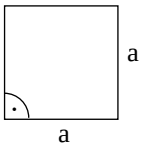
Mathematische Formeln

Ebene Figuren (Fläche A, Umfang u)

Quadrat

$A = a^2$

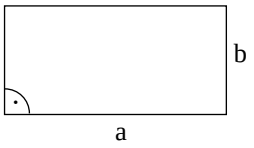
$u = 4 \cdot a$



Rechteck

$A = a \cdot b$

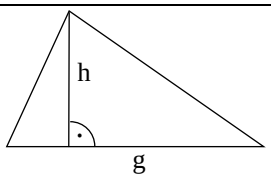
$u = 2 \cdot a + 2 \cdot b$



Dreieck

$A = \frac{g \cdot h}{2}$

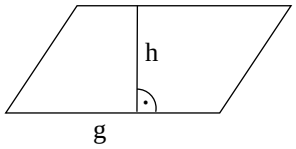
$u = a + b + c$



Parallelogramm

$A = g \cdot h$

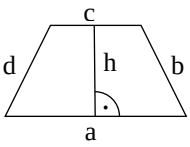
$u = 2 \cdot a + 2 \cdot b$



Trapez

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

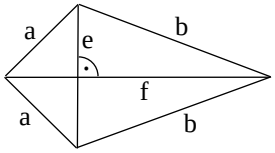
$u = a + b + c + d$



Drachen

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

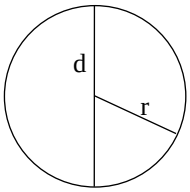
$u = 2 \cdot a + 2 \cdot b$



Kreis

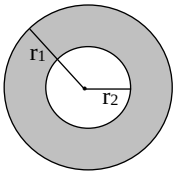
$A = \pi \cdot r^2$

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



Kreisring

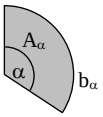
$A_{Ring} = \pi \cdot r_1^2 - \pi \cdot r_2^2$



Kreisausschnitt

$A_\alpha = \pi \cdot r^2 \cdot \frac{\alpha}{360°}$

$b_\alpha = 2 \cdot \pi \cdot r \cdot \frac{\alpha}{360°}$

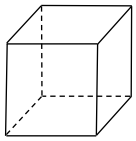


Körper (Volumen V, Oberfläche O, Grundfläche G, Mantelfläche M)

Würfel

$V = a^3$

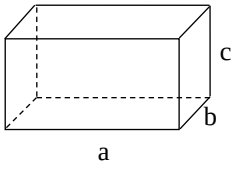
$O = 6 \cdot a^2$



Quader

$V = a \cdot b \cdot c$

$O = 2 \cdot a \cdot b + 2 \cdot b \cdot c + 2 \cdot a \cdot c$

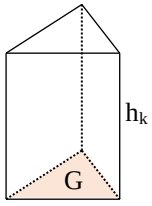


Prisma

$V = G \cdot h_k$

$M = u \cdot h_k$

$O = 2 \cdot G + M$



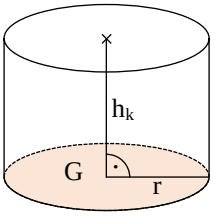
Zylinder

$V = \pi \cdot r^2 \cdot h_k$

$O = 2 \cdot G + M$

$G = \pi \cdot r^2$

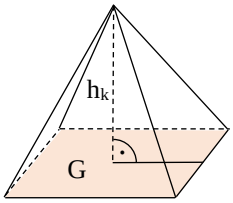
$M = 2 \cdot \pi \cdot r \cdot h_k$



Pyramide

$V = \frac{1}{3} \cdot G \cdot h_k$

$O = G + M$



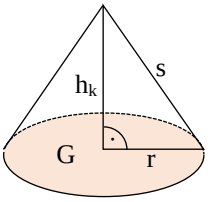
Kegel

$V = \frac{1}{3} \cdot \pi \cdot r^2 \cdot h_k$

$O = G + M$

$G = \pi \cdot r^2$

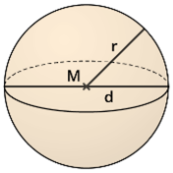
$M = \pi \cdot r \cdot s$



Kugel

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

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



Mathematische Formeln

Geradengleichungen

Normalform

$$y = mx + b$$

Steigung

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Quadratische Gleichungen und Funktionen

Normalform

$$x^2 + px + q = 0$$

pq-Formel

$$x_{1/2} = -\frac{p}{2} \pm \sqrt{\left(\frac{p}{2}\right)^2 - q}$$

Scheitelpunktform mit dem Scheitelpunkt S

$$y = a \cdot (x - d)^2 + e \qquad S = (d \mid e)$$

Binomische Formeln

I. $(a + b)^2 = a^2 + 2 \cdot a \cdot b + b^2$

II. $(a - b)^2 = a^2 - 2 \cdot a \cdot b + b^2$

III. $(a + b) \cdot (a - b) = a^2 - b^2$

Prozent- und Zinsrechnung

P_W:	Prozentwert
G:	Grundwert
p:	Prozentsatz / Zinssatz
K:	Kapital
Z:	Jahreszinsen

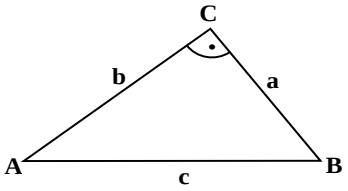
$$P_W = \frac{G \cdot p}{100} \qquad G = \frac{P_W}{p} \cdot 100 \qquad p = \frac{P_W}{G} \cdot 100$$

$$Z = \frac{K \cdot p}{100}$$

Satz des Pythagoras

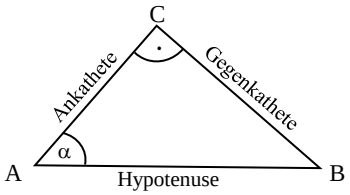
Im rechtwinkligen Dreieck ABC mit $\gamma = 90°$ gilt:

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



Trigonometrie

Im rechtwinkligen Dreieck ABC mit $\gamma = 90°$ gilt:



$$\sin\alpha = \frac{\text{Gegenkathete}}{\text{Hypotenuse}} \qquad \cos\alpha = \frac{\text{Ankathete}}{\text{Hypotenuse}} \qquad \tan\alpha = \frac{\text{Gegenkathete}}{\text{Ankathete}}$$