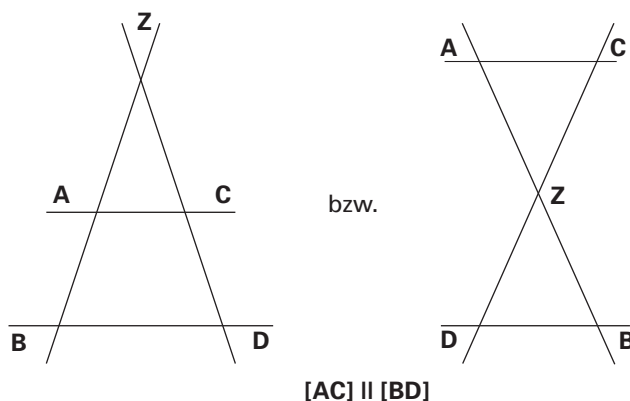


Formelsammlung

Strahlensatz (Vierstreckensatz)



1. Strahlensatz

$$\frac{\overline{ZA}}{\overline{ZA} + \overline{AB}} = \frac{\overline{ZC}}{\overline{ZC} + \overline{CD}}$$

2. Strahlensatz

$$\frac{\overline{ZA}}{\overline{ZC}} = \frac{\overline{AB}}{\overline{CD}}$$

Prozentrechnen

GW = Grundwert

PW = Prozentwert

p = Prozentsatz

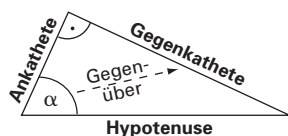
$$GW = \frac{PW \cdot 100}{p}$$

$$PW = \frac{GW \cdot p}{100}$$

$$p = \frac{PW \cdot 100}{GW}$$

Trigonometrische Berechnungen

Rechtwinkliges Dreieck



$$\sin \alpha = \frac{\text{Gegenkathete}}{\text{Hypotenuse}}$$

$$\tan \alpha = \frac{\text{Gegenkathete}}{\text{Ankathete}}$$

$$\cos \alpha = \frac{\text{Ankathete}}{\text{Hypotenuse}}$$

Potenzen und Wurzeln

$$a^m \cdot a^n = a^{m+n}$$

$$\frac{a^m}{b^n} = \left(\frac{a}{b}\right)^n$$

$$a^0 = 1$$

$$a^m : a^n = a^{m-n}$$

$$(a^m)^n = a^{m \cdot n}$$

$$a^{\frac{1}{n}} = \sqrt[n]{a}$$

$$a^n \cdot b^n = (a \cdot b)^n$$

$$a^{-n} = \frac{1}{a^n}$$

$$a^{\frac{m}{n}} = \sqrt[n]{a^m}$$

Quadratische Gleichungen

Allgemeine Form:

$$ax^2 + bx + c = 0$$

: a

Normalform:

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

Lösungsformel

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

Wachstum, Zerfall, Zinseszins

Wachstum:

$$W_n = W_0 \left(1 + \frac{p}{100}\right)^n$$

n = Anzahl der Zeiteinheiten

Zerfall:

$$Z_n = Z_0 \left(1 - \frac{p}{100}\right)^n$$

p = Prozentsatz

Zinseszins:

$$K_n = K_0 \left(1 + \frac{p}{100}\right)^n$$

W_0, Z_0, K_0 = Ausgangswert

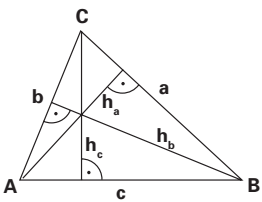
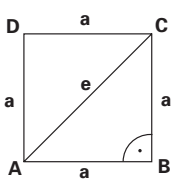
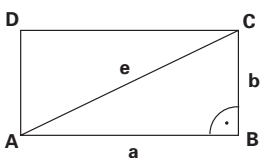
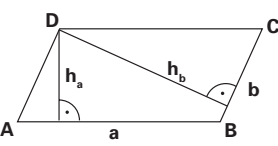
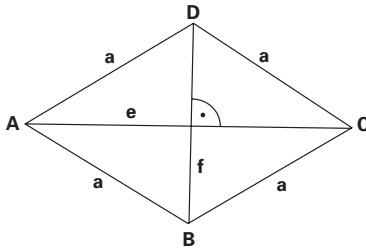
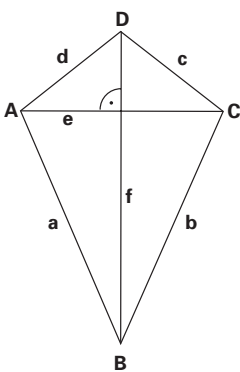
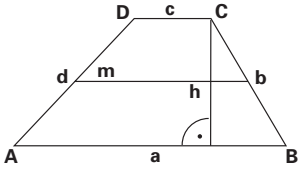
Wachstums- bzw. Zerfallsrate: $q = 1 \pm \frac{p}{100}$

W_n, Z_n, K_n = Wert nach n Zeiteinheiten

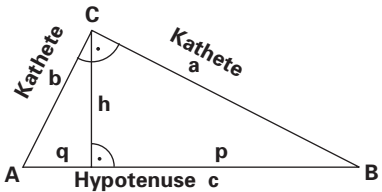
Erläuterungen für Abkürzungen

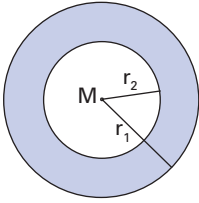
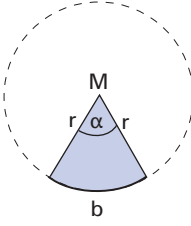
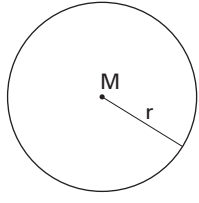
A: Flächeninhalt	d: Länge der Raumdiagonale
V: Volumen	s: Länge der Mantellinie
O: Oberflächeninhalt	G: Grundfläche
M: Mantelflächeninhalt	h: Höhe
M: Kreismitte	r: Radius
e, f: Länge der Flächendiagonalen	u: Umfang

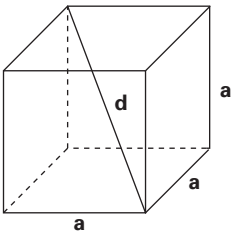
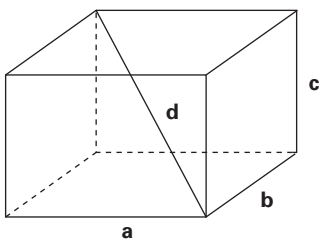
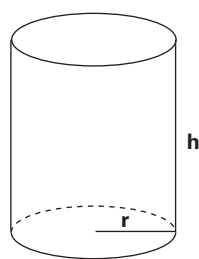
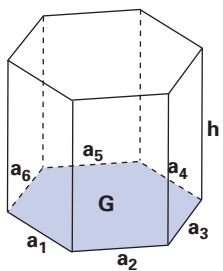
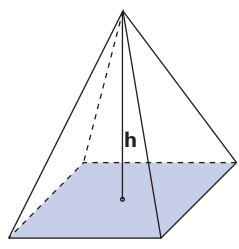
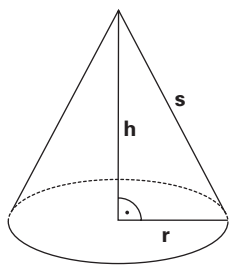
Berechnungen an Dreiecken und Vierecken

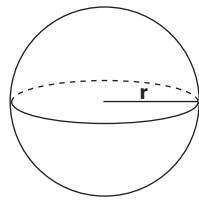
Dreieck	Quadrat	Rechteck	Parallelogramm
 $A = \frac{1}{2} a \cdot h_a = \frac{1}{2} b \cdot h_b$ $= \frac{1}{2} c \cdot h_c$	 $A = a^2$ $e = a\sqrt{2}$	 $A = a \cdot b$ $e = \sqrt{a^2 + b^2}$	 $A = a \cdot h_a = b \cdot h_b$
u = Summe aller Seiten			
Raute	Drachen	Trapez	
 $A = \frac{1}{2} e \cdot f$	 $A = \frac{1}{2} e \cdot f$	 $m = \frac{a + c}{2}$ $a \parallel c$ $A = \frac{a + c}{2} \cdot h = m \cdot h$	
u = Summe aller Seiten			

Berechnungen am rechtwinkligen Dreieck

	$c^2 = a^2 + b^2$	Satz des Pythagoras
	$h^2 = p \cdot q$	Höhensatz
	$a^2 = c \cdot p$ $b^2 = c \cdot q$	Kathetensatz

Berechnungen am Kreis		
Kreisring	Kreissector und Kreisbogenlänge	Kreis
 $A = (r_1^2 - r_2^2) \cdot \pi$ $u = 2\pi (r_1 + r_2)$	 $b = \frac{\alpha}{360^\circ} \cdot 2r\pi$ $A = \frac{\alpha}{360^\circ} \cdot r^2\pi = \frac{b \cdot r}{2}$ $u = 2 \cdot r + b$	 $A = r^2 \cdot \pi$ $u = 2 \cdot r \cdot \pi$

Berechnungen an Körpern		
Würfel	Quader	Zylinder
 $O = 6 \cdot a^2$ $V = a^3$ $d = a\sqrt{3}$	 $O = 2 \cdot (ab + ac + bc)$ $V = a \cdot b \cdot c$ $d = \sqrt{a^2 + b^2 + c^2}$	 $O = 2 \cdot G + M$ $O = 2r\pi (r + h)$ $M = 2r\pi h$ $V = r^2\pi h$
Prisma (allgemein)	Pyramide	Kegel
 $O = 2 \cdot G + M$ $M = (a_1 + \dots + a_6) \cdot h$ $V = G \cdot h$	 $O = G + M$ $V = \frac{1}{3} G \cdot h$	 $O = r\pi (r + s)$ $s = \sqrt{r^2 + h^2}$ $M = r\pi s$ $V = \frac{1}{3} r^2\pi \cdot h$

Kugel
 $O = 4r^2\pi$ $V = \frac{4}{3}r^3\pi$