Meine kleine Formelsammlung

Wichtige Zeichen, Rechengesetze und Formeln

Welche Zahlenmengen gibt es?

$\mathbb{N}$	Natürliche Zahlen	$\mathbb{Z}$	Ganze Zahlen
$\mathbb{Q}$	Rationale Zahlen	$\mathbb{R}$	Reele Zahlen
$\mathbb{I}$	Irrationale Zahlen		

Rechengesetze

Vertauschungsgesetz der Addition
$a + b = b + a$

Vertauschungsgesetz der Multiplikation
$a \cdot b = b \cdot a$

Verbindungsgesetz der Addition
$(a + b) + c = a + (b + c)$

Verbindungsgesetz der Multiplikation
$(a \cdot b) \cdot c = a \cdot (b \cdot c)$

Verteilungsgesetz
$a \cdot (b + c) = a \cdot b + a \cdot c$

Binomische Formeln

$(a + b)^2 = a^2 + 2ab + b^2$

$(a - b)^2 = a^2 - 2ab + b^2$

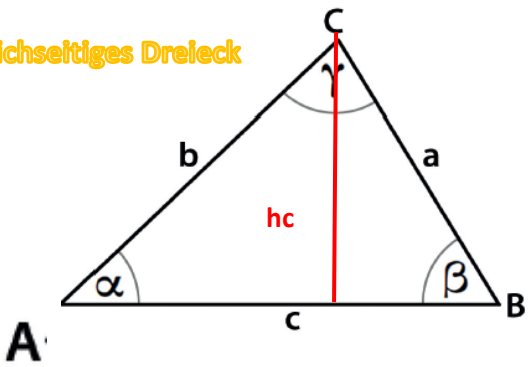
$(a + b)(a - b) = a^2 - b^2$

$(a + b)^3 = a3 + 3a^2b + 3ab^2 + b^3$

$(a + b)^3 = a3 + 3a^2b + 3ab^2 + b^3$

Flächenformeln

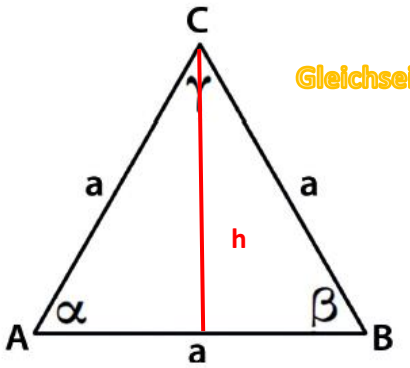
Ungleichseitiges Dreieck



$$A = \frac{a \cdot h_a}{2} = \frac{b \cdot h_b}{2} = \frac{c \cdot h_c}{2}$$

$$u = a + b + c$$

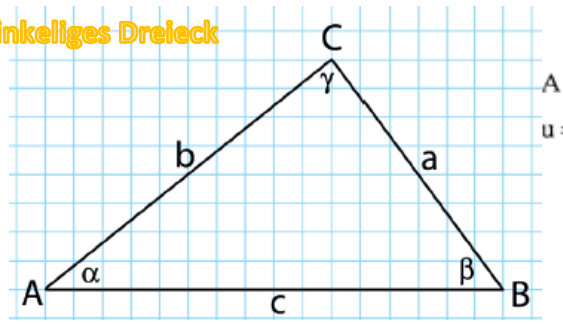
Gleichseitiges Dreieck



$$A = \frac{a^2 \cdot \sqrt{3}}{4}$$

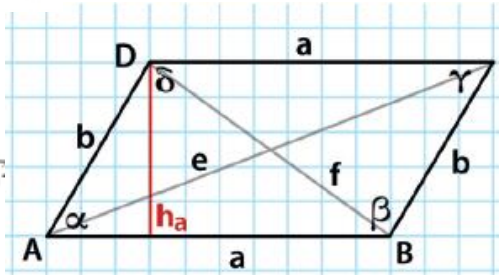
$$u = 3a \qquad h = \frac{a}{2} \cdot \sqrt{3}$$

Rechtwinkeliges Dreieck



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

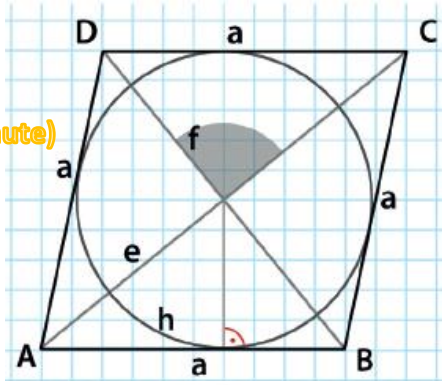
$$u = a + b + c \qquad c = \sqrt{a^2 + b^2}$$



$$A = a \cdot h_a = b \cdot h_b$$

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

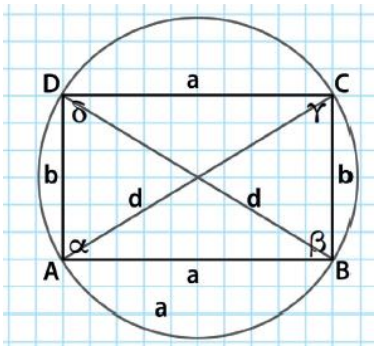
Rhombus (Raute)



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

$$u = 4a$$

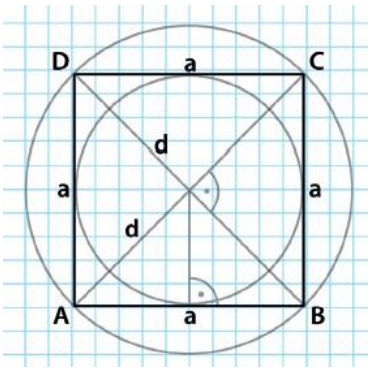
Rechteck



$$A = a \cdot b$$

$$u = 2 \cdot (a + b) \qquad d = \sqrt{a^2 + b^2}$$

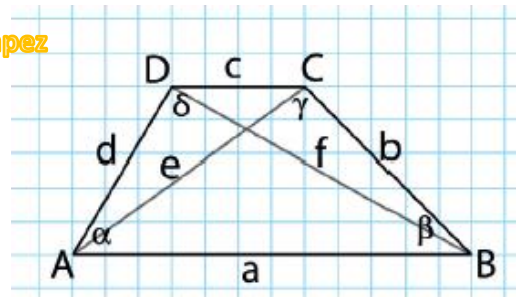
Quadrat



$$A = a^2 = \frac{d \cdot d}{2}$$

$$u = 4a \qquad d = a \cdot \sqrt{2}$$

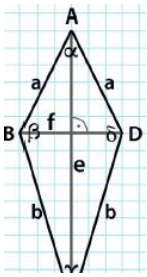
Trapez



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

$$u = a + b + c + d$$

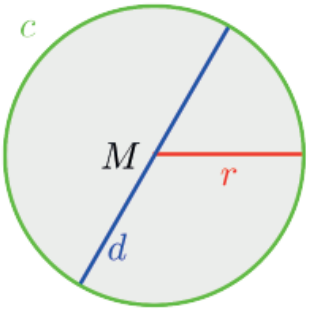
Deltoid (Drachenviereck)



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

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

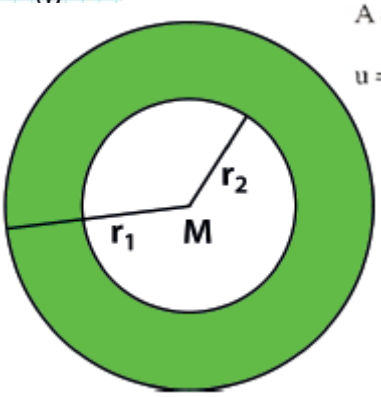
Kreis



$$A = r^2 \pi$$

$$u = 2 r \pi$$

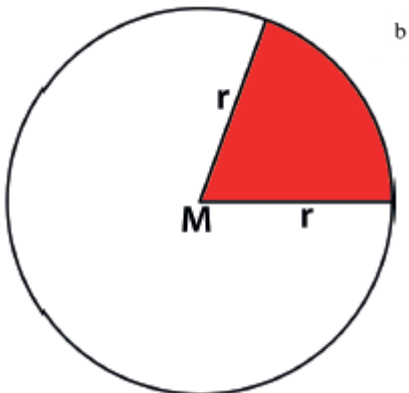
Kreisring



$$A = \pi \cdot (r_1^2 - r_2^2)$$

$$u = 2\pi \cdot (r_1 + r_2)$$

Kreisausschnitt (Sektor)

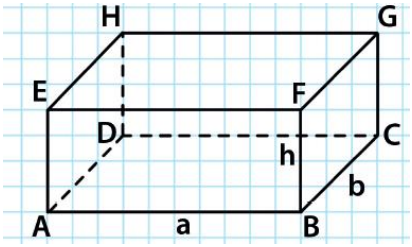


$$A = \frac{r^2 \pi \alpha}{360} = \frac{b \cdot}{2}$$

$$b = \frac{r \pi \alpha}{180}$$

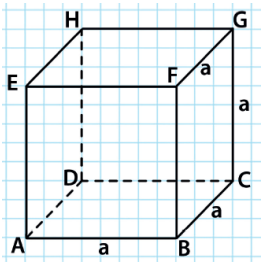
Körperformeln

Quader



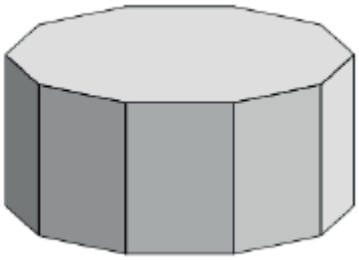
$$V = a \cdot b \cdot c$$
$$O = 2(ab + ac + bc)$$
$$d_R = \sqrt{a^2 + b^2 + c^2}$$

Würfel



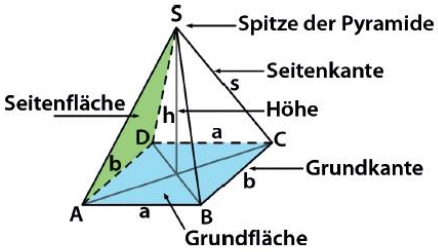
$$V = a^3$$
$$O = 6a^2$$
$$d = a\sqrt{2}\ ,\ d_R = a\sqrt{3}$$

Prismen



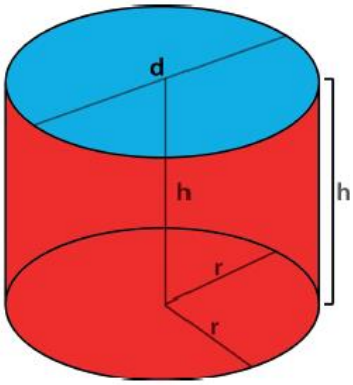
$$V = G \cdot h$$
$$O = 2G + M$$

Pyramide



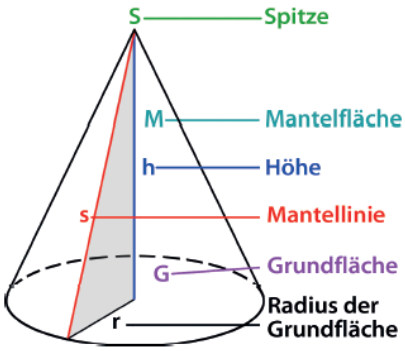
$$V = \frac{G \cdot h}{3}$$
$$O = G + M$$

Zylinder



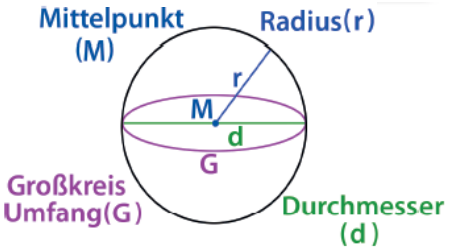
$$V = r^2 \pi h$$
$$O = 2r^2\pi + 2r\pi h$$

Kegel



$$V = \frac{r^2 \pi h}{3}$$
$$O = r^2\pi + r\pi s$$
$$s = \sqrt{h^2 + r^2}$$

Kugel



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