Geometrie im Gitternetz

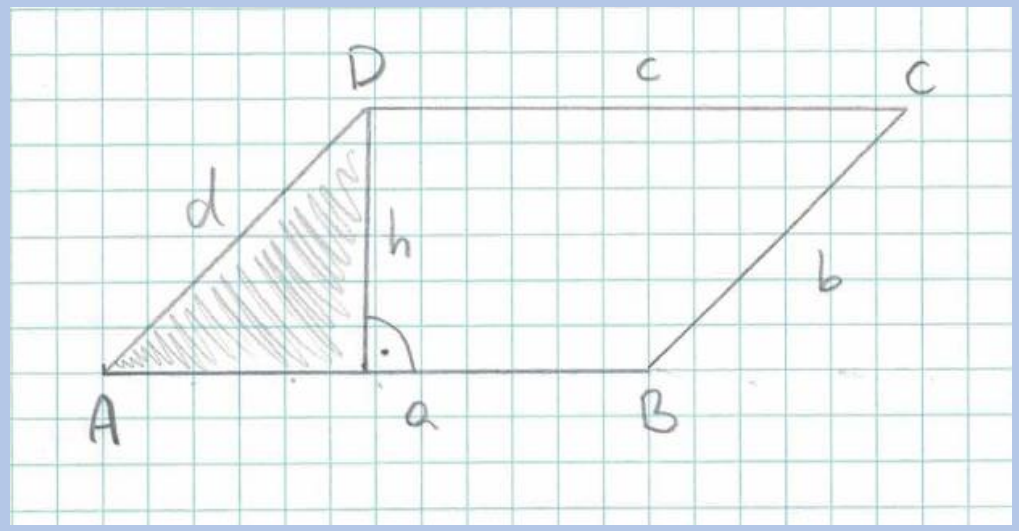
GeoGebra-Day 2019

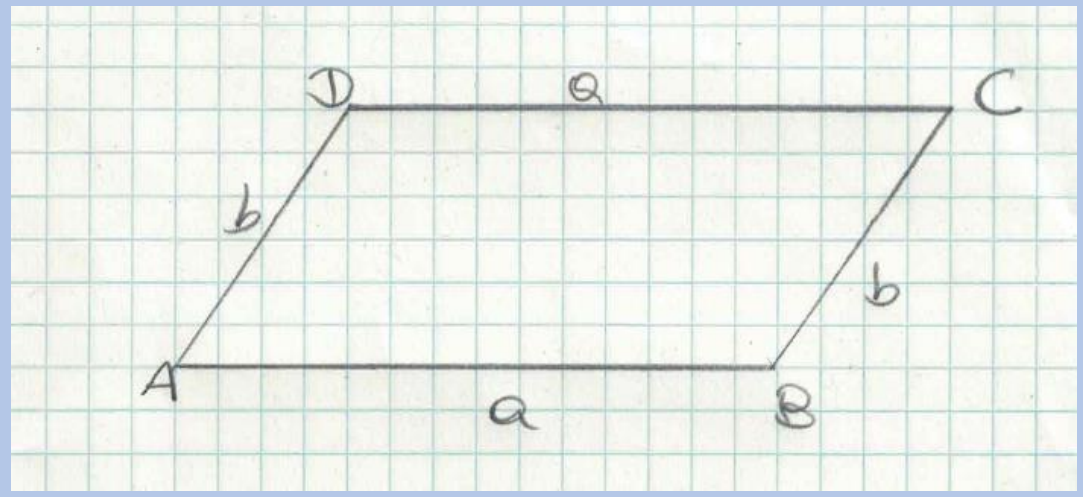
Gerhard Egger NÖGI

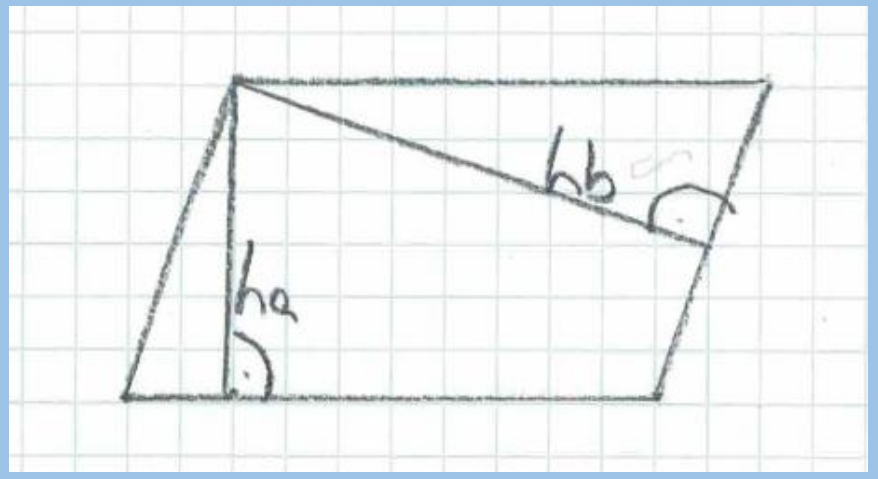
Zeichne auf kariertem Papier ein Parallelogramm!

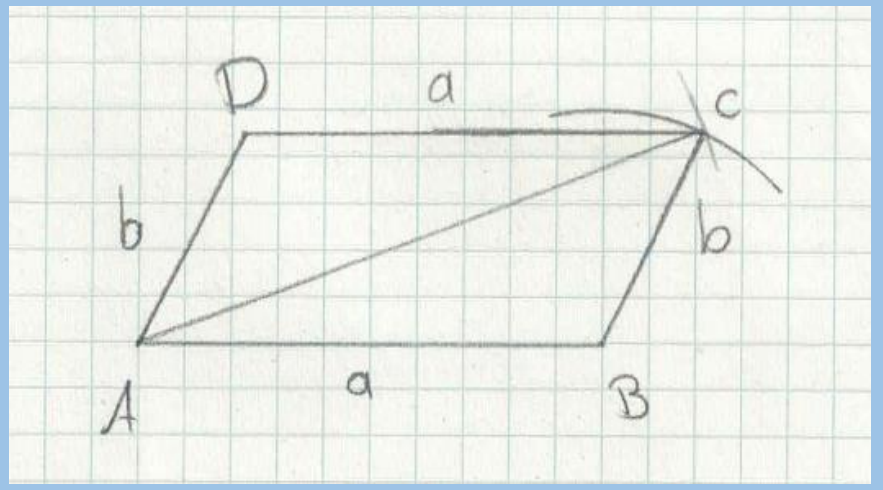
Arbeiten von Schülerinnen und Schülern (3. + 4. Klasse)

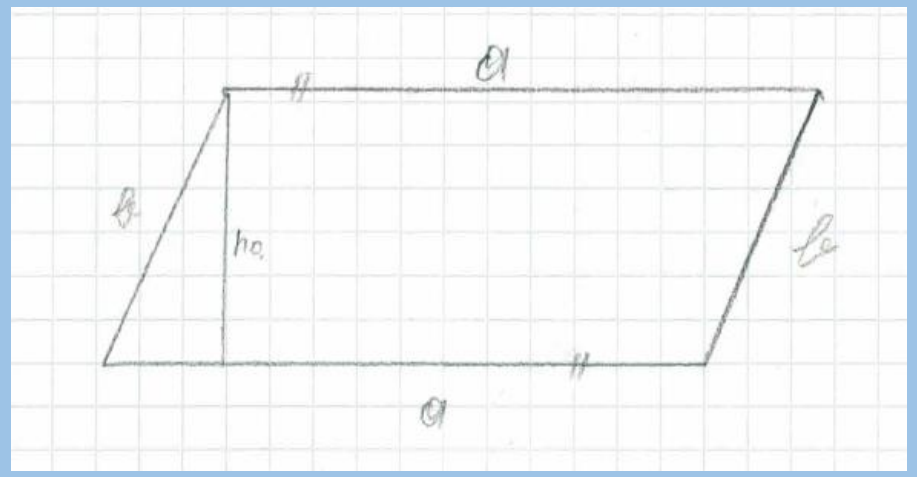
- 106 Vierecke
- 88 Parallelogramme
- 63 Zeichnungen im Gitternetz
  5 falsch
- 41 nicht im Gitternetz
  11 falsch

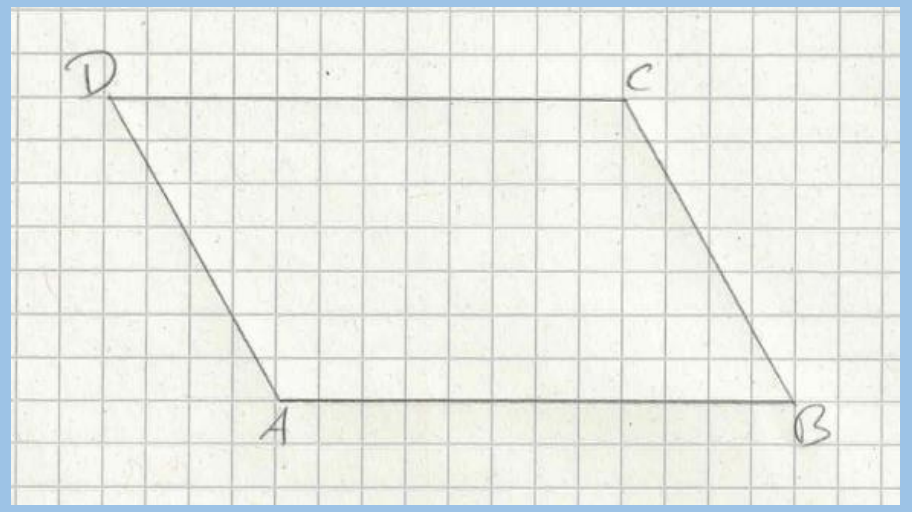





hb
ha


D
a
c
b
b
A
a
B


a
b
ha
a


D
C
A
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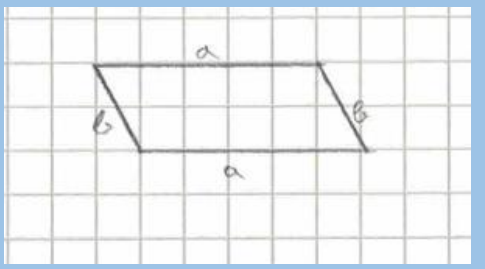
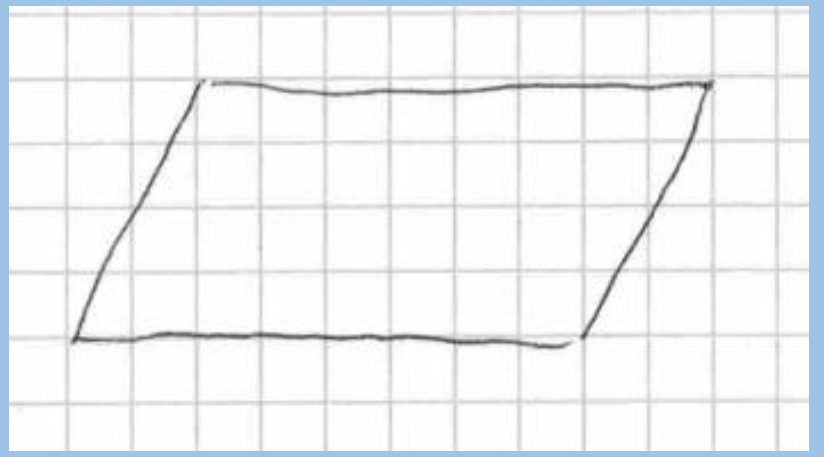
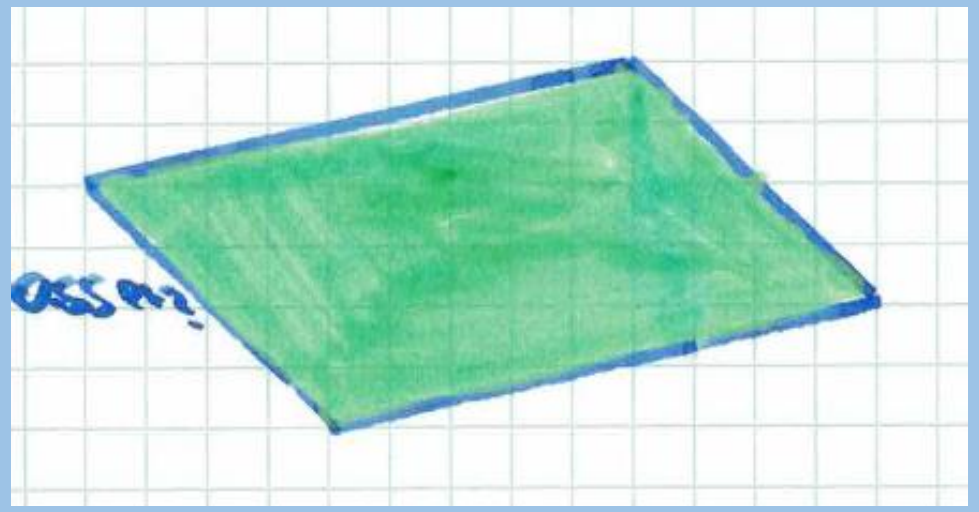
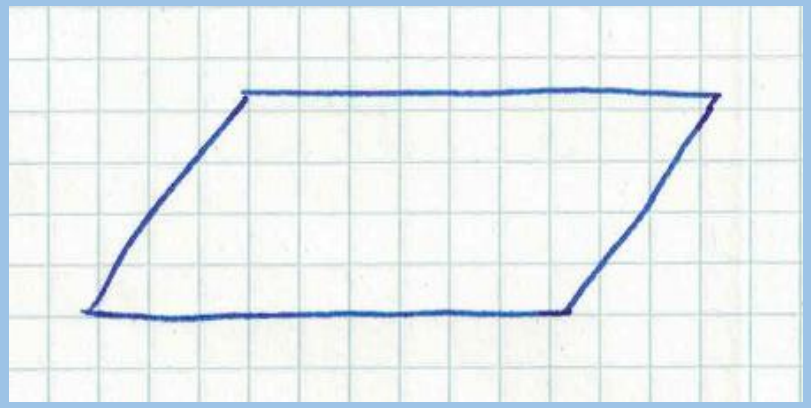
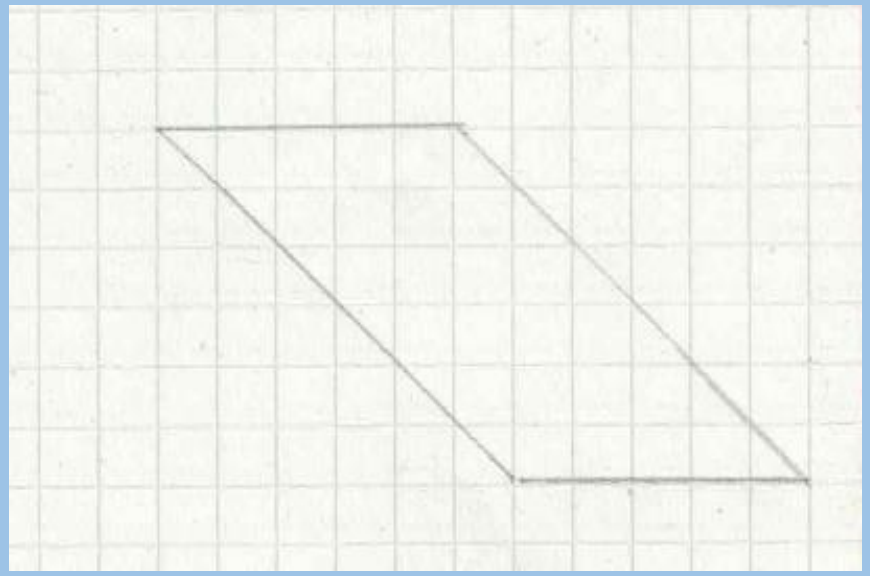

a
b
a

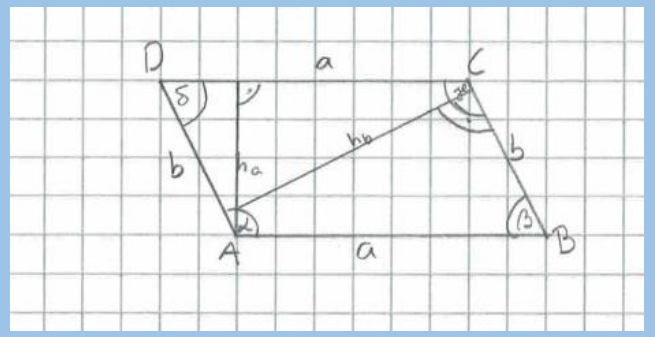
- alle Unterstufen-S/S mit Lineal
- fast alle mit Bleistift
- Beschriftung?
- Höhen?
- Standard-Parallelogramm rechtsgeneigt

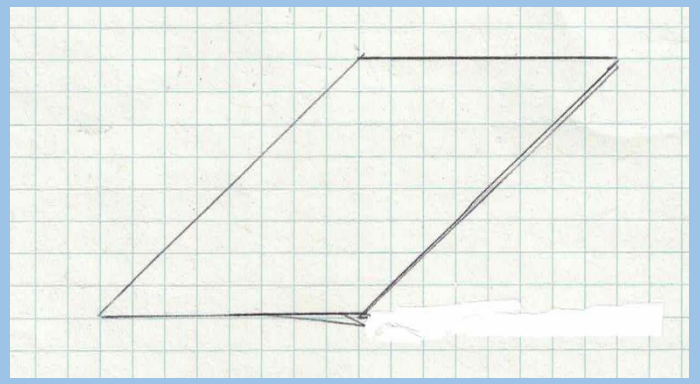


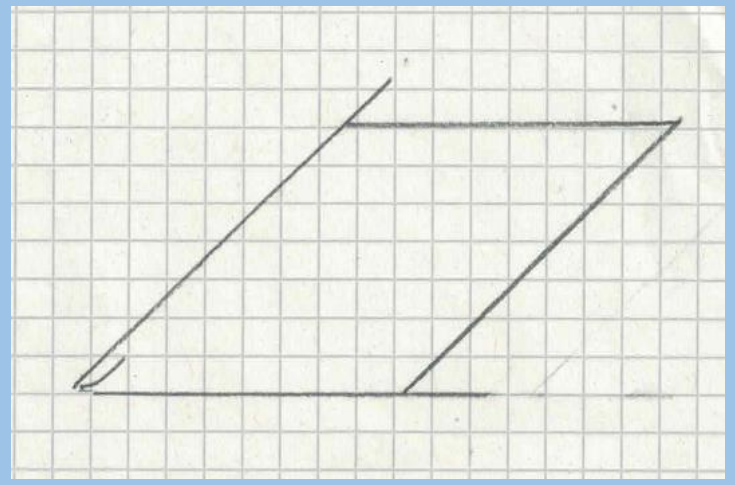


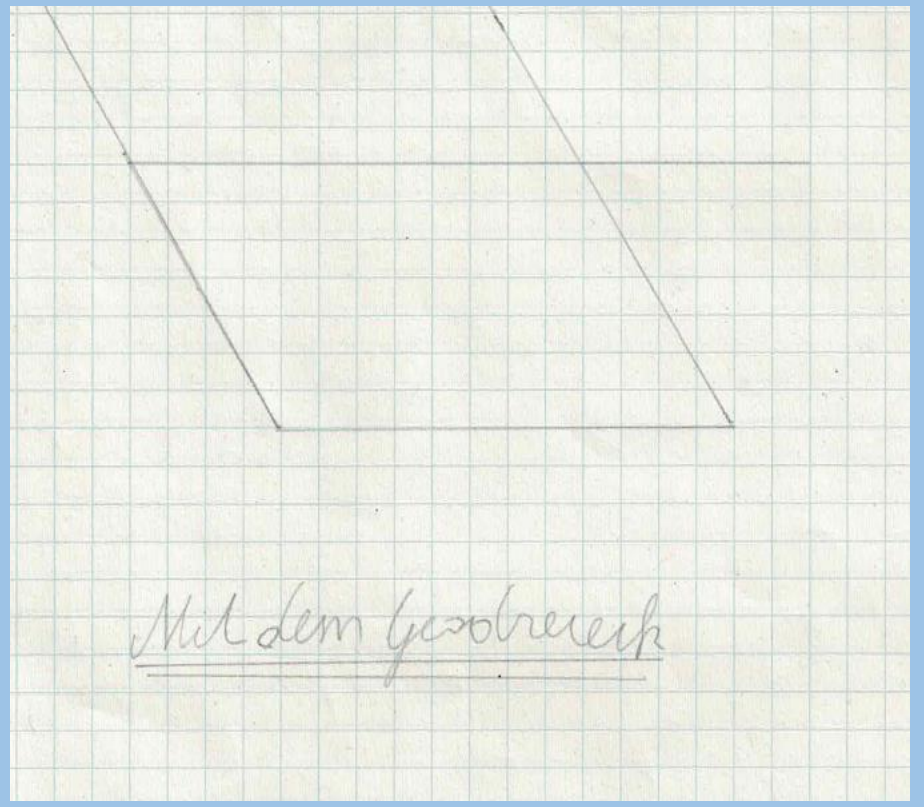




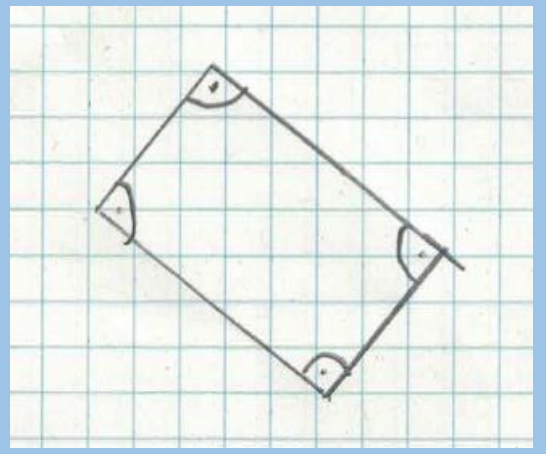

D
a
C
δ
b
h_a
h_b
b
A
a
B

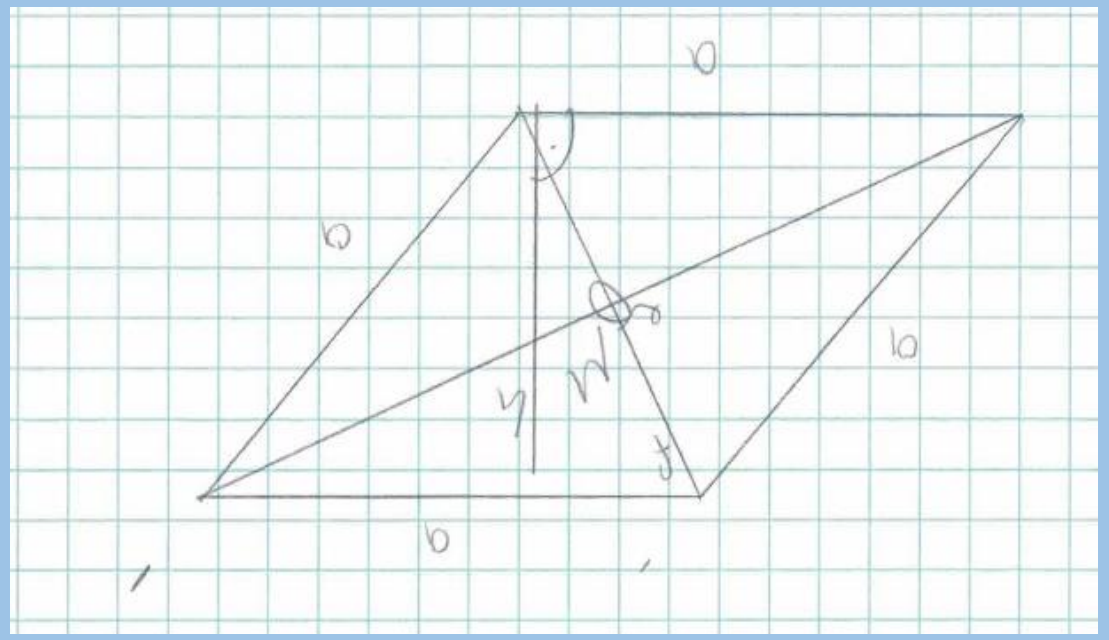


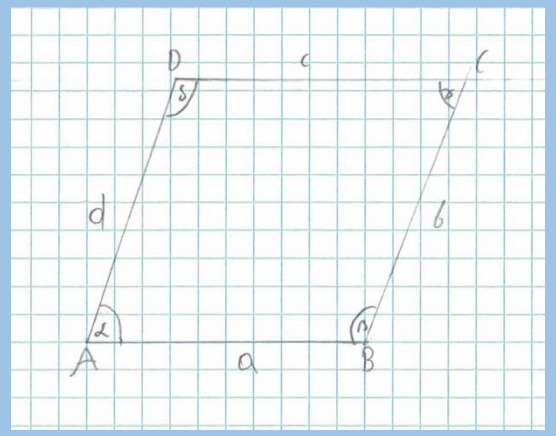


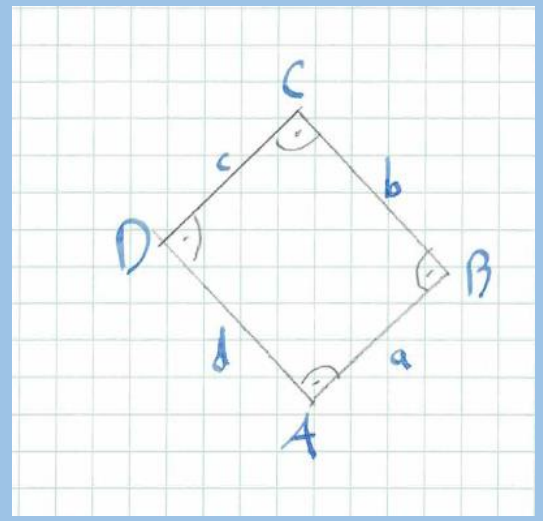

Mit dem Geodreieck

Rhomben und Rechtecke









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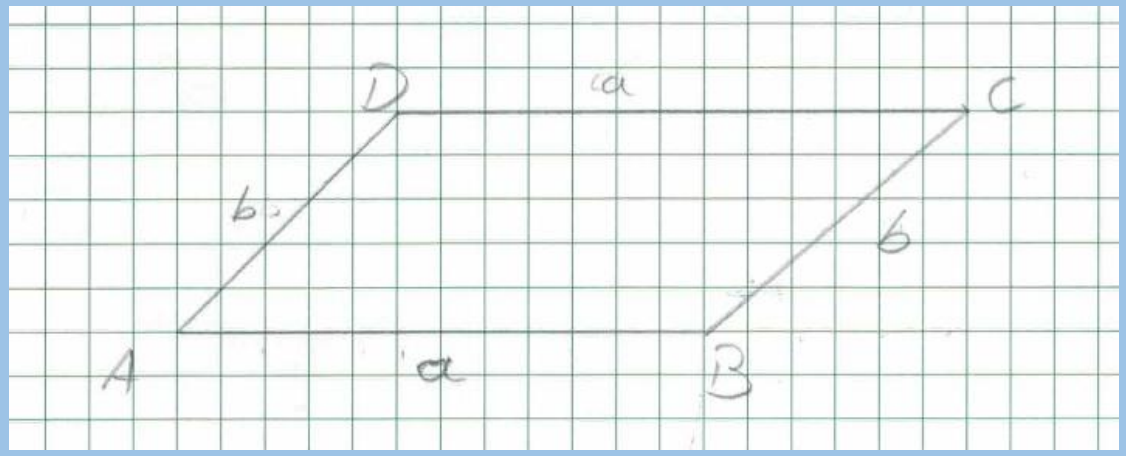
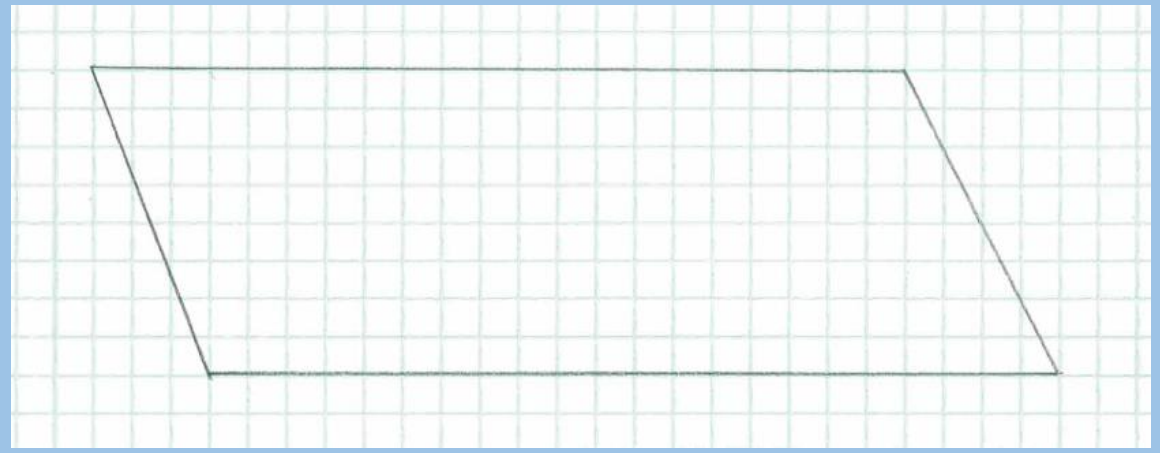
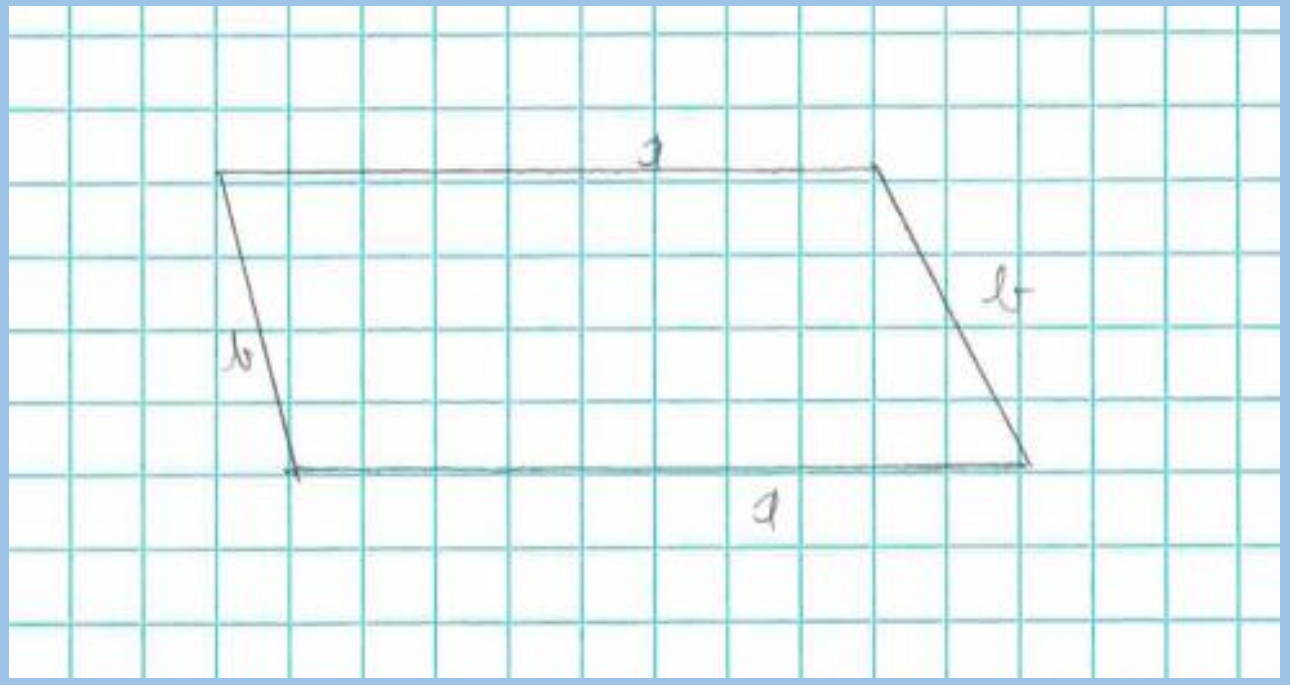
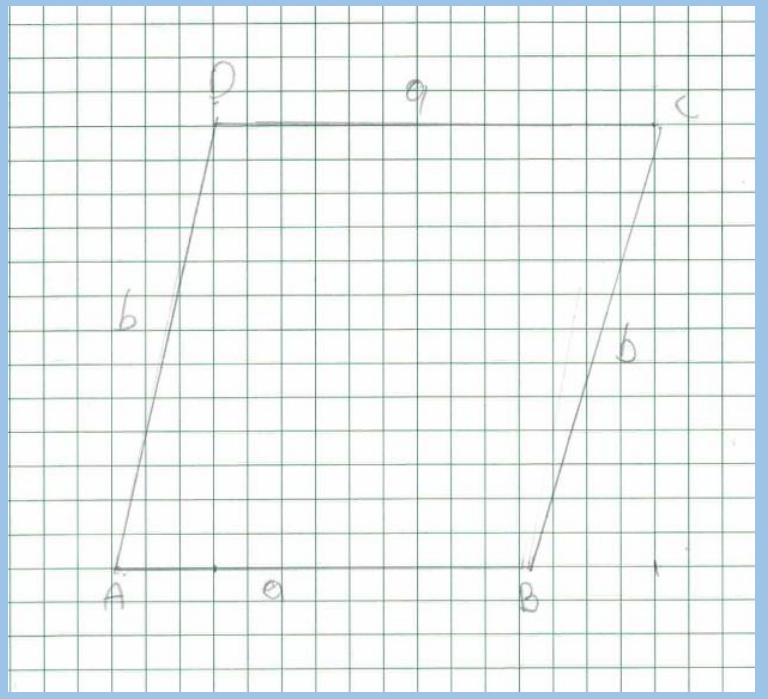





a
b
b
a


D
a
C
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a
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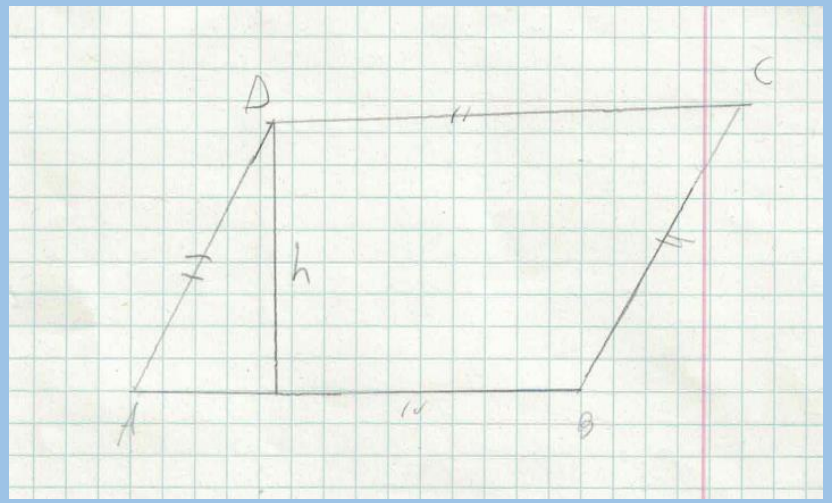
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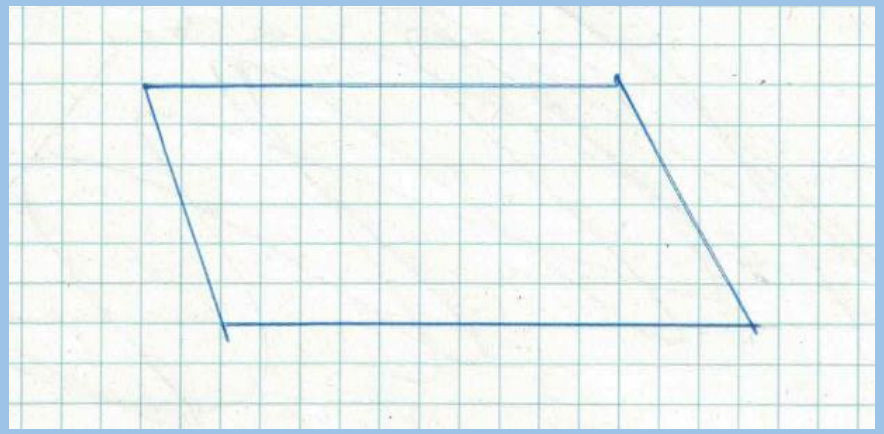


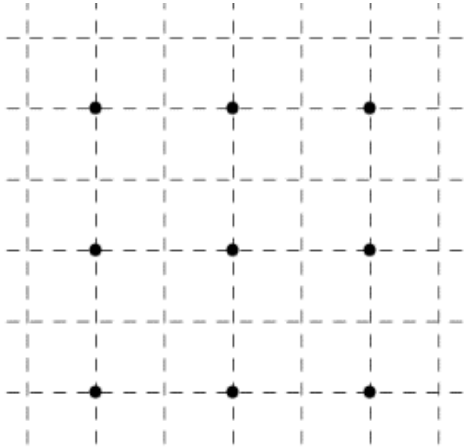
- Zeichnung – Konstruktion (auch GeoGebra) Freihandskizzen
- Prägung durch L/L
- Vorteile eines Gitternetzes ausnützen können
- Gitternetz als Vorstufe zum Koordinatensystem

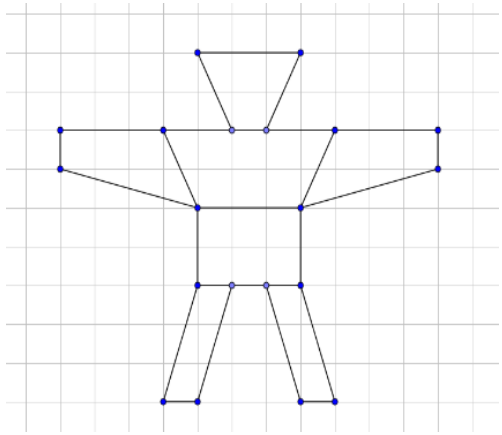
Zeichne ein Rechteck ABCD mit a = 7 cm und b = 4 cm.
Zeichne die Diagonale AC ein und miss ihre Länge!
Zeichne den Winkel $\alpha = \sphericalangle BAC$ ein und miss seine Größe!

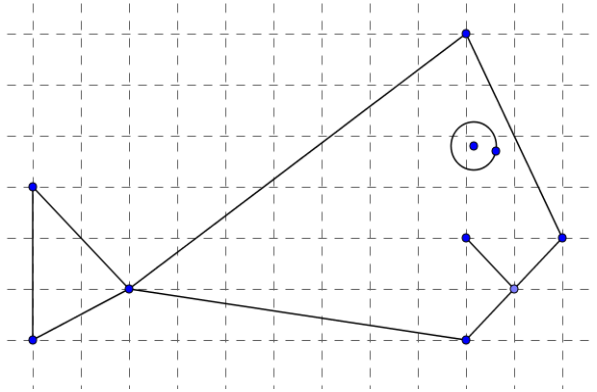
Gitternetz mit und ohne GeoGebra

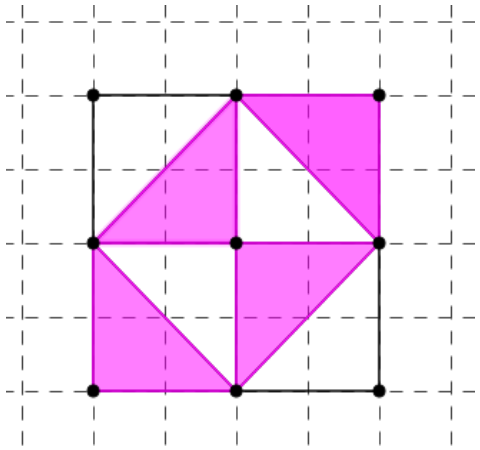
- Figuren nachzeichnen
- Figuren ergänzen
- Figuren entwerfen
  - kreative Entwürfe
  - Parkettierungen
  - Fadengrafiken
- Figuren bearbeiten
- kongruente (oder ähnliche Figuren) ohne Koordinatensystem

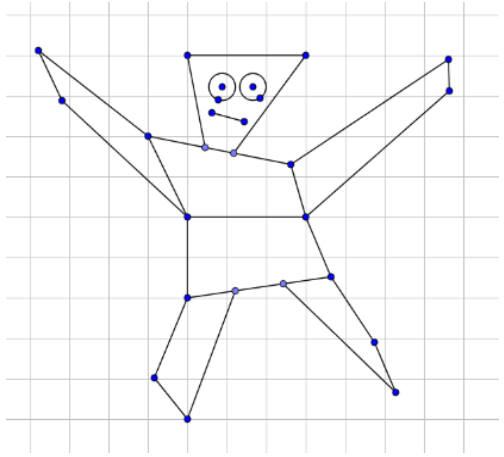
- Vorlage für Arbeitsblätter
- Vorzeigen am Smartboard
- Motivation für selbständiges Arbeiten mit GeoGebra
- Formatierung
- Dynamisierung
- digitale Grundbildung

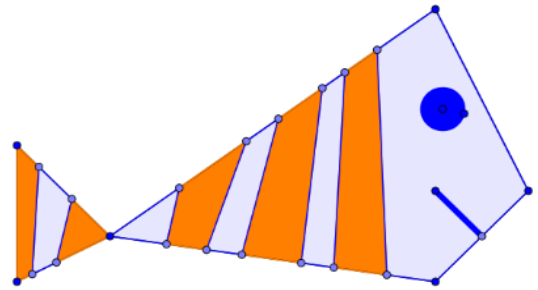


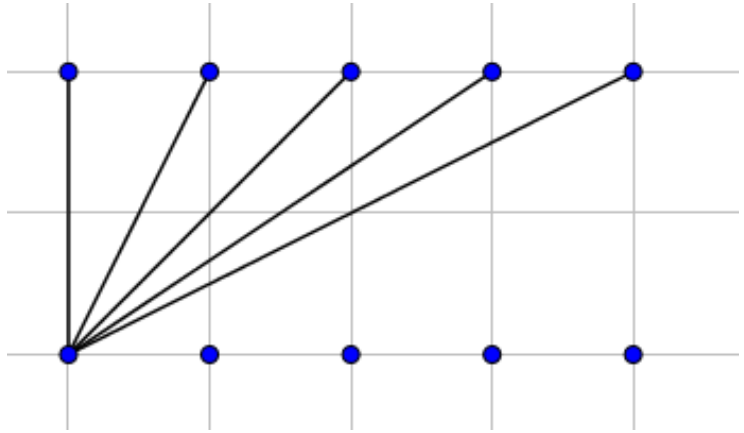


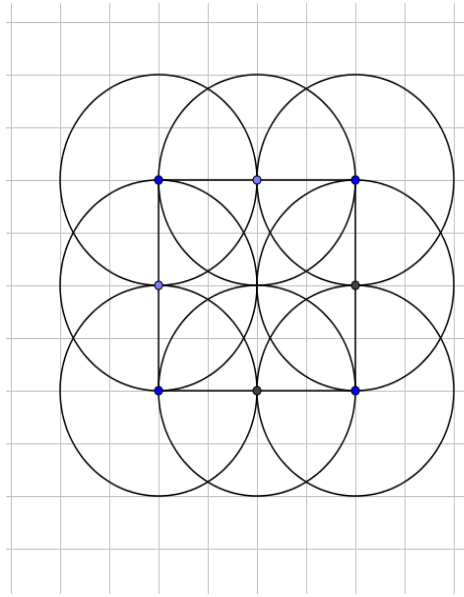


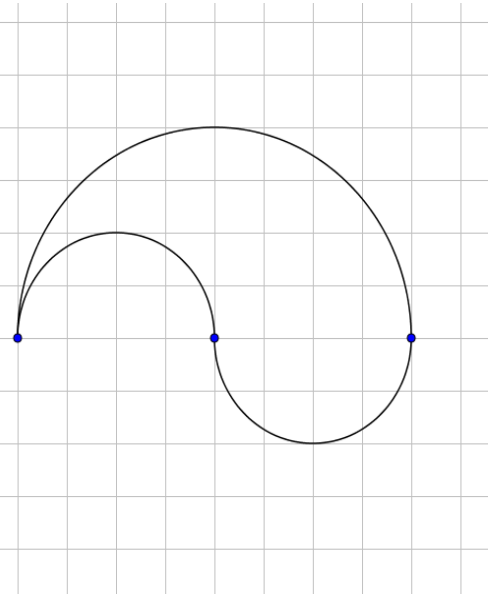


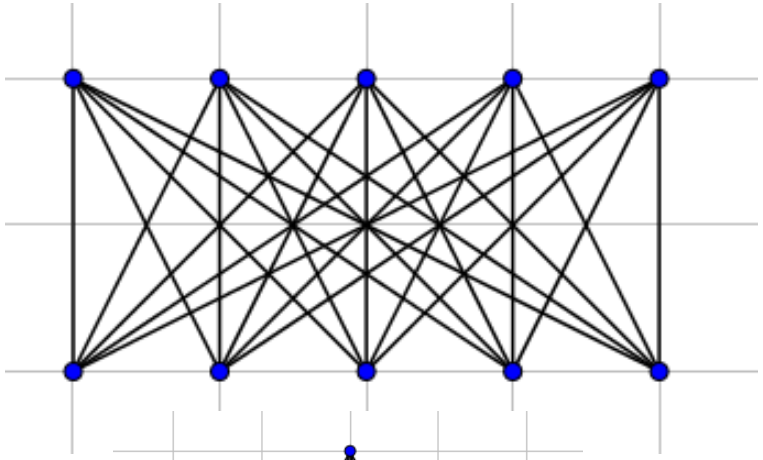


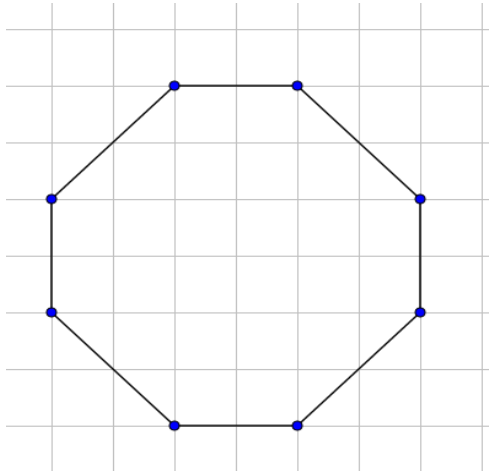


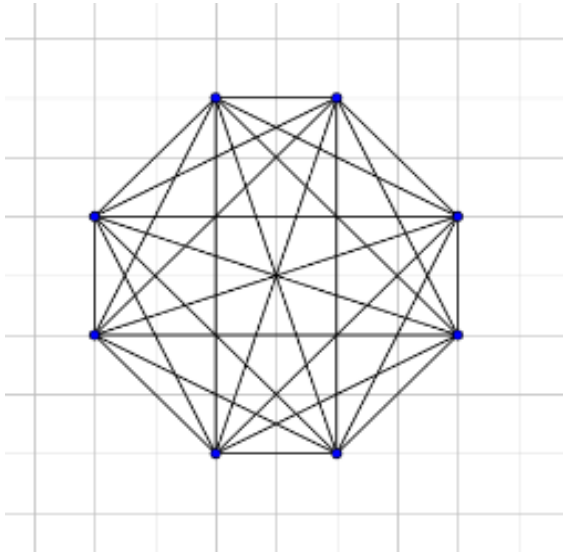


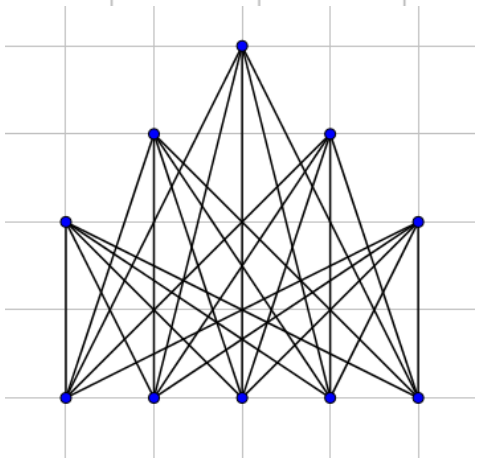


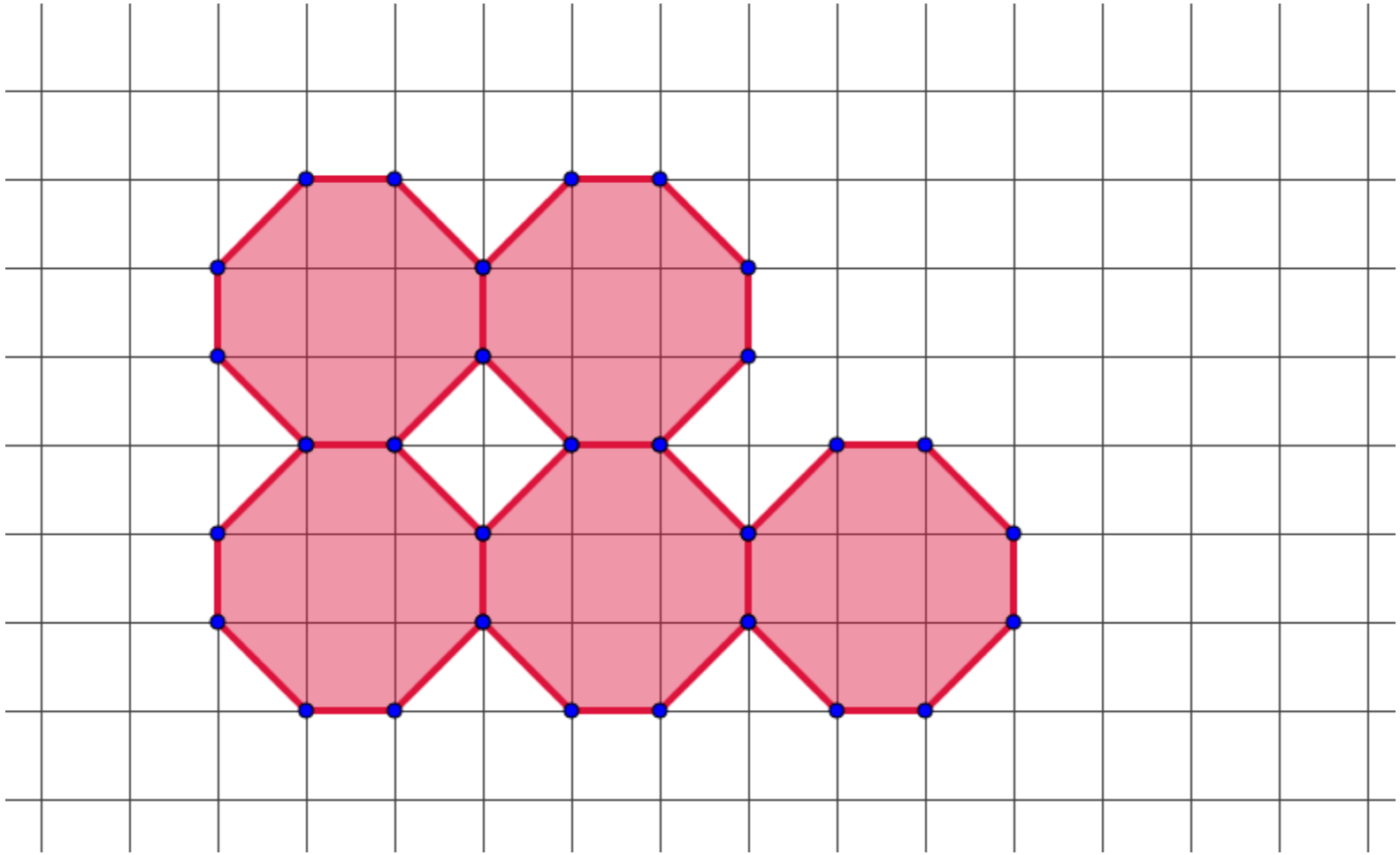




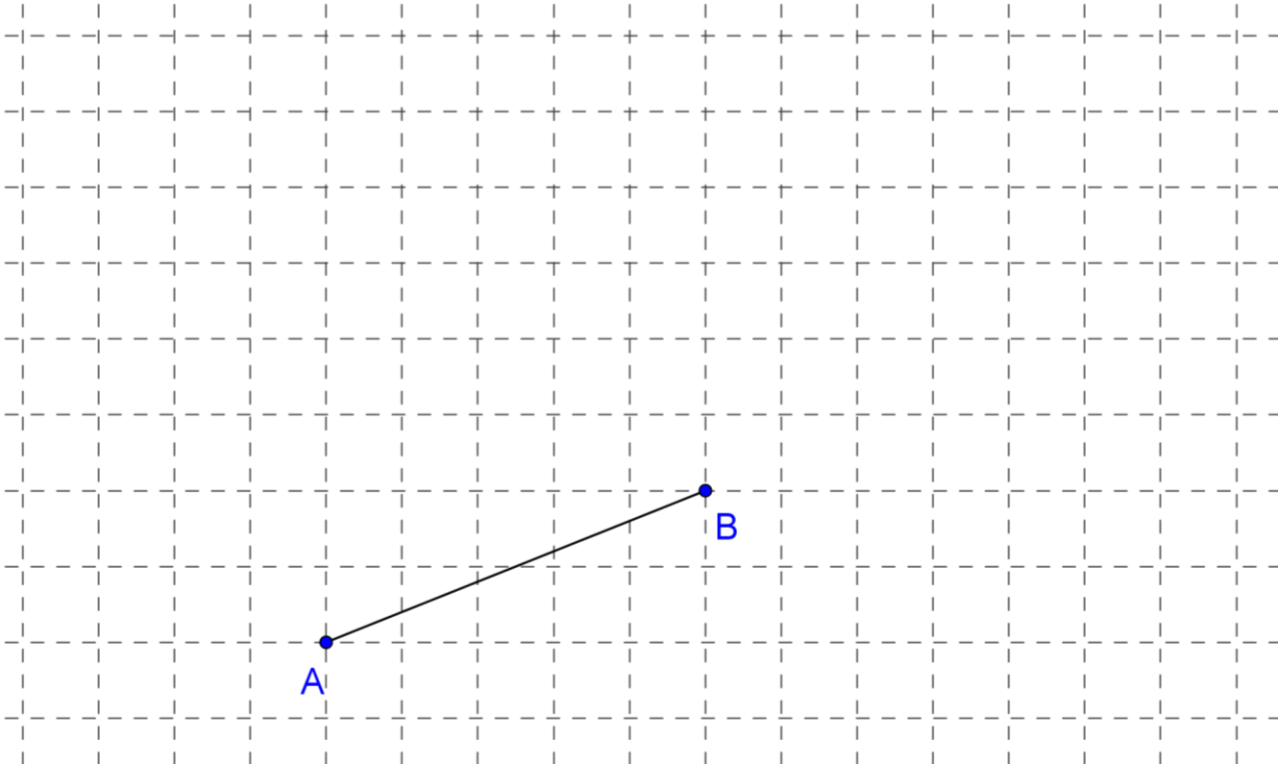




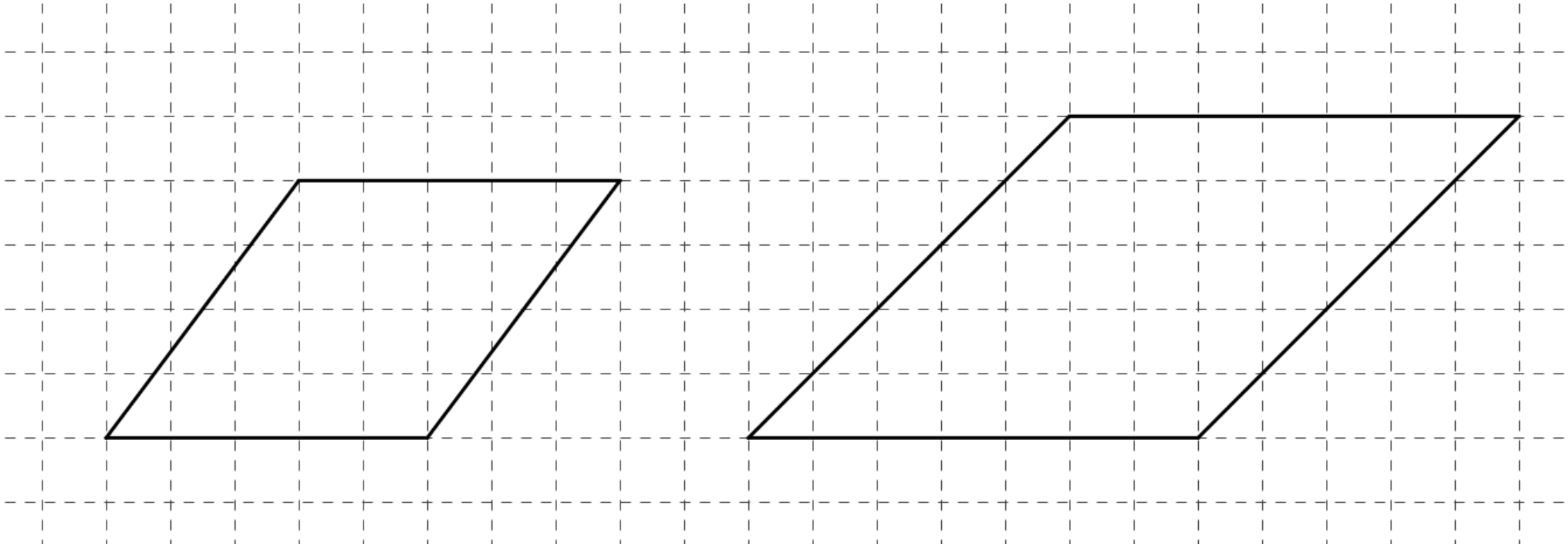




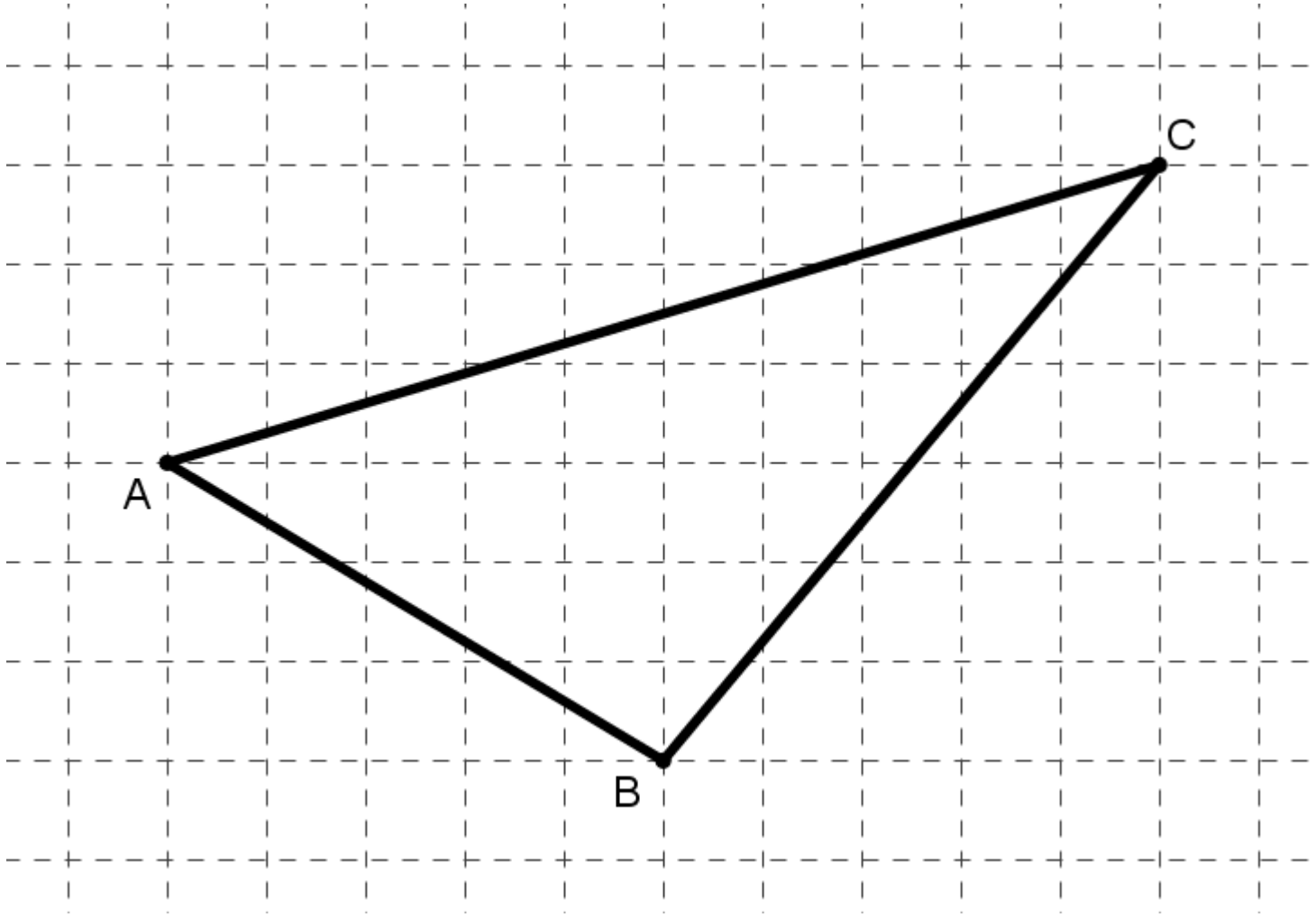
- Ergänze zu einem Quadrat!
- Ergänze zu einem Rhombus, das kein Quadrat ist!
- GGB-Arbeitsblatt https://ggbm.at/cnwextj9
- 1cm-Raster für Arbeitsblätter



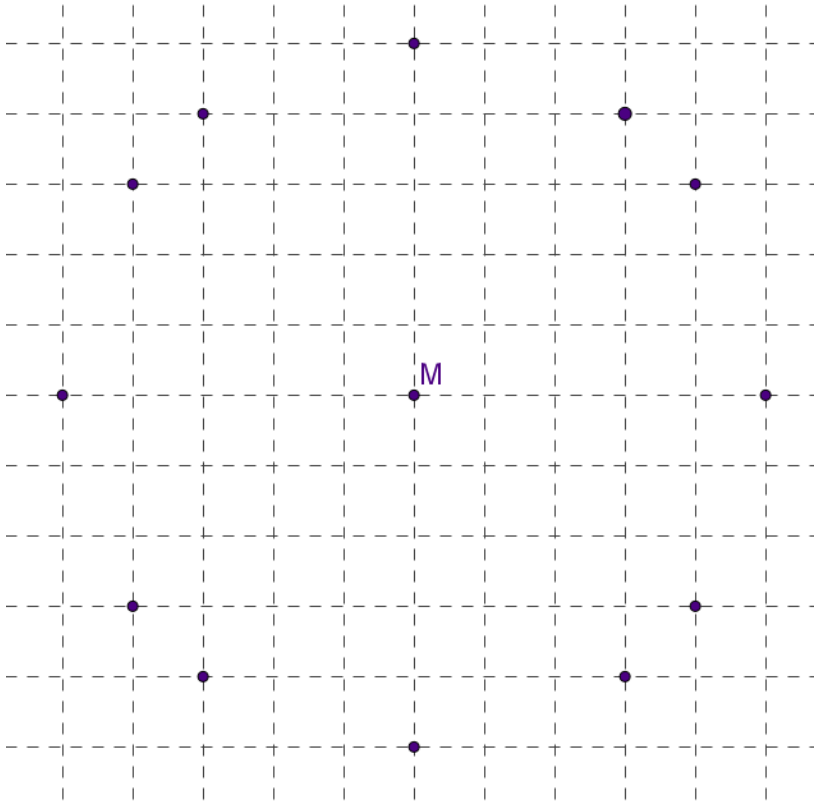
Handelt es sich um Rhomben?

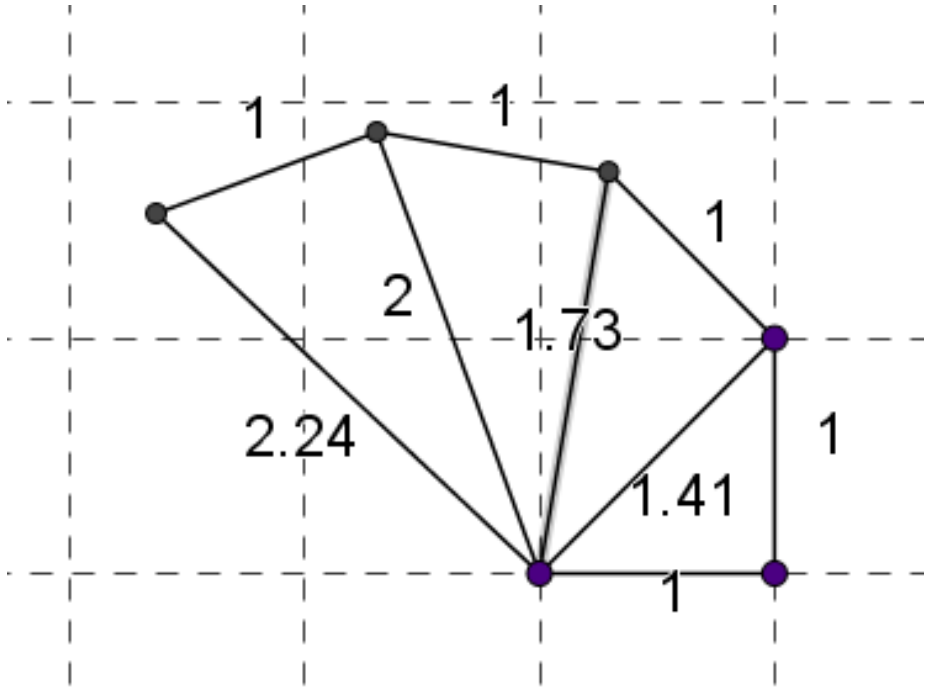


- Übertrage auf kariertes Papier! (Einheit 1 cm) Erkläre deine Vorgangsweise!
- Miss die Seitenlängen und die Größen der Winkel!
- Berechne den Flächeninhalt, indem du ein Rechteck um das Dreieck zeichnst!

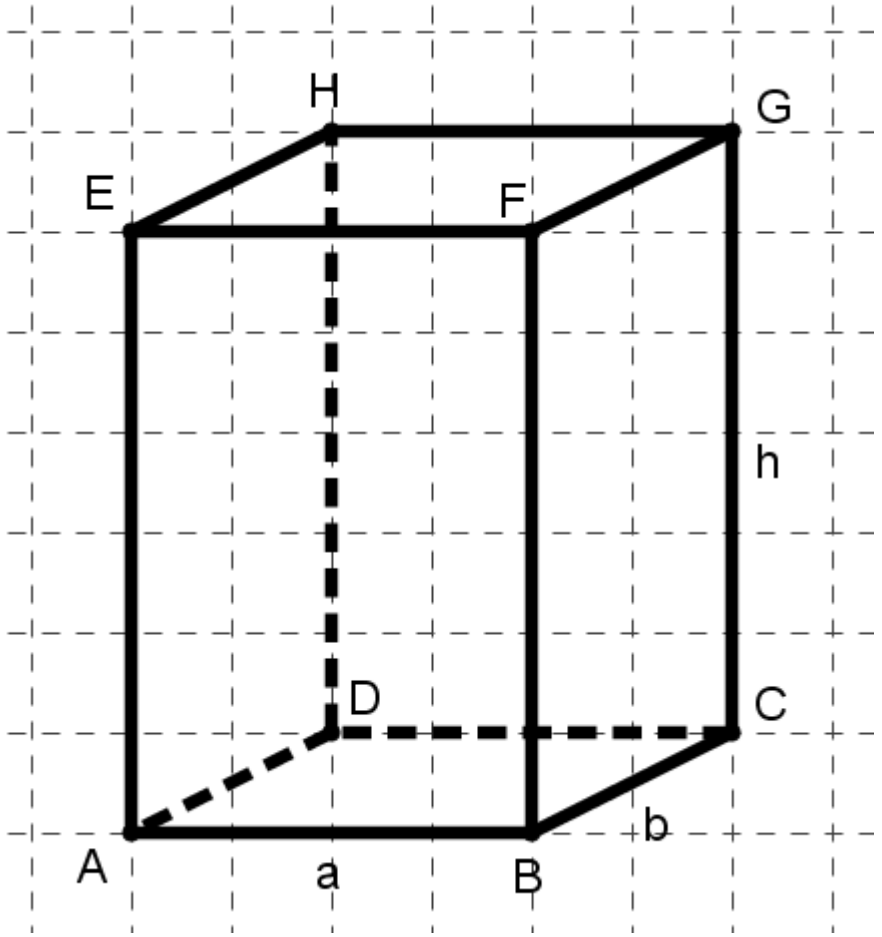


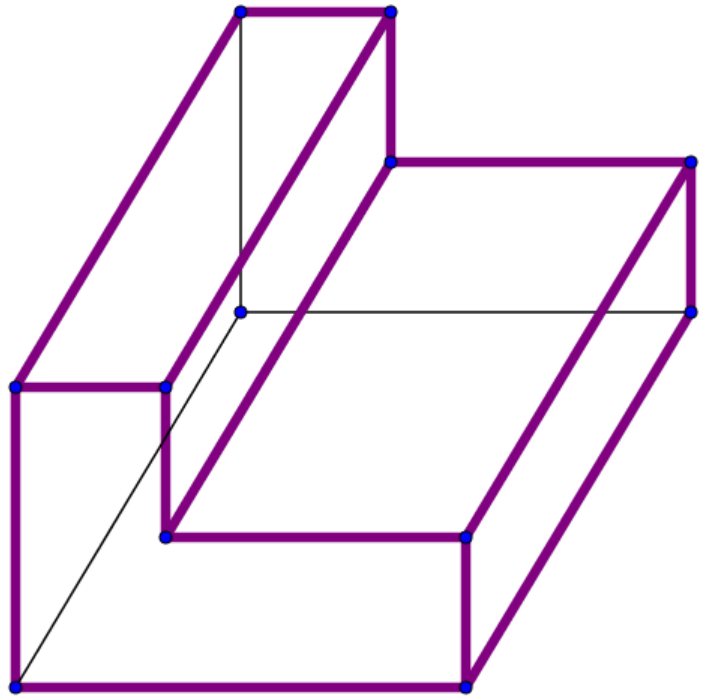
- Zeichne freihändig einen Kreis mit Radius r = 5 cm.
  Markiere vorher möglichst viele Punkte im Gitternetz!
- Konstruiere im Gitternetz $\sqrt{2}$, $\sqrt{3}$, …

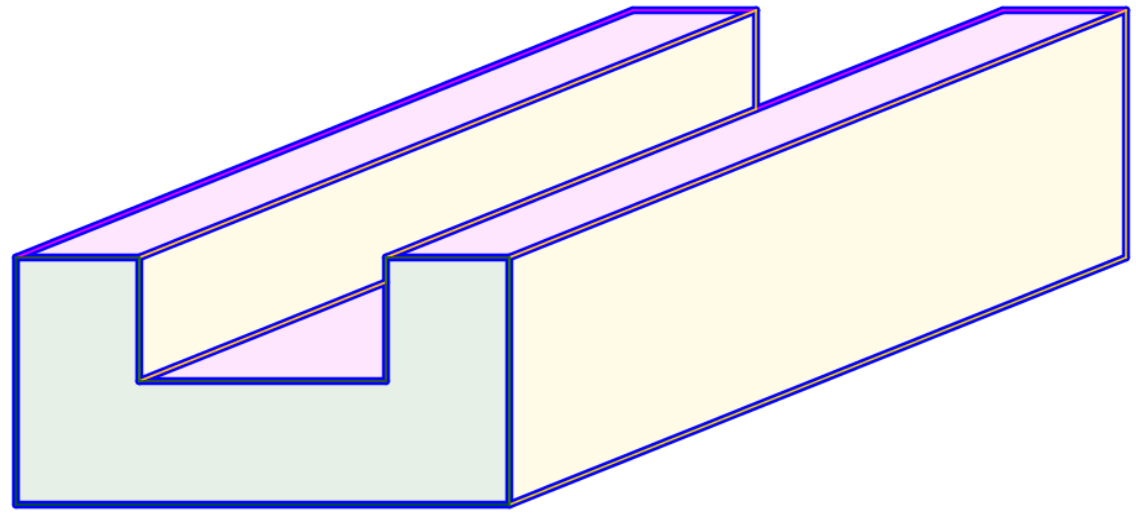


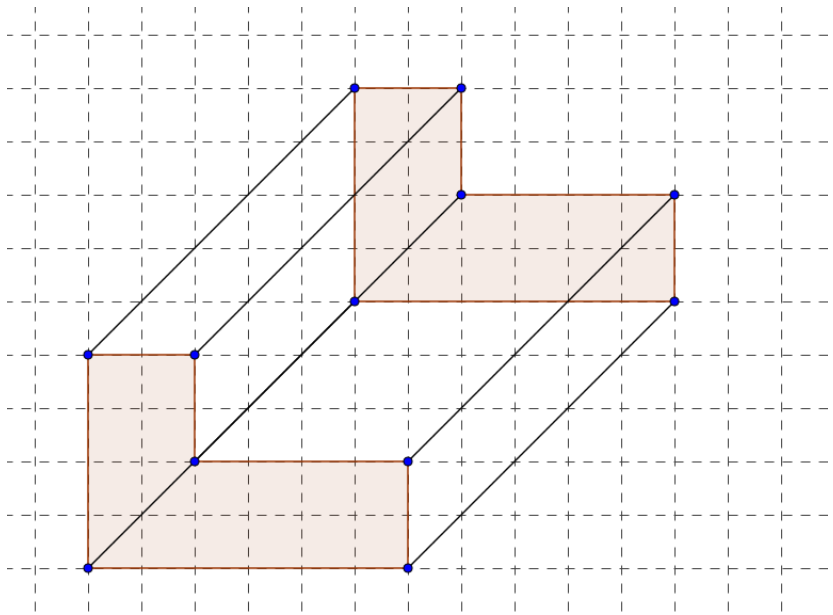


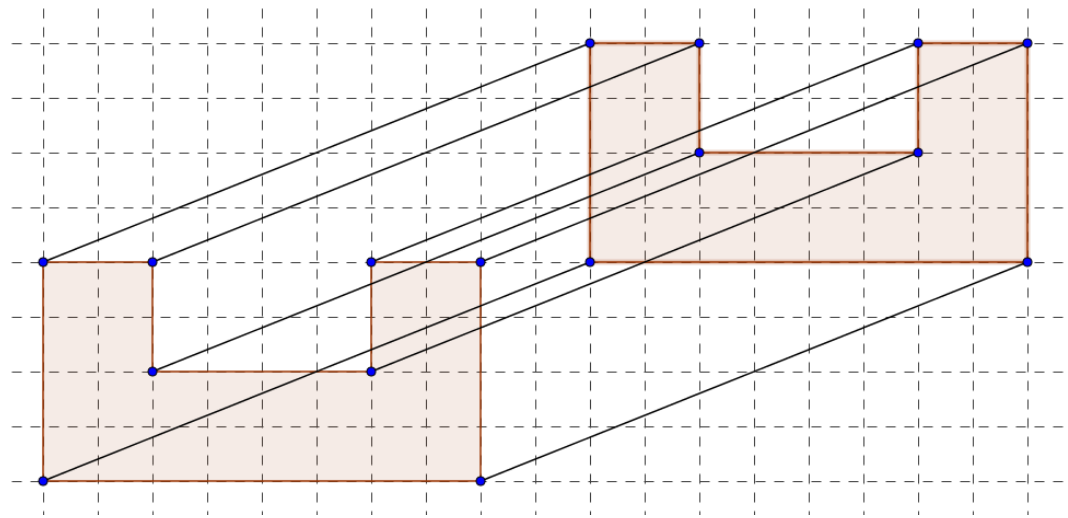
Schrägrisskizzen im Gitternetz

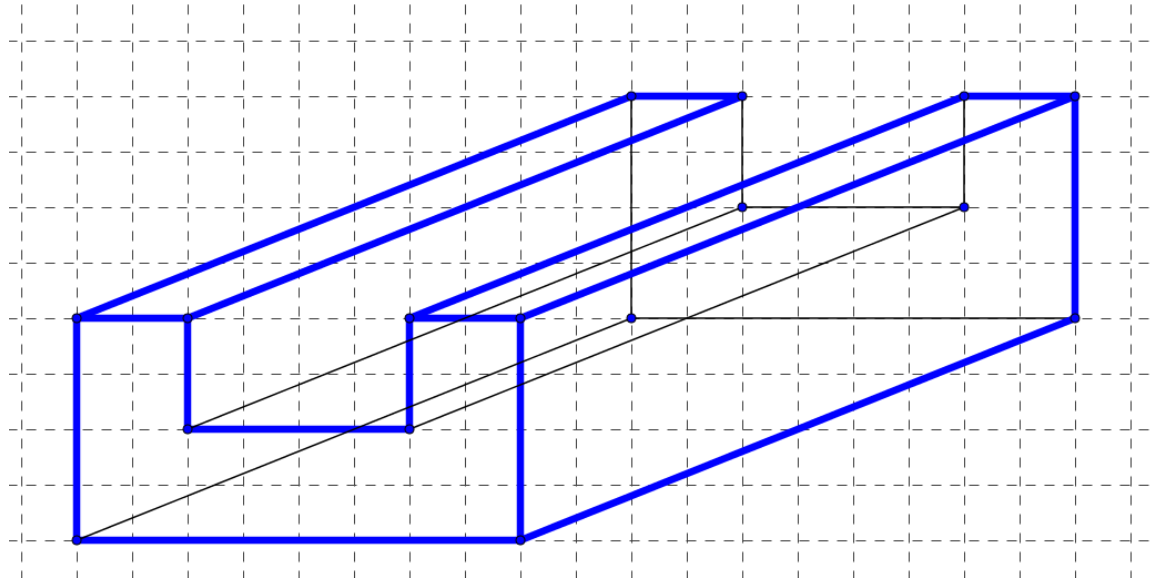


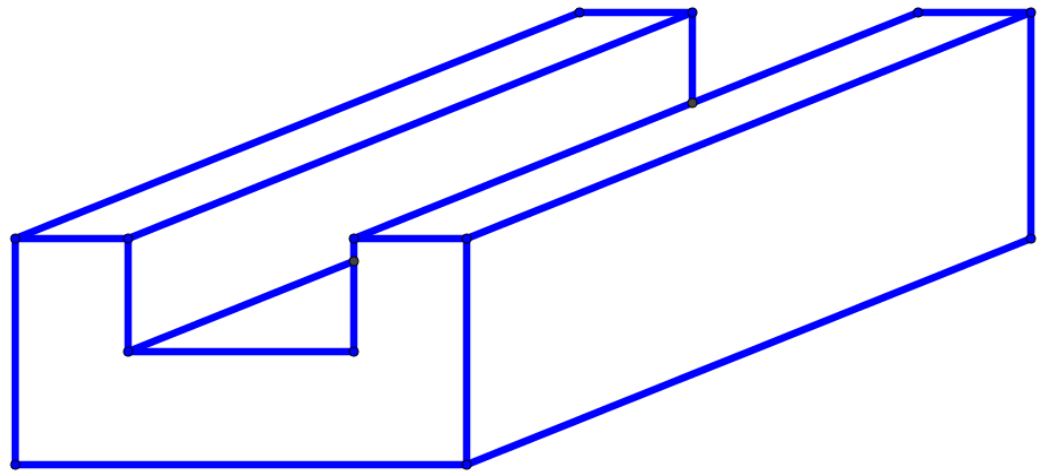


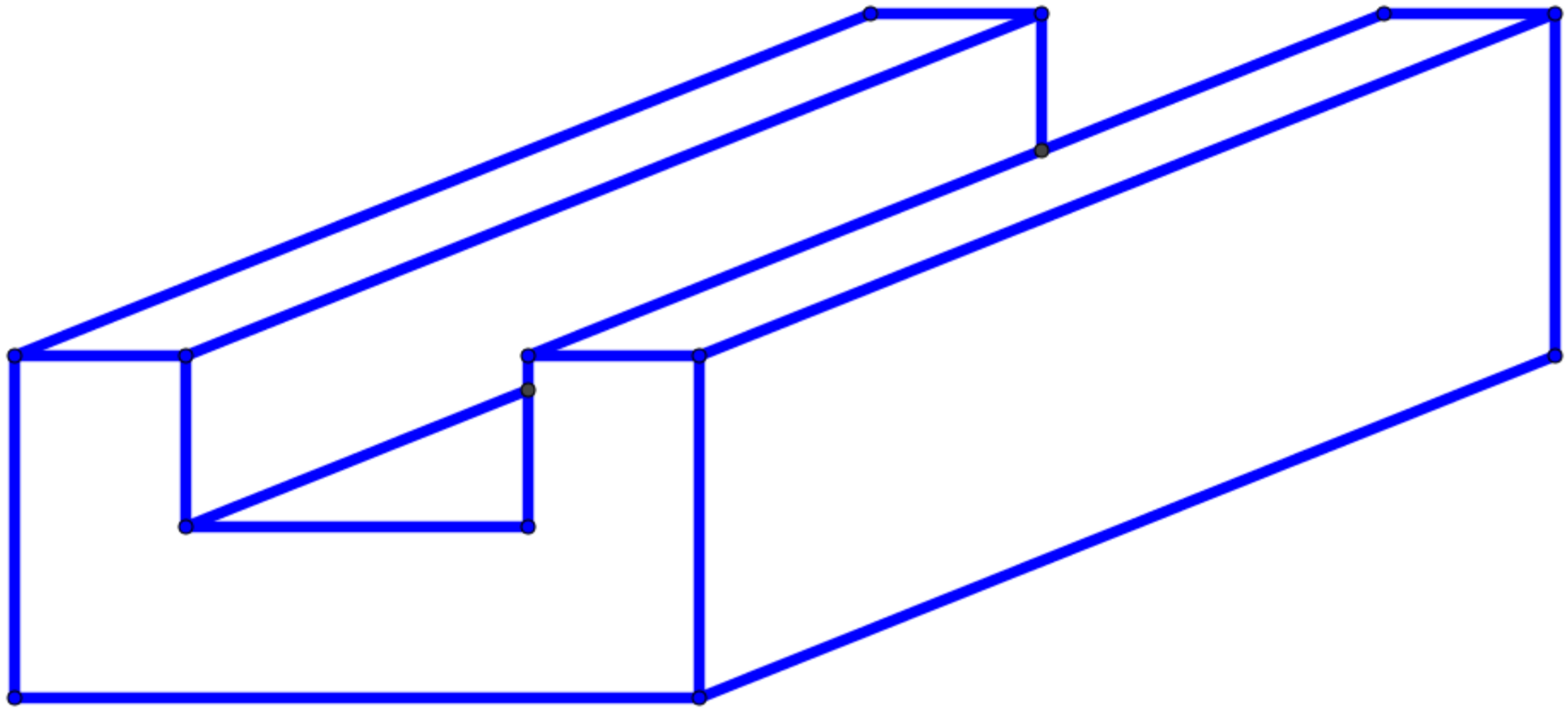




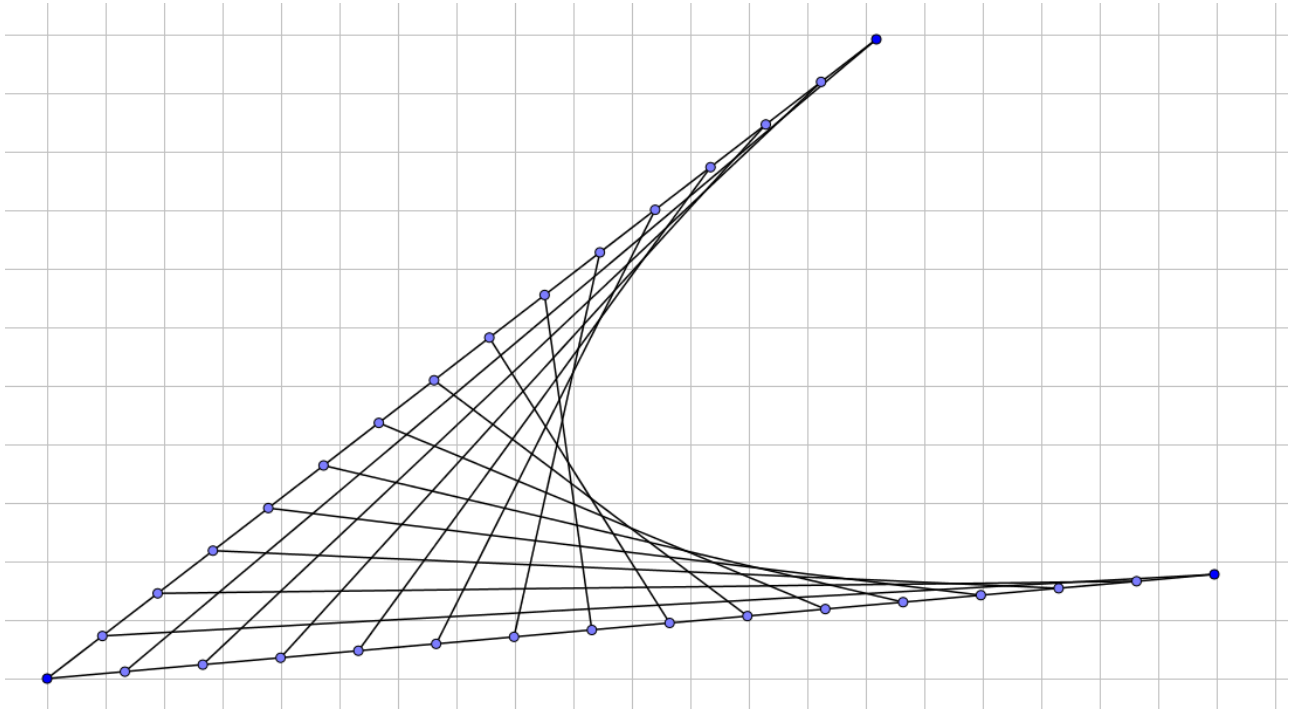


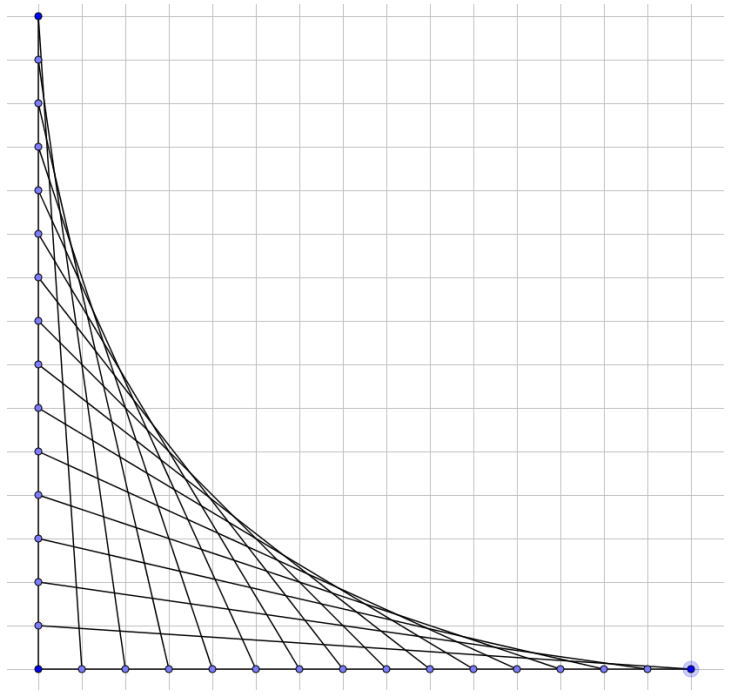






Fadenparabel





GeoGebra - Materialien

- Grundlagen Geometrie
  https://ggbm.at/caBjpRdR
- Grafik im Gitternetz
  https://ggbm.at/kxhc4jd3