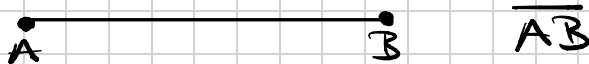
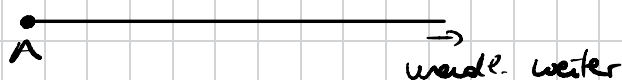


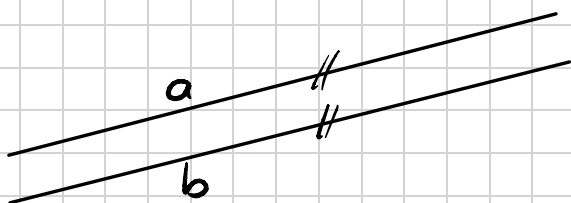
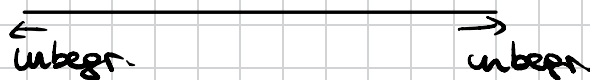
Strecke:



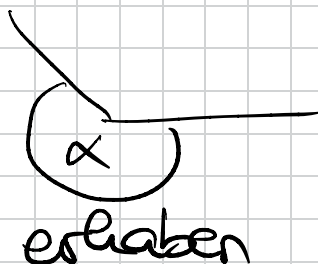
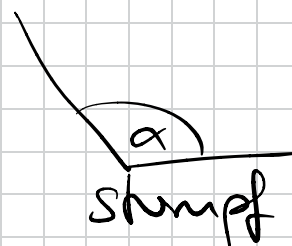
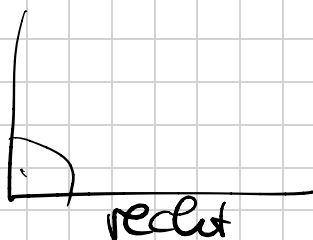
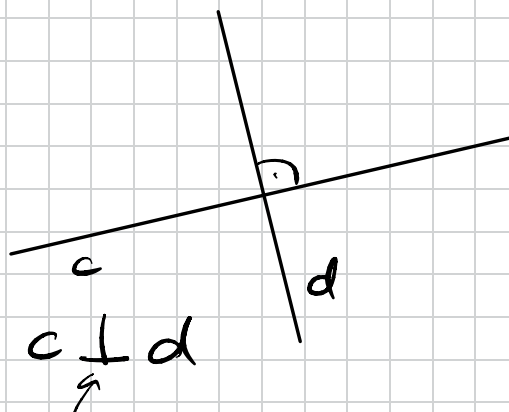
Strahl:



Gerade:



$a \parallel b$



Komplementärwinkel:

90°

Supplementärwinkel:

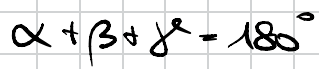
180°

z.B.



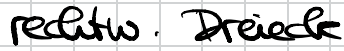
α und β supplementär

α und β komplementär



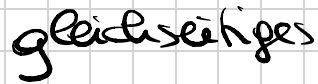
[92800878]

$$v = a + b + c$$

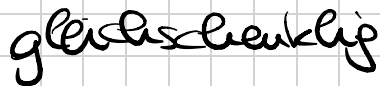


$$a^2 = b^2 + c^2$$

$$A = \frac{b \cdot c}{2}$$



$$\alpha = 60^\circ$$



Basis

allgemein fläche:

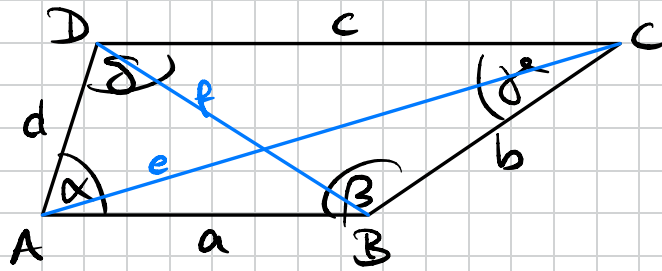


$$A = \frac{c \cdot h_c}{2}$$

Heron: $A = \sqrt{s \cdot (s-a) \cdot (s-b) \cdot (s-c)}$

mit $s = \frac{c}{2} = \frac{a+b+c}{2}$

Vierecke:

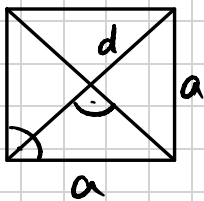
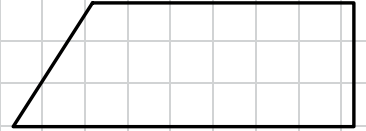
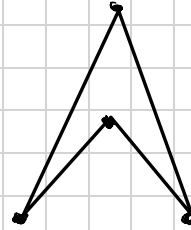


$$U = a + b + c + d$$

Innenwinkelsumme:

$$\alpha + \beta + \gamma + \delta = 360^\circ$$

Beispiele:



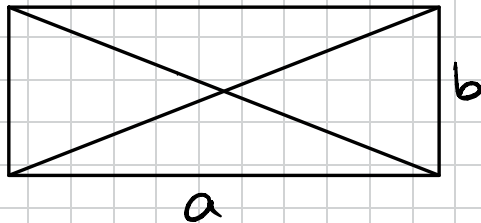
Quadrat

$$A = a^2$$

$$d^2 = a^2 + a^2 = 2a^2$$

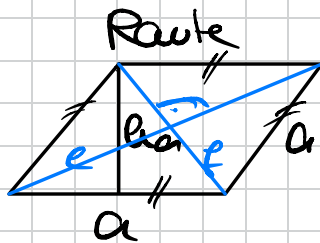
$$d = \sqrt{2a^2} = \sqrt{2} \cdot \underbrace{\sqrt{a^2}}_a$$

$$d = \sqrt{2} \cdot a$$



Rechteck

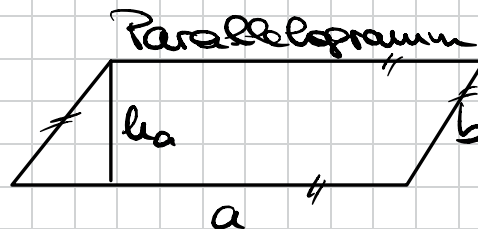
$$A = a \cdot b$$



Raute

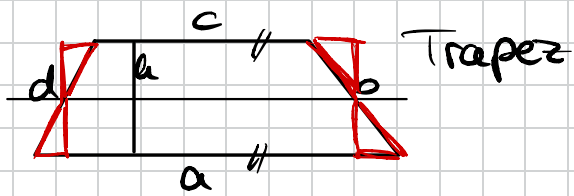
$$A = a \cdot h_a$$

$$= \frac{e \cdot f}{2}$$



Parallelogramm

$$A = a \cdot h_a$$



Trapez

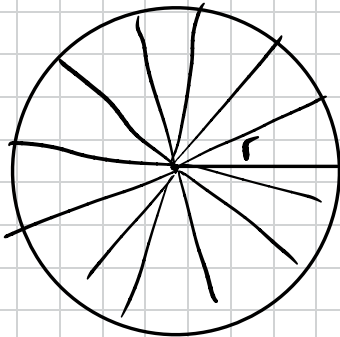
$$A = \underbrace{\frac{a+c}{2}}_{=m} \cdot h = m \cdot h$$



Deltoid / Drachenviereck

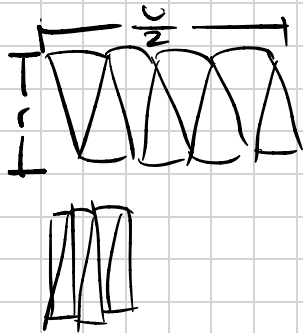
$$A = \frac{e \cdot f}{2}$$

Kreis



$$d = 2 \cdot r$$

$$\frac{u}{d} = \pi = 3,141592654... \approx \frac{22}{7}$$

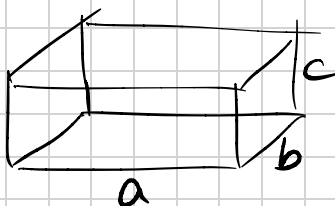


$$u = \pi \cdot d = \pi \cdot 2r$$

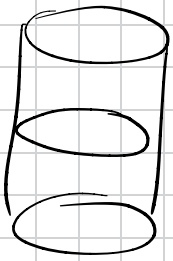
$$A = r^2 \pi = \left(\frac{d}{2}\right)^2 \pi = \frac{d^2}{2^2} \pi = \frac{d^2 \pi}{4}$$

$$A = r \cdot \frac{u}{2} = r \cdot \frac{2r\pi}{2} = r^2 \pi$$

Volumen



$$V = a \cdot b \cdot c$$



$$V = \text{Grundfläche} \cdot \text{Höhe}$$



Würfel: $V = a^3$



$$O = 6 \cdot a^2$$

Quader: $V = a \cdot b \cdot c$

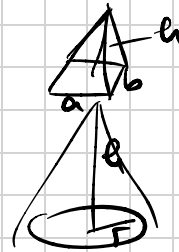


Zylinder: $V = r^2 \cdot \pi \cdot h$



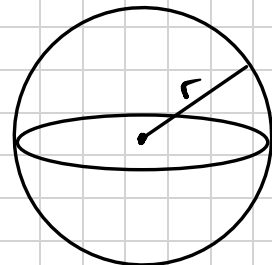
Pyramide: $V = \frac{a \cdot b \cdot h}{3}$

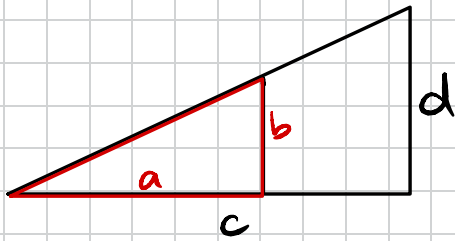
Drehzylinder: $V = \frac{r^2 \cdot \pi \cdot h}{3}$



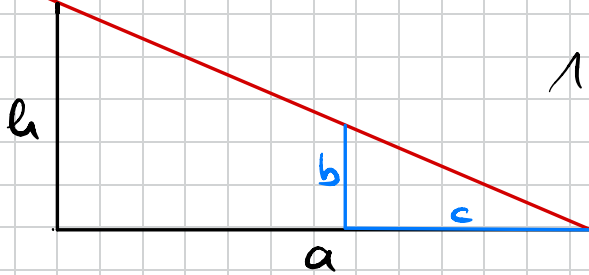
Kugel: $V = \frac{4 \pi \cdot r^3}{3}$

$$O = 4 \cdot \pi \cdot r^2$$





$$a:c = b:d$$



$$1. \quad \frac{h}{a} = \frac{b}{c}$$

$$2. \quad \frac{h}{b} = \frac{a}{c}$$

$$1. \quad \frac{h}{a} = \frac{b}{c}$$

$$| \cdot a$$

$$\underline{h = \frac{a \cdot b}{c}}$$

$$2. \quad \frac{h}{b} = \frac{a}{c} \quad | \cdot b$$

$$\underline{h = \frac{a \cdot b}{c}}$$

$$h = \frac{28 \cdot 1,6}{2,56} = \underline{17,5 \text{ m}}$$

$$9. \ a) \ a = 5 \text{ cm}$$

$$b = 12 \text{ cm}$$

$$c = 13 \text{ cm}$$

Pythagoras:

$$13^2 = 12^2 + 5^2$$

$$169 = 144 + 25$$

$$169 = 169 \checkmark$$

$$b) \ a = 6 \text{ cm}$$

$$b = 8 \text{ cm}$$

$$c = 10 \text{ cm}$$

$$10^2 = 6^2 + 8^2$$

$$100 = 36 + 64$$

$$100 = 100 \checkmark$$

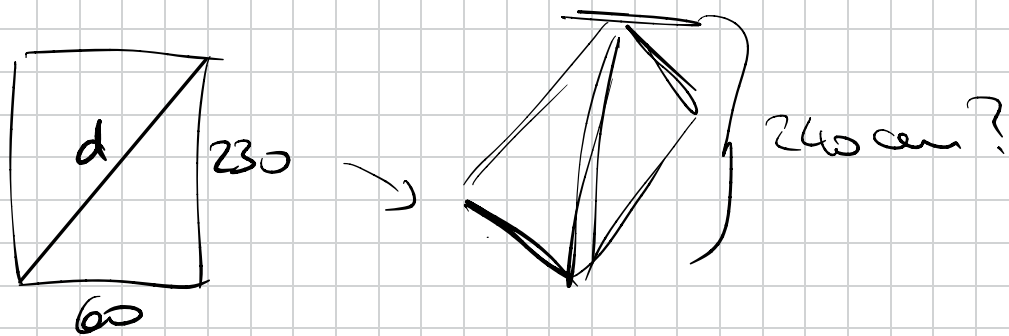
$$a = 6 \text{ cm}$$

$$b = 7 \text{ cm}$$

$$c = 10 \text{ cm}$$

13. 230 cm

60 cm



$$d = \sqrt{230^2 + 60^2} = \underline{237,7 \text{ cm}} < 240 \text{ cm}$$

25. $u = 4,22 \text{ m} = 422 \text{ cm}$

$$u = 2\pi r \quad | : 2\pi$$

$$r = \frac{u}{2\pi} = \frac{4,22}{2\pi} = 0,67 \text{ m}$$

26. $A = 33 \text{ cm}^2 = 0,33 \text{ dm}^2 = 0,0033 \text{ m}^2$

$$1^2 \text{ dm}^2 = 10^2 \text{ cm}^2$$

$$1 \text{ dm}^2 = 100 \text{ cm}^2$$

$$1^2 \text{ m}^2 = 10^2 \text{ dm}^2$$

$$1 \text{ m}^2 = 100 \text{ dm}^2 = 10000 \text{ cm}^2$$

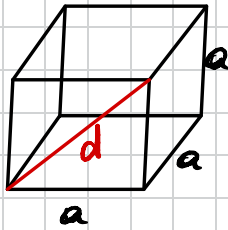
$$A = r^2 \pi \quad | : \pi$$

$$\frac{A}{\pi} = r^2 \quad | \sqrt{\quad}$$

$$r = \sqrt{\frac{A}{\pi}} = \sqrt{\frac{33}{\pi}} = \underline{3,24 \text{ cm}}$$

Stereometrie

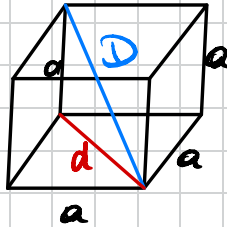
1.



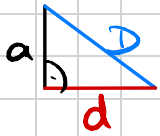
$$a = 5,75 \text{ cm}$$

$$d^2 = 2a^2$$

$$d = \sqrt{2 \cdot a^2} = \sqrt{2 \cdot 5,75^2} = \underline{8,13 \text{ cm}}$$



$$\begin{aligned} D &= \sqrt{a^2 + d^2} \\ &= \sqrt{5,75^2 + 8,13^2} \\ &= \underline{9,96 \text{ cm}} \end{aligned}$$



$$O = 6 \cdot a^2 = 6 \cdot 5,75^2 = 198,38 \text{ cm}^2$$

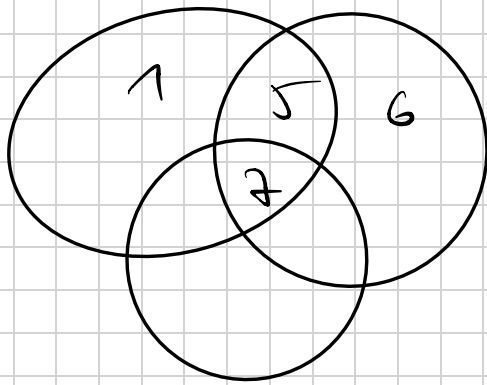
$$\begin{aligned} V &= a^3 = 5,75^3 = 190,11 \text{ cm}^3 \\ &= 0,19011 \text{ dm}^3 \end{aligned}$$

$$1 \text{ dm}^3 = 1 \text{ l}$$

$$= \underline{0,19011 \text{ l}}$$

$$1 \text{ dm}^3 = 10^3 \text{ cm}^3$$

$$1 \text{ dm}^3 = 1000 \text{ cm}^3$$



4

$$x^{-2} = \frac{1}{x^2}$$

$$\sqrt[3]{x} = x^{1/3}$$

+ Potenzgesetze

$$\frac{1}{4} : \frac{1}{2}$$

$$\frac{\frac{\frac{1}{2}}{4}}{\frac{1}{2}} = \frac{\frac{1}{2}}{4} : \frac{1}{2}$$

Geradenma: 850671 km

$$= 8,50671 \cdot 10^5$$

0,000000000 kg

$$= 1,2 \cdot 10^{-9}$$