()⁺ . . . 114
 weak ()⁺ 113
 enter . . *see also* carriage return, 169
 entering booth () . . 328–329
 enumerate 269
 envelope 198, 281, 312–314, 365
  198
  171
  281
  321

 173–175
 173–175
 173–175
 270
 322
 298
 314
 199
 gift () 296
 incoming
  301
  312
  312
 open
  173–175
  173–175
  173–175
 stamped () 312
 with at sign () . . . 312
 with downward arrow ()⁺
 298, 312
 with E () 297
 with heart
  290
  304
 331
 with lightning ()⁺ . 171, 312
 with pen () 312
 Envira () 315–318
 enya ()⁺ 24, 25
 Epi-Olmec script . . . 208–210
 epiolmec (package) . . . 208, 210, 387, 388
 epsdice (package) . 235, 387, 388
 epsilon
 lowercase (ϵ)⁺ . 20, 23–25, 120, 121
 lowercase backward (ζ)⁺ 23, 25, 68, 122, 159, 368
 lowercase closed ($\wp$) . . 22
 lowercase reversed and closed (ζ)⁺ 22, 24
 lowercase reversed with hook ($\wp$)⁺ 23, 24
 lowercase variant (ϵ)⁺ 120–122
 lowercase with hook (ϵ) 24
 uppercase (E)⁺ . . 20, 120
 equal ($=$)⁺ . 71, 74, 91, 156, 157
 arc ($\equiv$)⁺ . 74, 76, 77, 117
 arc, negated ($\neq$) . . 75, 117
 asterisk ($\neq$) 77

asymptotically ($\asymp$)⁺ 67, 74, 77, 116, 117
 asymptotically, negated
 ($\neq$)⁺ . 69, 70, 75, 78, 116, 117
 bump
 ⁺ . . 68–70, 73, 76, 77
 ⁺ . . 68–70, 73, 76, 77
 ⁺ 69, 71, 76
 ⁺ 73, 77
 bump, negated
 ⁺ 69, 72, 74, 78
 ⁺ 69, 72, 74, 78
  72
  74
 by definition ($\stackrel{\text{def}}{=}$) 78
 closed
  70
  71
 closed, negated
  72
  72
 colon
 ⁺ 69, 79
 ⁺ . . 69, 74, 78, 79, 81
 colon, double
 ⁺ 69, 79
 ⁺ 69, 79, 81
 decorative
  156
  157
 decorative, negated ($\neq$) 157
 dot
 ⁺ 67, 69, 71, 73, 76, 77
 ⁺ 69, 71, 74, 78
 dot, negated
 ⁺ 72, 75
 ⁺ 72, 75
 dots
 ⁺ . 68, 69, 71, 73, 74, 76–78
  77
 dots, falling ($\fallingdotseq$)⁺ . 68, 69, 71, 73, 76, 77
 dots, falling, negated ($\neq$)⁺ 72, 75
 dots, negated ($\neq$)⁺ . 72, 75
 dots, rising ($\risingdotseq$)⁺ 68–70, 73, 76, 77
 dots, rising, negated ($\neq$)⁺ 72, 75
 double ($=$) 78
 extensible ($\equiv$)⁺ 146, 147
 hat ($\hat{=}$)⁺ 70, 74
 hat, negated ($\neq$)⁺ . . 72, 75

- hollow ($\textcircled{=}$) 156
 measure ($\textcircled{=}$) 77
 negated ($\neq$)⁺ .. 70, 72, 73, 75, 76, 78, 85, 91, 157
 or greater than
 $\geq$ ⁺ 85–90
 $\succ$ 89
 $\supset$ 89
 $\supseteq$ 90
 or greater than, dotted ($\gtrsim$)
 89
 or greater than, negated
 ($\nless$)⁺ 86–88, 90
 or less than
 $\leq$ ⁺ 85–90
 $\prec$ 89
 $\preceq$ 90
 $\preceq$ 90
 or less than, dotted ($\lesssim$) 89
 or less than, negated ($\nless$)⁺
 86–88, 90
 or precedes ($\preceq$)⁺ .. 68–70, 73, 76, 77
 or precedes, negated ($\nless$)⁺ ..
 70, 72, 75
 or succeeds ($\succ$)⁺ .. 68–70, 73, 76, 77
 or succeeds, negated ($\nless$)⁺ ..
 70, 72, 75
 parallel ($\#$)⁺ 76, 78
 parallel slanted ($\#$) ... 78
 parallel slanted, similar ($\#$)
 77
 question mark ($\textcircled{?}$) ... 78
 ring
 $\textcircled{=}$ ⁺ 68, 69, 71, 74, 76, 78
 $\textcircled{=}$ ⁺ .. 68–70, 73, 76, 77
 ring, negated
 $\#$ ⁺ 72, 75
 $\#$ ⁺ 72, 74
 similar
 $\approx$ ⁺ .. 69, 71, 74, 76, 78
 $\approx$ 70
 $\approx$ 78
 similar, negated
 $\nless$ ⁺ 72, 75, 78
 $\nless$ 72
 star ($\textcircled{=}$)⁺ 73, 77
 star, negated ($\neq$) ... 74
 triangle ($\triangle$)⁺ 36, 76, 91–93
 triangle, negated ($\neq$)⁺ .. 92, 93
 triple ($\textcircled{=}$) 78
 V ($\textcircled{=}$)⁺ 74, 76, 78
 V, negated ($\nless$) 75
 wedge ($\triangle$)⁺ 74, 78
 wedge, negated ($\neq$) ... 75
 equidecomposable 369
 equilibrium ($\rightleftharpoons$)⁺ *see* harpoon,
 double, opposite sides
 equivalence
 $\equiv$ ⁺ 36, 67, 71, 73, 78, 154
 $\Leftrightarrow$ 154
 closed ($\equiv$) 71
 closed, negated ($\neq$) ... 72
 entailment ($\Rightarrow$)⁺ ... 113
 implication ($\Rightarrow$)⁺ ... 113
 intuitionistic ($\Rightarrow$)⁺ .. 114
 material ($\Rightarrow$)⁺ .. 113, 114
 negated ($\neq$)⁺ 69, 70, 72, 75, 76, 78, 81
 not entailment ($\nRightarrow$)⁺ 114
 not implication ($\nRightarrow$)⁺ 114
 not intuitionistic ($\nRightarrow$)⁺ 115
 not material ($\nRightarrow$)⁺ .. 114
 not weak entailment
 ($\nRightarrow$)⁺ 114
 not weak implication ($\nRightarrow$)⁺
 115
 not weak material ($\nRightarrow$)⁺ ..
 115
 parallel slanted ($\#$) ... 77
 weak entailment ($\Rightarrow$)⁺ ..
 113
 weak implication ($\Rightarrow$)⁺
 114
 weak material ($\Rightarrow$)⁺ 114
 with dots
 $\equiv$ 77
 $\equiv$ 78
 with vertical lines
 $\#$ 78
 $\#$ 78
 $\#$ 154
 er ($\textcircled{=}$) 24
 eraser ($\textcircled{=}$) 173–175
 Erlang ($\textcircled{=}$)⁺ 315–319
 Eros ($\textcircled{=}$) 168
 error ($\textcircled{=}$) 178
 escalators 310
 escapable characters 18
 esh ($\textcircled{=}$)⁺ 23–25
 reversed with loop ($\textcircled{=}$) .. 23
 esint (package) 57, 387
 esrelation (package) .. 115, 149, 387
 estimated (e) 34
 Estonia ($\textcircled{=}$) 243
 esvect (package) 142, 387
 eszett ($\textcircled{=}$) *see* sharp s
 eta
 lowercase (η)⁺ 20, 120, 121
 uppercase (H)⁺ .. 20, 120
 eth
 lowercase ($\textcircled{=}$)⁺ .. 20, 24, 25, 157, 160, 383
 uppercase (D)⁺ 20, 25, 383
 Ethereum ($\textcircled{=}$) 315–318
 Ethernet ($\textcircled{=}$) 173–175
 Etsy (E) 315–318
 euflag (package) .. 246, 387, 388
 eufrak (package) 162
 Euler Roman 121
 Euler’s constant (E) 124
 euro ($\textcircled{=}$)⁺ 31–33, 384
 blackboard bold ($\textcircled{=}$)⁺ .. 163
 euro banknote .. *see* banknote,
 euro
 European countries .. 242–244
 eurosym (package) 33, 387, 388
 euscript (package) 162, 387, 388
 evaluated at ($\textcircled{=}$)⁺ *see* vertical bar
 Evernote ($\textcircled{=}$) 315–318
 evil spirits 277
 ewe ($\textcircled{=}$) 206
 example ($\textcircled{=}$) 178
 excavator ($\textcircled{=}$) 325–327
 excess ($\textcircled{=}$)⁺ *see* equal, colon, *see*
 minus, colon
 exchange ($\textcircled{=}$) 173–175
 exchange eligible ($\textcircled{=}$) 176
 exciton ($\textcircled{=}$)⁺ 178
 exclamation point
 ! 37
 ! 22
 ! 302
 ! 296
 ! 199
 ! 199
 ! 199
 and question mark (!?) 298
 double
 !! 160
 !! 170
 !! 297
 upside-down (i) 19
 exclusive disjunction, logical ($\vee$)
 ... *see* vee, bar under
 exclusive or 367
 $\oplus$ *see* circled symbols, plus
 $\vee$... *see* vee, bar under
 Exherbo ($\textcircled{=}$) 318–319
 exists ($\exists$)⁺ 66, 123–125

- exclamation point (❗)⁺ 125
 negated (⚡)⁺ . . . 123–125
 tilde (̃)⁺ 125
 expand
  173–175
  173–175
  173–175
 ExpeditedSSL (🔒) . . 315–318
 experimental (🔬) 177
 exploding head (💥) 298
 explosion proof (💣) 176
 export
  171–172
  171–172
 extrarrows (package) . . 146, 387, 388
 extensible accents 139–142, 144, 145, 151, 171, 374–375
 extensible braces 139–141, 144, 171
 extensible symbols . . . 139–142, 144–150, 165, 367
 creating 374–375
 extensible tildes 139, 144
 extension characters 118
 external (🔗) 177
 external link
  173–175
  173–175
 extpfeil (package) . . 147, 387, 388
 extraipa (package) 28, 387
 extraterrestrial
  279
  292
  292
  307
  307
 eye
  311–312
  198
  173–175
  173–175
  343–346
  201
  201
  322
  298
  312
 eye dropper (👁️) 323–325
 eyeglasses
  323–325
  298
  281
 eyes
  331
  331
  298
  312
 ezh (3) *see* round z
 F
 inverted (⌋)⁺ . . . 123, 124
 face 159–160, 170, 200, 253, 257, 278, 284, 288–307, 311–312, 334–338, 343–346
 angry (😡)⁺ . . . 289, 292, 305
 angry, with horns (😡) . . 292
 anguished (😓)⁺ . . . 289, 292
 annoyed (😏) 288
 annoyed, 3D (😏) 288
 anxious, with sweat (😓) 292
 astonished (😲)⁺ . . . 289, 292
 beaming, with smiling eyes (😄) 293
 blowing a kiss (😘) . . . 298
 cold (🥶) 296
 confounded (😖)⁺ 289, 296
 confused (😕)⁺ . . . 289, 296
 cool (😎) 288
 cool, 3D (😎) 288
 cowboy hat (🤠) 296
 crying (😭)⁺ 289, 296
 disappointed (😞)⁺ 289, 297
 disappointed but relieved (😏) 289
 disguised (😬) 297
 dizzy (😵)⁺ 289, 305
 downcast, with sweat (😓) 297
 drooling (😬) 297
 expressionless (😐)⁺ . . . 289, 298
 fearful (😨)⁺ 289, 298
 flushed (😳)⁺ 289, 299
 frowning (☹)⁺ . . . 253, 257, 299, 305, 311–312
 frowning, with open mouth (😬)⁺ 289, 299
 grimacing (😬)⁺ . . . 257, 289, 300
 grinning (😄)⁺ 289, 300, 305
 grinning and squinting (😏)⁺ 300, 306
 grinning and squinting, with tears (😏)⁺ 306
 grinning and sweating (😓)⁺ 305
 grinning and winking (😏)⁺ 305
 grinning, with big eyes (😏) 300
 grinning, with hearts (😍)⁺ 306
 grinning, with smiling eyes (😏)⁺ 289, 300
 grinning, with stars (😍)⁺ 306
 grinning, with sweat (😓) 300
 grinning, with tears (😓)⁺ 306
 grinning, with tongue (😛)⁺ 306
 hieroglyphic (🐸)⁺ . . . 202
 hot (🔥) 301
 hugging (🤗) 301
 hushed (😬)⁺ 289, 301
 innocent (😇) 288
 innocent, 3D (😇) 288
 kissing (😘)⁺ . . . 289, 303, 305
 kissing, with closed eyes (😘)⁺ 289, 303
 kissing, with smiling eyes (😘)⁺ 289, 303
 knocked-out (😵) 303
 laughing (😂)⁺ . . . 288, 305
 laughing, 3D (😂) 288
 loudly crying (😭)⁺ 289, 303
 lying (😏) 304
 man (👨) 257
 massage (👨) 307
 meh (😐)⁺ 305, 306
 money-mouth (😬) . . . 292
 nauseated (🤢) 292
 nerd (🤓) 292
 neutral (😐)⁺ 288, 289, 293
 neutral, 3D (😐) 288
 ninja (🥷) 288
 ninja, 3D (🥷) 288
 nurse (👩) 288
 nurse, 3D (👩) 288
 partying (🥳) 294
 pensive (😞)⁺ 289, 294
 persevering (😬)⁺ 289, 294
 person with pouting (😬) 289
 pleading (😏) 295
 pounding on wall (👊)⁺ 288

- pounding on wall, 3D (👊) 288
- pouting (😬)+ 289, 296
- relieved (😌)+ 289, 297
- S-mouth (☹) 288
- S-mouth, 3D (😬) 288
- sad (☹)+ 284, 288, 306
- sad but relieved (😌) 297
- sad, 3D (😬) 288
- savoring food (😋) 298
- savouring delicious food (😋) 289
- screaming in fear (😱)+ 289, 298
- shushing (🤫) 298
- sleeping (😴)+ 289, 298
- sleepy (😴)+ 288, 289, 298
- sleepy, 3D (😴) 288
- slightly frowning (😞)+ 289, 298
- slightly smiling (😊)+ 289, 298
- smiley (☺)+ 170, 253, 257, 284
- smiley, inverse (☹)+ 159, 170, 253, 284
- smiling (☺)+ 288, 298, 311–312
- smiling, 3D (😬) 288
- smiling, with halo (😇)+ 289, 298
- smiling, with heart-shaped eyes (😍)+ 289, 298
- smiling, with hearts (😍) 298
- smiling, with horns (👹)+ 289, 298
- smiling, with open mouth (☺) 289
- smiling, with open mouth and cold sweat (😓) 289
- smiling, with open mouth and smiling eyes (😄) 289
- smiling, with open mouth and tightly-closed eyes (😄) 289
- smiling, with smiling eyes (😊)+ 289, 298
- smiling, with sunglasses (😎)+ 289, 298
- smiling, with tear (😢) 298
- smirking (😏)+ 289, 298
- sneezing (🤧) 299
- squinting, with tongue (😛) 299
- sun with (☀)+ 167, 299
- thinking (🤔) 300
- throwing a kiss (💋) 289
- tired (😫)+ 289, 300
- tongue-out (😛) 288
- tongue-out, 3D (😛) 288
- unamused (😏)+ 289, 301
- upside-down (🙃)+ 289, 301
- vomiting (🤮)+ 288, 298
- vomiting, 3D (🤮) 288
- weary (😫)+ 289, 302
- wind blowing (💨) 258
- winking (😉)+ 288, 289, 302
- winking, 3D (😬) 288
- winking, with tongue (😛) 302
- with cold sweat (😓) 289
- with hand over mouth (🙈) 298
- with head-bandage (🤕) 298
- with look of triumph (😏) 289
- with medical mask (😷)+ 289, 298
- with monocle (👁) 298
- with no good gesture (🙄) 289
- with ok gesture (👌) 289
- with open mouth (😛)+ 289, 298
- with open mouth and cold sweat (😓) 289
- with raised eyebrow (😏) 298
- with rolling eyes (😒)+ 289, 298
- with steam from nose (👃) 298
- with stuck-out tongue (😛) 289
- with stuck-out tongue and tightly-closed eyes (😓) 289
- with stuck-out tongue and winking eye (😛) 289
- with sunglasses (😎)+ 257
- with symbols on mouth (😬) 298
- with tears of joy (😂)+ 289, 298
- with thermometer (🌡) 298
- with tongue (😛) 298
- without mouth (😬)+ 289, 298
- woman (👩) 257
- woozy (😵) 304
- worried (😟)+ 289, 304
- X-eyes (😈) 288
- Y-eyes, 3D (😈) 288
- yawning (😴) 304
- zany (🤪) 304
- zipper-mouth (😬) 304
- Facebook
- fb 315–318
- fb 315–318
- fb 315–318
- fb 314
- fb 314
- Facebook Messenger (💬) 315–318
- facepalming (🤦)+ 294, 303, 304
- factory
- 🏭 298
- 🏭 314
- factory worker (👷)+ 298, 303, 304
- fairy (🧚)+ 298, 303, 304
- falafel (🌮) 285
- false (F) 125
- falsum (⬇)+ *see* turnstile, up
- family (👨) 307
- fan
- 🌀 323–325
- 🌀 325–327
- 🌀 325–327
- Fantasy Flight Games (🎮) 315–318
- farmer (👨) 298, 303, 304
- fast forward *see* media control symbols, forward
- Father Christmas (🎅)+ *see* Santa Claus
- faucet (🚰) 323–325
- fax
- FAX 171
- 📠 171
- fax machine
- 📠 171
- 📠 323–325
- 📠 298
- 📠 314
- 📠 312
- fc (package) 21, 26
- fclfont (package) 387
- .fd files 16, 378, 385
- fdsymbol (package) 40, 41, 46, 59, 60, 73–75, 84, 88, 93, 100–105, 117, 123, 124, 130, 131, 137, 140, 152, 156, 159, 192, 213, 233, 387, 388

- feather
 311–312
 323–325
 322
 298
FedEx () 315–318
Fedora
 315–318
 318–319
feeding baby ()⁺ 294, 303, 304
feet
⁺ *see* prime
⁺ .. *see* quotation marks, straight single
fencing () 294
fermata () 214, 220, 221
accent ()⁺ .. *see* accents,
fermata
inverted () 214
Fermi distribution ($\mathcal{F}$) 177
fermion 177–178
 $\mathcal{F}$ 177
 177
 177
 177
= 177
ferris wheel
 299
 313
ferry () 299
feyn (package) ... 177, 387, 388
Feynman slashed character notation 370
Feynman-diagram symbols . 177
fez, as math-mode accent () 138
fge (package) 111, 125, 137, 154, 160, 387, 388
field ($\mathbb{F}$) . *see* alphabets, math
field hockey stick and ball
 299
 241
figbas (package) 360, 387
figchild (package) 259, 264, 267, 270, 279, 286, 287, 325, 331, 387, 388
fighter jet ()⁺ . *see* airplane, military
Figma () 315–318
Figshare
 330–331
 330–331
file cabinet
 299
 313
file extensions
.dvi 384
.fd 16, 378, 385
.mf 16, 332, 376
.otf 212
.pdf 384
.sty 16
.tex 384, 385
.tfm 16, 162, 332, 366, 385
file folder () 313
file symbols 309
fill
 173–175
 173–175
film
 173–175
 322
 299
 313
film projector
 299
 312
filter ()⁺ 171–175
finger, pointing *see* fists
fingerprint () 173–175
finite field ($\mathbb{F}$) .. *see* alphabets, math
Finland () 243
fire
 270, 290
 168
 173–175
 328–329
 318–319
 299
 313
fire engine
 320
 254
 254
fire extinguisher
 323–325
 299
firecracker () 299
firefighter ()⁺ .. 299, 303, 304
Firefox
 315–318
 315–318
fireworks
 299
 312
first aid () 319
First Order
 315–318
 315–318
Firstdraft () 315–318
fish 339–340
 200
 311–312
 263
 264–267
 264–267
 264–267
 264–267
 264–267
 264–267
 264–267
 264–267
 264–267
 264–267
 264–267
 264–267
 264–267
 343–346
 343–346
 201
 201
 262
 263
 268
 268
fish cake with swirl
 285
 287
fish tail
down ($\perp$) 78
left ($\neg$)⁺ *see* strict converse
implication
right ($\neg$)⁺ *see* strict
implication

- up (Υ) 77
- fish-eye ($\odot$) 193
- fishing pole and fish
 299
-  313
- fists *see* hand
- fixed point
 extended greatest ($\vec{v}$) . 161
 extended least ($\vec{\mu}$) . . 161
 greatest (ν) 161
 least (μ) 161
- fixmath (package) 380
- flag
 259
 259
 284
 322
 302
 293
 301
 312
 312
 312
 312
 254
0 () 283
1 () 283
2 () 283
3 () 283
4 () 283
5 () 283
6 () 283
7 () 283
8 () 283
9 () 283
A () 283
Åland ()⁺ . . 248, 249
Abkhazia () 248
Afghanistan ()⁺ . 247, 249
Albania ()⁺ . 247, 249
Algeria ()⁺ . . 248, 249
American Samoa () . 249
Andorra ()⁺ . 247, 249
Angola ()⁺ . . 247, 249
Anguilla () 249
Antarctica ()⁺ 248, 249
Antigua and Barbuda
()⁺ 247, 249
Argentina ()⁺ 247, 249
Armenia ()⁺ 247, 249
Artsakh () 248
Aruba () 249
Ascension Island () . 249
Australia ()⁺ 247, 249
Austria ()⁺ . . 247, 249,
311–312
Azerbaijan ()⁺ . 247,
249
B () 283
Bahamas ()⁺ 247, 249
Bahrain ()⁺ . 247, 249
Bangladesh ()⁺ . 247,
249
Barbados ()⁺ 247, 249
Belarus ()⁺ . 247, 249
Belgium ()⁺ . . 247, 249,
311–312
Belize ()⁺ . . 247, 249
Benin ()⁺ . . . 247, 249
Bermuda () 249
Bhutan ()⁺ . . 247, 249
Bolivia ()⁺ . . 247, 249
Bonaire () 248
Bosnia and Herzegovina
()⁺ 247, 249
Botswana ()⁺ 247, 250
Bouvet Island () . . . 250
Brazil ()⁺ . . . 247, 250
British Indian Ocean Terri-
tory () 250
British Virgin Islands () .
. 250
Brunei ()⁺ . 247, 250
Buddhism () 283
Bulgaria ()⁺ 247, 250,
311–312
Burgenland () 249
Burkina Faso ()⁺ 247,
250
Burundi ()⁺ . 247, 250
C () 283
Cambodia ()⁺ 248, 250
Cameroon ()⁺ 248, 250
Canada ()⁺ . 247, 250
Canary Islands () . . . 250
Cape Verde ()⁺ . 248,
250
Caribbean Netherlands ()
. 250
Carinthia () 249
Cayman Islands () . . 250
Central African Republic
()⁺ 247, 250
Ceuta and Melilla () 250
Chad ()⁺ . . . 247, 250
checkered ()⁺ . 241, 284,
295
Chile ()⁺ . . . 248, 250
China ()⁺ . . . 248, 250
Christian () 283
Christmas Island () . 250
Clipperton Island () . 250
Cocos Islands () 250
Colombia ()⁺ 248, 250
Comoros ()⁺ 248, 250
Congo–Brazzaville ()⁺ .
. 247, 250
Congo–Kinshasa ()⁺ . .
. 247, 250
Cook Islands ()⁺ 248,
250
Costa Rica ()⁺ . . 248,
250
Côte d'Ivoire ()⁺ 247,
250
Croatia ()⁺ . 247, 250
Cuba ()⁺ . . 248, 250
Curaçao () 250
Cyprus ()⁺ . . 248, 250
Czech Republic ()⁺ 248,
250
D () 283
Democratic Republic of the
Congo *see* flags,
Congo–Kinshasa
Denmark ()⁺ 248, 250
Diego Garcia () 250
Djibouti ()⁺ 248, 250
Dominica ()⁺ 248, 251
Dominican Republic ()⁺
. 248, 251
E () 283

- Ecuador ()⁺ 247, 251
 Egypt ()⁺ . . . 247, 251
 El Salvador ()⁺ . 247, 251
 England () 251
 Equatorial Guinea ()⁺ 247, 251
 Eritrea ()⁺ . 247, 251
 Esperanto () 283
 Estonia ()⁺ . 247, 251
 Eswatini () 251
 Ethiopia ()⁺ 247, 251
 European Union ()⁺ 246, 251, 283
 F () 283
 Falkland Islands () . . 251
 Faroe Islands ()⁺ 248, 251
 Fiji ()⁺ 247, 251
 Finland ()⁺ . 247, 251
 flags 246–252, 259, 283, 284, 311–312, 343–346, 355–357
 France ()⁺ . . 247, 251, 311–312
 French Guiana ()⁺ 248, 251
 French Polynesia () . 251
 French Southern Territories () 251
 G () 283
 Gabon ()⁺ . . 247, 251
 Gambia ()⁺ . 247, 251
 Georgia ()⁺ . 247, 251
 Germany ()⁺ 248, 251, 311–312
 Ghana ()⁺ . . 247, 251
 Gibraltar ()⁺ 248, 251
 Greece ()⁺ . . 247, 251
 Greenland ()⁺ 248, 251
 Grenada ()⁺ 247, 251
 Guadeloupe () 251
 Guam () 251
 Guatemala ()⁺ 247, 251
 Guernsey ()⁺ 248, 251
 Guinea ()⁺ . . 247, 251
 Guinea-Bissau ()⁺ 247, 251
 Guyana ()⁺ . 247, 251
 H () 283
 Haiti ()⁺ . . . 247, 251
 Heard and McDonald Islands () 251
 Holy See () 248
 Honduras ()⁺ 247, 251
 Hong Kong SAR China () 251
 Hungary ()⁺ . 247, 252
 I () 283
 Iceland ()⁺ . . 247, 252
 India ()⁺ . . . 247, 252
 Indonesia ()⁺ 247, 252
 Iran ()⁺ . . . 247, 252
 Iraq ()⁺ 247, 252
 Ireland ()⁺ . 247, 252
 Isle of Man ()⁺ . 248, 252
 Israel ()⁺ . . . 247, 252
 Italy ()⁺ 247, 252, 311–312
 Ivory Coast *see* flags, Côte d'Ivoire
 J () 283
 Jamaica ()⁺ 248, 252
 Japan ()⁺ . . . 248, 252
 Jersey ()⁺ . . 248, 252
 Jolly Roger ()⁺ . . . 283
 Jordan ()⁺ . 248, 252
 K () 283
 Kazakhstan ()⁺ 248, 252
 Kenya ()⁺ . . 248, 252
 Kiribati ()⁺ 248, 252
 Kosovo ()⁺ . . 248, 252
 Kuwait ()⁺ . 248, 252
 Kyrgyzstan ()⁺ . 248, 252
 L () 283
 Laos ()⁺ 248, 252
 Latvia ()⁺ . 247, 252
 Lebanon ()⁺ . 248, 252
 Lesotho ()⁺ . 247, 249
 Liberia ()⁺ . 247, 249
 Libya ()⁺ . . 247, 249
 Liechtenstein ()⁺ 247, 249
 Lithuania ()⁺ 247, 249
 Lower Austria () . . 249
 Luxembourg ()⁺ 247, 249, 311–312
 M () 283
 Macao SAR China () 249
 Madagascar ()⁺ . 247, 249
 Malawi ()⁺ . . 247, 249
 Malaysia ()⁺ 247, 249
 Maldives *see* flags, Falkland Islands
 Maldives ()⁺ . 247, 249
 Mali ()⁺ 247, 249
 Malta ()⁺ . . . 247, 249
 Marshall Islands ()⁺ 247, 249
 Martinique () 249
 Mauritania ()⁺ 247, 249
 Mauritius ()⁺ 247, 249
 Mayotte () 249
 Mexico ()⁺ . 247, 249
 Micronesia, Federated States of ()⁺ 247, 249
 Moldova ()⁺ 247, 249
 Monaco () 249
 Mongolia ()⁺ 247, 249
 Montenegro ()⁺ 247, 249
 Montserrat () 249
 Morocco ()⁺ . 247, 249
 Mozambique ()⁺ . 247, 249
 multiple, crossed
  296
  312
 Myanmar ()⁺ 247, 249
 N () 283
 Namibia ()⁺ . 247, 249
 NATO () 283
 Nauru ()⁺ . 247, 250
 Nepal ()⁺ 247, 250
 Netherlands ()⁺ . 247, 250, 311–312
 New Caledonia () . . . 250

- New Zealand ()⁺ 248, 250
 Nicaragua ()⁺ 247, 250
 Niger ()⁺ 247, 250
 Nigeria ()⁺ . 247, 250
 Niue ()⁺ 248, 250
 Norfolk Island () 250
 North Korea ()⁺ 248, 250
 North Macedonia ()⁺ 247, 250
 Northern Mariana Islands () 250
 Norway ()⁺ . . 247, 250
 O () 283
 Olympics () 283
 Oman ()⁺ . . 248, 250
 P () 283
 Pakistan ()⁺ . 248, 250
 Palau ()⁺ 248, 250
 Palestinian Territories ()⁺ 248, 250
 Panama ()⁺ . 248, 250
 Papua New Guinea ()⁺ 248, 250
 Paraguay ()⁺ 248, 250
 Peru ()⁺ 248, 250
 Philippines ()⁺ . 248, 250
 pirate *see* flags, Jolly Roger
 Pitcairn Islands () . . 250
 Poland ()⁺ . . 248, 250
 Portugal ()⁺ . 248, 250
 Puerto Rico ()⁺ . 248, 250
 Q () 283
 Qatar ()⁺ . 248, 250
 R () 283
 rainbow ()⁺ 283
 Red Crescent () . . 283
 Red Cross () 283
 Red Crystal () . . . 283
 Republic of the Congo *see* flags, Congo–Brazzaville
 Réunion ()⁺ . 248, 250
 Romania ()⁺ 248, 250
 Russian Federation ()⁺ 248, 250
 Rwanda ()⁺ . 247, 250
 S () 283
 Saba () 248
 Saint Barthélemy () . 251
 Saint Eustasius () . 248
 Saint Helena () 251
 Saint Kitts and Nevis ()⁺ 248, 251
 Saint Lucia ()⁺ . 247, 251
 Saint Martin () 251
 Saint Pierre and Miquelon () 251
 Saint Vincent and Grenadines ()⁺ . 248, 251
 Salzburg () 249
 Samoa ()⁺ . 248, 250
 San Marino ()⁺ 247, 250
 São Tomé and Príncipe ()⁺ 247, 251
 Saudi Arabia ()⁺ 247, 250
 Scotland () 250
 Senegal ()⁺ . . 247, 250
 Serbia ()⁺ . . 248, 250
 Seychelles ()⁺ 247, 250
 Sierra Leone ()⁺ . 247, 251
 Singapore ()⁺ 247, 251
 Sint Maarten () 251
 skull and crossbones . . *see* flags, Jolly Roger
 Slovakia ()⁺ . 247, 251
 Slovenia ()⁺ 247, 251
 Solomon Islands ()⁺ 247, 251
 Somalia ()⁺ . 247, 251
 Somaliland () . . . 248
 South Africa ()⁺ . 248, 251
 South Georgia and South Sandwich Islands () 251
 South Korea ()⁺ . 248, 251
 South Sudan ()⁺ 247, 251
 Spain ()⁺ 247, 251
 Sri Lanka ()⁺ 247, 251
 Styria () 249
 Sudan ()⁺ . . 247, 251
 Suriname ()⁺ 247, 251
 Svalbard and Jan Mayen () 251
 Swaziland () 247
 Sweden ()⁺ . 247, 251
 Switzerland ()⁺ 247, 251
 Syria ()⁺ 247, 251
 T () 283
 Taiwan ()⁺ . . 247, 251
 Tajikistan ()⁺ . . 247, 251
 Tanzania ()⁺ 247, 251
 Thailand ()⁺ 247, 251
 The Tyrol () 249
 Tibet () 248
 Timor-Leste ()⁺ 247, 251
 Togo ()⁺ 247, 251
 Tokelau () 251
 Tonga ()⁺ . . 247, 251
 transgender () 283
 Transnistria () . . 248
 Trinidad and Tobago ()⁺ 247, 251
 Tristan da Cunha () . 251
 Tunisia ()⁺ . . 247, 251
 Turkey ()⁺ . . 247, 251
 Turkmenistan ()⁺ 247, 251
 Turks and Caicos Islands () 252
 Tuvalu ()⁺ . 247, 252
 U () 283
 Uganda ()⁺ . 247, 252
 Ukraine ()⁺ . 247, 252
 UNESCO () 283
 United Arab Emirates ()⁺ 247, 252
 United Kingdom ()⁺ 247, 252
 United Nations ()⁺ 252, 283

- United States (⁺) . 284, 343–346
 United States Minor Outlying Islands (⁺) 252
 United States of America (⁺) 248, 252
 United States Virgin Islands (⁺) 252
 Upper Austria (⁺) . . 249
 Uruguay (⁺) . 248, 252
 Uzbekistan (⁺) . 248, 252
 V (⁺) 283
 Vanuatu (⁺) . 248, 252
 Vatican City (⁺) 252
 Venezuela (⁺) . 248, 252
 Vienna (⁺) 249
 Vietnam (⁺) . 248, 252
 Vorarlberg (⁺) 249
 W (⁺) 283
 Wales (⁺) 252
 Wallis and Futuna (⁺) . 252
 Western Sahara (⁺) 248, 252
 Wieselburger Bier (⁺) 283
 World Health Organization (⁺) 283
 X (⁺) 283
 Y (⁺) 283
 Yemen (⁺) . . 248, 252
 Z (⁺) 283
 Zambia (⁺) . . 248, 252
 Zimbabwe (⁺) . . 248, 252
 flageolet (⁺) 214
 flamingo
 264–267
 264–267
 262
 flap (r)⁺ 24, 25
 flashlight
 325–327
 299
 313
 flask (⁺) 323–325
 flat (b)⁺ . . . 212, 213, 216, 219
 double (b)⁺ 216, 219
 flatbread
 285
 285
 fleur-de-lis (⁺) 299
 fleurons . . . 191, 198, 338–339
 flexed biceps
 299
 313
 Flickr
 315–318
 314
 314
 flint (⁺) 208–210
 Flipboard (⁺) 315–318
 floppy disk
 299
 313
 312
 312
 312
 florin
 32
 31
 flourishes . . 197, 198, 342–348
 flow
 171–172
 171–172
 171–172
 171–172
 flower . 189–191, 281, 290–305, 311–314, 338–340
 208–210
 189
 189
 189
 189
 189
 189
 189
 189
 189
 189
 189
 189
 189
 311–312
 325–327
 325–327
 325–327
 325–327

- fondue () 285
 font (**A**) 17, 173–175
 Font Awesome
  315–318
  315–318
  315–318
 font encodings 16, 19–21, 25, 26,
 29, 246, 367, 368, 373, 381,
 382, 384, 386
 7-bit 16
 8-bit 16
 ASCII 386
 Cyrillic 26
 document 382, 384
 Latin 1 386
 limiting scope of 16
 LY1 16
 OT1 16, 20, 26, 246, 373,
 381, 382
 OT2 368
 T1 16, 19–21, 26, 382, 384
 T2A 26, 368
 T2B 26
 T4 21, 25, 26, 29
 T5 21, 26
 TS1 367, 382
 TU 246
 U 368
 X2 26
 font families 244, 246, 332, 364,
 366, 368, 378
 bulb 378
 CountriesOfEurope 244
 psy 368
 rojud 246
 fontawesome5 (package) 22, 32,
 33, 157, 173, 176, 182, 183,
 186, 188, 191, 196, 236, 240,
 256, 259, 261, 263, 280, 284,
 305, 308–310, 315, 319, 320,
 323, 328, 387, 388
 fontdef.dtx (file) 368, 373
 fontenc (package) 16, 20, 21, 26,
 382, 384
 \fontencoding 16
 Fonticons (**fi**) 315–318
 Fonticons Fi (**fi**) 315–318
 fontmizz (package) 318, 319,
 329, 387, 388
 fonts
 Calligra 163
 Charter 32, 65
 Computer Modern 112,
 360, 366, 382
 Computer Modern Sans 360
 Courier 32
 Emmentaler 219
 Garamond 32, 65
 Helvetica 32
 Palatino 360
 Palladio 360
 Soyombo 281
 Symbol 121, 367, 368
 Times Roman 32, 366
 Type 1 379
 Utopia 32, 65
 Zapf Chancery 163
 Zapf Dingbats 179, 189
 \fontsize 366
 fontspec (package) 212, 385, 386
 food 284–287
 foot () 299
 football *see* soccer ball
 American
  240
  241
  292
 footline (–)⁺ *see* turnstile, short
 bar
 footprints
  323–325
  299
  312
 for all (∀)⁺ 66, 123–125
 force (↓) 171
 fork (i) 287
 fork and knife
  285
  287
 fork and knife with plate
  285
  287
 Fort Awesome
  315–318
  315–318
 forte (**f**) 219, 232
 fortune () 168
 fortune cookie () 285
 Forumbee () 315–318
 forward composition (•) 161
 fountain () 299
 fourier (package) 33,
 81, 122, 125, 133, 142, 184,
 191, 257, 387
 Fourier transform ($\mathcal{F}$) *see*
 alphabets, math
 Foursquare () 315–318
 fox () 262
 fractions 160
 one half ($\frac{1}{2}$) 160, 383
 one quarter ($\frac{1}{4}$) 160, 383
 three quarters ($\frac{3}{4}$) 160, 383
 fraktur *see* alphabets, math
 frame
 with picture () 312
 with tiles () 312
 with x () 312
 framed picture () 299
 France () 243
 FREE () 299
 free (→)⁺ 70, 71
 negated (↠)⁺ 72
 Free Code Camp
 () 315–318
 () 318–319
 FreeBSD
  315–318
  318–319
 Freemason's cipher 278
 frege (package) 154, 387, 388
 Frege logic symbols 111, 125,
 153, 154, 160
 Frege, Gottlob 153, 154
 french fries
  286–287
  285
  287
 fried shrimp
  285
  287
 frog
  263
  264–267
  262
  268
 frowning ()⁺ 289, 294, 303, 304
 frowny faces 170, 253, 257, 284,
 288–306, 311–312
 frying pan (–) 288
 fuel pump () 299
 Fulcrum (Ψ) 315–318
 full note (•) 212
 function
 composition (◦)⁺ 37, 39,
 46, 160, 161, 193, 194, 370
 continuous, partial, into
 multi-function (→⁺) 113
 continuous, partial, into
 multi-map (→⁺) 113
 continuous, partial, into,
 grounded multi-function
 (→⁺) 113

- continuous, partial, into,
grounded multi-map ($\succrightarrow$)
..... 113
- continuous, partial, into,
grounded, one-to-one func-
tion ($\vdash\rightarrow$) 113
- continuous, partial, into,
grounded, one-to-one map
($\succ\rightarrow$) 113
- continuous, partial, into,
grounded, singleton func-
tion ($\vdash\rightarrow$) 113
- continuous, partial, into,
grounded, singleton map
($\succ\rightarrow$) 113
- continuous, partial, into,
one-to-one function ($\vdash\rightarrow$)
..... 113
- continuous, partial, into,
one-to-one map ($\succ\rightarrow$) 113
- continuous, partial, into, sin-
gleton function ($\vdash\rightarrow$) 113
- continuous, partial, into, sin-
gleton map ($\succ\rightarrow$) .. 113
- continuous, partial, onto
multi-function ($\vdash\rightarrow$) 113
- continuous, partial, onto
multi-map ($\succ\rightarrow$) ... 113
- continuous, partial, onto,
grounded multi-function
($\vdash\rightarrow$) 113
- continuous, partial, onto,
grounded multi-map ($\succ\rightarrow$)
..... 113
- continuous, partial, onto,
grounded, one-to-one func-
tion ($\vdash\rightarrow$) 113
- continuous, partial, onto,
grounded, one-to-one map
($\succ\rightarrow$) 113
- continuous, partial, onto,
grounded, singleton func-
tion ($\vdash\rightarrow$) 113
- continuous, partial, onto,
grounded, singleton map
($\succ\rightarrow$) 113
- continuous, partial, onto,
one-to-one function ($\vdash\rightarrow$)
..... 113
- continuous, partial, onto,
one-to-one map ($\succ\rightarrow$) 113
- continuous, partial, onto,
singleton function ($\vdash\rightarrow$) .
..... 113
- continuous, partial, onto,
singleton map ($\succ\rightarrow$) 113
- continuous, total, into multi-
function ($\vdash\rightarrow$) 113
- continuous, total, into multi-
map ($\succ\rightarrow$) 113
- continuous, total, into,
grounded multi-function
($\vdash\rightarrow$) 113
- continuous, total, into,
grounded multi-map ($\succ\rightarrow$)
..... 113
- continuous, total, into,
grounded, one-to-one func-
tion ($\vdash\rightarrow$) 113
- continuous, total, into,
grounded, one-to-one map
($\succ\rightarrow$) 113
- continuous, total, into,
grounded, singleton func-
tion ($\vdash\rightarrow$) 113
- continuous, total, into,
grounded, singleton map
($\succ\rightarrow$) 113
- continuous, total, onto
multi-function ($\vdash\rightarrow$) 113
- continuous, total, onto
multi-map ($\succ\rightarrow$) ... 113
- continuous, total, onto,
grounded multi-function
($\vdash\rightarrow$) 113
- continuous, total, onto,
grounded multi-map ($\succ\rightarrow$)
..... 113
- continuous, total, onto,
grounded, one-to-one func-
tion ($\vdash\rightarrow$) 113
- continuous, total, onto,
grounded, one-to-one map
($\succ\rightarrow$) 113
- continuous, total, onto,
grounded, singleton func-
tion ($\vdash\rightarrow$) 113
- continuous, total, onto,
grounded, singleton map
($\succ\rightarrow$) 113
- continuous, total, onto, one-
to-one function ($\vdash\rightarrow$) 113
- continuous, total, onto, one-
to-one map ($\succ\rightarrow$) .. 113
- continuous, total, onto, sin-
gleton function ($\vdash\rightarrow$) 113
- continuous, total, onto, sin-
gleton map ($\succ\rightarrow$) .. 113
- converse ($\otimes$) 161
- partial ($\rightarrow$)⁺ 113
- total ($\rightarrow$)⁺ 113
- funeral urn () 299
- funnel with dollar () 328–329
- future ($\blacktriangleright$) 51
- deontic ($\blacktriangleright$) 50
- doxastic ($\blacktriangleright$) 51
- factual ($\blacktriangleright$) 51
- logical ($\blacktriangleright$) 52
- temporal ($\blacktriangleright$) 49
- ## G
- g
g 23
- g⁺ 22, 24, 25, 122
- Galactic Republic () 315–318
- Galactic Senate () . 315–318
- galaxy () 279
- game ($\odot$)⁺ 123, 124
- game controller *see* video game
controller
- game-related symbols . 233–241,
360–363
- gamma
lowercase (γ)⁺ . 20, 22–24,
120, 121
- lowercase IPA form (γ) 25
- lowercase with tail (γ)⁺ 23,
24
- uppercase (Γ)⁺ 20, 120, 121
- Garamond (font) 32, 65
- garlic () 285
- garlic press () 288
- gas pump () 323–325
- gauntlet () 200
- gavel () 323–325
- gear
 173–175
-  171–172
-  171–172
-  299
- multiple () ... 328–329
- gem
 323–325

-  299
 290
 Gemini (♊)⁺ . . . 166–168, 299, 335–338
 gender signs
 female (♀)⁺ 23–24, 166–168, 170, 176, 299, 311–312, 335–338
 female, filled (♀) 176
 female, without stroke (♀)⁺ 24, 176
 female/female (♀)⁺ . . 176
 female/male (♂)⁺ . . . 176
 male (♂)⁺ . 166–168, 170, 176, 304, 311–312, 335–338
 male and female (♂)⁺ . 176
 male and female, filled (♂) 176
 male with stroke and male and female (♂)⁺ 176, 300
 male, extra stroke (♂)⁺ 176
 male, filled (♂) 176
 male/male (♂)⁺ 176
 neuter (♂)⁺ 176
 genealogical symbols 253
 genie (🧞)⁺ 299, 303, 304
 gensymb (package) 164
 Gentoo (🐧) 318–319
 geographical symbols . 242–252
 geometric proportion (≐)⁺ . *see* minus, dots
 geometric shapes 48–52, 168, 192–197, 225–230, 240, 333–334, 358–359
 geometrically equal to (≐) . *see* equal, dots
 geometrically equivalent to (≐) . . . *see* equal, bump
 Germanic runes 211
 Germany (🇩🇪) 243
 gesturing NO (🙅)⁺ 294, 303, 304
 gesturing OK (🙏)⁺ 294, 303, 304
 GG
  315–318
  315–318
 ghost . . 52, 150, 277, 315–318, 322–325
  331
  329
  299
  312
 as math-mode accent (̂)⁺ . . . *see* accents, ghost
 math mode
  52
  52
  52
 Gibbons, Jeremy 390
 gift
  321
  323–325
  322
  304
  312
 gimel (ג)⁺ 122, 123
 GINETEX laundry symbols 257
 giraffe
  264–267
  264–267
  264–267
  262
 multiple (🦒) . 264–267
 girl
  299
  307
 Git
  315–318
  315–318
  315–318
  318–319
 GitHub
  315–318
  315–318
  315–318
  314
  314
 GitKraken (🦑) 315–318
 GitLab (🐳) 315–318
 Gitter (💬) 315–318
 glass
  323–325
  323–325
  323–325
  325–327
  285
 glasses
 clinking (🥂)⁺ 284
 Gleich Stark (⚖) 77
 Glide
  315–318
  315–318
 globe . 257, 290–305, 312–314, 322, 328–329
  257
  322
  322
  322
 showing Africa (🌍) 328–329
 showing Americas (🌎)⁺ 299, 312, 328–329
 showing Asia (🌏) . . . 328
 showing Asia-Australia (🌐)⁺ . 300, 312, 328–329
 showing Europe (🌐) . 328–329
 showing Europe-Africa (🌐)⁺ . . . 300, 312, 328–329
 with meridians (🌐)⁺ . 300, 312, 328–329
 glottal stop (ʔ)⁺ . . . 22, 24, 25
 barred (ʔ) 22
 inverted (ʔ)⁺ . . . 22, 24
 inverted, barred (ʔ) . . 22
 inverted, reversed (ʔ) . 24
 inverted, with tail (ʔ) . 23
 raised (ʔ) 23
 reversed (ʔ)⁺ . . . 23, 25
 reversed, barred (ʔ) . . 22
 gloves
  325–327
  300
 gluon 164, 177–178
 g 177
  164
 gnat (🪰) 264–267
 Gnome (🐧) 318–319
 go (package) 240, 387
 Go gopher
  318–319
  318–319
 Go stones 240
 circle (⬤)⁺ 240
 cross (⊗)⁺ 240
 empty (●)⁺ 240
 square (⬜)⁺ 240
 triangle (▲)⁺ 240
 go up (📈) 208–210
 goad
  201
  201
 goal net (🥅) 300

- goat
 343–346
 206
 262
 268
- goban 240
- goblet (👉) 206
- goblin
 300
 307
- god (👤) 208–210
- Gofore (👤) 315–318
- goggles (👓) 300
- gold (👑) 206
- golf ball (🏌️) 240
- golf hole with flag (🏌️) 299
- golfing (🏌️)⁺ 241, 294, 303, 304
- good (👍) 201
- Goodreads
 315–318
 315–318
- Google
 315–318
 318–319
 318–319
- Google Code (👤) 318–319
- Google Developers (👤) 318–319
- Google Drive (👤) 315–318
- Google Pay (👤) 315–318
- Google Play (👤) 315–318
- Google Scholar
 330–331
 330–331
- Google Wallet (👤) 315–318
- Google+
 315–318
 315–318
 315–318
 314
 314
- goose (👤) 264–267
- gopuram (👤) 310
- gorilla (👤) 262
- governor (👤) 208–210
- Gradle (👤) 318–319
- graduation cap *see* mortarboard
- Grails
 318–319
 318–319
- grapes
 285
-  287
- graphene (👤) 177
- graphics (package) 148, 368
- graphicx (package) 30, 366, 368, 372
- grasshopper (👤) .. 264–267
- grater
 200
 288
- Gratipay (👤) 315–318
- Grav (👤) 315–318
- grave (👤)⁺ *see* accents, grave
- gravestone (👤) 300
- graviton (g) 177
- Great Britain (👤) 243
- greater than (>)⁺ 19, 87, 88, 91, 381, 382
- arrow (➤) 89
- but not approximately equal to (≈)⁺ 85–90
- but not equal to
 85, 86, 89, 90
 85–90
 85, 86, 88–90
- but not similar to (≈)⁺ 85–90
- circle (⤵)⁺ 89, 90
- closed
 87, 88, 92, 93
 88–90
- closed, negated
 87, 88, 92, 93
 88
- decorative (➤) 157
- dotted (>)⁺ . 41, 69, 85–89
- dotted, negated (≠)⁺ 87, 88
- horizontally barred (➤) 90
- much
 85–88, 90, 160
 86, 89, 90
- much, negated (≠)⁺ 86–88, 90
- negated (≠)⁺ 85–91
- or approximately equal to (≈)⁺ 85–89
- or approximately equal to, negated (≠)⁺ 86, 88
- or equal to
 85–90
 85–91, 373
 85–88, 90, 91
 90
 154
-  157
- or equal to or less than
 85–89
 85–90
 87–89
 90
- or equal to or less than, negated
 87, 88
 87, 88
 87–89
- or equal to, closed
 87, 88, 92, 93
 88, 90
- or equal to, closed, negated
 87, 88, 92, 93
 88, 89
- or equal to, decorative (≥) 157
- or equal to, dotted
 87–90
 87, 88
 90
 90
- or equal to, dotted, negated
 87, 88
 87–89
- or equal to, horizontally barred (≥) 90
- or equal to, negated
 85–90
 85–91
 85–91
- or less than
 85–90
 90
- or less than but not equal to (≠) 87
- or less than or equal to (≥) 90
- or less than, negated (≠)⁺ 86–88, 90
- or less than, overlapping (≠)⁺ 89, 90
- or similar to
 85–90, 372
 373
- or similar to or equal to (≥) 90
- or similar to or less than (≈) 90
- or similar to, negated (≠)⁺ 86, 88, 90

- question mark (?) . . . 89
 very much
 $\ggg^+$. . . 85, 87–90, 365
 $\ggg$ 90
 very much, negated ($\ggg^+$)⁺
 87, 88
- Greece (€) 243
- Greek
 blackboard bold 163
 bold 120, 380
 letters . . 20, 120–122, 163,
 208, 380
 numerals 208
 polytonic . . . 20, 120, 121
 upright 20, 121
- Green Dot (♻)⁺ . *see* recycling
- greenpoint (package) . . 332, 387
- Gregorian music 215
- Gregorio, Enrico . . 136, 369, 370
- grid
 bottom (⌞) 240
 center (⊕) 240
 center, with filled circle (⊕)
 240
 left (⌞) 240
 right (⌞) 240
 top (⌞) 240
- grid, large (■) 173–175
- grid, small (■) 173–175
- Griffith's separation vector (⌘) .
 163
- Grim Reaper (☠) 288
- grip
 lines
 $\parallel$ 173–175
 $=$ 173–175
 squares
 ■ 173–175
 ■ 173–175
- Gripfire (♈) 315–318
- group (☹)⁺ 171–172
- group meeting (👥) 307
- group objects
 ☹ 173–175
 ☹ 173–175
- Grüne Punkt (♻)⁺ *see* recycling
- Grunst (☹)⁺ 315–319
- guarani (G) 31
- guard (🛡)⁺ . . 300, 303, 304, 307
- guide dog (🦮) 263
- Guilded (G) 315–318
- guillemet
 decorative left single («) 199
 decorative right single (») .
 199
 left («) 21, 383
 left single (‹) 21, 384
 right (») 21, 383
 right single (›) . . . 21, 384
- guise (👤) 208–210
- guitar
 🎸 323–325
 🎸 300
 🎸 313
- Gulp
 👤 315–318
 👤 318–319
 👤 318–319
- gun (🔫) *see* pistol
- ## H
- H (H) 328–329
- Hälsinge runes . . . *see* staveless
 runes
- háček (̣)⁺ . *see* accents, caron
- Hacker News (📰)⁺ . . 315–318
- HackerRank (👤) 315–318
- Hades (👤) 168
- Hadoop (🐘) 318–319
- hail (⚡) 258
- hair
 👤 296
 👤 296
 👤 302
- haircut (👤) 307
- HAL
 👤 330–331
 👤 330–331
- half note (♪)⁺ . . . 212, 215–218
 dotted (♪)⁺ 216–218
 double dotted (♪)⁺ . . 217,
 218
 rest (—)⁺ 215, 219
 rest, dotted (—)⁺ 219
- halfnoteize (👤) 314
- hallow (👤) 208–210
- Halloween symbols 52, 150
- halloweenmath (package) . . 52,
 117, 138, 148–150, 387, 388
- Hamburg Notation System 272–
 275
- hamburger
 🍔 323–325
 🍔 286–287
 🍔 285
- 👤 287
- Hamiltonian (H) *see* alphabets,
 math
- hammer
 🔨 323–325
 🔨 300
 🔨 313
 and pick (🔨) 300
 and sickle (🔨) 333
 and wrench
 🔨 254
 300
- hamnosys (package) . . 272–275,
 387, 388
- hamsa (👤) 310
- hamster (🐹)⁺ 263, 268
- hand 184–186, 274, 332, 343–346
 👤 325–327
 👤 201
 👤 201
 👤 296
 👤 296
 👤 185
 call me (👤) 294
 crossed fingers (👤) . . . 296
 fingers splayed
 👤 185
 👤 185
 👤 300
 fist
 👤 185
 👤 185
 👤 186
 👤 293
 👤 296
 👤 297
 👤 303
 holding dollar sign (👤) 186
 holding heart (👤) . . . 186
 holding medical sign (👤) .
 186
 holding position (👤) . . 186
 holding water (👤) . . . 186
 horns (👤) 298
 lizard sign (👤)⁺ 186
 love-you sign (👤) 304
 middle finger extended
 👤 185
 👤 186
 👤 292
 OK sign
 👤 185
 👤 185

-  185
 293
 paper sign (⁺) 186
 peace sign *see* hand,
 victory sign
 pinching
 295
 295
 pointing down
 185
 185
 185
 185
 185
 185
 186
 186
 292
 pointing left
 184
 184
 184
 185
 185
 185
 185
 185
 185
 185
 186
 186
 293
 pointing right
 184
 184
 184
 184
 184
 184
 185
 185
 185
 185
 185
 185
 186
 186
 257
 293
 pointing up
 185
 185
 185
 185
-  185
 186
 186
 186
 186
 293
 301
 pointing upper left
 184
 184
 pointing upper right
 184
 184
 rock sign (⁺) 186
 scissors sign (⁺) 186
 sparkles () 186
 Spock sign (⁺) 185, 186,
 301
 thumbs down
 184
 184
 185
 185
 185
 186
 186
 300
 thumbs up
 184
 184
 185
 185
 185
 186
 186
 300, 305
 victory sign
 185
 185
 186
 186
 301
 Vulcan salute .. *see* hand,
 Spock sign
 waving
 185
 301
 with eye () .. *see* hamsa
 writing
 184
 185
 185
 257
-  304
 handbag
 300
 281
 handball (⁺) ... 291, 295, 303
 hands () 186
 clapping
 185
 295
 helping () 186
 open
 185
 293
 palms up () 294
 praying
 299
 310
 raising () 296
 washing () 186
 handshake
 186
 186
 300
 slashed (⁺) 186
 hanger () 321
 happy person raising one hand
 () 289
 hard disk () 314
 hard sign () 22
 harmony (package) ... 215, 217,
 387, 388
 harp () 343–346
 harpoon (package) 148, 387, 388
 harpoon (⁺) 94–
 96, 99, 100, 104, 105, 107,
 110–112, 114, 148, 358–359
 barred head (⁺) ... 110
 barred tail (⁺) 110
 barred, parallel (⁺) . 96,
 110
 double ended, opposite sides
 (⁺) 96, 99, 104, 110, 111
 double ended, opposite sides,
 extensible (⁺) ... 148
 double ended, opposite sides,
 long (⁺) 111
 double ended, opposite sides,
 negated (⁺) . 100, 105
 double ended, same side
 (⁺) 110
 double, opposite sides (⁺)
 94–96, 99, 104, 107, 110

- double, opposite sides, extensible
 145, 146
 146
 double, opposite sides, negated ($\neq$)⁺ .. 100, 105
 double, same side ($\Rightarrow$)⁺ 96, 110
 extensible ($\Rightarrow$)⁺ .. 145, 148
 long ($\longrightarrow$)⁺ 111, 112
 negated ($\nrightarrow$)⁺ 100, 105
- hash
 #⁺ 18, 37, 76, 158, 173–175, 381
 #⁺ 76, 158
 # 302
- Haskell () 318–319
- hat
 325–327
 325–327
 304
 281
 accent ()⁺ .. *see* accents, circumflex
 as math-mode accent
 138
 138
 138
 138
 138
 138
 138
 138
 138
 138
 138
 138
 cowboy
 323–325
 323
 hard () 323–325
 top
 300
 313
 witch () 331
 wizard () 323–325
- hatching chick
 263
 268
- Hausa letters .. *see* boko letters
- head
 257
 201
 201
- heading (**H**) 173–175
- headphones
 323–325
 322
 300
 313
- headset () 323–325
- headstone () 300
- health worker ()⁺ .. 300, 303, 304
- heart ()⁺ .. 168, 198, 233, 234, 257, 269, 290–305, 311–314, 319, 328–329
 anatomical () 292
 beating
 290
 293
 black () 293
 blue () 294
 broken
 290
 294
 328–329
 brown () 294
 exclamation point
 199
 300
 filled ()⁺ 199, 290, 328–329
 floral () 199
 framed
 290
 300
 green () 300
 growing
 290
 300
 half filled () 328
 halftoned
 290
 290
 290
 290
 multiple ()⁺ .. 290, 301
 multiple, revolving
 290
 297
- orange () 294
 purple () 296
 red ()⁺ .. 296, 311–312
 rotated () 199
 rotated floral () 199
 sparkling
 290
 299
 suit *see* playing card suits, heart
 white () 302
 with arrow
 290
 300
 with ribbon
 290
 300
 with tip on the left () 290
 yellow () 304
- heartbeat () 319
- heavy left-pointing angle bracket ornament () 199
- heavy right-pointing angle bracket ornament () 199
- Hebrew 122, 123, 163
- hedgehog () 263
- helicopter 254, 320
 320
 323–325
 325–327
 321
 254
- helmet
 200
 201
 201
- help sign () 271
- Helvetica (font) 32
- hemiobelion (c) 32
- heraldry () 275
- herb
 300
 281
- hermaphrodite ()⁺ *see* gender signs, male and female
- Hermitian conjugate matrix ($\dagger$)⁺ 159
- Heroku (**H**) 318–319
- herring () 264–267
- heta
 lowercase (*h*) 208
 uppercase (*H*) 208

heterosexual (♂)⁺ . *see* gender signs, female/male

hexagon (◻)⁺ 192–194, 196–197

crossed (⊗) 197

dotted (⊙) 197

filled (●)⁺ . . 193, 194, 197

half filled

◐ 197

◑ 197

◒ 197

◓ 197

horizontally divided (⊖) 197

quartered (⊕) 197

vertically divided (⊗) . 197

with chemical bonds (⊞) 194

hhcount (package) 236, 268, 387, 388

hibiscus

🌺 300

🌻 281

Hidalgo (🇪🇸) 168

hidden universal bunch quantifier (⋈) 125

hidden universal individual quantifier (⋉) 125

hide

👤 200

👤 173–175

👤 173–175

hieroglf (package) 202, 387, 388

hieroglyphics 202

high brightness (☀) 256

high frequency (≈) 164

high voltage (⚡) 301

hiking (🧑🏞️) 328–329

Hilbert space ($\mathcal{H}$) *see* alphabets, math

hindu temple (🕌) 301

hippopotamus

🦘 263

🦘 264–267

🦘 263

HIPS (hips) 315–318

Hire a Helper (👷) . . . 315–318

Hirst, Daniel 212

history (📖) 173–175

Hive (🐝) 315–318

Hochschule Bochum (BO) . . 257

landscape (🌄) BO) . . . 257

portrait (👤) 257

hockey puck (🏒) 240

hole

h⁺ 177

◐ 301

◑ 314

holly berry (🌿) 328–329

Holmes, Sherlock 355

Holt, Alexander 1, 386

holtpolt (package) . . . 151, 387

Homer (👤) 306

homosexual (♂)⁺ . . *see* gender signs, male/male

honey pot

🍯 285

🍯 287

honeybee

🐝 263

🐝 268

hook (🪝) 301

hooked letters

a (a) 24

b

ḅ 22

ḅ 24

ḅ 25

c

ḥ 22

ḥ 25

d

ḏ 22

ḏ 24

ḏ 24

ḏ 24

ḏ 25

ḏ 25

ḏ 25

e (e) 24

g

ḡ 22

ḡ 24

g, small caps (ḡ) 22

h

ḥ 22

ḥ 24

ḥ 25

i (i) 23

i, long (ı) 22

j, dotless, barred

ḵ 22

ḵ 23

k (k)⁺ 22, 25

n (n) 24

o, open (ø) 24

p

ḡ 22

p 23

ḡ 25

q (q) 22

t

ṭ 22

ṭ 22

ṭ 24

ṭ 25

y, long (ȳ) 22

Hooli (🦉) 315–318

horizontal line

dashed (---) 182

high (—)⁺ 194, 195

low (—) 198

middle (—)⁺ 70, 159

middle, double (=) . . . 70

middle, double, slashed (≠)⁺ 23, 72

middle, slashed (+) . . . 72

middle, with vertical line (+) 198

horn (🐮) 200

Horn, Berthold 163

Hornbill (🦜) 315–318

horned letters

O (O) 21

o (o) 21

U (U) 21

u (u) 21

horoscope symbols . . . 166–168, 335–338

horse

🐎 263

🐎 263

🐎 264–267

🐎 264–267

🐎 343–346

🐎 206

🐎 263

🐎 268

🐎 268

carousel

🎠 294

🎠 313

racing

🏇 241

🏇 262

🏇 301

- hospital
 319
 319
 301
 314
hospital sign (Ⓜ) 271
hot air balloon
 315–318
 325–327
hot beverage (☕) 284
hot dog
 323–325
 284
 287
hot pepper
 323–325
 284
 287
hot springs (♨️) 301
hot tub (♨️) 323–325
hotel
 323–325
 301
 314
love
 304
 314
Hotjar (🔥) 315–318
hourglass
 41
 47
 47
 261
 261
 261
 261
 261
 261
 261
house
 193
 323–325
 325–327
 325–327
 325–327
 325–327
 201
 201
 322
 301
 314
damaged (🏠) .. 328–329
derelict (🏚️)⁺ .. 297, 313
multiple (🏘️)⁺ .. 301, 313
with garden (🌳)⁺ 301, 314
houses of worship 310, 333–334
Houzz (🏠) 315–318
hryvnia (₴) 32
HTML
 318–319
 171–172
HTML5
 318–319
 318–319
HubSpot (🌐) 315–318
hummingbird (🐦) 264–267
hundred points
 301
 313
Hungary (🇭🇺) 244
hut
 259
 259
 259
 301
hwemoji (package) 234, 252, 258, 261, 263, 278, 283, 285, 305, 321
Hygiea (♄) 168
hyphen
discretionary 382
double (=) 34
Hypothesis
 330–331
 330–331
I
i
dotless (ı)⁺ 25, 26
dotless, math mode (ı)⁺ ..
..... 123, 124, 136
incorrectly accented (ï) 26
Lidingö/Viby (ı)⁺ .. 23
I cursor (⌘) 173–175
IBM PC 276, 382
IBM PC symbols 170
ice (🧊) 284
ice cream
 323–325
 286–287
 286–287
 286–287
 286–287
 286–287
 286–287
 286–287
 286–287
 286–287
 286–287
 285
 284
 287
 287
ice hockey stick and puck
 301
 241
ice skate (🛼) 301
Iceland (🇮🇸) 244
Icelandic staves 276
icicles (🧊) 259
icons (📱) 173–175
icosahedron (🔺) ... 311–312
ID (ID) 301
ID badge
 328–329
 328–329
ID card
 328–329
 328–329
Ideal (🏠) 315–318
IDEASRePEc
 330–331
 330–331
IEEE
 330–331
 330–331
iff (⇔)⁺ .. see arrow, double ended, double bodied
ifsym (package) . 164, 194, 195, 236, 258–260, 268, 270, 365, 367, 387, 388
igloo (🏠) 323–325
igo (package) 240, 387
image
 173–175
 173–175
 171–172
 171–172
images
 173–175

-  173–175
 imaginary
 $\Im$ 119, 123
 j 124
 $\mathfrak{I}$ 124
 IMDB () 315–318
 immigration 254
 imp () 307
 Impactstory
  330–331
  330–331
 implication $(\rightarrow)^+$... 113, 114
 intuitionistic $(\Rightarrow)^+$.. 114
 material $(\Rightarrow)^+$ 113
 not $(\nrightarrow)^+$ 114
 not intuitionistic $(\nrightarrow)^+$ 115
 not material $(\nRightarrow)^+$... 114
 not weak $(\nrightarrow)^+$ 115
 not weak material $(\nRightarrow)^+$ 115
 weak $(\longrightarrow)^+$ 114
 weak material $(\Longrightarrow)^+$ 114
 impulse train *see* sha
 imum coeli ($\mathbb{L}$) 168
 in $(\in)^+$... *see* set membership
 inbox
  173–175
  301
  312
 inches
 " *see* prime, double
 " $^+$.. *see* quotation marks,
 straight double
 incoherence $(\asymp)^+$ *see* smiles and
 frowns, both
 increase font size ($\mathbf{AA}$) 313
 indent () 173–175
 independence
 $\perp^+$.. *see* turnstile, double
 dash, up
 $\perp^+$ *see* turnstile, up
 industry
  257
  328–329
 inexact differential ($\mathfrak{d}$) $^+$... *see*
 barred letters, d
 infant *see* baby
 infinity 155, 157–160, 371
 ∞^+ ... 155, 157–159, 161
  157
  156
  156
  301
 incomplete $(\omega)^+$ 155, 159
 negated (ϕ) 155
 tie over (∞) 155
 information
  257
  271
  311–312
  281
  173–175
  173–175
  171–172
  171–172
  171–172
  171–172
  301
 information desk person () 307
 informer symbols 239
 Innosoft () 315–318
 INPN
  330–331
  330–331
 input type
 Latin lowercase
  301
  301
  313
 Latin uppercase
  301
  313
  313
 numbers
  301
  313
 symbols
  301
  313
 inputenc (package) 385
 insect
  263
  262
  262
  262
  262
  268
 Inspire
  330–331
  330–331
 Instagram
  315–318
  315–318
  314
  314
 InstaLOD () 315–318
 integers ($\mathbb{Z}$) *see* alphabets, math
 integral $(\int)^+$.. 53–66, 158, 159,
 371
 around a point operator
 $(\oint)^+$ 53, 61, 63, 64
 bar $(f)^+$ 53, 60, 61, 63, 64,
 66, 371
 big $(\int)^+$ 58
 circulation function $(f)^+$ 53,
 61, 63, 64
 clockwise $(f)^+$.. 53, 60–62,
 65
 clockwise contour $(\oint)^+$ 53,
 54, 56–62, 64, 65
 closed surface $(\oint)^+$.. 53,
 55–57, 59, 61, 62, 64, 65
 closed volume $(\oint)^+$ 53, 56,
 57, 59, 61, 62, 64, 65
 contour $(\oint)^+$ 53–65
 counterclockwise $(f)^+$.. 53,
 60, 61, 63, 64
 counterclockwise contour
 $(\oint)^+$... 53, 56–62, 64, 65
 dotted $(\int \cdots \int)^+$ 54, 56–58,
 60, 64, 65
 double $(\iint)^+$ 53–58, 60–62,
 65
 double bar $(\mathfrak{f})^+$ 53, 60, 61,
 63, 371
 hooked arrow $(\mathfrak{f})^+$ 53, 61,
 63, 65
 intersection $(\oint)^+$ 53, 61, 63,
 65
 Landau down $(\mathfrak{f})^+$ 57, 58,
 60, 65
 Landau up $(\mathfrak{f})^+$ 57–60, 65
 line not including the pole
 $(\oint)^+$ 53, 62–64
 line with rectangular path
 around pole $(\mathfrak{f})^+$ 53, 61,
 63, 64
 line with semicircular path
 around pole $(\mathfrak{f})^+$ 53, 61,
 63, 64
 multiple $(\iiint)^+$ 66
 multiple, contour $(\iiint)^+$ 66
 multiple, square $(\iiint)^+$ 66
 overbar $(\overline{\int})^+$.. 53, 54, 61–65
 product $(\prod)^+$ 66
 quadruple $(\iiint)^+$.. 53, 54,
 56–58, 60, 61, 63, 64
 quaternion .. *see* integrals,
 square
 slash $(f)^+$ 53, 56, 57,
 59–61, 63, 64

- square ($\#$)⁺ 53, 54, 56, 57, 61, 63, 65
 square, double ($\#\#$)⁺ . . . 56, 57, 65
 square, triple ($\#\#\#$) . . . 56
 sum ($\$$)⁺ 53, 54, 59–62, 65
 times ($\times$)⁺ . 53, 61, 63, 65
 triple ($\#\#\#$)⁺ 53–58, 60–62, 64
 underbar ($_$)⁺ . 53, 61, 64
 union ($\cup$)⁺ . 53, 61, 63, 65
 interaction ($\mathfrak{S}$) 177
 intercalate (τ)⁺ . 38, 40–42, 124
 Intercom ($\mathfrak{U}$) 315–318
 interior ($\mathfrak{A}$)⁺ . *see* accents, ring
 interior product ($\cdot$)⁺ *see* logical negation, inverted
 interleave ($\|\|$)⁺ 38, 42, 54, 159
 internal ($\square$) 177
 Internet Explorer ($\mathfrak{E}$) 315–318
 interrobang ($\P$) 34
 inverted ($\downarrow$) 34
 intersection ($\cap$)⁺ 37, 39–42, 54, 58, 59, 61, 161
 bar ($\bar{\cap}$) 42
 bar, union ($\cap\cup$) 42
 closed ($\sqcap$) 42
 dotted ($\cap\cdots$)⁺ 39, 40, 42, 58, 59
 double ($\cap\cap$)⁺ 38–43
 over union ($\cap\cup\cup$) 42
 plus ($\cap+$)⁺ 38–40, 42, 54, 58, 59
 square ($\sqcap$)⁺ 37, 39, 40, 42, 43, 54, 55, 58, 60, 61, 161
 square, double ($\sqcap\sqcap$)⁺ 39–41, 43
 square, half
 $\sqcap$ 39
 $\sqcap$ 40
 square, plus ($\cap+$)⁺ . 39, 40, 56, 58, 60
 two adjacent ($\cap\cap$) 42
 vertical line ($\cap$) 77
 wedge ($\wedge$) 42
 inverse limit ($\varprojlim$) 119
 inverted letters . . . 22–25, 125
 a (α) 23
 a, small caps ($\mathfrak{v}$) 23
 r, small caps ($\mathfrak{r}$)⁺ . . 22, 24
 v (Λ) 25
 inverted symbols 368
 inverters 170, 357–358
 InVision ($\mathfrak{in}$) 315–318
 ion ($\textcircled{\circ}$) 178
 iota
 lowercase (ι)⁺ . 20, 22, 24, 25, 120, 121
 lowercase, upside-down ($\imath$)⁺ . . . 25, 122, 159, 368
 uppercase (I)⁺ . . . 20, 120
 IoxHost ($\mathfrak{H}$) 315–318
 iPhone (iPhone) 329
 Ireland ($\mathfrak{I}$) 244
 ironing
 high temperature ($\mathfrak{I}$) 257
 low temperature ($\mathfrak{I}$) . 257
 medium temperature ($\mathfrak{I}$) 257
 irony mark ($\mathfrak{I}$) 368
 irrational numbers ($\mathbb{I}$) . . . *see* alphabets, math
 irritant ($\mathfrak{X}$) 270
 ISIDORE
 $\mathfrak{X}$ 330–331
 $\mathfrak{X}$ 330–331
 Islamic star and crescent 290–305
 island
 $\mathfrak{I}$ 297
 $\mathfrak{I}$ 313
 ISO character entities . . . 384
 isoent (package) 384
 Isthmian script 208–210
 italic . 19, 33, 376, 378, 380, 382
 italics ($\textit{I}$) 173–175
 Italy ($\mathfrak{I}$) 244
 Itch.io ($\mathfrak{I}$) 315–318
 iTunes
 $\mathfrak{I}$ 315–318
 $\mathfrak{I}$ 315–318

J

j
 dotless (j) 26
 dotless, math mode (j)⁺ 123, 124, 136
 $\mathfrak{J}$
 jack of hearts ($\mathfrak{J}$) . . . 311–312
 jack-o'-lantern 52
 $\mathfrak{J}$ ⁺ 52
 $\mathfrak{J}$ 52
 $\mathfrak{J}$ 325–327
 $\mathfrak{J}$ 301
 $\mathfrak{J}$ 312
 jaguar ($\mathfrak{J}$) 208–210
 Japan ($\mathfrak{J}$) 314
 Japanese buttons
 acceptable ($\mathfrak{J}$) 301
 application ($\mathfrak{J}$) 301
 bargain ($\mathfrak{J}$) 301
 congratulations ($\mathfrak{J}$) . . . 301
 discount ($\mathfrak{J}$) 301
 free of charge ($\mathfrak{J}$) 301
 here ($\mathfrak{J}$) 301
 monthly amount ($\mathfrak{J}$) . . . 302
 no vacancy ($\mathfrak{J}$) 302
 not free of charge ($\mathfrak{J}$) . . . 302
 open for business ($\mathfrak{J}$) . . . 302
 passing grade ($\mathfrak{J}$) 302
 prohibited ($\mathfrak{J}$) 302
 reserved ($\mathfrak{J}$) 302
 secret ($\mathfrak{J}$) 302
 service charge ($\mathfrak{J}$) 302
 vacancy ($\mathfrak{J}$) 302
 Java ($\mathfrak{J}$)⁺ 315–319
 Duke ($\mathfrak{J}$) 318–319
 JavaScript ($\mathfrak{JS}$)⁺ 315–319
 JCB ($\mathfrak{JCB}$) 315–318
 jeans
 $\mathfrak{J}$ 302
 $\mathfrak{J}$ 281
 Jedi Order ($\mathfrak{J}$)⁺ 315–318
 Jenkins ($\mathfrak{J}$) 315–318
 Jetty ($\mathfrak{J}$) 318–319
 Jewish star ($\mathfrak{J}$)⁺ . . *see* star, of David
 Jira ($\mathfrak{J}$) 315–318
 Joget ($\mathfrak{J}$) 315–318
 join (database)
 full outer ($\mathfrak{J}$) 160
 left ($\mathfrak{J}$)⁺ 41, 69
 left outer ($\mathfrak{J}$) 159
 natural ($\mathfrak{J}$)⁺ 40, 41, 67, 68, 74, 159
 open ($\mathfrak{J}$) 69
 right ($\mathfrak{J}$)⁺ 41, 69
 right outer ($\mathfrak{J}$) 159
 joint denial ($\downarrow$) . . . *see* arrow
 joker ($\mathfrak{J}$) 302
 Joomla! ($\mathfrak{J}$) 315–318
 Journal of the Whills ($\mathfrak{J}$) 328–329
 joystick
 $\mathfrak{J}$ 302
 $\mathfrak{J}$ 314
 jQuery ($\mathfrak{J}$) 318–319
 JSFiddle ($\mathfrak{J}$) 315–318
 JSTOR
 $\mathfrak{J}$ 330–331
 $\mathfrak{J}$ 330–331

judge (⁺) 290, 302, 303
 juggling (⁺) . . . 291, 295, 303

juicy () 325–327
 junicode (package) . . . 385, 387
 Junicode.ttf (file) 385
 Juno () 168, 335–338
 Jupiter (⁺) . . . 166–168, 335–338
 justice () 275

K

K () 270

kaaba
 310
 302
 310

kabob () 286–287
 Kaggle () 315–318
 kangaroo () 263
 kaon 177–178
 minus (K^-) 178
 null (K^0) 178
 plus (K^+) 178

kappa
 lowercase (κ)⁺ . . . 20, 120, 121
 lowercase variant (κ)⁺ . . . 120, 122
 uppercase (K)⁺ 20, 120

KDE () 318–319

kernel contraction
 ~ see similar, dots, vertical
 ~ see similar, dots, vertical

ket (⁺) 127, 171

ketchup () 286–287

kettle



key 312–314



Keybase () 315–318

keyboard

 computer (⁺) . . . 169, 302, 312, 322–325

 computer, with mouse () 312

 musical (⁺) 292, 313

keyboard symbols 169

 alternate () 169

 alternate graphic () 169

 backspace () 169

 break () 169

 command (⁺) 253

 control () 169

 customizable () . . . 169

 delete (⁺) 169

 down arrow () 169

 end () 169

 enter () 169

 escape () 169

 home () 169

 insert () 169

 left arrow () 169

 numeric lock () 169

 page down () 169

 page up () 169

 print screen () 169

 return () 169

 right arrow () 169

 scroll () 169

 shift () 169

 spacebar () 169

 tab () 169

 up arrow () 169

KeyCDN () 315–318

keys, computer . . . see keyboard

 symbols

keystroke (package) . . . 169, 387, 388

khanda () 310

kick scooter () 321

Kickstarter

 K 315–318

 K 315–318

kidney (⁺) 255

kimono

 303

 281

king 238, 239, 361–363

 208–210

 240

 303

 290

 290

 290

 290

 290

 290

 290

 240

kiss

 303

 290

 290

kite

 325–327

 325–327

 303

kitten

 264–267

 264–267

kittens

 264–267

 264–267

 264–267

 264–267

 264–267

 264–267

kiwi bird () 263

kiwi fruit () 284

kneeling (⁺) 291, 295, 303

 325–327

knees () 325–327

knife

 287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

 286–287

Kronecker product ($\otimes$) . . . *see*
circled symbols, multiplication

Kronecker sum ($\oplus$) . *see* circled
symbols, plus

kroužek (⁺) . *see* accents, ring

L

L () 270

l (ℓ)⁺ 123, 124
with belt (t)⁺ 22, 24
with tilde (t)⁺ 22, 25

lab coat () 303

label

 303

 312

lacrosse () 303

ladder () 303

ladle () 286–287

ladybug

 264–267

 263

 268

Lagrangian ($\mathcal{L}$) . *see* alphabets,
math

lamb () 264–267

lambda

lowercase (λ)⁺ . 20, 22, 24,
120, 121

lowercase with slash (λ)⁺ .
. 22, 24, 25, 158, 159

uppercase (Λ)⁺ . 20, 120,
121

Lamport, Leslie 386, 390

land masses . 242–246, 312–314

language () 173–175

lantern

 325–327

 296

 314

Laplace transform ($\mathcal{L}$) *see*
alphabets, math

Laplacian

Δ . . *see* delta, uppercase

∇^2 *see* nabla

laptop and house () 328–329

Laravel

 315–318

 318–319

large

 171–172

 171–172

larger than ($\succ$) *see* greater than,
horizontally barred

laser beam () 176

Last.fm

 315–318

 315–318

 314

 314

L^AT_EX 1, 14–17, 21, 26, 67, 127,
151, 157, 179, 246, 269, 332,
358, 363, 364, 367–374, 376,
379, 380, 382, 384–390

L^AT_EX 2_ε 1,
16, 18, 19, 33, 37, 67, 82,
94, 137, 151, 157, 163, 212,
233, 332, 363–368, 371, 373,
378, 379, 381–384, 390

latexsym (package) . . 37, 67, 82,
94, 157, 364, 387, 388

Latin 1 17, 382–384, 386

Lattes

 330–331

 330–331

lattice

bottom ($\perp$)⁺ *see* turnstile,

up

top ($\top$)⁺ . . . *see* turnstile,

down

Latvia () 242

laundry symbols 257

layer group () 173–175

LCD numerals 164

lcircuit (package) . 357, 358, 387

leads to ($\rightsquigarrow$)⁺ *see* arrow, wavy

leaf 191, 198, 338–339

 323–325

 325–327

 325–327

 325–327

 253

 322

falling

 281

 298

fleuron ()⁺ 191

fluttering

 281

 303

maple ()⁺ 281, 291,
315–318

leafy green () 284

Leanpub () 315–318

ledger

 303

 314

Lefschetz motive ($\mathcal{L}$) *see*
alphabets, math

leg () 303
mechanical () 291

legal symbols . . 19, 33, 34, 383

Attribution () 34

BY ()⁺ 33, 34

CC ()⁺ 33, 34

CC BY-NC-ND ()

. 34

CC0 ()⁺ 33, 34

copyleft () 33

copyright ()⁺ 19, 33, 34,

37, 296, 383

NoDerivatives ()⁺ 33, 34

NonCommercial ()⁺ 33,

34

NonCommercial, euro ()⁺

. 33, 34

NonCommercial, yen ()⁺

. 33, 34

phonographic copyright

() 33

public domain

 33

⁺ 33, 34

registered trademark ()⁺

. 19, 33, 297, 383

Remix ()⁺ 33, 34

Sampling ()⁺ 33, 34

Sampling Plus () 33

service mark (SM) 33

Share ()⁺ 33, 34

ShareAlike ()⁺ 33, 34

trademark (TM)⁺ . . 19, 33,

300, 383, 384

lemon

 323–325

 284

 287

length (i) 31

length mark (:) 22

Leo (Ω)⁺ 166–168, 303, 335–338

leopard

 263

 268

lesbian ()⁺ . *see* gender signs,

female/female

- less than ($<$)⁺ . . . 19, 87, 88, 91, 381, 382
 arrow ($\lesssim$) 90
 but not approximately equal to ($\not\approx$)⁺ 85–90
 but not equal to
 $\nless$ ⁺ 85, 86, 88–90
 $\nlessdot$ ⁺ 85, 86, 89, 90
 $\nlesssim$ ⁺ 85–90
 but not similar to ($\nlesssim$)⁺ 85–89
 circle ($\lesscirc$)⁺ 89, 90
 closed
 $\lessdot$ ⁺ 87, 88, 92, 93
 $\lessgtr$ ⁺ 88, 89
 closed, negated
 $\nlessdot$ ⁺ 87, 88, 92, 93
 $\nlessgtr$ ⁺ 88, 89
 decorative ($\lessgtr$) 157
 dotted ($\lessdot$)⁺ 41, 69, 85–88, 90
 dotted, negated ($\nlessdot$)⁺ 87, 88
 horizontally barred ($\lessbar$) 90
 much
 $\lessgtr$ ⁺ 85–88, 90
 $\lessgtr$ ⁺ 86, 89
 much, negated ($\nlessgtr$)⁺ 86–88, 90
 much, underlined ($\lessgtr$) . 90
 negated ($\nless$)⁺ 85–91
 or approximately equal to ($\lessapprox$)⁺ 85–90
 or approximately equal to, negated ($\nlessapprox$)⁺ . . . 86, 88
 or equal to
 $\lessdot$ ⁺ 85–90
 $\lessgtr$ ⁺ 85–91
 $\lessgtr$ ⁺ 85–91
 $\lessgtr$ ⁺ 90
 $\lessgtr$ ⁺ 154
 or equal to or greater than
 $\lessdot$ ⁺ 85–90
 $\lessgtr$ ⁺ 85–90
 $\lessgtr$ ⁺ 87–89
 $\lessgtr$ ⁺ 90
 $\lessgtr$ ⁺ 90
 or equal to or greater than, negated
 $\nlessdot$ ⁺ 87–89
 $\nlessgtr$ ⁺ 87–89
 $\nlessgtr$ ⁺ 87, 88
 or equal to, closed
 $\lessdot$ ⁺ 87, 88, 92, 93
 $\lessgtr$ ⁺ 88–90
 or equal to, closed, negated
 $\nlessdot$ ⁺ 87, 88, 92, 93
 $\nlessgtr$ ⁺ 88, 89
 or equal to, decorative ($\lessgtr$) 157
 or equal to, dotted
 $\lessdot$ ⁺ 87, 88, 90
 $\lessgtr$ ⁺ 87, 88
 $\lessgtr$ ⁺ 90
 $\lessgtr$ ⁺ 90
 or equal to, dotted, negated
 $\nlessdot$ ⁺ 87, 88
 $\nlessgtr$ ⁺ 87–89
 or equal to, horizontally barred ($\lessbar$) 90
 or equal to, negated
 $\nlessdot$ ⁺ 85–90
 $\nlessgtr$ ⁺ 85–91
 $\nlessgtr$ ⁺ 85–91
 or greater than ($\lessgtr$)⁺ 85–90
 or greater than but not equal to ($\lessgtr$) 87
 or greater than, negated ($\nlessgtr$)⁺ 86–88, 90
 or similar to
 $\lessgtr$ ⁺ 85–90, 372
 $\lessgtr$ ⁺ 373
 or similar to or equal to ($\lessgtr$) 89
 or similar to or greater than ($\lessgtr$) 89
 or similar to, negated ($\nlessgtr$)⁺ 86, 88, 90
 question mark ($\lessq$) . . . 90
 very much
 $\lessgtr$ ⁺ . . . 85, 87–90, 365
 $\lessgtr$ ⁺ 90
 very much, negated ($\nlessgtr$)⁺ 87, 88
 Less.js ($\less$) 315–318
 letter-like symbols . . . 123–125, 330–331
 letters *see* alphabets, 20
 barred 369
 non-ASCII 20
 rotated 22–25, 125
 variant Greek 122
 variant Latin 122
 level down ($\lessdot$) 173–175
 level slider
 $\lessdot$ ⁺ 303
 $\lessdot$ ⁺ 313
 level up ($\lessdot$) 173–175
 Libra ($\lessdot$)⁺ 166–168, 303, 335–338
 licenses
 Creative Commons . . . 34
 lid ($\lessdot$) 200
 Lie derivative ($\mathcal{L}$) *see* alphabets, math
 Liechtenstein ($\lessdot$) 242
 life preserver ($\lessdot$) 323–325
 life-insurance symbols 145, 374
 lifting weights ($\lessdot$)⁺ . . . 291, 295, 303
 ligatures
 A–E ($\lessdot$) 20
 a–e ($\lessdot$) 20
 a–o ($\lessdot$) 23
 a–o, small caps ($\lessdot$) . . . 23
 c–e, with c rotated ($\lessdot$) 23
 d–b ($\lessdot$) 23
 d–yogh ($\lessdot$) 23
 d–z ($\lessdot$)⁺ 23, 25
 d–z, with tail ($\lessdot$)⁺ . 22, 23
 f–j ($\lessdot$)⁺ 25
 h–engma ($\lessdot$) 24
 h–engma, hooked ($\lessdot$)⁺ 22, 24
 h–m ($\lessdot$) 24
 h–v ($\lessdot$)⁺ 22, 24
 I–J ($\lessdot$) 20
 i–j ($\lessdot$) 20
 l–r ($\lessdot$) 23
 l–yogh ($\lessdot$)⁺ 22, 23
 l–z ($\lessdot$) 24
 O–E ($\lessdot$)⁺ 20, 384
 o–e ($\lessdot$)⁺ 20, 384
 o–e, small caps ($\lessdot$) . . . 22
 o–o ($\lessdot$) 24
 q–p ($\lessdot$) 24
 t–c, both tailed ($\lessdot$) . . . 23
 t–c, with tail ($\lessdot$) 22
 t–esh ($\lessdot$)⁺ 22, 25
 t–s ($\lessdot$) 22
 light bulb
 $\lessdot$ ⁺ 311–312
 $\lessdot$ ⁺ 323–325
 $\lessdot$ ⁺ 325–327
 $\lessdot$ ⁺ 322
 $\lessdot$ ⁺ 303
 $\lessdot$ ⁺ 312
 $\lessdot$ ⁺ 378
 light left tortoise shell bracket ornament ($\lessdot$) 199

- light rail
 321
 254
light right tortoise shell bracket
ornament (l) 199
light skin tone (👤) 303
lightbulb.mf (file) .. 376, 377
lightbulb.sty (file) . 378, 379
lightning (⚡)⁺ 95–98,
100–102, 110–111, 118, 171,
253, 258, 325–329, 365
lightning mood (⚡) 314
lightning mood bubble (⚡) 314
Lilith (👤) 168
lily (🌸) 200
lilyglyphs (package) 212,
217–225, 230–232, 387
limits 118, 119
LINE (📺) 315–318
line chart
 173–175
 171–172
 171–172
line feed (↵)⁺ 106, 109
line graph (📈) 329
line load (📶) 171
Linear A symbols 202
Linear B symbols 205, 206
linear implication (→)⁺ .. *see*
multimap, *see* multimap
linear logic symbols 37
linearA (package) . 202, 387, 388
linearb (package) 205, 206, 387,
388
linguistic symbols .. 22–25, 30
link
 173–175
 171–172
 171–172
 303
 313
LinkedIn
in 315–318
in 315–318
in 314
in 314
Linode (🐙) 315–318
Linux (🐧) 315–318
Linux Mint (🐧) 318–319
lion
 264–267
-  264–267
 343–346
 263
lips (👄) 313
lipstick
 303
 312
lira
 32
£ 31
Lisa (👤) 306
list
 173–175
 173–175
 173–175
 173–175
 171–172
 171–172
literature (📖) 275
Lithuania (🇱🇹) 242
litter in bin
 303
 254
liturgical music 215
lizard (🦎) 263
llama (🦙) 263
\llap 31, 372
lobster
 343–346
 263
local ring (O) .. *see* alphabets,
math
location (📍)⁺ 171–172
location arrow (📍) .. 173–175
lock 290–305, 312–314, 322–325,
330–331
 303
 313
open
 301
 313
with key
 303
 313
with pen
 303
 313
locker (🔒) 327
locust (🦋) 264–267
- log-like symbols .. 118, 119, 380
logic (package) 170
logic gates 170, 357–358
logic symbols ... 37–39, 44, 45,
54, 58–60, 67, 81, 113–115,
123–125, 161
logical bistability (I) 161
logical conjunction (∧) *see*
wedge
logical disjunction (∨) . *see* vee
logical exclusive disjunction (∨)
... *see* vee, bar under
logical nand (↑) 44
logical negation (¬)⁺ 44,
157–160, 383
classical (¬)⁺ 44
dotted (¬) 44
double bar (⇒) 77
double bar, reversed (⇐) 77
inverted (¬)⁺ .. 40–42, 44,
158, 159
reversed (¬)⁺ 68, 158, 159
reversed and inverted (¬)⁺
... 40–42, 158, 159
logical nor (↓) 44
logix (package) .. 37, 44, 48, 52,
81, 82, 85, 91, 113–115, 125,
134, 135, 153, 161, 387, 388
logos 314–319
loin cloth (👙) 208–210
lollipop
 284
 287
lollipop (mathematics) (→)⁺ *see*
multimap, *see* multimap
long division 139, 141
long drum (🥁) 303
long lip (👄) 208–210
long-branch runes . *see* normal
runes
long-legged letters
m, rotated (u) ⁺ ... 23, 24
n (n) 23
r (r) ⁺ 22, 24
r, rotated (I) ⁺ ... 23, 24
longa (👤) 214
longdiv (package) 139
longdiv.tex (file) 139
loop
 296
 199
double
 199
 297

lord (𐤋𐤍) 208–210
 lorry *see* truck
 lose (𐤋𐤍𐤏) 208–210
 lost and found (𐤋𐤍𐤏𐤍) 327
 loudspeaker
 𐤋𐤍𐤏𐤍𐤏𐤍 303
 𐤋𐤍𐤏𐤍𐤏𐤍𐤏 314
 low brightness (𐤋𐤍𐤏𐤍𐤏𐤍) 256
 low vision (𐤋𐤍𐤏𐤍𐤏𐤍) 320
 lozenge *see* rhombus
 LuaL^AT_EX 37, 43,
 44, 52, 66, 67, 81, 82, 85,
 91, 111, 114, 115, 125, 135,
 138, 143, 147, 148, 153, 156,
 161, 172, 181–183, 185, 188,
 191, 212, 234, 252, 255, 256,
 258, 259, 261, 263, 271–275,
 278, 283, 285, 305, 307–310,
 314, 319–322, 327–329, 331,
 385
 Luecking, Dan 371
 luggage
 𐤋𐤍𐤏𐤍𐤏𐤍 323
 𐤋𐤍𐤏𐤍𐤏𐤍𐤏 323–325
 𐤋𐤍𐤏𐤍𐤏𐤍𐤏𐤍 321
 𐤋𐤍𐤏𐤍𐤏𐤍𐤏𐤍𐤏 304
 𐤋𐤍𐤏𐤍𐤏𐤍𐤏𐤍𐤏𐤍 254
 luggage cart (𐤋𐤍𐤏𐤍𐤏𐤍) 323–325
 lungs
 𐤋𐤍𐤏𐤍𐤏𐤍 319
 𐤋𐤍𐤏𐤍𐤏𐤍 304
 Luxembourg (.) 242
 Lyft (𐤋𐤍𐤏𐤍) 315–318

M

M (𐤌) 21, 270
 ma (𐤌𐤍) 208–210
 macaw
 𐤌𐤍𐤏𐤍 208–210
 𐤌𐤍𐤏𐤍𐤏 208–210
 𐤌𐤍𐤏𐤍𐤏𐤍 264–267
 Macedonia (.) 242
 machine wash
 at or below 30°C, reduced
 spin speed (𐤌𐤍𐤏𐤍𐤏𐤍) 257
 at or below 40°C
 markbothmachine washma-
 chine wash (𐤌𐤍𐤏𐤍𐤏𐤍) 257
 at or below 40°C, reduced
 spin speed (𐤌𐤍𐤏𐤍𐤏𐤍) 257
 at or below 50°C, reduced
 spin speed (𐤌𐤍𐤏𐤍𐤏𐤍) 257

at or below 60°C
 markbothmachine washma-
 chine wash (𐤌𐤍𐤏𐤍𐤏𐤍) 257
 at or below 60°C, reduced
 spin speed (𐤌𐤍𐤏𐤍𐤏𐤍) 257
 at or below 95°C
 markbothmachine washma-
 chine wash (𐤌𐤍𐤏𐤍𐤏𐤍) 257
 at or below 95°C, reduced
 spin speed (𐤌𐤍𐤏𐤍𐤏𐤍) 257
 by hand (𐤌𐤍𐤏𐤍𐤏𐤍) 257
 cotton (𐤌𐤍𐤏𐤍𐤏𐤍) 257
 delicate (𐤌𐤍𐤏𐤍𐤏𐤍) *see* machine
 wash, wool/silk
 maximum agitation (𐤌𐤍𐤏𐤍𐤏𐤍) .
 see machine wash, cotton
 medium agitation (𐤌𐤍𐤏𐤍𐤏𐤍) *see*
 machine wash, synthetics
 minimal agitation (𐤌𐤍𐤏𐤍𐤏𐤍) *see*
 machine wash, wool/silk
 normal (𐤌𐤍𐤏𐤍𐤏𐤍) *see* machine
 wash, cotton
 permanent press (𐤌𐤍𐤏𐤍𐤏𐤍) . *see*
 machine wash, synthetics
 synthetics (𐤌𐤍𐤏𐤍𐤏𐤍) 257
 wool/silk (𐤌𐤍𐤏𐤍𐤏𐤍) 257
 macron (𐤌𐤍𐤏𐤍𐤏𐤍)⁺ *see* accents, macron
 mage (𐤌𐤍𐤏𐤍𐤏𐤍)⁺ 291, 303, 304
 Magento (𐤌𐤍𐤏𐤍𐤏𐤍)⁺ 315–319

Maggie (𐤌𐤍𐤏𐤍𐤏𐤍𐤏𐤍) 306
 magic (package) 361, 387
 magic wand
 𐤌𐤍𐤏𐤍𐤏𐤍𐤏𐤍 328–329
 𐤌𐤍𐤏𐤍𐤏𐤍𐤏𐤍 304

Magic: The Gathering symbols
 361
 magical signs 276
 magnet
 𐤌𐤍𐤏𐤍𐤏𐤍 323–325
 𐤌𐤍𐤏𐤍𐤏𐤍 304

magnifying glass
 𐤌𐤍𐤏𐤍𐤏𐤍 311–312
 𐤌𐤍𐤏𐤍𐤏𐤍 304
 𐤌𐤍𐤏𐤍𐤏𐤍 304
 𐤌𐤍𐤏𐤍𐤏𐤍 312
 𐤌𐤍𐤏𐤍𐤏𐤍 312
 magnon (𐤌𐤍𐤏𐤍𐤏𐤍) 178
 mahjong tiles 238
 autumn (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 back (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 bamboo (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 chrysanthemum (𐤌𐤍𐤏𐤍𐤏𐤍) 238

east wind (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 eight of bamboos (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 eight of characters (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 eight of circles (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 five of bamboos (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 five of characters (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 five of circles (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 four of bamboos (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 four of characters (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 four of circles (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 green dragon (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 joker (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 nine of bamboos (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 nine of characters (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 nine of circles (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 north wind (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 one of bamboos (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 one of characters (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 one of circles (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 orchid (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 plum (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 red dragon
 𐤌𐤍𐤏𐤍𐤏𐤍 238
 𐤌𐤍𐤏𐤍𐤏𐤍 304
 seven of bamboos (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 seven of characters (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 seven of circles (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 six of bamboos (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 six of characters (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 six of circles (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 south wind (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 spring (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 summer (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 three of bamboos (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 three of characters (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 three of circles (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 two of bamboos (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 two of characters (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 two of circles (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 west wind (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 white dragon (𐤌𐤍𐤏𐤍𐤏𐤍) 238
 winter (𐤌𐤍𐤏𐤍𐤏𐤍) 238

mailbox
 𐤌𐤍𐤏𐤍𐤏𐤍 325–327
 𐤌𐤍𐤏𐤍𐤏𐤍 325–327
 𐤌𐤍𐤏𐤍𐤏𐤍 295
 𐤌𐤍𐤏𐤍𐤏𐤍 295
 𐤌𐤍𐤏𐤍𐤏𐤍 293
 𐤌𐤍𐤏𐤍𐤏𐤍 293
 𐤌𐤍𐤏𐤍𐤏𐤍 296
 𐤌𐤍𐤏𐤍𐤏𐤍 312
 𐤌𐤍𐤏𐤍𐤏𐤍 312
 𐤌𐤍𐤏𐤍𐤏𐤍 312

 312
 312
 Mailchimp () 315–318
 majuscules 120
 Malta () 242
 mammoth () 263
 man
 323–325
 206
 202
 202
 304
 307
 adult () 307
 and woman holding hands
 () 307
 at drinking fountain () 307
 at help desk () 307
 child () 307
 deaf () 296
 discarding trash () 307
 getting haircut () 304
 getting massage () 304
 holding infant () 307
 in business suit levitating
 () 314
 in lotus position () 290
 in manual wheelchair () 290
 in motorized wheelchair () 290
 in steamy room () 290
 in tuxedo () 290
 old
 293
 307
 walking () 307
 walking dog () 307
 walking stroller () 307
 wearing turban () 291
 with child () 307
 with gua pi mao () 307
 with luggage waiting () 307
 with luggage waving () 307
 with service animal () 307
 with turban () 307
 with veil () 291
 with white cane () 291

man working sign () 311–312
 manacles () 200
 Mandalorian () 315–318
 manfnt (package) . 255, 387, 388
 mango () 284
 manicures *see* hand
 map
 323–325
 322
 marked
 173–175
 173–175
 of Japan () 291
 world
 304
 314
 map abstraction (λ) 125
 map composition ($\circ$) 161
 map join ($\sqcup$)⁺ *see* union, square
 map marker
 173–175
 173–175
 map meet ($\sqcap$)⁺ *see* intersection,
 square
 map pin () 173–175
 map signs () 328–329
 map symbols 333–334
 maps 242–246, 312–314
 European countries 242–244
 Romanian counties 245–246
 maps to ($\mapsto$)⁺ 94, 96, 97,
 100–102, 105, 107, 111–114
 diagonal
 96
 96
 97
 97
 diagonal, negated
 98
 98
 98
 98
 double ($\Rightarrow$)⁺ 95, 100–102,
 105, 107
 double headed ($\Rightarrow$) 108
 double, negated ($\Rightarrow$)⁺ 103,
 104
 downward ($\Downarrow$)⁺ 96, 101,
 102, 105, 107
 downward, double ($\Downarrow$)⁺ 101,
 102
 downward, double, negated
 ($\Downarrow$)⁺ 103, 104

downward, negated ($\Downarrow$)⁺ 98,
 103, 104
 extensible ($\mapsto$)⁺ 112, 145,
 147
 leftward ($\Leftarrow$)⁺ 73, 95,
 97, 100, 102, 105, 107, 109,
 111, 112
 leftward, double ($\Leftrightarrow$)⁺ 73,
 95, 100, 102, 105, 107, 109
 leftward, double headed ($\Leftarrow$)
 108
 leftward, double, negated
 ($\Leftarrow$)⁺ 75, 102–104
 leftward, extensible ($\Leftarrow$)
 147
 leftward, negated ($\Leftarrow$)⁺ 75,
 99, 102–104
 negated ($\mapsto$)⁺ . 98, 99, 103,
 104
 upward ($\Uparrow$)⁺ . 97, 101, 102,
 105, 107
 upward, double ($\Uparrow$)⁺ 101,
 102
 upward, double, negated ($\Uparrow$)
)⁺ 103,
 104
 upward, negated ($\Uparrow$)⁺ . 99,
 103, 104
 marcato
 down ()⁺ 214, 220
 up () 220


 Marge () 306
 MariaDB () 318–319
 mark (+) 201
 Markdown () 315–318
 marks chapter () 310
 married (ω) 253
 Mars (σ)⁺ . 166, 168, 335–338
 martial arts uniform () 291
 marvosym (package) 31,
 32, 154, 166, 169, 171, 176,
 182, 187, 255, 257, 279, 365
 mask () 323–325
 masonic cipher 278
 Mastercard () 315–318
 Mastodon () 315–318

 mat () 325–327
 mate () 284

- material biconditional ($\equiv$)⁺ *see* equivalence
- material conditional
 $\rightarrow$ ⁺ *see* arrow
 $\supset$ ⁺ *see* superset, strict
- material equivalence
 $\equiv$ ⁺ *see* equivalence
 $\leftrightarrow$ ⁺ *see* arrow, double ended
- material implication
 $\rightarrow$ ⁺ *see* arrow
 $\supset$ ⁺ *see* superset, strict
 $\Rightarrow$ 77
- material nonimplication
 $\nrightarrow$ ⁺ *see* arrow
 $\not\supset$ ⁺ *see* superset, strict, negated
- math alphabets 162
- mathabx (package) 36, 39, 45, 55, 69, 70, 83, 86, 91, 95, 96, 118, 123, 126–128, 136, 141, 155, 158, 166, 270, 364, 365, 387, 388
- mathbbol (package) 162, 163
- mathcomp (package) 154
- mathdesign (package) 32, 43, 65, 125, 132, 160, 387
- mathdots (package) 136, 151, 153, 373, 387, 388
- mathematical symbols 36–163
- mathematics ($\mathbb{A}$) 275
- MathOverflow
 330–331
 330–331
- mathrsfs (package) 162, 387
- mathspec (package) 120
- mathspec.sty (file) 120
- mathtools (package) 36, 79, 112, 141, 145, 387, 388
- matryoshkas () 293
- mattock () 200
- Maven () 318–319
- MaxCDN () 315–318
- maxima () 214
- maximize () 313
- Maxwell distribution ($\mathcal{M}$) 178
- Maxwell-Stefan diffusion coefficient ($\mathbb{D}$) *see* barred letters, D
- Mayan numerals 155
- mbboard (package) 162, 163, 387
- MDB () 315–318
- mdwmath (package) 145, 387, 388
- me () 208–210
- measured angles 155, 156, 158
- meat () 285
- on bone
 284
 287
- mechanic ()⁺ 291, 303
- mechanical scaling 376, 378
- medal () 323–325
- bronze () 292
- gold () 292
- military
 292
 313
- silver () 292
- sports
 241
 299
- MedApps () 315–318
- media control symbols 255, 256, 312–314
- down
 255
 297
 298
- eject
 255
 255
- forward
 255
 255
 255
 255
 255
 255
 256
 256
 256
 293
 298
- pause
 255
 255
- play
 255
 255
 256
 256
 295
- play or pause () 295
- record
 255
 255
- reverse
 255
 255
-  255
 255
 255
 255
 255
 256
 256
 256
 297
 298
 303
- stop
 255
 255
 256
 256
 256
 299
- up
 255
 298
 301
- medical symbols 186, 275, 290–305, 319
- medieval runes 211
- Medium
 315–318
 315–318
- medium coeli ($\mathcal{M}^{\circ}$) 168
- medium left-pointing angle bracket ornament () 199
- medium right-pointing angle bracket ornament () 199
- medium skin tone () 291
- medium-dark skin tone () 291
- medium-light skin tone () 291
- medkit () 319
- Meetup () 315–318
- megaphone
 291
 312
- MegaPort () 315–318
- Mellin transform ($\mathcal{M}$) *see* alphabets, math
- melon
 284
 287
- member of ($\in$)⁺ *see* set membership
- memo () 314
- memory () 323–325
- men 200, 201, 206, 254, 257, 290–305, 307, 308, 333–334, 352–357

- holding hands
 291
 307
 with bunny ears () .. 291
 wrestling () 292
- Mendeley
 330–331
 330–331
 315–318
- menorah
 310
 310
 292
 310
- menu
 171–172
 171–172
- Mercury (♿)⁺ 166–168, 328–329, 335–338
- merge ()⁺ *see* wedge, double
- mermaid () 292
- merman () 292
- merperson () 292
- meson 177–178
- B minus (B^-) 178
- B null (B^0) 178
- B plus (B^+) 178
- D minus (D^-) 178
- D null (D^0) 178
- D plus (D^+) 178
- eta (η) 178
- eta, prime (η') 178
- J/psi (Ψ) 178
- phi (ϕ) 178
- phi, null (ϕ^0) 178
- rho, minus (ρ^-) 178
- rho, null (ρ^0) 178
- rho, plus (ρ^+) 178
- T minus (T^-) 178
- T null (T^0) 178
- T plus (T^+) 178
- Upsilon (Y) 178
- message () 171–172
- message typing () .. 171–172
- messages () 171–172
- METAFONT .. 16, 163, 375–377, 379
- METAFONTbook symbols .. 255
- meteor () 323–325
- meter, musical
⁺ *see* alla breve
 214
-  .. *see* common time, forward and reversed
-  *see* alla breve, reversed
-  *see* common time
-  216
-  216
-  216
-  *see* common time
-  216
- method ($\mathbb{M}$) 178
- metre (package) .. 29, 135, 271, 387, 388
- metrical symbols 271, 272
- metro
 321
 254
- mezzo (m) 219, 232
- .mf files 16, 332, 376
- micro (μ)⁺ *see* mu, lowercase
- upright
- Micro.blog () 315–318
- microbe () 262
- microchip () 323–325
- microphone
⁺ 322–325
 299
 292
 313
 313
 slashed ()⁺ .. 173–175
- microscope
 321
 323–325
 329
 292
 313
- Microsoft
 315–318
 314
- Microsoft SQL Server () 318–319
- Microsoft Windows 384
- middle () 127, 208–210
- midheaven (M°) .. *see* medium
- coeli
- MIL-STD-806 170
- military () 275
- military helmet () 292
- milk () 286–287
- milky way
 292
 312
- millesimal sign (‰)⁺ *see* per mill
- milstd (package) .. 170, 387, 388
- mine sign () 257
- minibus
 321
 254
- minidisc () 313
- Minkowski space ($\mathbb{M}$) *see* alphabets, math
- minus ($-$)⁺ 37, 40–42, 160
- colon ($-:$)⁺ 77, 81
- colon, double ($-::$) 81
- comma ($\pm$) 42
- commercial (‰) 34
- decorative
 - 154
 156
 156
 157
 173–175
 173–175
 173–175
 199
 - 292
- dot
⁺ 37, 40, 41, 43, 76
⁺ 40–42
- dots
⁺ 41, 42
⁺ 41, 42
⁺ 73, 78
- hooked
⁺ 41, 159
⁺ 41, 158, 159
⁺ 158, 159
⁺ 158, 159
- u (u) 42
- with circle overlay ($\ominus$)⁺ 38, 42, 370
- minus or plus ($\mp$)⁺ .. 37, 40–42
- minutes, angular *see* prime
- mirror
 325–327
 292
- miscellaneous symbols 157–161, 198, 199, 253–331
- mismath (package) .. 119, 387
- “Missing \$ inserted” 36
- mitten () 323–325
- Mix () 315–318
- Mixcloud () 315–318
- Mixer () 315–318
- Mizuni () 315–318

- MnSymbol (package) 36, 39, 40,
45, 58, 59, 70–72, 83, 87, 92,
96–100, 115, 116, 122, 124,
128, 136, 139, 140, 152, 155,
158, 192, 212, 233, 387, 388
- moai (🗿) 290
- mobile devices (📱) 329
- mobile phone ... *see* cell phone
- models (|=)⁺ ... *see* turnstile,
double dash, right
- moduli space ... *see* alphabets,
math
- MODX (✎) 315–318
- Moldova (🇲🇩) 242
- Monero (📄) 315–318
- monetary symbols ... 31–33, 37,
163, 290–305, 312–314
- money bag
💰 292
👛 313
- money with wings
🦋 292
🦋 313
- MongoDB (🐪) 318–319
- monitor (🖥) 321
- monkey
🐒 264–267
🐒 264–267
🐒 201
🐒 201
🐒 262
🐒 262
🐒 268
🐒 268
hear no evil
🙉 289
🙊 300
see no evil
🙈 289
🙊 298
speak no evil
🙊 289
🙊 299
- monorail
🚆 321
🚆 254
- monster
👹 208–210
👹 325–327
Montenegro (🇲🇪) 242
- Monty Python’s Flying Circus .
..... 308
- monument (🗿) 323–325
- monus (÷) . *see* division, single
dot
- moo (🐄)⁺ 38, 42
- mood bubble (🌤) 314
- Moodle
📖 330–331
📖 330–331
- moon 166–168, 278, 279,
323–325, 334–338
🌕 279
🌕 279
crescent
🌒 166
🌒 167
🌒 278
first quarter
🌓 166
🌓 166
🌓 166
🌓 167
🌓 167
🌓 167
🌓 168
🌓 259
🌓 278
🌓 278
🌓 278
full
🌕 166
🌕 166
🌕 167
🌕 167
🌕 278
🌕 278
🌕 278
last quarter
🌔 166
🌔 166
🌔 166
🌔 167
🌔 167
🌔 167
🌔 168
🌔 278
🌔 278
🌔 278
new
🌑 166
🌑 166
- 167
● 167
☺ 278
☺ 278
☺ 278
waning crescent
🌘 167
🌘 278
waning gibbous
🌖 167
🌖 278
waxing crescent
🌑 167
🌑 278
waxing gibbous
🌔 167
🌔 278
moon cake (🥮) 284
moon viewing ceremony
🌕 292
🌕 313
moonphase (package) . 334, 387
moose (🦌) 264–267
mordent
🎵 214
🎵 214
mortar and pestle (🔪) 323–325
mortarboard
🎓 323–325
🎓 322
🎓 300
🎓 313
as math-mode accent (🎓) .
..... 138
mosque
🕌 310
🕌 292
🕌 310
motor scooter
🛵 321
🛵 254
motorcycle
🏍 323–325
🏍 325–327
🏍 325–327
🏍 321
motorway
🛣 321
🛣 254
Mount Fuji
🗻 292

 314
 mountain
 208–210
 259
 259
 259
 259
 323–325
 292
 mountain cableway
 321
 254
 mountain railway
 320
 254
 mouse
 264–267
 264–267
 264–267
 264–267
 262
 262
 268
 268
 computer ()⁺ .. 169, 296,
 312, 323–325
 pointer () 173–175
 mouse trap () 292
 mouth
 292
 312
 move down () 255
 move up () 255
 movie camera
 292
 313
 moyai
 292
 314
 Mrs. Claus
 292
 292
 MRT () 315–318
 MTMT
 330–331
 330–331
 mu
 lowercase (μ)⁺ .. 20, 120,
 121, 154, 165, 383

lowercase upright (μ)⁺ 20,
 164
 uppercase (M)⁺ .. 20, 120
 mug
 321
 323–325
 286–287
 multiline braces 144
 multimap ($\multimap$)⁺ 68, 69, 76, 77,
 81, 115, 117
 black ($\multimap$)⁺ 69, 76, 115, 117
 diagonal ($\multimap$)⁺ 115
 dual ($\multimap$)⁺ 69, 76, 78, 81,
 117
 dual, black ($\multimap$)⁺ .. 69, 76,
 117
 dual, negated ($\multimap$)⁺ .. 117
 dual, vertical ($\multimap$)⁺ .. 69, 76
 dual, vertical, black ($\multimap$)⁺ 69,
 76
 image ($\multimap$)⁺ 69, 76, 77, 117
 inverse ($\multimap$)⁺ 69, 76, 77, 81,
 115, 117
 inverse, black ($\multimap$)⁺ 69, 76,
 115, 117
 negated ($\multimap$)⁺ 81, 115, 117
 origin ($\multimap$)⁺ 69, 76, 77, 117
 vertical ($\multimap$)⁺ 115, 117
 vertical, black ($\multimap$)⁺ 115, 117
 vertical, black and white
 ($\multimap$)⁺ 69, 76
 multiple accents per character ..
 373
 multiplication
 cross ($\times$)⁺ *see* times
 dot ($\cdot$)⁺ 37, 39, 40, 42, 151,
 152, 154, 369
 multiplicative disjunction ($\curlywedge$)⁺
see ampersand, inverted
 muon (μ^-) 178
 Museum of Icelandic Sorcery and
 Witchcraft 277
 mushroom
 286–287
 286–287
 286–287
 284
 287
 musical meters 214, 216

musical notes
 213
 213, 218
 311–312
 173–175, 328
 212
 218
 218
 218
 328
 292
 292
 212, 213
 213
 213
 213
 musical score (musical score)⁺ .. 213, 292
 musical symbols 173–175,
 212–232, 311–314, 328, 360
 musicography (package) .. 216,
 387, 388
 musixgre (package) 215
 musixlit (package) 215
 musixper (package) 215
 MusiX_{TEX} 214–217
 musixtex (package) .. 387, 388
 mute
 173–175
 173–175
 256
 255
 MySQL
 318–319
 318–319

 N
 270
 nabla (∇)⁺ 157–159
 nadir (nadir)⁺ *see* imum coeli
 nail polish
 292
 312
 naira (naira)⁺ 31
 NAKALA
 330–331
 330–331
 name badge
 292
 314
 nand (nand)⁺ .. *see* wedge, bar over
 NAND gates 170, 357–358

- nanny ($\mathcal{N}$) 206
 Napster ($\mathcal{N}$) 315–318
 natal ($\mathcal{N}$) 168
 nath (package) . . . 127, 133, 387
 national park
  292
  314
 natural ($\mathfrak{h}$)⁺ . . . 212, 213, 216, 219
 natural numbers ($\mathbb{N}$) *see*
 alphabets, math
 Naturalist
  330–331
  330–331
 nazar amulet ($\odot$) 292
 necessity ($\blacksquare$) 48
 deontic ($\square$) 50
 doxastic ($\boxplus$) 51
 factual ($\square$) 51
 logical ($\boxdot$) 52
 temporal ($\boxminus$) 49
 necktie
  292
  281
 negation ($\neg$)⁺ *see* logical
 negation
 neither true nor false ($\perp$) . . 125
 Neos ($\mathcal{N}$) 315–318
 Neptune ($\mathfrak{N}$)⁺ 166–168
 nesting dolls ($\mathfrak{N}$) 293
 NetBSD ($\mathcal{N}$) 318–319
 Netherlands ($\mathfrak{N}$) 242
 network, wired ($\mathfrak{N}$) . . . 173–175
 neumes 215
 neutrino (ν) 178
 neutron (n^0) 178
 NEW ($\mathcal{N}$) 293
 newspaper
  323–325
  322
  293
  312
 rolled
  297
  313
 next ($\bullet$) 48
 deontic ($\odot$) 50
 doxastic ($\odot$) 51
 factual ($\odot$) 51
 logical ($\odot$) 52
 temporal ($\odot$) 49
 NG ($\mathcal{N}$) 293
 NGINX
  318–319
  318–319
  318–319
 nib 183, 184
  183
  183
  183
  183
  183
  184
  184
 nib shapes
  255
  255
  255
 nicefrac (package) . . . 160, 387, 388
 niceframe (package) . . . 339–342, 352
 night with stars
  293
  312
 Nimblr ($\mathcal{N}$) 315–318
 ninja
  288
  293
 nkarta (package) 333, 387
 no
  271
  328–329
  296
  254
  254
 no bicycles ($\mathfrak{N}$)⁺ 254, 320
 no dogs ($\mathfrak{N}$) 271
 no dry cleaning ($\mathfrak{N}$) 257
 no entry ($\mathfrak{N}$)⁺ 257, 293
 no littering ($\mathfrak{N}$) 293
 no mobile phones ($\mathfrak{N}$)⁺ . . 271,
 293, 312
 no one under eighteen
  293
  313
 no parking ($\mathfrak{N}$) 271
 no pedestrians ($\mathfrak{N}$)⁺ . . 254, 293
 no piracy ($\mathfrak{N}$) 314
 no smoking
  271
  328–329
  293
  254
 Node ($\mathfrak{N}$) 315–318
 Node.js ($\mathfrak{N}$)⁺ 315–319
 non-commutative division . . 151
 non-contingency ($\blacktriangle$) 48
 deontic ($\blacktriangle$) 50
 doxastic ($\blacktriangle$) 51
 factual ($\blacktriangle$) 51
 logical ($\blacktriangle$) 52
 temporal ($\blacktriangle$) 49
 logical ($\blacktriangle$) 52
 temporal ($\blacktriangle$) 49
 nose
  325–327
  293
  312
 not
  *see* logical negation
  *see* slash
 not equal ($\neq$)⁺ *see* equal,
 negated
 not false ($\perp$) 125
 not true ($\perp$) 125
 note ($\mathfrak{N}$) 313
 note pad ($\mathfrak{N}$) 313
 note page ($\mathfrak{N}$) 313
 notebook
  293
  314
 notebook with decorative cover
  293
  314
 now ($\mathfrak{N}$) 208–210
 npm ($\mathfrak{N}$)⁺ 315–319
 ntheorem (package) 157
 nu
 lowercase (ν)⁺ . . . 20, 120, 121
 uppercase ($\mathcal{N}$)⁺ . . . 20, 120
 nuclear power plant ($\mathfrak{N}$) . . 306
 nucleus ($\mathfrak{N}$) 178
 nuggets ($\mathfrak{N}$) 286–287
 null character ($\mathfrak{N}$) 170
 null infinity *see* alphabets, math
 null set *see* empty set
 number sets *see* alphabets, math
 number sign
  *see* hash
  34
 numbers *see* numerals
 numerals . . . 154, 155, 205, 210,
 232, 270, 333–334
 circled . . 188, 189, 240, 361
 Epi-Olmec 210
 Isthmian 210

- LCD 164
 Linear B 205
 Mayan 155
 old-style 34
 rotated 154
 segmented 164
 nut and bolt
  293
  313
 Nutritionix () 315–318
- O**
- O () 270
 o (*o*) 120
 o
 open (*o*)⁺ 23–25
 o (*o*) 119
 obelus
 —⁺ 271
 ÷⁺ 271
 Objective C () 318–319
 OBP
  330–331
  330–331
 octagon () 192
 octagonal sign () 254
 octahedron () 311–312
 octonions () .. *see* alphabets,
 math
 octopus
  264–267
  264–267
  262
  268
 Octopus Deploy () . 315–318
 octothorpe (*#*)⁺ *see* hash
 oden
  284
  287
 Odnoklassniki
  315–318
  315–318
 of course
 ! 37
 ? 161
 office building
  293
  314
 office worker ()⁺ 291, 293, 303
- officer
  208–210
  208–210
  208–210
  208–210
  208–210
  208–210
 ogonek (package)⁺ . *see* accents,
 ogonek, 30, 387, 388
 ogre
  293
  307
 ohm *see* omega
 oil can () 323–325
 oil drum
  293
  254
 OK () 293
 Old Republic () . . 315–318
 old-arrows (package) . . 112, 387
 old-style numerals 34
 olive
  206
  284
 Olschok, Marc 368
 om
  310
  293
  310
 omega
 lowercase (ω)⁺ . 20, 23, 24,
 120, 121, 161
 lowercase closed (ω)⁺ . 22,
 24
 lowercase variant (ω) . 25
 lowercase, upside-down (ω)
 23
 uppercase (Ω)⁺ 20, 22, 120,
 121, 154, 164, 165
 uppercase, upside-down
 (Ω)⁺ . . 25, 122, 157, 165
 omicron
 lowercase (*o*)⁺ . . . 20, 120
 uppercase (*O*)⁺ . . 20, 120
 ON! with arrow ()⁺ . 293, 313
 one-piece swimsuit () 293
 onion
  286–287
  284
 Open Access
  330–331
  330–331
- open book
  293
  314
 open box operator
 left ($\sqsubset$) 77
 right ($\sqsupset$) 77
 Open Data
  330–331
  330–331
 Open Edition
  330–331
  330–331
 open file folder () 313
 open folder () 313
 Open Materials
  330–331
  330–331
 open unit disk () *see*
 alphabets, math
 OpenCart () 315–318
 OpenID () 315–318
 OpenShift () 318–319
 OpenType 212
 Opera () 315–318
 operators
 binary 37–52
 set *see* set operators
 Ophiuchus () 294
 oplotsymb1 (package) . 196–198,
 387, 388
 opposition ($\circ^o$)⁺ 166–168,
 335–338
 optical scaling 376
 OptimMonster () . . 315–318
 options *see* package options
 or (*V*) *see* vee
 OR gates 170, 357–358
 Oracle
  318–319
  318–319
 orangutan () 262
 orbit () 178
 orca () 264–267
 Orch OR 329
 orchestrated objective reduction
 symbols 329
 ORCID
  330–331
  330–331
  315–318
 ordered list () 173–175
 ordinal
 feminine (*a*)⁺ 19, 383

- masculine ($^{\circ}$)⁺ . . . 19, 383
 ornament () . . . 311–312
 ornaments . . 189–191, 197, 198,
 338–340, 343–352
 orthogonal ($\perp$)⁺ . *see* turnstile,
 up
 OS X () 318–319
 OSF
  330–331
  330–331
 OSI () 315–318
 ostrich () 264–267
 .otf files 212
 otter
  263
  262
 outbox
  294
  312
 outdent () 173–175
 outer joins 159–160
 oven
  287
  288
 bottom heat () 287
 convection () 287
 gas () 287
 top and bottom heat () .
 287
 top heat () 287
 oven mitts () 287
 overarrows (package) . 144, 387,
 388
 overlap () 313
 Overleaf
  330–331
  330–331
 overline ()⁺ *see* accents,
 overline
 overrightarrow (package) 139, 387
 owl
  264–267
  264–267
  264–267
  264–267
  343–346
  202
  262
- owns ($\ni$)⁺ *see* set membership,
 reversed
 ox
  264–267
  206
  201
  201
  262
  268
 ox back () 200
 oyster () 262
- P**
- P
  270
  294
 package
  294
  312
 package options
 a (esvect) 142
 arrows (boisik) 106
 b (esvect) 142
 boondox (emf) 165
 c (esvect) 142
 cal (emf) 165
 calligra (emf) 165
 chorus (emf) 165
 cmr (emf) 165
 crescent (fge) 137
 d (esvect) 142
 e (esvect) 142
 f (esvect) 142
 frcursive (emf) 165
 g
 txfonts/pxfonts 122
 esvect 142
 german (keystroke) . . . 169
 greek (babel) 20, 120, 121,
 208
 h (esvect) 142
 integrals (wasysym) . . . 55
 mathcal (euscript) 162
 mathscr
 urwchancal 162
 euscript 162
 miamia (emf) 165
 new (old-arrows) 112
 noeuro (wasysym) 32
 polutonikogreek (babel) 20,
 120, 121
 rsfs (emf) 165
 sans (dsfont) 162
- scaled (CountriesOfEurope)
 244
 scr (rsfso) 162
 transform (emf) 165
 utf8x (inputenc) 385
 packages
 abraces 144, 387, 388
 academicons 330, 331, 387,
 388
 accents . 136, 374, 387, 388
 actuarialangle 145, 374, 387,
 388
 actuarialsymbol 374
 adorn . 180, 190, 191, 197,
 198, 387, 388
 adfsymbols . 180, 186, 190,
 196, 387
 allrunes 211, 387
 AMS 16, 20,
 38, 54, 68, 82, 85, 91, 94,
 95, 112, 119, 120, 122, 123,
 126, 128, 136, 140, 145, 151,
 155, 157, 163, 364, 365, 386
 amsbsy 380
 amsfonts 157, 162
 amsmath 16, 65, 136, 369,
 379
 amssymb 16, 136, 157, 162,
 208, 387, 388
 amstext 370, 372
 apl 169, 387
 ar 165, 387, 388
 arcs 30, 387, 388
 arev . . 180, 183, 184, 187,
 213, 234, 284, 387
 asapsym 181, 271, 307, 310,
 320, 321, 327, 387, 388
 ascii . . . 170, 382, 387, 388
 astrosym 335, 387
 babel . . . 20, 120, 121, 208
 bartel-chess-fonts . 361, 363,
 387
 bbding 179,
 182–184, 186, 187, 189, 195,
 198, 365, 387, 388
 bbm 162, 387
 bbold 162, 387
 bclogo . 311, 312, 387, 388
 begriff 153, 387
 bigints 58, 387, 388
 bm 380
 boisik 41, 47,
 60, 76, 84, 89, 93, 105–107,
 122–124, 126, 137, 156, 159,
 192, 208, 213, 233, 387, 388

- braket 127
- bulcntr 269, 387, 388
- bulldenum 269
- calligra 163, 387, 388
- calrsfs 162
- cancel 139
- ccicons 34, 387, 388
- cclicenses 34, 387, 388
- centernot 370
- chancery 387
- chemarr 146, 387, 388
- chemarrow 111, 146, 387
- ChemA2e 32, 119, 162, 163, 278, 279, 281, 387, 388
- circledsteps 26, 373
- clock 260, 387, 388
- cmll 37, 44, 67, 81, 125, 387
- cmupint 64, 65, 387, 388
- colonequals 36, 81, 387, 388
- combelow 30, 387, 388
- cookingsymbols 287, 387, 388
- countriesofeuropa 242, 387, 388
- cryst 358, 387
- cypriot 207, 387, 388
- dancers 352, 387
- dblacnt 373
- dice 360, 387
- dictsym 275, 387, 388
- dingbat 183, 184, 198, 342, 365, 387, 388
- DotArrow 147, 387, 388
- dozenal 155, 269, 387, 388
- dsfont 162, 387
- ds serif 162, 387
- emf 165, 387, 388
- emo 234, 252, 258, 261, 263, 278, 283, 285, 305, 321
- emoji 234, 252, 258, 261, 263, 278, 283, 285, 305, 321
- endofproofwd 126, 387
- epiomec 208, 210, 387, 388
- epsdice 235, 387, 388
- esint 57, 387
- esrelation 115, 149, 387
- esvect 142, 387
- eulflag 246, 387, 388
- eulfrak 162
- eurosym 33, 387, 388
- euscript 162, 387, 388
- extarrows 146, 387, 388
- extpfeil 147, 387, 388
- extraipa 28, 387
- fc 21, 26
- fclfont 387
- fdsymbol 40, 41, 46, 59, 60, 73–75, 84, 88, 93, 100–105, 117, 123, 124, 130, 131, 137, 140, 152, 156, 159, 192, 213, 233, 387, 388
- feyn 177, 387, 388
- fge 111, 125, 137, 154, 160, 387, 388
- figbas 360, 387
- figchild 259, 264, 267, 270, 279, 286, 287, 325, 331, 387, 388
- fixmath 380
- fontawesome5 22, 32, 33, 157, 173, 176, 182, 183, 186, 188, 191, 196, 236, 240, 256, 259, 261, 263, 280, 284, 305, 308–310, 315, 319, 320, 323, 328, 387, 388
- fontenc 16, 20, 21, 26, 382, 384
- fontmifizz 318, 319, 329, 387, 388
- fontspec 212, 385, 386
- fourier 33, 81, 122, 125, 133, 142, 184, 191, 257, 387
- frege 154, 387, 388
- gensymb 164
- go 240, 387
- graphics 148, 368
- graphicx 30, 366, 368, 372
- greenpoint 332, 387
- halloweenmath 52, 117, 138, 148–150, 387, 388
- hamnosys 272–275, 387, 388
- harmony 215, 217, 387, 388
- harpoon 148, 387, 388
- hhcount 236, 268, 387, 388
- hieroglf 202, 387, 388
- holtpolt 151, 387
- hwemoji 234, 252, 258, 261, 263, 278, 283, 285, 305, 321
- ifsym 164, 194, 195, 236, 258–260, 268, 270, 365, 367, 387, 388
- igo 240, 387
- inputenc 385
- isoent 384
- junicode 385, 387
- keystroke 169, 387, 388
- knitting 282, 387, 388
- knot 348, 352, 387
- latexsym 37, 67, 82, 94, 157, 364, 387, 388
- lcircuit 357, 358, 387
- lilyglyphs 212, 217–225, 230–232, 387
- linearA 202, 387, 388
- linearb 205, 206, 387, 388
- logic 170
- logix 37, 44, 48, 52, 81, 82, 85, 91, 113–115, 125, 134, 135, 153, 161, 387, 388
- longdiv 139
- magic 361, 387
- manfnt 255, 387, 388
- marvosym 31, 32, 154, 166, 169, 171, 176, 182, 187, 255, 257, 279, 365
- mathabx 36, 39, 45, 55, 69, 70, 83, 86, 91, 95, 96, 118, 123, 126–128, 136, 141, 155, 158, 166, 270, 364, 365, 387, 388
- mathbbol 162, 163
- mathcomp 154
- mathdesign 32, 43, 65, 125, 132, 160, 387
- mathdots 136, 151, 153, 373, 387, 388
- mathrsfs 162, 387
- mathspec 120
- mathtools 36, 79, 112, 141, 145, 387, 388
- mbboard 162, 163, 387
- mdwmath 145, 387, 388
- metre 29, 135, 271, 387, 388
- milstd 170, 387, 388
- mismath 119, 387
- MnSymbol 36, 39, 40, 45, 58, 59, 70–72, 83, 87, 92, 96–100, 115, 116, 122, 124, 128, 136, 139, 140, 152, 155, 158, 192, 212, 233, 387, 388
- moonphase 334, 387
- musicography 216, 387, 388
- musicgre 215
- musiclit 215
- musicper 215
- musixtex 387, 388
- nath 127, 133, 387
- nicefrac 160, 387, 388
- niceframe 339–342, 352
- nkarta 333, 387
- nttheorem 157
- ogonek 30, 387, 388
- old-arrows 112, 387
- oplotsymb 196–198, 387, 388

- overarrows . . . 144, 387, 388
- overrightarrow . . . 139, 387
- pdfMsym . . . 43, 66, 67, 81, 110, 111, 138, 143, 147, 148
- pdfmsym 387
- pgfornament 343, 346, 348, 387, 388
- phaistos 200, 387, 388
- phonetic . . . 25, 29, 368, 387
- pict2e 165
- pifont . . . 21, 179, 182, 184, 186–188, 190, 195, 198, 332, 339, 357, 368, 387, 388
- pigpen 278, 387, 388
- plimsoll 165, 370, 387, 388
- pmboxdraw . . . 276, 387, 388
- polynom 139
- prodint 66, 387
- prosem 201, 387, 388
- psnfss 188
- PSTricks 312
- pxfonts 36, 39, 56, 69, 82, 86, 95, 118, 121–123, 157, 158, 162, 233, 364, 382
- quantikz 127, 171, 387, 388
- realhats 138, 387, 388
- recycle 280, 387
- resize 30
- resmes 44, 387, 388
- rojud . . . 245, 246, 387, 388
- rotating 34, 169
- rsfso 162, 387
- rubikcube . . . 329, 387, 388
- sacsymb 329, 387, 388
- sarabian 207, 387, 388
- savesym 364
- scalrel 372
- scsnowman . . . 309, 387, 388
- semaphor . . . 355, 357, 387
- semtrans . . . 25, 30, 387, 388
- shuffle 44, 387, 388
- sillypage 308, 387, 388
- simplewick 375
- simpsons 306, 387
- skak 239, 387, 388
- skull 270, 387, 388
- slashed 370
- soyombo 281, 387, 388
- stackengine 372
- starfont 168, 387, 388
- staves 276, 387
- steinmetz . . . 165, 387, 388
- stix 42, 43, 47, 48, 53, 61, 62, 77, 78, 84, 89, 90, 93, 107, 109, 110, 118, 122–124, 126, 131, 137, 141, 152, 155, 156, 159, 160, 166, 169, 176, 193, 194, 213, 234, 236, 387, 388
- stmaryrd 38, 54, 68, 82, 91, 95, 112, 118, 126, 128, 365, 370, 386–388
- svrsymbols . . . 177, 387, 388
- t4phonet . . . 25, 29, 387, 388
- teubner 32, 153, 208, 272, 387, 388
- textcomp 16, 19, 26, 31, 33, 34, 94, 135, 160, 165, 212, 253, 364, 382, 384, 387, 388
- textgreek 20, 121, 387, 388
- tfruppee 32, 387, 388
- TikZ 17, 26, 167, 176, 181, 183–185, 187–190, 196–199, 213, 234–238, 241, 248, 249, 254, 256, 258–260, 267, 268, 270, 279, 281, 283, 287–290, 307, 309, 310, 312, 314, 329, 331, 346, 348, 373
- tikzsymbols . . . 288–290, 387, 388
- timing 164
- tipa 22, 23, 25, 26, 28, 29, 368, 387, 388
- tipx 23, 387, 388
- trfsigns . . . 80, 124, 148, 387
- trsym 80, 387, 388
- turnstile . . . 79, 80, 387, 388
- twemojis 234, 249, 252, 258, 261–263, 278, 283–285, 290, 305, 320, 321, 387–389
- txfonts 36, 39, 56, 69, 82, 86, 95, 118, 121–123, 157, 158, 162, 233, 364, 366, 382, 387, 388
- type1cm 366
- typicons 156, 171, 172, 182, 183, 185, 188, 191, 255, 256, 259, 261, 308, 309, 314, 322, 328, 387, 388
- ucs 385
- ulsy 44, 118, 367, 387
- umranda 339, 340, 387
- umrandb 340, 341, 387
- underscore 18
- undertilde . . . 144, 387, 388
- units 160
- universa 195, 257, 387, 388
- upgreek . . . 20, 121, 387, 388
- upquote 382
- url 382
- urwchancal . . . 162, 163, 387
- ushort 145, 387, 388
- utfsym 167, 176, 181, 183–185, 187–190, 196, 199, 213, 234–238, 241, 254, 256, 258, 260, 268, 279, 281, 287, 289, 290, 307, 310, 312, 314, 387, 388
- vietnam 387
- vntex 21, 26
- wasysym 25, 32, 35, 38, 55, 68, 82, 86, 151, 157, 164, 166, 168, 176, 187, 189, 192, 212, 253, 365, 367, 387, 388
- webomints . . . 338, 339, 387
- worldflags 247–249, 283, 387
- wsuipa 24, 28, 31, 365, 368, 373, 374, 387, 388
- xfakebold . . . 380, 387, 388
- xfrac 160
- yfonts . . . 162, 163, 387, 388
- yhmath 137, 139, 144, 153, 373, 387
- page (■) 313
 - facing up
 -  294
 -  313
 - landscape (▢) 270
 - multiple (■) 313
 - portrait (▮) 270
 - with circled text (Ⓢ) . . . 313
 - with curl
 -  294
 -  313
- PageLines (⚙) 315–318
- pager
 -  323–325
 -  294
 -  314
- paint roller (🔧) 323–325
- paintbrush
 -  323–325
 -  323–325
 -  322
 -  294
 -  184
- Pakin, Scott . . . 1, 371, 374, 386
- Palatino (font) 360
- palette (🎨) 323–325
- PalFed (👤) 315–318
- Palladio (font) 360
- Pallas (♀) 168
- palm
 - ☪ 201
 - ☵ 201

- pan
 286–287
 288
 285
 pancakes () 284
 panda
 262
 268
 paper *see* page
 paperclip 311–312
 311–312
 323–325
 322
 294
 313
 multiple, linked
 303
 312
 papyrus () 200
 par ()⁺ *see* ampersand,
 inverted
 parachute
 323–325
 294
 paragraph mark () *see* pilcrow
 parallel ()⁺ 54, 67, 71, 73, 77,
 129
 negated ()⁺ 68, 73, 75, 76,
 78
 short ()⁺ 68, 70, 73, 76, 77
 short, negated ()⁺ 68, 72,
 75, 76, 78
 similar () 77
 slanted ()⁺ 69, 81
 slanted backward () 69
 slanted backward, negated
 () 69
 slanted, negated ()⁺ . 69,
 81
 parallel port () 169
 parallelogram () ... 193–194,
 358–359
 filled () 194
 parentheses *see* delimiters
 dingbat ()⁺ 199
 sans serif ()⁺ 154
 parking () 328–329
 parrot
 264–267
 262
 part alternation mark () . 294
 part of (3) 368
 partial derivative (∂)⁺ 123, 125
 slashed (∂) 123
 partial meet contraction ($\leq$) *see*
 less than, much, underlined
 particle-physics symbols 177–178
 partly sunny
 311–312
 259
 party popper
 294
 312
 pass
 331
 331
 passport () 328–329
 passport control 254
 320
 254
 past () 49
 deontic () 50
 doxastic () 51
 factual () 51
 logical () 48
 temporal () 49
 Pastafarianism () 310
 paste () 173–175
 Patreon () 315–318
 patron
 208–210
 208–210
 pause
 173–175
 173–175
 173–175
 255
 255
 294
 paw () 328–329
 paw prints
 262
 312
 PayPal
 315–318
 315–318
 PDF 43, 66, 67,
 81, 111, 138, 143, 147, 148,
 212, 234, 252, 258, 261, 263,
 278, 283, 285, 305, 308, 321
 .pdf files 384
 pdfL^AT_EX 43, 66, 67,
 81, 111, 138, 143, 147, 148,
 234, 246, 252, 258, 261, 263,
 278, 283, 285, 305, 321, 385
 pdfM_{sym} (package) . 43, 66, 67,
 81, 110, 111, 138, 143, 147,
 148
 pdfmsym (package) 387
 peace 290–305, 311–312,
 328–329
 257
 198
 311–312
 328–329
 294
 290
 peach
 284
 287
 peacock
 264–267
 262
 peanuts () 284
 pear
 284
 287
 pedal
 engage
 214
 214
 release
 214
 214
 pedestrian
 200
 254
 peeler () 288
 peg () 201
 pen 183
 183
 183
 183
 183
 183
 183
 183
 294
 299
 293
 184
 184
 pencil 183, 184

-  183
 183
 183
 183
 183
 183
 183
 183
 183
 311–312
 183
 325–327
 325–327
 183
 183
 294
 184
 184
 184
 184
 and ruler () 324
 penguin
 264–267
 262
 268
 penis () 208–210
 pennant *see* flag
 Penny Arcade () .. 315–318
 Penrose triangle () *see* triangle, impossible
 pentagon ()⁺ 192–194, 196–197
 crossed () 197
 dotted () 197
 filled ()⁺ 194, 197
 half filled
  197
  197
  197
  197
 horizontally divided () 197
 irregular () 170
 quartered () 197
 vertically divided () . 197
 pentagram ()⁺ *see* star, pentagram
 people 290–305, 307, 308, 320–321, 328–329
 carrying () ... 328–329
 holding hands () ... 294
 hugging () 294
 with arrows () 328–329
 with bunny ears () .. 294
 wrestling () 294
 per mill (‰)⁺ 19, 35, 154, 164, 384
 per ten thousand (‱)⁺ .. *see* permyriad
 permyriad
 per thousand (‰)⁺ *see* per mill
 PerByte () 315–318
 percent
 % 18, 381
 % 37
 % 157
 % 157
 perch () 264–267
 percussion 215
 performing arts
 294
 313
 period (.) 154
 centered (·)⁺ 19, 383
 Periscope () 315–318
 Perl () 318–319
 permanent paper () 279
 permyriad (‱)⁺ 19, 154
 perpendicular (⊥)⁺ *see* turnstile, up
 person () 294
 deaf () 296
 getting haircut () ... 294
 getting massage () .. 294
 in bed () 295
 in lotus position () .. 295
 in manual wheelchair () .
 295
 in motorized wheelchair ()
 295
 in steamy room () .. 295
 in suit levitating () . 295
 in tuxedo () 295
 old () 293
 raising both hands in celebration () 289
 wearing turban () .. 295
 with blond hair () .. 307
 with folded hands () 289
 with skullcap () 295
 with veil () 295
 with white cane () .. 295
 peso (₱) 31
 petri dish () 295
 pfund ()⁺ 32
 pgfornament (package) 343, 346, 348, 387, 388
 Phabricator () 315–318
 phaistos (package) 200, 387, 388
 Phaistos disk 200
 pharmaceutical prescription *see* recipe
 phasor () 165
 phi
 lowercase (φ)⁺ . 20, 23, 24, 120, 121
 lowercase variant (φ)⁺ 120–122
 uppercase (Φ)⁺ . 20, 120, 121
 Phil Papers
 330–331
 330–331
 Phoenix Framework () . 315–318
 Phoenix Squadron () 315–318
 phonetic (package) . 25, 29, 368, 387
 phonetic accents
 advanced () . *see* accents, plus below
 advanced tongue root () *see* accents, tack below, left
 apical () *see* accents, bridge below, inverted
 breathy voiced ()⁺ .. *see* accents, diæresis below
 centralized ()⁺ *see* accents, diæresis
 creaky voiced ()⁺ ... *see* accents, tilde below
 dental ()⁺ .. *see* accents, bridge below
 laminal () ... *see* accents, square below
 less rounded () *see* accents, half ring below, left
 linguolabial () *see* accents, seagull below
 lowered () .. *see* accents, tack below, down
 mid-centralized () ... *see* accents, X
 more rounded () . *see* accents, half ring below, right
 nasalized ()⁺ *see* accents, tilde
 no audible release () . *see* accents, angle, left

- non-syllabic (⁺ . . . *see* accents, breve below, inverted raised (⁺ . . . *see* accents, tack below, up
- retracted (⁺ . . . *see* accents, bar below
- retracted tongue root (⁺ . . . *see* accents, tack below, right
- suprasegmental, extra short (⁺ . . . *see* accents, breve syllabic (⁺ . . . *see* accents, vertical line below
- tone, extra high (⁺ . . . *see* accents, acute, double
- tone, extra low (⁺ . . . *see* accents, grave, double
- tone, falling (⁺ . . . *see* accents, circumflex
- tone, high (⁺ . . . *see* accents, acute
- tone, high rising (⁺ . . . *see* accents, high rising tone
- tone, low (⁺ . . . *see* accents, grave
- tone, low rising (⁺ . . . *see* accents, low rising tone
- tone, mid (⁺ . . . *see* accents, macron
- tone, rising (⁺ . . . *see* accents, caron
- tone, rising and falling (⁺ . . . *see* accents, rising and falling tone
- velarized/pharyngealized (⁺ . . . *see* accents, tilde overlay
- voiced (⁺ . . . *see* accents, caron below
- voiceless (⁺ . . . *see* accents, ring below
- phonetic symbols . . . 22–25, 30
- phonon (⁺ . . . 178
- photo and video (⁺ . . . 173–175
- photon . . . 164, 177–178
- ~~~~~ . . . 164
- f . . . 178
- f . . . 178
- PHP
- ⁺ . . . 315–318
- ⁺ . . . 318–319
- ⁺ . . . 318–319
- physical symbols . . . 164
- pi
- lowercase (π)⁺ 20, 120–122, 156, 368
- lowercase variant (ϖ)⁺ 120–122
- uppercase (Π)⁺ . . . 20, 120, 121
- pi fonts . . . 368
- piano (⁺ . . . 219, 232
- Piazza
- ⁺ . . . 330–331
- ⁺ . . . 330–331
- pick (⁺ . . . 295
- pict2e (package) . . . 165
- pie (⁺ . . . 284
- pie chart
- ⁺ . . . 173–175
- ⁺ . . . 171–172
- ⁺ . . . 171–172
- Pied Piper
- ⁺ . . . 315–318
- ⁺ . . . 315–318
- ⁺ . . . 315–318
- ⁺ . . . 315–318
- ⁺ . . . 315–318
- pierce (⁺ . . . 208–210
- pifont (package) . . . 21, 179, 182, 184, 186–188, 190, 195, 198, 332, 339, 357, 368, 387, 388
- pig
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
- ⁺ . . . 264–267
-

- pizza
 323–325
 284
 287
- piñata () 295
- placard () 295
- place of worship
 310
 295
 254
- Planck's constant ($\hbar$) *see* barred letters, h
- planet
 279
 279
 279
 279
 279
 279
 279
- planets () 166–168, 279, 335–338
- plant
 208–210
 201
 201
- plants 312–314
- plasmon ($\sim e^-$) 178
- play () 208–210
- Play Framework
 318–319
 318–319
- playing card suits 198, 233, 234, 311–312
- club (⁺ ... 170, 233, 234
 club, hollow (⁺ 233, 234
 diamond
⁺ 233, 234
 234
 diamond, filled (⁺ . 170, 233, 234
 heart
⁺ 233, 234
 234
- heart, filled (⁺ 170, 233, 234
 234
 spade (⁺ . 170, 233, 234, 311–312
 spade, hollow (⁺ 233, 234
- playing cards 233–235
- ace of clubs () 235
 ace of diamonds () . 235
 ace of hearts () 235
 ace of spades () 235
 back () 235
 black joker () 235
 eight of clubs () 235
 eight of diamonds () . 235
 eight of hearts () . . . 235
 eight of spades () . . . 235
 five of clubs () 235
 five of diamonds () . . 235
 five of hearts () 235
 five of spades () 235
- flower
 299
 313
- fool () 235
- four of clubs () 235
 four of diamonds () . 235
 four of hearts () 235
 four of spades () . . . 235
 jack of clubs () 235
 jack of diamonds () . 235
 jack of hearts () 235
 jack of spades () . . . 235
 king of clubs () 235
 king of diamonds () . 235
 king of hearts () 235
 king of spades () . . . 235
 knight of clubs () . . . 235
 knight of diamonds () 235
 knight of hearts () . . 235
 knight of spades () . . 235
 nine of clubs () 235
 nine of diamonds () . 235
 nine of hearts () 235
 nine of spades () . . . 235
 queen of clubs () . . . 235
 queen of diamonds () 235
 queen of hearts () . . 235
 queen of spades () . . 235
 red joker () 235
 seven of clubs () . . . 235
 seven of diamonds () 235
 seven of hearts () . . . 235
 seven of spades () . . . 235
 six of clubs () 235
 six of diamonds () . . 235
- six of hearts () 235
 six of spades () 235
 ten of clubs () 235
 ten of diamonds () . . 235
 ten of hearts () 235
 ten of spades () 235
 three of clubs () 235
 three of diamonds () 235
 three of hearts () . . . 235
 three of spades () . . . 235
 trump 1 () 235
 trump 2 () 235
 trump 3 () 235
 trump 4 () 235
 trump 5 () 235
 trump 6 () 235
 trump 7 () 235
 trump 8 () 235
 trump 9 () 235
 trump 10 () 235
 trump 11 () 235
 trump 12 () 235
 trump 13 () 235
 trump 14 () 235
 trump 15 () 235
 trump 16 () 235
 trump 17 () 235
 trump 18 () 235
 trump 19 () 235
 trump 20 () 235
 trump 21 () 235
 two of clubs () 235
 two of diamonds () . . 235
 two of hearts () 235
 two of spades () 235
 white joker () 235
- PlayStation () 315–318
- plimsoll (package) 165, 370, 387, 388
- Plimsoll line () 165, 370
- Plone () 318–319
- plug
 323–325
 322
- plumed head () 200
- plunger () 296
- plus
⁺ 37, 39–43, 55, 58, 60, 154, 186, 187, 198, 211, 333–334
⁺ 42
 bold (⁺ . 156, 157, 186, 199, 296

- double
 $\#$ 43
 $\ddagger$ 211
hollow ($\oplus$) 156
open center
 $\oplus$ 186
 $\oplus$ 186
outlined ($\oplus$) 186
triple
 $\#$ 42
 $\ddagger$ 211
with circle
 $\ddagger^+$ 39, 42, 43
 $\oplus^+$ 39, 42
with dot
 $\ddagger^+$ 37–39, 41–43
 $\oplus^+$ 41, 43
with equal sign
 $\ddagger$ 43
 $\pm$ 43
with hat ($\hat{\ddagger}$) 43
with similarity sign
 $\ddagger$ 43
 $\ddagger$ 43
with subscripted 2 ($\ddagger_2$) 43
with triangle ($\triangle^+$) 42, 43
plus or minus ($\pm$)⁺ . 37, 40–43, 160, 383
Pluto 335–338
 $\P$ 166
 $\P$ 166
 $\P$ 168
 $\P$ 168
 $\P$ 166
 $\P$ 167
pmboxdraw (package) . 276, 387, 388
Pocket ($\P$) 315–318
pocket calculator ($\P$) 312
podcast ($\P$) 173–175
point of interest
 $\P$ 328
 $\P$ 328
pointing finger *see* hand
Poland ($\P$) 243
polar bear ($\P$) 262
polariton ($\P$) 178
polaron ($\P$) 178
police car
 $\P$ 320
 $\P$ 320
 $\P$ 254
 $\P$ 254
police car light
 $\P$ 320
 $\P$ 254
police officer ($\P$)⁺ 291, 296, 303, 307
policeman’s hat, as math-mode
accent ($\P$) 138
poll
 $\P$ 173–175
 $\P$ 173–175
polygon ($\P$) 173–175
polygons 48–52, 192–194, 196–197, 225–230, 333–334, 358–359
polynom (package) 139
polynomial division 139
polytonic Greek . . 20, 120, 121
pomega ($\P$)⁺ *see* pi, lowercase variant
poo
 $\P$ 328–329
 $\P$ 328–329
 $\P$ 295
 $\P$ 313
storm ($\P$) 328–329
poodle
 $\P$ 262
 $\P$ 268
popcorn
 $\P$ 284
 $\P$ 287
popsicle ($\P$) 286–287
portable stereo ($\P$) 312
portato
down ($\P$) 220
up ($\P$) 220
portrait ($\P$) 173–175
Portugal ($\P$) 243
Poseidon ($\P$) 168
positron (e^+) 178
possibility ($\P$) 49
deontic ($\P$) 50
doxastic ($\P$) 51
factual ($\P$) 51
logical ($\P$) 48
temporal ($\P$) 49
post office
 $\P$ 302
 $\P$ 296
 $\P$ 314
 $\P$ 314
postal horn
 $\P$ 296
 $\P$ 312
postal mark ($\P$)⁺ *see* turnstile, double bar, down
postbox *see* mailbox
PostgreSQL
 $\P$ 318–319
 $\P$ 318–319
PostScript . . 121, 163, 179, 367, 368, 379
PostScript fonts 179
pot ($\P$) 288
pot of food
 $\P$ 285
 $\P$ 287
potato
 $\P$ 286–287
 $\P$ 285
potted plant ($\P$) 296
pouch ($\P$) 281
pound
 $\P$ 32
 $\P$ ⁺ 19, 31, 382, 383
math mode ($\P$)⁺ 36, 123, 124
pound banknote *see* banknote, pound
pound sign ($\P$)⁺ . . . *see* hash
pouting ($\P$)⁺ . . . 291, 295, 303
power
 $\P$ 173–175
 $\P$ 255
 $\P$ 255
power set ($\P$) 124
praise
 $\P$ 201
 $\P$ 201
pray ($\P$) 310
prayer beads
 $\P$ 296
 $\P$ 312
praying mantis ($\P$) . 264–267
precedes ($\P$)⁺ 67, 71, 73, 77, 81
closed ($\P$) 70
double
 $\P$ 69
 $\P$ ⁺ 76, 78
negated ($\P$)⁺ . . 68, 70, 72, 75, 76, 78, 81
or approximately equal to
($\P$)⁺ 68, 69, 71, 73, 76, 78
or approximately equal to,
negated ($\P$)⁺ 69, 70, 72, 75

- or equal to
 - $\leq^+$. . . 67, 71, 74, 78, 81
 - $\lesssim^+$ 68, 69, 71, 73, 76, 78
 - $\leq^+$ 69, 74, 78
- or equal to, negated
 - $\nless^+$. . . 68, 70, 72, 75, 76, 78, 81
 - $\nless^+$. . . 69, 70, 72, 75, 78
 - $\nless^+$ 69, 75
- or not approximately equal to $(\nless)^+$ 68, 70, 72, 74, 76, 78
- or not equal to
 - $\nless^+$ 69, 74–76, 78
 - $\nless^+$ 70, 74, 75, 78
- or not similar to $(\nless)^+$ 68, 70, 72, 74, 76, 78
- or similar to $(\nless)^+$ 68, 69, 71, 74, 76, 78
- or similar to, negated $(\nless)^+$
 - 69, 70, 72, 75
- under relation $(\nless)^+$ 76, 78
- pregnant woman
 -  307
 -  296
- Preregistered
 -  330–331
 -  330–331
- prescription *see* recipe
- present-value symbols 145, 374
- pretzel () 285
- priest () 208–210
- prime $(\prime)^+$ 155, 157–159
 - backward $(\backslash)^+$ 155, 157–159
 - backward double $(\backslash\backslash)$. . 155
 - backward triple $(\backslash\backslash\backslash)$. . 155
 - double $(\prime\prime)^+$ 155, 158
 - quadruple $(\prime\prime\prime\prime)^+$. . 155, 158
 - triple $(\prime\prime\prime)^+$ 155, 158
- prince
 -  208–210
 -  296
- princess
 -  296
 -  296

quantifiers 125
 quantikz (package) 127, 171, 387, 388
 quantum-mechanics notation 171
 quark (q) 177
 b (b) 177
 c (c) 177
 d (d) 177
 s (s)⁺ 177–178
 t (t) 177
 u (u) 177
 quarter note (♩)⁺ 212, 213, 215–218
 dotted (♩)⁺ 216–218
 double dotted (♩)⁺ 217, 218
 rest (⏏)⁺ 214, 215, 219
 rest, dotted (⏏) 219
 quasi-quotation marks (⏏) *see* delimiters, upper corners
 quaternions (ℍ) *see* alphabets, math
 queen (♔) .. 238–240, 361–363
 question mark
 $?$ 37
 $?$ 311–312
 $?$ 22, 157
 $?$ 296
 $?$ 302
 $?$ 199
 $?$ 199
 double ($??$) 159
 upside down (¿) 19
 quidditch (♣) 240
 quincunx (⋈) 168
 Quine corners (⏏) *see* delimiters, upper corners
 QuinScape (Ⓚ) 315–318
 Quora (Ⓚ) 315–318
 quotation marks 19, 21, 22, 34, 37, 284, 381, 384
 decorative double left
 $“$ 22
 $“$ 199
 decorative double left base
 (“) 199
 decorative double left, inverted (“) 284
 decorative double right
 $”$ 22
 $”$ 199
 decorative double right, inverted (”) 284

decorative left (“) 199
 decorative right (”) .. 199
 decorative single left base
 (“) 199
 double left (“) 19
 double right (”) 19
 double right base (,,) .. 21, 384
 single back (`) 37
 single left (') 19
 single right (') 19
 single right base (') 21, 384
 straight double (”)⁺ 21, 37, 381
 straight double base (”) 34
 straight single (')⁺ 34, 37, 381
 straight single base (') 34
 straight triple (''') 37
 Quran (🕌) 310

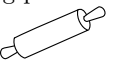
R

R (Ⓜ) 270
 r (r) 163
 fishhook (r) 23
 R Project (Ⓜ) 315–318
 rabbit
 🐰 264–267
 🐰 264–267
 🐰 262
 🐰 262
 🐰 268
 🐰 268
 rabbits (🐰) 264–267
 raccoon
 🦝 264–267
 🦝 262
 racing car
 🏎️ 320
 🏎️ 254
 racing motorcycle (🏍️) 254
 radar
 📡 328
 📡 328
 radiation
 ☢ 284
 ☢ 270
 ☢ 176
 ☢ 311–312

☢ 328–329
 ☢ 328–329
 ☢ 296
 radicals *see* square root
 radio
 📻 296
 📻 312
 radio button
 🔵 296
 🔵 313
 radix (ℝ) 168
 railway car
 🚂 320
 🚂 254
 railway track
 🚦 320
 🚦 254
 rain
 🌧️ 208–210
 🌧️ 258
 rainbow
 🌈 323–325
 🌈 296
 🌈 312
 raindrop 361
 raising hand (🙋)⁺ 291, 295, 303
 rake (🍷) 325–327
 ram
 🐏 200
 🐏 343–346
 🐏 206
 🐏 262
 🐏 268
 ram's horns (🐏) 23
 random (🎲) 173–175
 Raspberry Pi (🍷)⁺ .. 315–319
 rat
 🐭 343–346
 🐭 262
 🐭 268
 ratio (:)⁺ *see* colon, math mode
 rational numbers (ℚ) *see* alphabets, math
 Ravelry (🧶) 315–318
 Raw Font Tables 17, 162
 rays
 three above (↗) 313
 three below (↘) 313
 three left (↵) 313
 three right (↶) 313

- razor  325–327
-  296
- React ()⁺ 315–319
- ReactEurope () 315–318
- ReadMe () 315–318
- real
- $\mathbb{R}$ 119, 123
- $\mathfrak{R}$ 124
- real numbers ($\mathbb{R}$) *see* alphabets, math
- realhats (package) 138, 387, 388
- Rebel () 315–318
- receipt
-  323–325
-  296
- recipe ($\mathbb{R}$) 34, 366
- record
-  255
-  255
-  296
- record, vinyl () 323–325
- rectangle 195, 225–230, 333–334
-  54
-  38
-  38
-  47
-  47
-  193
-  47
-  61
-  194
- filled
-  193
-  194
-  195
-  195
-  195
- recycle (package) 280, 387
- recycling 279, 280, 284, 290–305, 311–312, 332
- ⁺ 279, 284
- ⁺ 279, 332
- ⁺ 279, 280
- ⁺ 296, 311–312
-  279
-  279
- generic materials () 279
- type-1 plastics () 279
- type-2 plastics () 279
- type-3 plastics () 279
- type-4 plastics () 279
- type-5 plastics () 279
- type-6 plastics () 279
- type-7 plastics () 279
- Red Hat
-  315–318
-  318–319
- Reddit
-  315–318
-  315–318
-  315–318
- Redis () 318–319
- redo ()⁺ 173–175
- reduced quadrupole moment (f) 370
- reference (R) 177
- reference mark ($*$) 34, 36
- `\reflectbox` 368
- refresh
-  171–172
-  171–172
- refrigerator () 286–287
- registered trademark ($\text{\textcircled{R}}$)⁺ *see* legal symbols, registered trademark
- relation
- left project () 149
- lifting () 149
- right project () 149
- relational algebra *see* join (database)
- relational symbols 67, 81
- binary 68–71, 73–74, 76–91, 115–117
- negated binary 68–70, 72–76, 78
- triangle 91–93
- religious symbols 186, 187, 257, 310, 333
- resize (package) 30
- reminder ribbon
-  297
-  313
- remove formatting () 173–175
- Renren () 315–318
- repeat () 297
- repeat single () 297
- replace
- all (left) ($\leftarrow$) 113
- all (left/right) ($\leftrightarrow$) 113
- all (right) ($\rightarrow$) 113
- all bound variables (left) ($\leftarrow$) 113
- all bound variables (left/right) ($\leftrightarrow$) 113
- all bound variables (right) ($\rightarrow$) 113
- any (left) ($\leftarrow$) 113
- any (left/right) ($\leftrightarrow$) 113
- any (right) ($\rightarrow$) 113
- any free variables (left) ($\leftarrow$) 113
- any free variables (left/right) ($\leftrightarrow$) 113
- any free variables (right) ($\rightarrow$) 113
- equivalent expressions (left) ($\leftarrow$) 114
- equivalent expressions (left/right) ($\leftrightarrow$) 114
- equivalent expressions (right) ($\rightarrow$) 114
- reply () 173–175
- reply all () 173–175
- Replyd () 315–318
- Republican () 328–329
- request () 281
- rescue worker's helmet () 297
- ResearcherID
-  330–331
-  330–331
- ResearchGate
-  330–331
- R^e 330–331
-  315–318
- resistivity ($\ll$) 177
- `\resizebox` 148, 366
- resmes (package) 44, 387, 388
- Resolving () 315–318
- respondens ($\sim$)⁺ 271
- response ($\mathbb{R}$) 385, 386
- `\restoresymbol` 364
- restriction ($\upharpoonright$)⁺ 95, 99, 100, 104, 105, 110, 115, 160
- barb ($\downharpoonright$)⁺ 115
- mallet ($\downharpoonright$)⁺ 115
- negated ($\downharpoonright$)⁺ 100, 105
- wand ($\downharpoonright$)⁺ 115
- restriction of a measure 44
- restroom
-  257
-  257
-  328–329
-  292
-  304
-  297
-  254
-  254
-  254
-  254

- ¶ 254
 retort (⚡) 275
 retrograde (Ⓡ) 168
 return *see* carriage return
 retweet (🔄) 173–175
 Rev (Ⓔ) 315–318
 reverse solidus (\)⁺ *see* backslash
 reversed letters
 D (Ⓓ) 25
 e (e)⁺ 23, 24
 L, sans serif (Ⓕ) 159
 l, small caps (Ⓛ) 24
 r, small caps (Ⓡ) 24
 reversed symbols 368
 rewind *see* media control symbols, reverse
 rhinoceros (🦏) 262
 rho
 lowercase (ρ)⁺ 20, 120–122
 lowercase variant (ρ)⁺ 120–122
 uppercase (P)⁺ .. 20, 120
 rhombus (◇)⁺ 37, 39–40, 45–52, 95, 157, 158, 192–198, 225–230, 233, 234, 253, 255, 270, 333–334, 358–359
 blue (◆)⁺ 298, 303
 circle (⊖) 47
 concave (◇) 48
 concave, with tick (◇)⁺ 47
 concentric (⊖) 255
 crossed (⊗) 197
 curved (◇)⁺ . 48, 50, 193, 253
 curved, crossed (⊗) ... 50
 curved, dotted (◇) ... 50
 curved, filled (◆)⁺ . 48, 52
 curved, horizontally divided (◇)⁺ 51
 curved, outlined (◇)⁺ 48, 49
 curved, quartered
 ⊖ 49
 ◇ 49
 ◇ 50
 curved, slashed (◇)⁺ 49, 51
 curved, small rhombus, filled (◇) 50
 curved, vertically divided (◇)⁺ 50
 dotted (◇)⁺ ... 45, 46, 50, 158, 192, 194, 197
 dotted multiply (⊗) .. 312
 dotted, with arrow
 ◇→⁺ 95
 ◇⇒⁺ 95
 enclosing (⬠) 193
 error bars (⊞) 193
 error bars, filled (⬠) .. 193
 filled (◆)⁺ . 39, 45–49, 52, 158, 192–195, 197
 filled, shadowed (◆)⁺ . 194
 half filled
 ◆⁺ 194, 196
 ◆⁺ 194–196
 ◆⁺ 194, 196
 ◆⁺ 194–196
 horizontally divided (◇)⁺ . . 45–47, 51, 192, 196
 of blue rhombuses, with dot (◆) 297
 of dots (⋮)⁺ 40, 152
 of filled rhombuses (◆)⁺ 198, 199, 270
 of rhombuses (⊖) 270
 orange (◆)⁺ 298, 303
 outlined (◇) 48
 patterned
 ◆ 196
 ◆ 196
 quartered
 ◇⁺ 45–47, 50
 ◇⁺ 45–47, 49, 196
 rhombus (◇)⁺ 45, 46
 shadowed
 ◇ 195
 ◇ 195
 ◇ 195
 slashed (◇)⁺ 45, 46, 49, 51
 small rhombus, filled (◇)⁺ 50, 193
 striped (◆)⁺ 196
 triangle (◇) 47
 vertically divided (◇)⁺ 45–47, 50, 196
 white on black (⊗) ... 253
 with arrow
 ◇→⁺ 95
 ◇⇒⁺ 95
 ribbon
 🎀 323–325
 🎀 297
 🎀 312
 rice ball
 🍙 285
 🍙 312
 rice bowl
 🍚 285
 🍚 287
 rice cracker
 🍘 285
 🍘 312
 rice sheaf
 🌾 298
 🌾 281
 right angles 156, 160
 rinforzando
 rfz 219
 rf 219
 ring
 🍷 323–325
 🍷 297
 🍷 290
 ring accent (◌)⁺ .. *see* accents, ring
 ring equals (≡) . *see* equal, ring
 ring sum (⊕) *see* circled symbols, plus
 ring within equals (≡) *see* equal, ring
 ringed planet (🪐) 297
 RIP (Ⓡ) 270
 river (🌊) 315–318
 \rlap 31, 195, 371, 372
 road (🛣️) 323–325
 roasted sweet potato
 🍠 285
 🍠 287
 robe (👔) 325–327
 robot
 🤖 323–325
 🤖 297
 rock (🪨) 297
 Rock RMS (🪨) 315–318
 rock, paper, scissors (also lizard, Spock) *see* hand
 rocket
 🚀 323–325
 🚀 279
 🚀 279
 🚀 279
 🚀 279
 🚀 320
 🚀 254
 Rocket.Chat (🗨️) ... 315–318

rockets 254
 rod of Asclepius
  275
  291
 rojud (package) . 245, 246, 387, 388
 roll of paper () 297
 roller coaster
  297
  313
 roller skate () 320
 rolling on the floor laughing ()
 297
 rolling pin
  286–287
  288
 Roman coins 32
 Romania () 243
 Romanian counties .. 245–246
 rooster
  343–346
  262
  268
 roots *see* square root
 ROR
  330–331
  330–331
 rose
  297
  281
 rosette
  200
  297
  281
 roshambo *see* hand, 186
 \rotatebox 30, 368, 372
 rotated letters 22–25, 125
 a
 + 23, 25
 + 23, 24
 e ()+ *see* schwa
 f () 24
 h ()+ 23, 24
 k () 23
 k, small caps () 24
 L, sans serif () 159
 m ()+ 23–25
 r ()+ 23–25
 r, with tail ()+ 23, 24
 s, inverted ()+ 42, 76
 t () 23
 u, small caps () 24
 v (+) 23, 25
 w (+) 23, 25

 y ()+ 23, 25
 rotated symbols 30, 368
 rotating (package) 34, 169
 rotations
 dice 360
 Rubik's Cube 329
 route () 173–175
 rowing
 + 320, 321
  254
 rsfso (package) 162, 387
 RSS
  173–175
  173–175
  171–172
  171–172
 rubbish bin *see* trash
 Rubik's Cube 329
 rubikcube (package) .. 329, 387, 388
 ruble () 32
 Ruby () 318–319
 Ruby on Rails
  318–319
  318–319
 rugby football
  297
  241
 rule delayed ($\Rightarrow$) 77
 ruler
  323–325
  299
  313
 triangular
  301
  313
 runes 15, 211
 Anglo-Frisian 211
 Danish .. *see* normal runes
 Germanic 211
 Hälsinge *see* staveless runes
 long-branch .. *see* normal runes
 runes
 medieval 211
 normal 211
 short-twig 211
 staveless 211
 Swedo-Norwegian *see*
 short-twig runes
 running ()+ 241, 291, 295, 303,
 328–329
 running shirt () 297
 running shirt with sash () 313
 rupee
 ₹ 32

 ₹ 32
 Rust ()+ 315–319

 S
 S () 270
 s
 lazy ()+ *see* rotated
 letters, s, inverted
 long (f)+ 35, 367
 sacrifice () 208–210
 sacsymb (package) 329, 387, 388
 Safari () 315–318
 safety pin () 297
 safety vest () 297
 safety-related symbols 176
 Sagittarius ()+ 166–168, 297,
 335–338
 salad () 285
 Salesforce () 315–318
 salt () 285
 saltire (X) 188
 sampi
 lowercase ()+ 208
 lowercase variant ()+ 208
 uppercase ()+ 208
 sandwich () 285
 Santa Claus
  297
  312
 Santa Claus's hat, as math-mode
 accent () 138
 Sappho () 168
 sarabian (package) 207, 387, 388
 sari () 297
 Sass ()+ 315–319
 satellite () 323–325
 satellite dish
  323–325
  318–319
  198
  297
  314
 satisfies ($\models$)⁺ ... *see* turnstile,
 double dash, right
 Saturn ()⁺ ... 166–168, 279,
 335–338
 save
  173–175
  173–175
 savesym (package) 364
 \savesymbol 364
 saw
  208–210

-  200
 saxophone
 297
 313
 Scala ()⁺ 318–319
 scale
 275
 328–329
 328–329
 328–329
 328–329
 \scalebox 366
 scalerel (package) 372
 scaling
 mechanical 376, 378
 optical 376
 scallions () 286–287
 scarf () 297
 Schlix () 315–318
 school
 323–325
 297
 314
 schoolbag
 325–327
 313
 schwa (ə)⁺ 22, 24, 25
 hooked (ə̃) 23
 Schwartz distribution spaces *see*
 alphabets, math
 scientific symbols 164–178,
 358–359
 scientist ()⁺ 291, 297, 303
 SciHub
 330–331
 330–331
 SciRate
 330–331
 330–331
 scissors 182, 183, 186
 182
 182
 182
 182
 182
 182
 182
 182
 182
 182
 182
 182
 182
 182
 182
 182
 182
 182
 182
 182
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 182
 182

- right ($\angle$)⁺ . 38, 39, 41–43, 158
- semidirect products 38, 39, 158
- semisextile (∇) 168
- semisquare ($\angle$) 168
- semitic transliteration . . 25, 30
- semtrans** (package) . 25, 30, 387, 388
- separated ($\backslash$) 70
- separation vector ($\rangle$) 163
- sequent ($\succ$) 81
- denied ($\nmid$) 81
- Serbia (S) 243
- serial interface (S) 169
- serial port (S) 169
- server (S) 173–175
- service dog (S) 262
- service mark (SM) *see* legal symbols, service mark
- ServiceStack (S) 315–318
- sesquiquadrate (S) 168
- set (S) 208–210
- set difference ($\setminus$)⁺ 37, 38, 40, 41, 43
- set interior (S)⁺ *see* accents, ring
- set intersection ($\cap$)⁺ *see* intersection
- set membership ($\in$)⁺ 73, 77, 82, 123–125
- bar over ($\bar{\in}$)⁺ 77, 123
- bar over, negated ($\nbar{\in}$) . 78
- bar under ($\underline{\in}$) 77
- dot ($\dot{\in}$) 77
- equal ($\equiv$) 77
- extended horizontal line (ϵ)⁺ 76, 77
- negated ($\notin$)⁺ . . 74, 75, 78, 82, 123–125
- plus ($\oplus$)⁺ 68, 76
- reversed ($\ni$)⁺ . . 73, 74, 77, 78, 82, 123–125, 370
- reversed, bar over ($\bar{\ni}$)⁺ 77, 78
- reversed, bar under ($\underline{\ni}$) 123
- reversed, extended horizontal line ($\ni$)⁺ 76, 77
- reversed, negated ($\n\ni$)⁺ 75, 78, 82, 123–125
- reversed, negated, bar over ($\bar{\n\ni}$) 78
- reversed, plus ($\ni$)⁺ . 68, 76
- reversed, short vertical bar ($\ni$)⁺ 76–78
- short vertical bar (ϵ)⁺ 76, 77
- set symmetric difference (Δ) *see* triangle
- set union ($\cup$)⁺ *see* union
- sewing needle (S) 298
- sextile ($\times$) 168
- SGML 384
- sha (III)⁺ 367–368
- shake
-  214
-  214
-  214
-  214
-  214
-  214
- shamrock (S) 298
- shapes (S) 173–175
- share
-  173–175
-  173–175
-  173–175
-  173–175
-  173–175
- shark
-  264–267
-  262
- sharp ($\sharp$)⁺ . . 212, 213, 216, 219
- double ($\times$)⁺ 216, 219
- with extra slashes and stems
-  219
-  219
-  219
-  219
- sharp s
- lowercase (S) 20
- uppercase (SS) 20
- Sharpe, Michael 30
- shaved ice
-  285
-  287
- shears (S) 325–327
- sheep
-  264–267
-  264–267
-  264–267
-  264–267
-  206
-  262
-  268
- Sheffer's stroke ($\mid$)⁺ *see* vertical bar
- bar
- shekel (S) 32
- shell script
-  329
-  329
- shell, operating system (S) 329
- shield
-  200
-  298
-  254
- shinto shrine (S) 298
- ship 254, 320
-  320
-  323–325
-  325–327
-  321
-  320
-  254
-  254
- shipping fast (S) . . . 328–329
- Shirts in Bulk (S) . . . 315–318
- shoe
-  325–327
-  343–346
-  291
-  297
-  301
-  304
-  299
-  293
-  300
-  281
-  281
-  281
-  281
- Shopify (S) 315–318
- shopping bag
-  323–325
-  322
- shopping bags
-  298
-  254
- shopping basket (S) . . 323–325
- shopping cart
-  323–325
-  322
-  298
-  254

- Shopware (☪) 315–318
- short-twig runes 211
- shortcake
 285
 287
- shorts (👖) 298
- shovel (🔨) 275
- show
 173–175
 173–175
- shower
 323–325
 325–327
 259
 298
 254
- shrimp
 286–287
 262
- shrugging (🙄)⁺ . . . 291, 295, 303
- shuffle (package) . . . 44, 387, 388
- shuffle product (⊔)⁺ . . . 43, 44
 complete (□) 44
- shuffle tracks (🔄) 298
- shuttle van (🚌) 323–325
- sieve (🪦) 288
- sigma
 lowercase (σ)⁺ . . . 20, 24, 120, 121
 lowercase variant (ς)⁺ . . . 120–122
 uppercase (Σ)⁺ . . . 20, 120, 121
- sign (📧) 323–325
- sign in (➡) 173–175
- sign language 272–275, 320
 320
 320
- sign out (➡) 173–175
- signal
 173–175
 292
 312
- signature (✍) 173–175
- signs 271
- silly walks 308
- sillypage (package) . . . 308, 387, 388
- sim card (📱) 323–325
- similar (≈)⁺ . . . 67, 70, 73, 77, 369, 372, 382
 colon (≈:) 81
 colon, double (≈::) . . . 81
- dots, rising (≈)⁺ . . . 76, 77
- dots, vertical (≈)⁺ . . . 76, 77
- dotted (≈)⁺ 76, 78
- minus, similar (≈) . . . 77
- negated (≈)⁺ . . . 68, 70, 72, 74, 76, 78
- or equal to
 ≈⁺ . . . 67, 70, 73, 76, 77
 ≈⁺ . . . 67, 70, 73, 77, 91
- or equal to, dotted (≈)⁺ . . . 73, 77
- or equal to, dotted, negated (≈) 78
- or equal to, negated
 ≈⁺ . . . 68, 70, 72, 75, 76, 78
 ≈⁺ . . . 69, 70, 72, 74, 75, 78, 91
- or equal to, reversed
 ≈⁺ . . . 68, 70, 73, 76, 77
 ≈⁺ 70, 73, 77
- or equal to, reversed, negated
 ≈⁺ 69, 72, 74
 ≈⁺ 72, 74
- or greater than (≳) . . . 90
- or greater than or equal to (≧) 90
- or less than (≲) 90
- or less than or equal to (≦) 90
- or not equal to (≠)⁺ . . . 75, 77
- or not equal to, reversed (≠) 74
- reversed (≈)⁺ . . . 68, 70, 73, 76, 77
- reversed, negated (≈)⁺ . . . 69, 72, 74
- thick (≈)⁺ . . . 68, 73, 76, 77
- simplewick (package) 375
- SimplyBuilt (🏠) 315–318
- simpsons (package) . . . 306, 387
- Simpsons characters 306
- since (∴)⁺ . . . see therefore, down
- sine wave
 ~ 159
 ~ 159
- sing (🎤) 208–210
- singer (🎤)⁺ 291, 298, 303
- sink (🚰) 323–325
- SISTRIX (Q) 315–318
- Sitefinity (🔗) 318–319
- sitemap (🗺) 173–175
- Sith (👹) 315–318
- sixteenth note (🎵)⁺ . . . 215–218
- dotted (🎵)⁺ 216–218
- double dotted (🎵)⁺ . . . 217, 218
- rest (🎵)⁺ 214, 215, 219
- rest, dotted (🎵) 219
- sixty-fourth note (🎵) 216
- dotted (🎵) 216
- rest (🎵) 214
- skak (package) 239, 387, 388
- skateboard (🛹) 321
- skating (🛼) 240
- Sketch (🖍) 315–318
- skiing
 240
 240
 298
- skillet (🍳) 286–287
- skin (🐼) 208–210
- skis (🎿) 298
- skull (package) 270, 387, 388
- skull 52, 270, 284, 290–305, 312–314, 361
 52
 52
 328–329
 298
 307
- and crossbones
 270
 284
 298
 314
 328–329
- skunk (🦨) 262
- sky (🌤) 208–210
- sky animal (🐾) 208–210
- sky pillar (🏢) 208–210
- SkyAtlas (∞) 315–318
- Skype
 315–318
 314
 314
- Slack
 315–318
 315–318
- slash (/)⁺ . . . 37, 40, 41, 46, 61, 70, 77, 127, 129–132, 370, 382
 bar over (7) 43

- double ($//$)⁺ . . . 38, 41, 42
fraction ($/$)⁺ 42, 160
hollow ($/$)⁺ 38, 76
horizontally centered . 370
negated ($\nmid$) 168
triple ($///$) 42
slashed (package) 370
slashed letters 370
 b ($\text{\textbackslash b}$) 24
 c ($\text{\textbackslash c}$) 24
 d ($\text{\textbackslash d}$) 24
 O ($\text{\textbackslash O}$) 20
 o ($\text{\textbackslash o}$) 20
 u ($\text{\textbackslash u}$) 24
slashed.sty (file) 370
sled () 321
sleeping () 313
sleeping accommodation () 254
sleeping bag () . . . 325–327
sleet () 258
sleigh () 323–325
slice ($\prec$)⁺ . . . 38, 41, 42, 45, 70
sliders () 173–175
SlideShare () 315–318
sling () 200
slot machine
 298
 241
sloth () 262
Slovakia ($\text{\textbackslash S}$) 243
Slovenia ($\text{\textbackslash S}$) 243
small caps letters
 a ($\text{\textbackslash A}$) 22
 b ($\text{\textbackslash B}$) 22
 d ($\text{\textbackslash D}$) 25
 e ($\text{\textbackslash E}$) 22
 f ($\text{\textbackslash F}$) 23
 g ($\text{\textbackslash G}$)⁺ 22, 25
 h ($\text{\textbackslash H}$) 22
 i ($\text{\textbackslash I}$)⁺ 22, 24
 j ($\text{\textbackslash J}$) 22
 k ($\text{\textbackslash K}$) 23
 l ($\text{\textbackslash L}$) 22
 m ($\text{\textbackslash M}$) 23
 n ($\text{\textbackslash N}$)⁺ 22, 24
 p ($\text{\textbackslash P}$) 23
 q ($\text{\textbackslash Q}$) 23
 r ($\text{\textbackslash R}$)⁺ 22, 24
 u ($\text{\textbackslash U}$)⁺ 22, 24
 y ($\text{\textbackslash Y}$)⁺ 22, 24
smaller than ($\leq$) see less than,
 horizontally barred
smash product ($\ast$)⁺ . . . 41, 43
smiles and frowns 67, 68, 73–78,
 116, 117
 $\smile$ ⁺ 67, 68, 73, 74, 76, 77,
 81, 116, 117, 161
 $\frown$ ⁺ 67, 68, 73, 74, 76, 77,
 81, 116, 117, 161
 both
 $\smile$ ⁺ 73, 81, 116, 117, 161
 $\frown$ ⁺ 73, 81, 116, 117, 161
 both, equals
 $\smile$ ⁺ 116
 $\frown$ ⁺ 116
 $\smile$ ⁺ 116
 $\frown$ ⁺ 116
 both, equals, negated
 $\nsmile$ ⁺ 116
 $\nfrown$ ⁺ 116
 $\nsmile$ ⁺ 116
 $\nfrown$ ⁺ 116
 both, negated
 $\nsmile$ ⁺ 74, 116, 117
 $\nfrown$ ⁺ 75, 116, 117
 double
 $\smile$ ⁺ 116
 $\frown$ ⁺ 116
 double, equals
 $\smile$ ⁺ 116
 $\frown$ ⁺ 116
 double, equals, negated
 $\nsmile$ ⁺ 116
 $\nfrown$ ⁺ 116
 double, negated
 $\nsmile$ ⁺ 116
 $\nfrown$ ⁺ 116
 equals
 $\smile$ 73, 117
 $\frown$ 73, 117
 $\smile$ ⁺ 116
 $\frown$ ⁺ 116
 $\smile$ ⁺ 116
 $\frown$ ⁺ 116
 equals, negated
 $\nsmile$ 74, 117
 $\nfrown$ 75, 117
 $\nsmile$ ⁺ 116
 $\nfrown$ ⁺ 116
 $\nsmile$ ⁺ 116
 $\nfrown$ ⁺ 116
 negated
 $\nsmile$ ⁺ 74, 116, 117
 $\nfrown$ ⁺ 75, 116, 117
 triple
 $\smile$ ⁺ 116
 $\frown$ ⁺ 116
triple, negated
 $\nsmile$ ⁺ 116
 $\nfrown$ ⁺ 116
smiley faces 159–160, 170,
 253, 257, 278, 284, 288–306,
 311–312, 334–338
smog () 259
smoking 254
 323–325
 254
SMS () 173–175
snail
 264–267
 264–267
 264–267
 262
 268
snake 339–340
 208–210
 201
 262
 268
Snapchat
 315–318
 315–318
 315–318
snow plow () 323–325
snow-capped mountain
 299
 313
snowboarding
 240
 299
 241
snowflake 189, 190
 258
 189
 189
 189
 311–312
 259
 325–327
 259
 299
 190
 190
 190

- snowman 290–305, 309, 323–325
 290
 309
 309
 299
 299
so (س) 208–210
soap
 323–325
 299
soccer ball
 257
 240
 299
sock () 325–327
socks
 323–325
 299
sofa
 325–327
 325–327
soft sign (ѣ) 22
softball (⚾) 299
solar panel (☀️) 323–325
Solaris (☼) 318–319
solid (▣) 178
solidus (/)⁺ *see slash*
sombbrero, as math-mode accent
 138
SOON with arrow (→)⁺ 299, 313
sort (♠) 173–175
 alpha down
 ↓ 173–175
 ↓ 173–175
 alpha up
 ↑ 173–175
 ↑ 173–175
 alphabetically
 A–Z 171–172
 AZ 171–172
 amount down
 ↓ 173–175
 ↓ 173–175
 amount up
 ↑ 173–175
 ↑ 173–175
 down (▼) 173–175
 numeric down
 ↓ 173–175
 ↓ 173–175
 numeric up
 ↑ 173–175
- ↑ 173–175
numerically
 123 171–172
 123 171–172
 up (▲) 173–175
SOS (sos) 299
SoundCloud (☁️) 315–318
Sourcetree (🍏) 315–318
South Arabian alphabet 207
south node (📍) 168
sow (🌾) 206
Soyombo
 281
 281
 terminal (🖨) 281
soyombo (package) 281, 387, 388
Soyombo (font) 281
Soyombo symbols 281
spa (🛀) 328–329
space
 non-breaking (␣) 170
 thin 380
 visible (␣)⁺ 19, 159
space shuttle (🚀) 323–325
space symbols 279
spacecraft
 279
 279
spade (♠) *see playing card suits*,
 spade
spaghetti
 285
 287
Spain (🇪🇸) 244
span (📏) 208–210
spanner *see wrench*
sparkle 189, 190, 290–305
 189
 189
 299
 299
 312
 190
 190
 190
spatula () 286–287
- spatulas () 286–287
Speakap (🗣) 315–318
speaker
 muted
 🔇 255
 🔇 256
 🔇 256
 🔇 256
 🔇 256
 🔇 292
 🔇 299
 volume down
 🔇 255
 🔇 256
 🔇 256
 🔇 256
 🔇 299
 volume up
 🔊 255
 🔊 256
 🔊 256
 🔊 256
 🔊 299
Speaker Deck (🔊) 315–318
speaking head (🗣) 299
speaking head in silhouette (🗣) 313
spear (🚰) 206
“special” characters 18
special forty (🗣) 257
speech bubble
 303
 313
 313
angry
 297
 313
 313
ellipsis (⋯) 299
eye (👁) 298
multiple
 313
 313
text (🗣) 313
spell check (AB) 173–175
spherical angles .. 155, 156, 158
spider
 263
 264–267
 264–267

-  264–267
 299
 314
 spider web
 299
 314
 spin () 178
 down () 178
 up () 178
 spin down () 195
 spin up () 195
 spinner () 173–175
 spiral () 328
 spiral note pad () 313
 spiral notepad () 299
 spirals 339–340
 splashing sweat () 313
 splatter () 329
 splotch () 328–329
 sponge () 299
 spoon
  287
  323–325
  299
 spoon symbols (mathematics) *see*
 multimap, *see* multimap
 sporting symbols 290–305,
 312–314
 sports symbols 240, 241
 Spotify () 315–318
 spouting whale
  262
  268
 spray can () 323–325
 Spring () 318–319
 Springer
  330–331
  330–331
 sprinkle () 208–210
 spy () 314
 square ()⁺ 39, 45–52, 157, 159–
 160, 168, 171, 192–196, 198,
 225–230, 240, 302, 333–334,
 339–340, 358–359, 365
 backslashed ()⁺ 51
 backslashed, rounded cor-
 ners () 51
 black ()⁺ 293
 blue () 294
 brown () 294
 crossed ()⁺ 50, 196
 crossed, rounded corners ()
 50
 diagonally striped ()⁺ 193
 dot ()⁺ 51, 196
 dot, rounded corners () 51
 dots surrounding () 198
 dots surrounding, filled ()
 198
 dotted () 194
 dotted, with arrow
 95
 95
 enclosing to the left () 193
 error bars () 193
 error bars, filled () .. 193
 filled ()⁺ 45–47, 49, 50,
 52, 157, 171, 192–196
 filled, containing white circle
 () 170
 filled, outlined ()⁺ 51, 52,
 193
 filled, outlined, rounded cor-
 ners () 52
 filled, rounded corners ()⁺
 49, 52
 filled, shadowed ()⁺ . 195
 green () 300
 grid () 193
 grid, diagonal () ... 193
 half filled, bottom ()⁺ 193,
 197
 half filled, left ()⁺ . 193,
 197
 half filled, lower left () 193
 half filled, lower right () .
 193
 half filled, right ()⁺ 193,
 197
 half filled, top ()⁺ . 193,
 197
 half filled, upper left () .
 193
 half filled, upper right ()
 193
 horizontally divided ()⁺ .
 51, 52, 197
 horizontally divided,
 rounded corners () . 51
 horizontally striped () 193
 nested, lower left () . 193
 nested, lower right () 193
 nested, upper left () . 193
 nested, upper right () 193
 of filled squares () 171–172
 of squares () ... 171–172
 orange () 294
 outlined ()⁺ 49
 outlined, rounded corners
 () 49
 overlapping square () 193
 purple () 296
 quartered ()⁺ .. 49, 197
 quartered, rounded corners
 () 49
 red () 296
 rounded corners ()⁺ . 48,
 52, 193
 shadowed ()⁺ . 195, 199
 slashed ()⁺ 49, 50
 slashed, rounded corners ()
 49
 tick left () 48
 tick right () 48
 vertically divided ()⁺ 50,
 197
 vertically divided, rounded
 corners () 50
 vertically striped () . 193
 white ()⁺ 302
 white with black outline ()
 293
 with arrow
 95
 95
 yellow () 304
 square brackets *see* delimiters
 square impulse 164
 square root
 ⁺ .. 139, 141, 371–372
  173–175
 with hook () 372
 without overbar
  145
  157, 160
 square wave () 328–329
 Squarespace () 315–318
 squeezer () 288
 squid () 263
 squirrel
  264–267
  264–267
 squirt gun () *see* water pistol
 SSRN
  330–331
 SSRN 330–331
 staccatissimo () 220
 Stack Exchange () 315–318

Stack Overflow

 330–331
 330–331
 315–318
 stackengine (package) 372
 StackPath () 315–318
 \stackrelrel 36, 369, 374
 stadium
 299
 314
 stairs 310
 stamp () 323–325
 standard state ($\circ$) 165, 370
 standing ()⁺ 291, 295, 303
 star . 46–48, 157, 168, 189–194,
 196–197, 279, 290–305, 310,
 333–338
 ☆⁺ 45, 46, 189, 190,
 192–194, 197, 279
 ★⁺ 37, 39, 45–47, 157,
 189–194, 197, 211, 374
 ★ 311–312
 279
 ★ 299
 and crescent ()⁺ 299, 310
 crossed out (★) 197
 dotted (★) 197
 eight pointed
 ✨⁺ 189, 190, 297
 ✨⁺ 189, 190
 Epi-Olmec () 208–210
 filled center (★)⁺ 189, 190
 four pointed
 ✨⁺ 189, 190
 ✨⁺ 189, 190
 glowing
 ✨ 167
 ✨ 300
 half () 191
 half filled
 ☆ 191
 ☆ 197
 ☆ 197
 ☆ 197
 ☆ 197
 horizontally slashed (★) 197
 jack (★)⁺ 189
 Jewish (★)⁺ .. see star, of
 David
 knotted (★) 255
 of David (★)⁺ .. 189, 190,
 192, 290–305, 310

of David, dotted (★)⁺ 190,
 297
 of life (★) 191
 open center (★)⁺ 189, 190
 outlined (★)⁺ .. 189, 190
 pentagram (★)⁺ 45, 168,
 178, 189, 190, 192
 pinwheel (★)⁺ .. 189, 190
 plus (★) 197
 shadowed (★)⁺ .. 189, 190
 shooting



..... 167
 279

 298

six pointed

★⁺ .. 39, 189, 190, 194
 ✨⁺ 189

sixteen pointed (★) .. 189

stress outlined (★) .. 190

twelve pointed (★)⁺ .. 189,
 190

vertically slashed (★) .. 197

star warrior, Epi-Olmec



..... 208–210



..... 208–210

Star Wars symbols .. 315–318,

328–329

star-struck () 299

starfont (package) 168, 387, 388

stater (★) 32

station



..... 168



..... 321



..... 254

Statue of Liberty



..... 299



..... 314

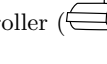
staveless runes 211

staves (package) 276, 387

staves 276

StayLinked () 315–318



steak () 286–287

Steam



..... 315–318



..... 315–318



..... 315–318

steamroller () 325–327

steel

circular (●) 171

flat (—) 171

hexagonal (●) 171

L (L) 171

octagonal (●) 171

rectangular (■) 171

rounded L (L)⁺ 171

rounded T (T)⁺ 171

rounded TT (I) 171

T (T) 171

TT (I) 171

steinmetz (package) .. 165, 387,

388

Steinmetz phasor notation .. 165

step () 208–210

stethoscope



..... 319



..... 299

stick (—) 201

stick figures .. 201, 290, 352–357

Sticker Mule () 315–318

sticky note () 323–325

stigma

lowercase (τ)⁺ 208

lowercase variant (ξ) .. 208

uppercase (Γ)⁺ 208

stix (package) 42,

43, 47, 48, 53, 61, 62, 77,

78, 84, 89, 90, 93, 107, 109,

110, 118, 122–124, 126, 131,

137, 141, 152, 155, 156, 159,

160, 166, 169, 176, 193, 194,

213, 234, 236, 387, 388

stmaryrd (package) 38,

54, 68, 82, 91, 95, 112, 118,

126, 128, 365, 370, 386–388

stock chart () 313

stone man (▲) 259

stool



..... 325–327



..... 325–327



..... 325–327

stop sign



..... 176



..... 311–312



..... 299

stoplight see traffic light

store () 323–325

slashed ()⁺ .. 173–175

stormy () 259

stove see oven

strainer () 200

Strava () 315–318

strawberry



. 286–287



. 286–287



. 285



. 287

stream () 173–175

street view () 173–175

strict biconditional ($\Leftrightarrow$) 69

strict converse implication ($\Leftarrow$)⁺ 69, 76, 77

strict implication ($\Rightarrow$)⁺ 69, 76, 77

strikethrough () 173–175

striking through ($\dashv$) 31

Stripe



. 315–318



. 315–318



. 315–318

stroked letters

h ($\hbar$)⁺ 123, 124

L ($\mathbb{L}$) 20

l ($\mathbb{l}$) 20

stroopwafel () 323–325

student ()⁺ 291, 299, 303

Studio Vinari () 315–318

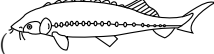
StumbleUpon



. 315–318



. 315–318

sturgeon () 264–267

.sty files 16

subatomic particles 177–178

subbunch ($\sqsubset$)⁺ *see* subset, square

submap ($\sqsubseteq$)⁺ *see* subset, square

submarine () 325–327

subscript ($\mathbf{x}_i$) 173–175

subscripts

new symbols used in 371

subset 82–85

approximately equal to ($\approx$)

. 84

atop subset ($\subseteq$) 85

atop superset ($\supseteq$) 85

backslash ($\backslash$) 84

circle, strict ($\odot$) 84

closed ($\sqsupset$) 84

closed, strict ($\sqsupset$) 84

dotted ($\dot{\sqsubseteq}$) 84

dotted square ($\sqsupseteq$) 85

dotted square, negated ($\nsubseteq$)

. 85

dotted square, negated strict

($\nsubseteq$) 85

dotted square, strict ($\sqsupseteq$) 85

dotted, strict ($\sqsupseteq$) 84

double ($\sqsubseteq$) *see* subset, finite

finite ($\sqsubseteq$) 85

finite square, negated strict

($\nsubseteq$)⁺ 83, 84

finite, negated strict ($\nsubseteq$)⁺ 82–85

finite, strict ($\sqsubseteq$)⁺ 82–85

finite, strict square ($\sqsupseteq$)⁺ 83, 84

left arrow, strict ($\Leftarrow$) 84

negated finite ($\nsubseteq$) 85

ordinary

$\sqsubseteq$ ⁺ 82–85

$\sqsupseteq$ ⁺ 82–85

ordinary, negated

$\nsubseteq$ ⁺ 82–85

$\nsubseteq$ ⁺ 82–85

plus ($\sqsubseteq$)⁺ 82, 84

plus, strict

$\sqsubseteq$ ⁺ 82, 84

$\nsubseteq$ 85

proper

$\sqsubset$ 82

$\sqsupset$ 82

$\sqsubset$ 82

$\sqsupset$ 82

$\sqsubset$ 83

$\sqsupset$ 83

$\sqsubset$ 83

$\sqsupset$ 83

$\sqsubset$ 83

$\sqsupset$ 83

$\sqsubset$ 83

$\sqsupset$ 84

$\sqsubset$ 84

$\sqsupset$ 84

$\sqsubset$ 84

$\sqsupset$ 84

$\sqsubset$ 84

$\sqsupset$ 84

$\sqsubset$ 84

$\sqsupset$ 85

$\sqsubset$ 85

$\sqsupset$ 85

$\sqsubset$ 85

proper square

$\sqsupset$ ⁺ 83–85

$\nsubseteq$ ⁺ 83, 84

right arrow, strict ($\Rightarrow$) 84

similar to ($\approx$) 85

square

$\sqsubseteq$ ⁺ 82–85

$\sqsupseteq$ ⁺ 83, 84

square, negated

$\nsubseteq$ ⁺ 82–85

$\nsubseteq$ ⁺ 83–85

strict ($\sqsubseteq$)⁺ 82–85

strict square ($\sqsupseteq$)⁺ 82–85

strict square, negated ($\nsubseteq$)⁺

. 82–85

strict, negated ($\nsubseteq$)⁺ 83–85

times, strict ($\nsubseteq$) 84

subway () 323–325

succeeds ($\succ$)⁺ 67, 70, 73, 77, 81

closed ($\succ$) 70

double

$\gg$ 69

$\gg$ ⁺ 76, 77

negated ($\nsubseteq$)⁺ 68, 70, 72,

74, 76, 78, 81

or approximately equal to

($\approx$)⁺ 68–70, 73, 76, 77

or approximately equal to,

negated ($\nsubseteq$)⁺ 69, 70, 72,

74

or equal to

$\succ$ ⁺ 67, 70, 73, 77, 81

$\succ$ ⁺ 68–70, 73, 76, 77

$\approx$ ⁺ 69, 73, 77

or equal to, negated

$\nsubseteq$ ⁺ 68, 70, 72, 74, 76,

78, 81

$\nsubseteq$ ⁺ 69, 75

$\nsubseteq$ ⁺ 69, 70, 72, 74, 78

or not approximately equal

to ($\nsubseteq$)⁺ 68, 70, 72, 75–77

or not equal to

$\nsubseteq$ ⁺ 69, 75–77

$\nsubseteq$ ⁺ 70, 75, 77

or not similar to ($\nsubseteq$)⁺ 68,

70, 72, 75–77

or similar to ($\nsubseteq$)⁺ 68–70,

73, 76, 77

or similar to, negated ($\nsubseteq$)⁺

. 69, 70, 72, 75

under relation ($\nsubseteq$)⁺ 76, 77

such that ($\ni$) 368, 370

sugar () 286–287

suitcase *see* luggage

sum (Σ)⁺ 54, 59–61

circular (Σ)⁺ 59–61

- horizontally extensible ($\sum$)
 67
- summit
 † *see* cross (crucifix)
 ▲ *see* triangle, filled
 △ *see* triangle
- sun 166–168, 198, 253, 258, 259,
 311–312, 335–338, 361, 365
 ☀⁺ ... 166, 167, 253, 258
 ☂ 208–210
 * 170
 ☀ 311–312
 ☀ 259
 ☀ 259
 ☀ 259
 ☀ 259
 ☀ 258
 ☀ 258
 astronomical (☉)⁺ 166–168,
 365
 behind cloud
 ☂ 258
 ☂ 258
 ☂ 258
 ☂ 258
 ☂ 258
 ☂ 258
 behind cloud with rain (☂) 258
 eclipsed (●) 258
 half (☉) 258
 sunglasses (🕶) 314
 sunrise
 ☀ 300
 ☀ 312
 over mountains
 ☀ 300
 ☀ 312
 sunset over buildings
 ☀ 300
 ☀ 312
 superhero (🦸)⁺ .. 291, 300, 303
 Superpowers (🦸) 315–318
 superscript (X¹) 173–175
 superscripts
 new symbols used in .. 371
 superset 82–85
- approximately equal to ($\approx$)
 84
 atop subset ($\supset$) 85
 atop superset ($\supseteq$) 85
 circle, strict ($\supset$) 84
 dotted ($\supset$) 85
 dotted, strict ($\supset$) 84
 finite square, negated strict
 ($\nexists$)⁺ 83, 84
 finite, negated strict ($\nexists$)⁺ ..
 82–84
 finite, strict ($\supset$)⁺ .. 82–84
 finite, strict square ($\supset$)⁺ 83,
 84
 left arrow, strict ($\supset$) .. 84
 ordinary
 $\supset$ ⁺ 82–84
 $\supseteq$ ⁺ 82–84
 ordinary, negated
 $\nexists$ ⁺ 82–85
 $\nexists$ ⁺ 82–85
 plus ($\supset$)⁺ 82, 84
 plus, strict
 $\supset$ ⁺ 82, 84
 $\supset$ 85
 proper ($\supset$)⁺ 82–85
 proper square
 $\supset$ ⁺ 83, 84
 $\supseteq$ ⁺ 83, 84
 right arrow, strict ($\supset$) 85
 similar to ($\supset$) 85
 solidus ($\supset$) 85
 square
 $\supset$ ⁺ 82–84
 $\supseteq$ ⁺ 83, 84
 square, negated
 $\nexists$ ⁺ 83, 84
 $\nexists$ ⁺ 82–84
 strict ($\supset$)⁺ 82–84
 strict square ($\supset$)⁺ .. 82–85
 strict square, negated ($\nexists$)⁺
 82–84
 strict, negated ($\nexists$)⁺ 83–85
 subset ($\supset$) 84
 subset dash ($\supset$) 85
 times, strict ($\supset$) 84
 supervillain (🦹)⁺ . 291, 300, 303
 Supple (🦹) 315–318
 support (🦹) 171–172
 supset
 closed ($\supset$) 84
 closed, strict ($\supset$) 84
 surface ($\supset$) 178
 surfer (🏄) 241
 surfing (🏄)⁺ 291, 295, 304
- survey sign (📍) 259
 SUSE (🐧)⁺ 315–319
 sushi
 🍣 285
 🍣 287
 suspension railway
 🚆 321
 🚆 254
 SVG (🖼) 318–319
 svrsymbols (package) . 177, 387,
 388
 swan (🦢) 263
 swatchbook (📖) 323–325
 sweat droplets (💧) 300
 Sweden (🇸🇪) 244
 Swedo-Norwegian runes ... *see*
 short-twig runes
 🌿
 sweet potato (🍠) . 286–
 287
 Swift (🚚) 315–318
 swimmer (🏊) 241
 swimming (🏊)⁺ 240, 291, 295,
 304
 swimming pool (🏊) . 323–325
 Switzerland (🇨🇭) 244
 sword
 ⚔ 206
 = 201
 multiple, crossed (✂)⁺ 257,
 275, 284, 296
 swung dash (～)⁺ .. *see* similar
 Symbol (font) ... 121, 367, 368
 symbols
 academic profile . 330–331
 alpine 259
 ancient language 200–211
 annuity 145, 374
 astrological 166–168,
 334–338
 astronomical 166–168, 278,
 334–338
 Begriffsschrift ... 153, 154
 biological 176
 block-element 276
 body-text 18–35
 bold 380
 box-drawing 276
 boxed .. 38, 45–47, 55–56
 brand 314–319
 calendar 261
 chess .. 238–240, 290–305,
 361–363
 cipher 278

- clock 253, 260, 261, 311–312
- communication 171
- computer hardware . . 169, 290–305, 312–314
- contradiction 36, 118
- cooking 286–288
- counties 245–246
- countries 242–244
- crystallography . . 358–359
- currency 31–33, 37, 159–160, 163, 290–305, 312–318
- dangerous bend 255, 311–312
- database . . 39–41, 67–69, 73–74, 159–160
- definition 36, 374
- dictionary . . . 22–25, 275
- digital logic . . 170, 357–358
- dingbat 179–199
- disability 320
- electrical 164
- engineering . . 159–160, 164, 171
- Epi-Olmec 208–210
- extensible 139–142, 144–150, 165, 367, 374–375
- Feynman diagram . . . 177
- file 309
- Frege logic . . 111, 125, 153, 154, 160
- game-related . . . 233–241, 360–363
- genealogical 253
- general 253
- geographical 242–252
- GINETEX 257
- Go stones 240
- Halloween 52, 150
- horoscope 166–168, 335–338
- IBM PC 170
- informator 239
- inverted 368
- Isthmian 208–210
- knitting 282
- Knuth’s 255
- laundry 257
- legal 19, 33, 34, 383
- letter-like 123–125, 330–331
- life insurance . . . 145, 374
- Linear A 202
- Linear B 205, 206
- linear logic 37
- linguistic 22–25, 30
- log-like 118, 119, 380
- logic 37–39, 44, 45, 54, 58–60, 67, 81, 113–115, 123–125, 161
- Magic: The Gathering* . 361
- magical signs 276
- map 333–334
- maps . . 242–246, 312–314
- mathematical 36–163
- media control . . . 255, 256, 312–314
- medical . 186, 275, 290–305, 319
- METAFONTbook 255
- metrical 271, 272
- miscellaneous 157–161, 198, 199, 253–331
- monetary . . 31–33, 37, 163, 290–305, 312–314
- musical . 173–175, 212–232, 311–314, 328, 360
- non-commutative division 151
- orchestrated objective reduction 329
- particle physics . . 177–178
- peace . . 290–305, 311–312, 328–329
- Phaistos disk 200
- phonetic 22–25, 30
- physical 164
- Pitman’s base 12 . 155, 269
- present value . . . 145, 374
- proto-Semitic 201
- pulse diagram 164
- recycling . . 279, 280, 284, 290–305, 311–312, 332
- relational 67, 81
- religious . 186, 187, 257, 310, 333
- reversed 368
- rotated 368
- runes 211
- safety-related 176
- scientific . 164–178, 358–359
- semaphore 355–357
- Simpsons characters . . 306
- smiles and frowns . . 67, 68, 73–78, 116, 117
- Soyombo 281
- space 279
- spoon (mathematics) . 115, 117
- sporting . 290–305, 312–314
- sports 240, 241
- Star Wars 315–318, 328–329
- staves 276
- subset and superset . 82–85
- technological . . . 164–178
- TeXbook 255
- transliteration 25, 30
- transportation 254, 320–321
- upside-down . . 368, 381–382
- user-interface . . . 171–175
- variable-sized . . 54–66, 366
- VLSI 357–358
- weather . 258, 259, 311–312
- Web 330–331
- yin-yang . 257, 284, 290–305, 310–312, 339–340
- zodiac . . 166–168, 335–338
- symbols.tex** (file) . . . 364, 387
- Symfony (⁺) 315–319
- synagogue
 -  310
 -  300
 -  310
- sync (⁺) 173–175
- syringe
 -  319
 -  300
 -  312
- T**
- 
 - T () 21, 270
- T-shirt
 -  323–325
 -  300
 -  281
- t4phonet (package) . . 25, 29, 387, 388
- table () 173–175
- table tennis *see* ping pong
- tablet
 -  321
 -  323–325
 -  322
- tabs () 171–172
- tachyon () 178
- tack (⁺) *see* turnstile
- taco
 -  285
 -  287
- tag
 -  323–325
 -  322

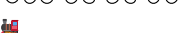
tailed letters

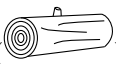
- c (c)⁺ 22, 24
- c, stretched
 - ℄ 23
 - ℄ 23
- d
 - đ 22
 - đ 23
 - đ⁺ 24, 25
- d, with hook (đ) 22
- esh (f)⁺ 22, 24
- h, with hook (h) 24
- j (j)⁺ 23
- l (l)⁺ 23, 24
- m (m) 22
- n
 - n⁺ 22, 25
 - n⁺ 22, 24
 - n 23
- r (r)⁺ 22, 24
- s
 - š 22
 - š 24
- t
 - t⁺ 22, 24
 - ţ 23
 - ţ 25
- t, inverted (t) 23
- z
 - z *see* round z
 - z 22
 - z 22
 - z⁺ 23, 25
 - z 24
- takeout box (☎) 285
- taking bath (♨) 295
- tally markers 205, 268, 269
 - ┆┆┆┆┆┆ 269
 - ┆┆┆┆┆┆┆ 268
- tamale (🌯) 285
- tangerine
 - 🍊 285
 - 🍊 287
- tape
 - 📼 198
 - 📼 323–325
 - 📼 199
- tape cartridge (📼) 312
- target
 - 🎯 325–327
 - 🎯 241
- tasks (☹) 173–175
- Tate-Shafarevich group *see* sha

- tattooed head (👤) 200
- tau
 - lowercase (τ)⁺ 20, 120, 121
 - uppercase (T)⁺ 20, 120
- tau lepton
 - minus (τ^-) 178
 - plus (τ^+) 178
- Taurus (♉)⁺ 166–168, 300, 335–338
- tautology (T)⁺ . . *see* turnstile, down
- taxi 254, 320
 - 🚕 320
 - 🚕 323–325
 - 🚕 321
 - 🚕 320
 - 🚕 254
 - 🚕 254
- tea kettle (🍵) 286–287
- teacher (👩)⁺ 291, 300, 304
- teacup without handle
 - 🍵 285
 - 🍵 287
- TeamSpeak (🗣) 315–318
- teapot (🍵) 285
- technical (⊕) 275
- technological symbols 164–178
- technologist (👩)⁺ 291, 300, 304
- teddy bear (🐻) 300
- teeth (🦷) 323–325
- Telegram
 - 📠 315–318
 - 📠 315–318
- telephone
 - ☎ 198
 - ☎ 171
 - ☎ 270
 - ☎ 281
 - ☎ 325–327
 - ☎ 329
 - ☎ 253
 - ☎ 300
 - ☎ 312–314
 - ☎ 312–314
- telephone handset (📞)⁺ 300, 312–314, 321–325, 329
 - atop modem (📞)⁺ 312–314
 - circled (📞)⁺ . . *see* circled symbols, telephone handset
 - inverse (📞)⁺ 328–329
 - slashed (📞) 328–329

- volume (📖) 328–329
- with page (📖)⁺ 312–314
- telescope
 - 🔭 300
 - 🔭 313
 - man looking through (🔭) 318–319
- television
 - 📺 323–325
 - 📺 325–327
 - 📺 300
 - 📺 312
- temperature
 - high (🌡) 259
 - low (🌡) 259
- ten thousandths (‰)⁺ . . . *see* permyriad
- Tencent QQ (👤) 315–318
- Tencent Weibo (👤) 315–318
- tenge (₸) 32
- Tennent, Bob 36
- tennis ball (🎾) 300
- tennis racquet and ball (🎾) 241
- tensor product (⊗) . . *see* circled symbols, multiplication
- tent
 - 🏕 259
 - 🏕 325–327
 - 🏕 300
- tenuto (◡) 220
- terminal (➤) 173–175
- terminus
 - ⊗⁺ 271
 - ⊕⁺ 271
- test tube (🧪) 300
- testfont.dvi (file) 378
- testfont.tex (file) 377, 378
- tetartemorion (⋈) 32
- tetrahedron (🔺) 311–312
- teubner (package) 32, 153, 208, 272, 387, 388
- TeX 16, 17, 43, 66, 67, 81, 92, 93, 111, 138, 143, 147, 148, 152, 162, 165, 246, 276, 366–375, 377–380, 382, 384, 385, 390
- .tex files 384, 385
- TeXbook, The 368, 369, 371–373, 375, 379
- symbols from 255
- text height (Tt) 173–175

- text width () 173–175
- textcomp (package) . . . 16, 19, 26, 31, 33, 34, 94, 135, 160, 165, 212, 253, 364, 382, 384, 387, 388
- textgreek (package) 20, 121, 387, 388
- .tfm files 16, 162, 332, 366, 385
- tfruppee (package) . 32, 387, 388
- Thành, Hàn Thế 373
- The Red Yeti () . . . 315–318
- theater masks () . . 323–325
- Themeco () 315–318
- Themeisle () 315–318
- therefore ($\therefore$)⁺ . . 40, 68, 69, 76, 151–153
- down ($\downarrow$)⁺ 39, 68, 76, 151–153
- left ($\leftarrow$)⁺ 40, 152
- right ($\rightarrow$)⁺ 39, 152
- thermodynamic ($\pm$) 159
- thermometer 258, 259, 323–325
-  259
-  259
-  258
-  258
- empty () 259
- full () 259
- half () 259
- quarter () 259
- three quarters () 259
- theta
- lowercase (θ)⁺ . 20, 22, 24, 120, 121
- lowercase variant (ϑ)⁺ 120–122
- uppercase (Θ)⁺ . 20, 120, 121
- thin fog () 258
- thin space 380
- ThinkPeaks () 315–318
- thirty-second note ()⁺ 215–218
- dotted ()⁺ 216–218
- double dotted ()⁺ . 217, 218
- rest ()⁺ 214, 215
- thorn
- lowercase ($\mathfrak{b}$)⁺ . 20, 22, 24, 25, 383
- uppercase ($\mathfrak{B}$)⁺ 20, 25, 383
- thought bubble
-  300
-  313
-  313
- text () 313
- thousandths (‰)⁺ *see* per mill
- thread
-  201
-  201
-  300
- Threadprint () 318–319
- throat () 325–327
- throne () 208–210
- thumb pizzicato (ϑ) 220
- thumbtack *see* pushpin
- thus ($\therefore$)⁺ *see* therefore
- tiara () 200
- tick marks . . . *see* check marks
- ticket
-  322
-  300
-  313
- tiger
-  263
-  263
-  268
-  268
- TikTok () 315–318
- TikZ (package) . . . 17, 26, 167, 176, 181, 183–185, 187–190, 196–199, 213, 234–238, 241, 248, 249, 254, 256, 258–260, 267, 268, 270, 279, 281, 283, 287–290, 307, 309, 310, 312, 314, 329, 331, 346, 348, 373
- tikzsymbols (package) . 288–290, 387, 388
- tilde ($\sim$) . 19, 22–28, 31, 34, 37, 136, 139, 144, 374, 382
- extensible 139, 144
- lowered ($\sim$) 34, 382
- vertically centered . . . 382
- time
-  208–210
-  208–210
- time interval () 260
- time of day 260, 261
- time signatures . 212, 216, 217, 219, 220
- times ($\times$)⁺ . 37, 38, 40–42, 69, 160
- big ($\times$)⁺ 55, 59, 61
- closed bottom ($\times$)⁺ 39–43
- closed left ($\times$)⁺ . . . 38–42
- closed left and right ($\times$)⁺ 41, 69
- closed right ($\times$)⁺ . . 38–43
- closed top ($\times$)⁺ 40, 41, 43
- closed top and bottom ($\times$) 43
- decorative
- $\times$ 154
- $\times$ 156, 188
- $\times$ 157, 188
- $\times$ 188
- $\times$ 188
- $\times$ 292
- dotted ($\times$)⁺ 37, 39, 41, 43
- double ($\times$)⁺ 211
- filled left ($\times$)⁺ 42, 77
- filled right ($\times$)⁺ . . . 41, 78
- half rim, left ($\times$) 43
- half rim, right ($\times$) . . . 43
- hollow ($\times$)⁺ 156, 188
- underbar ($\times$)⁺ 40, 42
- vector ($\times$) 43
- Times Roman (font) . . 32, 366
- timing (package) 164
- tint () 173–175
- slashed () 173–175
- tipa (package) 22, 23, 25, 26, 28, 29, 368, 387, 388
- tipping hand ()⁺ 291, 295, 304
- tipx (package) . . . 23, 387, 388
- title
-  208–210
-  208–210
-  208–210
- to () 208–210
- toggle off () 173–175
- toggle on () 173–175
- toilet
-  323–325
-  325–327
-  300
-  254
- toilet paper
-  323–325
-  325–327

- slashed () 328–329
 Tokyo tower
 300
 314
 tomato
 286–287
 285
 287
 tombstone () 300
 Tomcat () 318–319
 tongue
 325–327
 300
 312
 toolbox
 323–325
 300
 tools () . . . 312–314, 323–325
 tooth
 323–325
 300
 toothbrush () 300
 top (T)⁺ . . . *see* turnstile, down
 above bottom (I)⁺ . . . 124,
 371, 372
 top hat, as math-mode accent
 138
 TOP with arrow ()⁺ . . . 300, 313
 torah () 310
 torii gate () 310
 tornado
 325–327
 258
 torus (T) . . . *see* alphabets, math
 toucan () 264–267
 towel () 325–327
 trackball
 300
 312
 tractor
 323–325
 325–327
 325–327
 321
 254
 Trade Federation () . . . 315–318
- trademark (TM)⁺ *see* legal
 symbols, trademark
 traffic light
 311–312
 311–312
 311–312
 311–312
 323–325
 321
 321
 254
 254
 trailer () 323–325
 train 254, 320
 320
 275
 323–325
 325–327
 321
 321
 320
 321
 254
 254
 254
 254
 254
 tram
 323–325
 321
 321
 254
 254
 transform . . . *see also* alphabets,
 math
 80
 148
 148
 80
 76, 80
 76, 80
 76, 80
 76, 80
 80
 80
 80
 80
- transgender ()⁺ . . . *see* gender
 signs, male with stroke and
 male and female
 transliteration symbols . . . 25, 30
 transportation symbols . . . 254,
 320–321
 transpose 38
 transversal intersection (h)⁺ . . . *see*
 pitchfork
 trapezoid () 193
 trash
 323–325
 322
 301
 313
 restore from ()⁺ . . . 173–175
 tree 289, 361
 289
 323–325
 325–327
 343–346
 322
 apple () 325–327
 autumn () 289
 Christmas
  295
  312
  325–327
 deciduous
  281
  297
 evergreen
  281
  298
 palm
  281
  294
  325–327
 plane () 200
 spring () 289
 summer () 289
 tanabata
  300
  312
 winter () 289
 Trello () 315–318
 tréma ()⁺ . . . *see* accents, diæresis
 trfsigns (package) . . . 80, 124, 148,
 387

- triangle ($\triangle$)⁺ . . . 16, 37, 38, 42,
43, 45–52, 54, 87, 89, 91–
93, 157, 159–161, 168, 170,
192–197, 225–230, 240, 259,
333–334, 358–359, 365
bar through ($\triangleleft$)⁺ 47, 159
bar under ($\triangle$)⁺ 37, 38, 42,
87, 89, 92, 193
containing filled triangle
($\triangle$)⁺ 50–52
containing triangle ($\triangle$) 194
crossed ($\triangle$)⁺ 50, 196, 197
dot over ($\triangle$) 193
dotted ($\triangle$)⁺ . . . 50, 51, 193,
196, 197
enclosing $\triangle$ 193
equals ($\triangle$)⁺ . . . 87, 91–93
equals, negated ($\ntriangle$)⁺ . . . 87,
91–93
filled ($\blacktriangle$)⁺ 38,
45–50, 52, 91–93, 157, 170,
192–197, 253, 255, 259, 365
half filled (∇)⁺ . . . 193, 194,
196, 197
horizontally divided ($\triangle$)⁺ .
. 51, 196, 197
impossible ($\triangle$) 290
minus ($\triangle$) 47
multiplication ($\triangle$) . . . 47
negated ($\ntriangle$)⁺ . . . 87, 91–93
one third filled (∇)⁺ . . . 196,
197
outlined ($\triangle$)⁺ 48, 49
plus ($\triangle$) 47
quartered ($\triangle$)⁺ . . . 49, 196,
197
red ($\color{red}\triangle$)⁺ 296, 297
right ($\triangle$)⁺ . . . 93, 192–194
right, equals ($\triangle$) 93
right, filled ($\blacktriangle$)⁺ 193
rounded corners ($\triangle$) . . . 254
s ($\triangle$) 193
serifs ($\triangle$) 47
slashed ($\triangleright$)⁺ 49, 51
striped ($\blacktriangle$)⁺ 196
two ($\triangleright$) 93
two thirds filled (∇)⁺ 196,
197
vertical bar ($\triangleleft$)⁺ 93
vertically divided ($\triangle$)⁺ 50,
196, 197
triangle relations 91–93
tribar ($\triangle$) *see* triangle,
impossible
- tricycle () 325–327
trident
 288
 301
 313
trigonometric functions 118, 119
trill () 214
trine ($\triangle$) 168
trolleybus
 321
 254
trophy
 323–325
 301
 241
tropical drink
 285
 287
trsym (package) . . . 80, 387, 388
truck
 323–325
 325–327
 325–327
 325–327
 325–327
 325–327
 325–327
 325–327
 325–327
 325–327
 325–327
 325–327
 325–327
 320
 320
 254
fast () 328
true (T) 125
trumpet
 301
 313
trunk () . . . 325–327
TTY () 320
- TUGboat 139, 390
tuki () 208–210
tukpa () 208–210
tulip
 325–327
 301
 281
tumble dry () 257
tumbler glass () 285
Tumblr
 315–318
 315–318
 314
 314
turkey
 264–267
 264–267
 263
turn () 214
reversed  214
turnstile (package)⁺ 79, 80, 387,
388
turnstile
double bar, double dash,
down ($\overline{\overline{}}$)⁺ 71, 74
double bar, double dash,
down, negated ($\overline{\overline{}}$)⁺ . . . 72,
75
double bar, double dash, left
($\equiv$)⁺ 69, 70, 73, 74, 76, 77
double bar, double dash, left
and right ($\equiv$) 77
double bar, double dash, left,
negated ($\ncong$)⁺ 70, 72, 74,
75
double bar, double dash,
northeast ($\nwarrow$) 70
double bar, double dash,
northeast, negated ($\nwarrow$) 72
double bar, double dash,
northwest ($\swarrow$) 71
double bar, double dash,
northwest, negated ($\swarrow$) 72
double bar, double dash,
right ($\equiv$)⁺ 69, 71, 73, 74,
76, 78
double bar, double dash,
right, negated ($\ncong$)⁺ . . . 68,
70, 72, 73, 75, 76, 78

- double bar, double dash, southeast ($\llcorner$) 70
- double bar, double dash, southeast, negated ($\lrcorner$) 72
- double bar, double dash, southwest ($\gg$) 71
- double bar, double dash, southwest, negated ($\ll$) 72
- double bar, double dash, up ($\underline{}$)⁺ 71, 74
- double bar, double dash, up, negated ($\underline{}^+$) 72, 75
- double bar, down ($\bar{}$)⁺ 71, 73, 74, 77, 160
- double bar, down, negated ($\bar{}^+$) 72, 75
- double bar, left ($\neg$)⁺ . 70, 73, 74, 76, 77
- double bar, left and right ($\neg$) 77
- double bar, left, negated ($\neg$)⁺ 70, 72, 74, 75
- double bar, northeast ($\swarrow$) 70
- double bar, northeast, negated ($\swarrow$) 72
- double bar, northwest ($\searrow$) 71
- double bar, northwest, negated ($\searrow$) 72
- double bar, right ($\vdash$)⁺ 68–71, 73, 74, 76, 78, 81
- double bar, right, negated ($\vdash$)⁺ . 69, 70, 72, 73, 75, 76, 78, 81
- double bar, southeast ($\swarrow$) 70
- double bar, southeast, negated ($\swarrow$) 72
- double bar, southwest ($\searrow$) 71
- double bar, southwest, negated ($\searrow$) 72
- double bar, triple dash, right ($\equiv$) 81
- double bar, triple dash, right, negated ($\equiv$) 81
- double bar, up ($\perp$)⁺ 71, 74, 78
- double bar, up, negated ($\perp$)⁺ 72, 75
- double bar, wavy dash, right ($\sim$) 81
- double bar, wavy dash, right, negated ($\sim$) 81
- double bar, wavy double dash, right ($\approx$) 81
- double bar, wavy double dash, right, negated ($\approx$) 81
- double dash, down (π)⁺ 71, 74, 77
- double dash, down, negated (π)⁺ 72, 75
- double dash, left ($\Rightarrow$)⁺ 69, 70, 73, 74, 76, 77, 368
- double dash, left, negated ($\Rightarrow$)⁺ 70, 72, 74, 75
- double dash, northeast ($\swarrow$) 70
- double dash, northeast, negated ($\swarrow$) 72
- double dash, northwest ($\searrow$) 71
- double dash, northwest, negated ($\searrow$) 72
- double dash, right ($\models$)⁺ 67–69, 71, 73, 74, 76–78, 81, 368
- double dash, right, negated ($\models$)⁺ . 68, 70, 72, 73, 75, 76, 78, 81
- double dash, southeast ($\swarrow$) 70
- double dash, southeast, negated ($\swarrow$) 72
- double dash, southwest ($\searrow$) 71
- double dash, southwest, negated ($\searrow$) 72
- double dash, up ($\perp$)⁺ . 69, 71, 74, 76, 78, 81, 125, 371
- double dash, up, negated ($\perp$)⁺ 72, 75
- down ($\top$)⁺ . 38, 71, 74, 77, 123–125, 159, 371
- down, negated ($\top$)⁺ 72, 75, 123, 159
- left ($\neg$)⁺ 67, 70, 71, 73, 74, 77
- left, long ($\longrightarrow$)⁺ 73, 74, 77
- left, long, negated ($\longrightarrow$)⁺ 75
- left, negated ($\neg$)⁺ 70, 72–75
- northeast ($\swarrow$) 70
- northeast, negated ($\swarrow$) 72
- northwest ($\searrow$) 71
- northwest, negated ($\searrow$) 72
- right ($\vdash$)⁺ . 67, 70, 71, 73, 74, 77, 78, 81
- right, long ($\longrightarrow$)⁺ 73, 74, 78
- right, long, negated ($\longrightarrow$)⁺ 74, 75
- right, negated ($\vdash$)⁺ 68, 70, 72, 73, 75, 76, 78, 81
- short bar, down ($\bar{}$) 71
- short bar, down, negated ($\bar{}$) 72
- short bar, down, ring below ($\bar{}$) 159
- short bar, left ($\neg$)⁺ 71, 74
- short bar, left, negated ($\neg$)⁺ 72, 75
- short bar, northeast ($\swarrow$) 71
- short bar, northeast, negated ($\swarrow$) 72
- short bar, northwest ($\searrow$) 70
- short bar, northwest, negated ($\searrow$) 72
- short bar, right ($\vdash$)⁺ 70, 73
- short bar, right, negated ($\vdash$)⁺ 72, 74
- short bar, southeast ($\swarrow$) 71
- short bar, southeast, negated ($\swarrow$) 72
- short bar, southwest ($\searrow$) 70
- short bar, southwest, negated ($\searrow$) 72
- short bar, up ($\perp$) 71
- short bar, up, negated ($\perp$) 72
- short bar, up, ring above ($\bar{}$) 77
- southeast ($\swarrow$) 70
- southeast, negated ($\swarrow$) 72
- southwest ($\searrow$) 71
- southwest, negated ($\searrow$) 72
- triple bar, double dash, right ($\equiv$) 69
- triple bar, left ($\neg$)⁺ 69, 73
- triple bar, left, negated ($\neg$)⁺ 70, 75
- triple bar, right ($\vdash$)⁺ . 68, 69, 71, 74, 76, 78
- triple bar, right, negated ($\vdash$)⁺ 70, 75
- triple dash, left ($\equiv$) 73
- triple dash, left, negated ($\equiv$) 75
- triple dash, right ($\equiv$)⁺ 74, 78, 81
- triple dash, right, negated ($\equiv$)⁺ 75, 81
- up ($\perp$)⁺ 36, 67, 71, 73, 74, 77, 123–125, 159, 371

- up over down ($\updownarrow$) 78
 up, negated ($\uparrow$)⁺ . . . 70, 72,
 73, 75, 123, 159
 up, with s ($\uparrow$) 160
 wavy bar, up ($\uparrow$)⁺ 81, 125,
 161
 wavy dash, right ($\rightsquigarrow$) . . . 81
 wavy dash, right, negated
 ($\nrightarrow$) 81
 wavy double dash, right ($\rightsquigarrow$)
 81
 wavy double dash, right,
 negated ($\nrightarrow$) 81
- turtle
 208–210
 264–267
 264–267
 264–267
 263
 268
 \twemoji 234, 249–252,
 258, 261–263, 278, 283–285,
 290–305, 320, 321
 twemojis (package) 234, 249, 252,
 258, 261–263, 278, 283–285,
 290, 305, 320, 321, 387–389
 twiddle *see* tilde
 Twitch () 315–318
 Twitter
 315–318
 315–318
 314
 314
 txfonts (package) 36,
 39, 56, 69, 82, 86, 95, 118,
 121–123, 157, 158, 162, 233,
 364, 366, 382, 387, 388
 typelcm (package) 366
 Type 1 (font) 379
 typicons (package) 156, 171, 172,
 182, 183, 185, 188, 191, 255,
 256, 259, 261, 308, 309, 314,
 322, 328, 387, 388
 tzetze () 208–210
- U**
 270
 u
 descending ($\mathfrak{u}$) 25
 Uber () 315–318
- ubulb.fd (file) 378, 379
 Ubuntu
 315–318
 318–319
 ucs (package) 385
 udingbat.fd (file) 342
 UIKit () 315–318
 ulsy (package) 44, 118, 367, 387
 Umbraco () 315–318
 umbrella
 323–325
 325–327
 301
 closed
 295
 312
 on ground () 301
 with rain drops () 301
 umlaut ()⁺ *see* accents,
 diaeresis
 umranda (package) 339, 340, 387
 umrandb (package) 340, 341, 387
 unary operators 37
 Uncharted () 315–318
 \underaccent 374
 underline
 -⁺ 18, 19, 36, 37, 139, 145,
 170, 382
⁺ *see* accents, underline
 173–175
 underscore (package) 18
 underscore *see* underline
 \underset 369
 undertilde (package) 144, 387,
 388
 undo ()⁺ 173–175
 ungroup objects
 173–175
 173–175
 Unicode 17, 276, 384–386
 unicorn () 263
 union ($\cup$)⁺ . . . 37, 39–43, 54, 58,
 59, 61, 161, 369, 379
 bar ($\bar{\cup}$) 42
 bar, intersection ($\cap$) 43
 closed ($\bar{\cup}$) 42
 closed, smash product ($\bar{\cap}$) .
 42
 dotted ($\dot{\cup}$)⁺ 36, 40, 43, 58,
 59, 61, 66, 369, 379
 double ($\cup\cup$)⁺ 38–43
 left arrow ($\rightarrow$)⁺ 42, 43, 105
 over intersection ($\overline{\cap}$) 43
- plus ($\oplus$)⁺ . . . 37, 39–42, 54,
 58–61
 square ($\sqcup$)⁺ 36, 37, 39, 40,
 42, 54, 59, 61, 161
 square, dotted ($\sqcup\sqcup$)⁺ 39, 40,
 58–60
 square, double ($\sqcup\sqcup$)⁺ 39–42
 square, half
 40
 40
 square, plus ($\oplus$)⁺ . . . 39–41,
 55, 56, 59
 two adjacent (ω) 42
 vee ($\vee$) 43
 vertical line (ψ) 77
 Uniregistry () 315–318
 unit disk ($\mathbb{D}$) . . . *see* alphabets,
 math
 units (package) 160
 Unity ()⁺ 315–319
 unity ($\mathbb{1}$) . . . *see* alphabets, math
 universa (package) 195, 257, 387,
 388
 universal access () . . . 173–175
 universal bunch quantifier ($\forall$)⁺
 *see* for all
 universal individual quantifier
 ($\forall$)⁺ *see* for all
 university () 323–325
 unlink () 173–175
 unordered list (⋮) 173–175
 Unsplash () 315–318
 Untappd () 315–318
 up bow ($\Uparrow$) 214
 UP! () 301
 upgreek (package) 20, 121, 387,
 388
 upload
 173–175
 171–172
 171–172
 upquote (package) 382
 upright Greek letters . . . 20, 121
 UPS () 315–318
 upside-down letters *see* rotated
 letters, 22–25, 125, 157
 upside-down symbols 368,
 381–382
 upsilon
 lowercase (υ)⁺ . . . 20, 23, 24,
 120, 121
 uppercase (Υ)⁺ . . . 20, 120,
 121
 Uranus 335–338
 166

- ☸ 168
 ♂ 168
 ☼ 166
 ♂ 166
 ☼ 167
 url (package) 382
 urwchancal (package) . 162, 163, 387
 us-Sunnah (☪) 315–318
 USB (🔌) 315–318
 user
 👤 308
 👤 308
 👤 308
 👤 308
 👤 308
 add
 👤+ 308
 👤+ 308
 astronaut (🚀) 308
 check (👤) 308
 circled (🕒)⁺ .. *see* circled symbols, user
 clock (🕒) 308
 cog (⚙️) 308
 delete
 👤- 308
 👤- 308
 edit (👤) 308
 friends (👤👤) 308
 graduate (🎓) 308
 injured (👤) 308
 lock (🔒) 308
 medical (👤) 308
 minus (👤-) 308
 multiple (👤👤) 308
 multiple, cog (👤👤) 308
 multiple, slashed (👤👤) . 308
 ninja (👤) 308
 nurse (👤) 308
 plus (👤+) 308
 secret (🔒) 308
 shield (👤) 308
 slashed (👤)⁺ 308
 tag (👤) 308
 tie (👤) 308
 times (👤*) 308
 user-interface symbols 171–175
 ushort (package) . 145, 387, 388
 USPS (📬) 315–318
 \usym 167, 176, 181, 183–185, 187–190, 196, 199, 213, 234–238, 241, 254, 256, 258, 260, 268, 279, 281, 287, 289, 290, 307, 310, 312–314
 utensils (🍴)⁺ 321, 323–325
 UTF-8 385
 utfsym (package) 167, 176, 181, 183–185, 187–190, 196, 199, 213, 234–238, 241, 254, 256, 258, 260, 268, 279, 281, 287, 289, 290, 307, 310, 312, 314, 387, 388
 Utopia (font) 32, 65
 uwebo.fd (file) 339

 V
 V (📌) 270
 v
 v 122
 ∫ 25
 v 24
 v 22
 ring under (v) 25
 Vaadin (🏠) 315–318
 vampire (🧛) 291, 301, 304
 van (🚐) 325–327
 variable-sized symbols . 54–66, 366
 vector (📏) 173–175
 vector notation .. *see* accents
 vee (v)⁺ . 37, 39–44, 54, 59, 61, 125
 bar over (v̄)⁺ 42, 44
 bar through (v̄) 42
 bar under (v̄)⁺ .. 38, 39, 41–44
 curly (v)⁺ . 38–43, 54, 55, 58, 59
 curly, closed (v) 40
 curly, dot (v̇)⁺ 40, 58
 curly, double (v̈)⁺ . 40, 59
 dot above (v̇)⁺ 43, 44
 dot within (v̇)⁺ 40, 41, 43, 59
 double (v̈)⁺ . 39–43, 59–61
 double bar over (v̄) .. 43
 double bar under (v̄)⁺ 39, 41, 43
 nested (v̄)⁺ 42, 43
 slanted bar (v̄) 44
 slanted bar, bar over (v̄) 44
 slanted bar, bar under (v̄) 44
 sloped (v̇) 42
 vertical line through (v̄) 43
 wedge (v̄) 78
 vee join (v̄) 161
 vee meet (v̄) 161
 Venus (v)⁺ . 166, 168, 335–338
 vernal (v̄) 166
 versicle (v̇) 385, 386
 vertex (v̄) 168
 vertical bar (|)⁺ .. 19, 22–25, 37, 44, 67, 69, 71, 73, 77, 78, 127, 129, 131–134, 195, 198, 199, 381, 382
 double (||)⁺ 19, 23, 71, 127, 129, 131
 double, negated (||)⁺ 72, 78
 equals (|=)⁺ 23
 heavy (||)⁺ 199
 negated (|)⁺ 68, 70, 72, 73, 75, 76, 78, 154
 ring over (|)⁺ .. 77, 117
 ring over, negated (|)⁺ . 117
 ring under (|)⁺ .. 77, 117
 ring under, negated (|)⁺ 117
 short (|)⁺ . 40, 68, 73, 76, 77, 195, 211
 short, dotted (|)⁺ 40
 short, negated (|)⁺ 68, 72, 75, 76, 78
 split (|)⁺ 34, 170, 211, 253, 383
 split twice (|) 211
 triple, negated (|||) 42
 very high frequency (v̄) 164
 vest (👤) 323–325
 Vesta (👤) 168, 335–338
 Viacoin (👤) 32, 315–318
 Viadeo
 👤 315–318
 👤 315–318
 vial (👤) 323–325
 Viber (👤) 315–318
 vibration mode
 👤 301
 👤 312
 video camera
 👤 173–175
 👤 322
 👤 301
 👤 312
 slashed (👤) 173–175
 video game controller
 👤 301
 👤 241
 videocassette
 👤 301
 👤 312

vietnam (package) 387
 viewdata (≡) 160
 vihara (𑖦) 310
 village (🏠🏠) 259
 Vimeo
  315–318
  315–318
  315–318
  314
  314
 vinculum (≡)⁺ . *see* accents, bar
 Vine (🍷) 315–318
 vine (🍷) 200
 Vinogradov notation
 >⁺ *see* equal,
 asymptotically
 >> . *see* greater than, much
 << *see* less than, much
 violin
  301
  313
 Virgo (♍)⁺ 166–168, 301,
 335–338
 virus (🦠) 319
 Visa (🛂) 315–318
 VK (🇺🇸) 315–318
 VLSI symbols 357–358
 vntex (package) 21, 26
 VNV (🐍) 315–318
 voicemail (📞) 173–175
 volcano
  301
  312
 volleyball
  240
  301
  241
 volume control . . . *see* speaker
 vote yes (🗳️) 328–329
 VS (🇻🇸) 301
 Vue.js (🇻🇪) 315–318
 Vulcan (♄) 168

W

W (🇨🇦) 270
 w (w) 122
 waffle (🍩) 285
 wagon (🚲)⁺ 325–327
 waiting seated (👤) 307
 walk (🚶) 271
 walking (🚶)⁺ 291, 295, 304,
 328–329

walking cane (🦯) 307
 wallet (👛) 323–325
 wardrobe (🚪) 325–327
 warehouse (🏢) 323–325
 warning
  284
  311–312
  311–312
  173–175
  173–175
  171–172
  171–172
  301
  257
 wastebasket *see* trash
 wasysym (package) 25, 32, 35,
 38, 55, 68, 82, 86, 151, 157,
 164, 166, 168, 176, 187, 189,
 192, 212, 253, 365, 367, 387,
 388
 watch
  261
  301
 Watchman Monitoring (🕒) 315–
 318
 water
  168
  328–329
  201
  178
 non-potable
  254
  293
 potable
  254
  296
 water buffalo
  263
  268
 water closet
  301
  254
 water pistol (🔫) 301
 water polo (🏊)⁺ 291, 295, 303
 watering can (🪴) 325–327
 watermelon
  286–287
  285
  287

waves
  328
  171–172
  171–172
  301
  312
 wavy band (〰) 200
 wavy dash (〰) 301
 wavy line delimiters 128–132
 Waze (📍) 315–318
 weak rain (🌧) 258
 weather symbols 258, 259,
 311–312
 Web symbols 330–331
 webomints (package) 338, 339,
 387
 wedding
  302
  290
 wedge (∧)⁺ 37, 39–44, 54, 59,
 61, 125
 bar over (⋈)⁺ 38–42, 44
 bar through (⋈) 42
 bar under (⋈) 43
 circle (⋈)⁺ 43, 66
 curly (⋈)⁺ 38–43, 54, 55,
 58, 59
 curly, closed (⋈) 40
 curly, dot (⋈)⁺ 40, 58
 curly, double (⋈)⁺ 40, 59
 dot above (⋈)⁺ 43, 44
 dot within (⋈)⁺ 40, 41, 43,
 59, 66
 double (⋈)⁺ 38–43, 59, 60,
 62
 double bar over (⋈)⁺ 38,
 39, 41, 43
 double bar under (⋈) 43
 nested (⋈)⁺ 42, 43
 slanted bar (⋈) 44
 slanted bar, bar over (⋈) 44
 sloped (⋈) 42
 vertical line through (⋈) 43
 Weebly (🇨🇦) 315–318
 Weibo (🇨🇦) 315–318
 Weierstrass elliptic function (℘)⁺
 123, 124
 weight (🏋) 323–325
 weight lifter (🏋) 241
 Weixin (🇨🇦) 315–318
 whale
  263
  268

WhatsApp

-  315–318
-  315–318
- wheat (🌾) 206
- wheel of dharma *see* dharmachakra
- wheelbarrow () 325–327
- wheelchair
 -  257
 -  307
 -  320
 -  292
 -  291
 -  302
- white cane (🦯) 302
- white square button
 -  302
 -  313
- whiteboard () *see* chalkboard
- WHMCS (🔧) 315–318
- whole note (🎵)⁺ 215–218
 - dotted (🎵)⁺ 216–218
 - rest (—)⁺ 215, 219
 - rest, dotted (—.) 219
- whole of (€) 368
- why not
 - ? 37
 - ! 161
- Wick contractions 375
- wifi (📶)⁺ *see* wireless network
- Wikipedia (W) 315–318
- wind 258
 -  259
 -  259
 -  258
- wind chime
 -  302
 -  313
- window () 302
- window close
 -  173–175
 -  173–175
- window maximize
 -  173–175
 -  173–175
- window minimize
 - 173–175
 - 173–175
- window restore
 -  173–175
 -  173–175
- Windows (🖥️) 315–318, 384
- windy cloudy (☁️) 259

wine

-  323–325
-  206
-  206
-  206
-  206
-  322
-  285
-  287
- wireless network
 -  329
 -  171–172
 -  171–172
- witch 52, 150
 - as math-mode accent (☿)⁺ *see* accents, witch on broom
 - math mode (☿)⁺ 52
- witch's hat, as math-mode accent (☿) 138
- Wix (wix) 315–318
- Wizards of the Coast (🎮) 315–318, 361
- Wodu (Wodu) 315–318
- wolf
 -  263
 -  268
- Wolfpack Battalion (🐺) 315–318
- woman
 -  200
 -  323–325
 -  206
 -  302
 -  307
 - adult (👩) 307
 - and man holding hands (👫) 302
 - at drinking fountain (🚰) 307
 - at help desk (👩) 307
 - child (👧) 307
 - deaf (👂) 296
 - discarding trash (🗑️) 307
 - getting haircut (💇) 303
 - getting massage (💆) 303
 - holding infant (👶) 307
 - in lotus position (🧘) 303
 - in manual wheelchair (🦽) 303
 - in motorized wheelchair (🦼) 303
 - in steamy room (🧖) 303
 - in tuxedo (👤) 303

old

-  293
-  307
- walking (🚶) 307
- walking dog (🐕) 307
- walking stroller (🚶) 307
- wearing turban (👤) 304
- with bunny ears (🐰) 307
- with child (👶) 307
- with headscarf (🧕) 304
- with luggage waiting (🧳) 307
- with luggage waving (👋) 307
- with service animal (🐕) 307
- with veil (🧝) 304
- with white cane (🦯) 304
- women 200, 206, 254, 257, 290–305, 307
- holding hands
 -  304
 -  307
- with bunny ears (🐰) 304
- wrestling (🤼) 304
- won
 -  32
 -  31
- wood (🌲) 304
- wool (🧶) 206
- word balloon *see* speech bubble
- WordPress
 -  315–318
 -  315–318
 -  318–319
- world *see* globe
- worldflags (package) 247–249, 283, 387
- worm (🪱) 263
- WPBeginner (👤) 315–318
- WPExplorer (👤) 315–318
- WPForms (📄) 315–318
- WPpressr (👤) 315–318
- wreath product (∏)⁺ 37, 40, 41, 43
- wrench
 -  311–312
 -  323–325
 -  322
 -  304
 -  313
- wsuipa (package) 24, 28, 31, 365, 368, 373, 374, 387, 388

wynn (p) 23

X

X () 270

x-ray () 319

X11 () 318–319

Xbox () 315–318

Xdvi 148, 368

X_qL^AT_EX 37, 43,

44, 52, 66, 67, 81, 82, 85,

91, 111, 114, 115, 120, 125,

135, 138, 143, 147, 148, 153,

156, 161, 172, 181–183, 185,

188, 191, 212, 246, 255, 256,

259, 261, 271–275, 307–310,

314, 319–322, 327–329, 331,

385

X_qT_EX 30

xfakebold (package) . . . 380, 387,
388

xfraction (package) 160

xi

lowercase (ξ)⁺ 20, 120, 121

uppercase (Ξ)⁺ 20, 120, 121

XING

 315–318

 315–318

XML 384

xor

⊕ *see* circled symbols, plus

⊖ *see* vee, bar under

X_Y-pic 372

Y

Y () 270

down (γ)⁺ 38–40, 42

left ($\prec$)⁺ 38, 40, 42

right ($\succ$)⁺ 38–40, 42

up (λ)⁺ 38, 40–42, 124

y (y) 122

Lidingö/Viby ($\mathfrak{y}$) 23

Y Combinator () . . . 315–318

Yahoo! () 315–318

Yammer ($\mathfrak{Y}$) 315–318

Yandex () 315–318

Yandex International ($\mathfrak{Y}$) . 315–
318

Yarn () 315–318

yarn () 304

year

 208–210

 208–210

Yelp () 315–318

yen

¥ 160

¥ 32

¥ 31, 383

yen banknote *see* banknote, yen

yfonts (package) . 162, 163, 387,
388

yhmath (package) 137, 139, 144,
153, 373, 387

yin-yang

⁺ . . . 257, 284, 290–305,
310–312, 339–340

 304

yo-yo

 325–327

 304

Yeast () 315–318

yogh ($\mathfrak{z}$)⁺ 23, 25

reversed ($\mathfrak{z}$) 23

with bent tail ($\mathfrak{z}$) 23

with curly tail ($\mathfrak{z}$)⁺ . 23, 25

yoke ($\mathfrak{y}$) 259

YouTube

 315–318

 315–318

 314

 314

Yu, Billy 374

Z

Z () 270

z

round ($\mathfrak{z}$) 25

Z notation

domain antirestriction ($\triangleleft$)

see triangle, bar through

range antirestriction ($\triangleright$) .

see triangle, bar through

relational composition ($\mathfrak{z}$)⁺

see semicolon, hollow

relational image ($((\mathfrak{z}))$)⁺ *see*

delimiters, parenthesis with

bar

schema piping ($\gg$)⁺ . . *see*

greater than, much

schema projection ($\mathfrak{z}$)⁺ *see*

restriction

spot ($\bullet$)⁺ *see* bullet

type colon ($\mathfrak{z}$) . *see* colon,

hollow

Zapf Chancery (font) 163

Zapf Dingbats (font) . 179, 189

zebra

 264–267

 263

Zenodo ()⁺ 330–331

zeta

lowercase (ζ)⁺ 20, 120, 121

uppercase ($\mathfrak{Z}$)⁺ . . . 20, 120

Zeus () 168

Zhihu ($\mathfrak{z}$) 315–318

zigzag

horizontal ($\sim$) 159

vertical ($\mathfrak{z}$) 160

zodiac symbols 166–168,
335–338

zombie ()⁺ 291, 304

zoom ()⁺ 171–172

zoom in ($\mathfrak{z}$)⁺ 171–172

zoom out ($\mathfrak{z}$)⁺ 171–172

Zotero

 330–331

 330–331

zzz () 304