

Formulario di Geometria

Objektyp: **Group**

Zeitschrift: **Pestalozzi-Kalender**

Band (Jahr): **56 (1963)**

Heft [2]: **Schüler ; 50 anni per la gioventù**

PDF erstellt am: **19.07.2024**

Nutzungsbedingungen

Die ETH-Bibliothek ist Anbieterin der digitalisierten Zeitschriften. Sie besitzt keine Urheberrechte an den Inhalten der Zeitschriften. Die Rechte liegen in der Regel bei den Herausgebern.

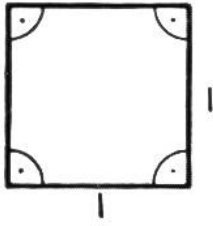
Die auf der Plattform e-periodica veröffentlichten Dokumente stehen für nicht-kommerzielle Zwecke in Lehre und Forschung sowie für die private Nutzung frei zur Verfügung. Einzelne Dateien oder Ausdrucke aus diesem Angebot können zusammen mit diesen Nutzungsbedingungen und den korrekten Herkunftsbezeichnungen weitergegeben werden.

Das Veröffentlichen von Bildern in Print- und Online-Publikationen ist nur mit vorheriger Genehmigung der Rechteinhaber erlaubt. Die systematische Speicherung von Teilen des elektronischen Angebots auf anderen Servern bedarf ebenfalls des schriftlichen Einverständnisses der Rechteinhaber.

Haftungsausschluss

Alle Angaben erfolgen ohne Gewähr für Vollständigkeit oder Richtigkeit. Es wird keine Haftung übernommen für Schäden durch die Verwendung von Informationen aus diesem Online-Angebot oder durch das Fehlen von Informationen. Dies gilt auch für Inhalte Dritter, die über dieses Angebot zugänglich sind.

Formulario di Geometria

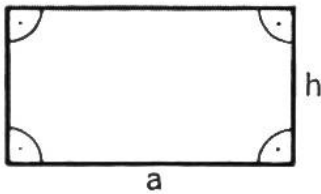


Il quadrato (lati uguali; angoli uguali)

l = lato p = perimetro A = area

$$p = 4l \quad l = \frac{p}{4} = p : 4$$

$$A = l \cdot l = l^2 \quad l = \sqrt{A}$$

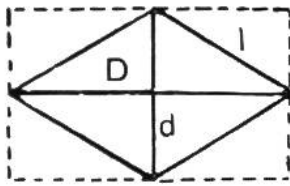


Il rettangolo (lati disuguali; angoli uguali)

a = lunghezza (base) h = larghezza (altezza)

$$p = 2(a + h) \quad a = \frac{p}{2} - h \quad h = \frac{p}{2} - a$$

$$A = ah \quad a = A : h \quad h = A : a$$



La losanga (lati uguali; angoli disuguali)

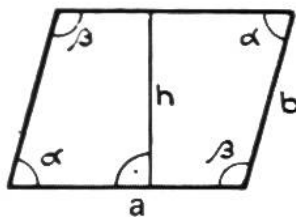
$$p = 4l \quad l = p : 4$$

$$A = \frac{D \cdot d}{2} \quad D = \frac{2A}{d} \quad d = \frac{2A}{D}$$

Caso speciale del quadrato:

$$A = \frac{d \cdot d}{2} = \frac{d^2}{2} \quad d = \sqrt{2A}$$

l = lato D =
diagonale maggiore
 d = diagonale minore



Il romboide qualunque

(lati ed angoli disuguali)

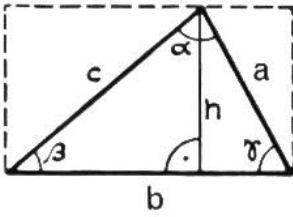
$$\alpha + \beta = 180^\circ$$

$$p = 2(a + b) \quad a = \frac{p}{2} - b \quad b = \frac{p}{2} - a$$

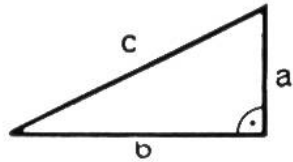
a = base h = altezza $A = ah$ $a = A : h$ $h = A : a$
 b = lato consecutivo alla base

Osservazione: Ricordare che il segno \times , quando non sia sostituito da \cdot è sempre da sottintendere e che il segno $\frac{\quad}{\quad}$ (fratto) vale il segno $:$

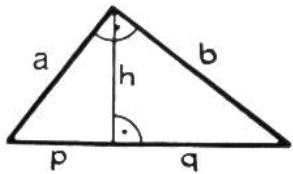
Per designare l'ampiezza di angoli (archi), solitamente, si ricorre a lettere dell'alfabeto greco: $\alpha, \beta, \gamma, \delta, \epsilon, \pi, \lambda, \omega, \dots$



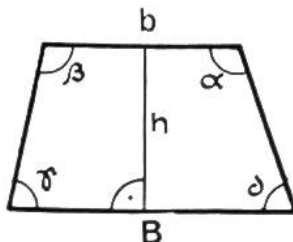
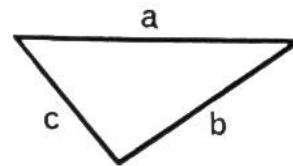
b = base
h = altezza



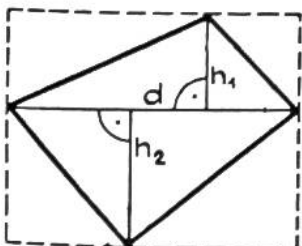
a, b = cateti
c = ipotenusa



c = p + q



h = altezza



Il triangolo

$$p = a + b + c$$

$$a = p - (b + c) \quad b = p - (a + c) \quad c = p - (a + b)$$

$$A = \frac{bh}{2} \quad b = \frac{2A}{h} \quad h = \frac{2A}{b}$$

$$\alpha + \beta + \gamma = 180^\circ \quad \alpha = 180^\circ - (\beta + \gamma)$$

$$\beta = 180^\circ - (\alpha + \gamma) \quad \gamma = 180^\circ - (\alpha + \beta)$$

Il teorema di Pitagora

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

$$a^2 = c^2 - b^2 \quad a = \sqrt{c^2 - b^2} = \sqrt{(c + b)(c - b)}$$

$$b^2 = c^2 - a^2 \quad b = \sqrt{c^2 - a^2} = \sqrt{(c + a)(c - a)}$$

$$a^2 = cp \quad a = \sqrt{cp} \quad c = a^2 : p \quad p = a^2 : c$$

$$b^2 = cq \quad b = \sqrt{cq} \quad c = b^2 : q \quad q = b^2 : c'$$

$$h^2 = pq \quad h = \sqrt{pq} \quad p = h^2 : q \quad q = h^2 : p$$

Formola di Erone

a, b, c, lati del triangolo A = area

$$s = \frac{a + b + c}{2} \quad A = \sqrt{s(s - a)(s - b)(s - c)}$$

Il trapezio

B = base maggiore b = base minore

$$A = \frac{B + b}{2} \cdot h \quad B = \frac{2A}{h} - b \quad b = \frac{2A}{h} - B$$

$$\alpha + \delta = \beta + \gamma = 180^\circ$$

Il trapezoide

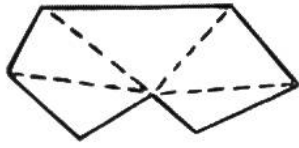
d = diagonale h₁, h₂ = altezze

$$A = \frac{d(h_1 + h_2)}{2}$$

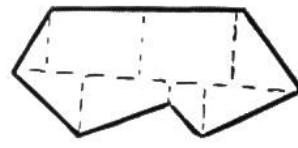
$$d = \frac{2A}{h_1 + h_2} \quad h_1 = \frac{2A}{d} - h_2 \quad h_2 = \frac{2A}{d} - h_1$$

Poligono qualunque

Tav. 3



Scomposizione in triangoli



Sc. trapezi rett. e triang. rett.

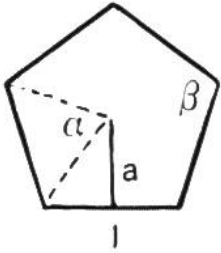
Poligono regolare

l = lato a = apotema n = numero dei lati

$$p = ln \quad l = p : n \quad n = p : l$$

$$A = \frac{pa}{2} \quad p = \frac{2A}{a} \quad a = \frac{2A}{p}$$

$$\alpha = \frac{360^\circ}{n} \quad \beta = 180^\circ - \alpha$$



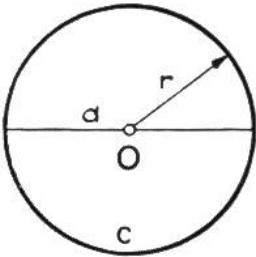
Il circolo

O = centro d = diametro r = raggio c = circonferenza

$$d = 2r \quad r = d : 2 \quad c : d = \pi \quad c = \pi d = 2 \pi r$$

$$d = c : \pi \quad r = \frac{c}{2\pi} \quad A = \pi r^2 = \frac{\pi d^2}{4} = \frac{c^2}{4\pi}$$

$$r = \sqrt{A : \pi} \quad d = 2 \sqrt{A : \pi} \quad c = 2 \sqrt{\pi A}$$

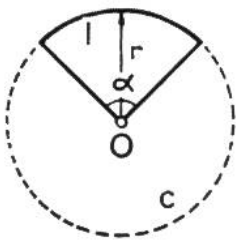


Settore circolare

l = lunghezza arco α = ampiezza settore

$$l = \frac{\alpha}{360} c = \frac{\alpha}{360} \pi d = \frac{\alpha}{180} \pi r \quad \alpha = \frac{360l}{c} = \frac{360l}{\pi d} = \frac{180l}{\pi r}$$

$$A = \frac{lr}{2} = \frac{\alpha}{360} \pi r^2 \quad l = \frac{2A}{r} \quad r = \frac{2A}{l} = 6 \sqrt{\frac{10A}{\pi \alpha}}$$



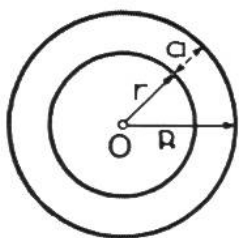
Corona circolare

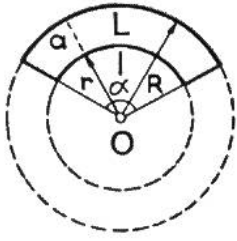
R, r = raggi D, d = diametri

$a = R - r$ = larghezza della corona

$$A = \pi (R^2 - r^2) = \pi (R + r) (R - r) = \pi a (R + r) =$$

$$= \pi a (2r + a) = \pi a (d + a) = \pi a (2R - a) = \pi a (D - a)$$





$R, r =$ raggi

Settore di corona circolare

$L, l =$ lunghezza archi $\alpha =$ ampiezza del settore

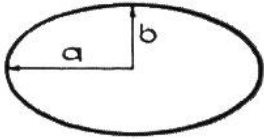
$a = R - r =$ larghezza della corona

$$A = \frac{L + l}{2} a = \frac{\alpha}{360} \pi (R^2 - r^2) = \frac{\alpha}{360} \pi (R + r) (R - r)$$

Ellisse

$a =$ semiasse maggiore $b =$ semiasse minore

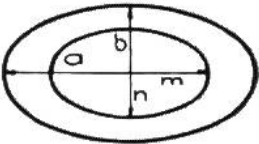
$$A = \pi a b \quad a = \frac{A}{\pi b} \quad b = \frac{A}{\pi a}$$



Corona ellittica

$a, b =$ semiassi ellisse maggiore

$m, n =$ semiassi ellisse minore $A = \pi (a b - m n)$



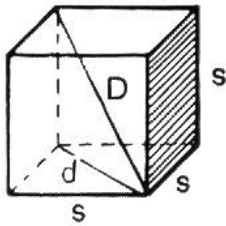
Il cubo

$s =$ spigolo $V =$ volume $A =$ area della superficie

$d =$ diagonale di una faccia $D =$ diagonale del cubo

$$d^2 = 2s^2 \quad d = s\sqrt{2} \quad D^2 = 3s^2 \quad D = s\sqrt{3}$$

$$A = 6s^2 \quad s = \sqrt{A:6} \quad V = s^3 \quad s = \sqrt[3]{V}$$



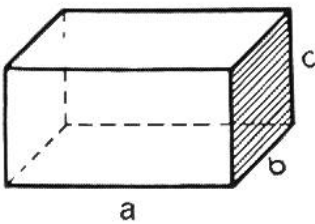
Il parallelepipedo rettangolo

$a, b, c =$ dimensioni $a, b =$ lati di base $c =$ altezza

$A_l =$ area laterale $A_t =$ area totale $V =$ volume

$$A_l = 2(a + b)c \quad A_t = 2c(a + b) + 2ab = 2(ab + ac + bc)$$

$$V = abc \quad a = \frac{V}{bc} \quad b = \frac{V}{ac} \quad c = \frac{V}{ab}$$



Il prisma retto

$p =$ perimetro di base $s =$ spigolo laterale $h =$ altezza

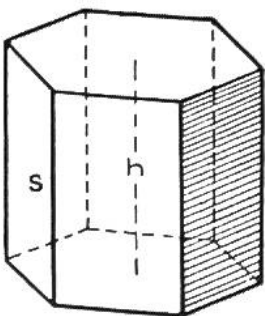
$B =$ area di base $A_l =$ area laterale $A_t =$ area totale

$V =$ volume

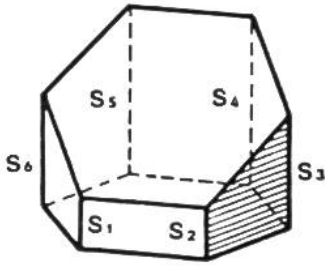
$$A_l = ps \quad p = \frac{A_l}{s} \quad s = \frac{A_l}{p}$$

$$A_t = A_l + 2B \quad B = (A_t - A_l) : 2$$

$$V = Bh \quad B = V : h \quad h = V : B$$



La formola del volume vale anche per il prisma obliquo

Tronco di prisma retto

S_1, S_2, \dots = spigoli laterali n = numero degli s B = area della base retta B' = area della base obliqua risp. agli s

$$A_l = p \frac{S_1 + S_2 + \dots + S_n}{n} \quad A_t = A_l + B + B'$$

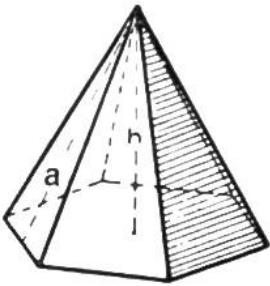
$$V = B \frac{S_1 + S_2 + \dots + S_n}{n}$$

La piramide retta

p = perimetro di base a = apotema B = area di base

$$A_l = \frac{p a}{2} \quad p = \frac{2 A_l}{a} \quad a = \frac{2 A_l}{p} \quad A_t = A_l + B$$

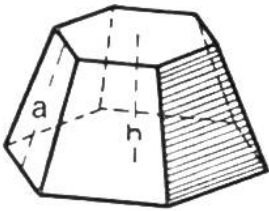
$$V = \frac{B h}{3} \quad B = \frac{3 V}{h} \quad h = \frac{3 V}{B}$$

**Tronco di piramide retta**

P, p = perimetri di base B, b = area delle basi a = apot.

$$A_l = \frac{P+p}{2} a \quad a = \frac{2 A_l}{P+p} \quad P = \frac{2 A_l}{a} - p \quad p = \frac{2 A_l}{a} - P$$

$$V = \frac{1}{3} h (B + b + \sqrt{Bb})$$

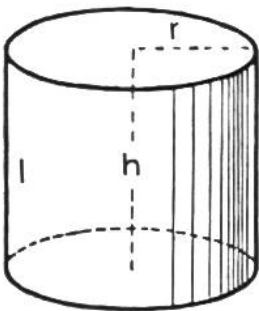
**Il cilindro retto**

r = raggio di base h = altezza l = lato

$$A_l = 2 \pi r l \quad l = \frac{A_l}{2 \pi r} \quad r = \frac{A_l}{2 \pi l} \quad A_t = 2 \pi r l + 2 \pi r^2 =$$

$$V = \pi r^2 h \quad h = \frac{V}{\pi r^2} \quad r = \sqrt{\frac{V}{\pi h}} = 2 \pi r (l + r)$$

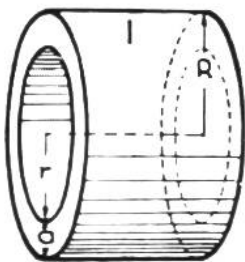
La formula del volume vale anche per il cilindro obliquo

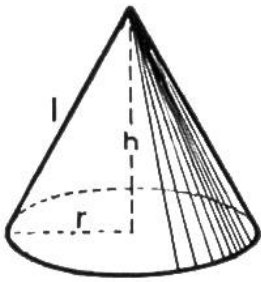
**Involucro cilindrico (tubo)**

D, d = diametri R, r = raggi l = lunghezza

$$V = \pi (R^2 - r^2) l = \pi l (R + r) (R - r) =$$

$$\frac{\pi}{4} (D^2 - d^2) l = \frac{\pi}{4} (D + d) (D - d)$$



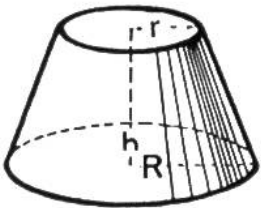


Il cono retto

r = raggio di base h = altezza l = lato o apotema

$$A_l = \pi r l \quad l = \frac{A_l}{\pi r} \quad r = \frac{A_l}{\pi l} \quad A_t = \pi r l + \pi r^2 = \pi r(l + r)$$

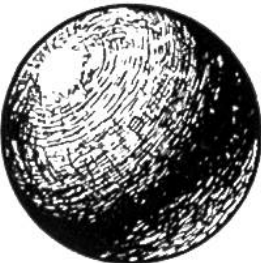
$$V = \frac{1}{3} \pi r^2 h \quad h = \frac{3V}{\pi r^2} \quad r = \sqrt{\frac{3V}{\pi h}}$$



Tronco di cono retto

$$A_l = \pi (R + r) l \quad l = \frac{A_l}{\pi (R + r)} \quad R = \frac{A_l}{\pi l} - r$$

$$r = \frac{A_l}{\pi l} - R \quad V = \frac{1}{3} \pi h (R^2 + r^2 + Rr)$$



La sfera

r = raggio d = diametro c = circonferenza massima

$$A = 4\pi r^2 = \pi d^2 = \frac{c^2}{\pi} \quad r = \sqrt{\frac{A}{4\pi}} \quad d = \sqrt{\frac{A}{\pi}} \quad c = \sqrt{\pi A}$$

$$V = \frac{4}{3} \pi r^3 = \frac{\pi}{6} d^3 \quad r = \sqrt[3]{\frac{3V}{4\pi}} \quad d = \sqrt[3]{\frac{6V}{\pi}}$$



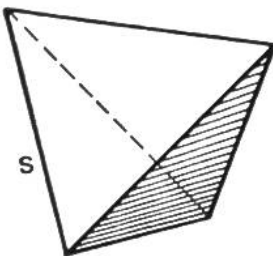
Involucro sferico

R, r = raggi delle 2 sfere D, d = diametri

$$V = \frac{4}{3} \pi (R^3 - r^3) = \frac{\pi}{6} (D^3 - d^3)$$

Poliedri regolari (cubo vedi altrove)

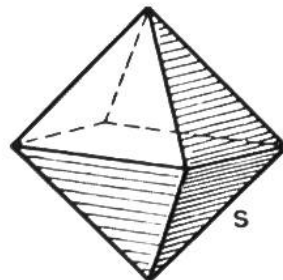
s = spigolo A = area della superficie V = volume



tetraedro

$$A = s^2 \cdot 1,732$$

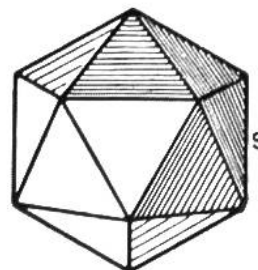
$$V = s^3 \cdot 0,1178$$



ottaedro

$$A = s^2 \cdot 3,4141$$

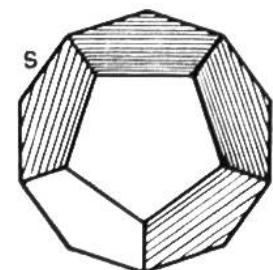
$$V = s^3 \cdot 0,4714$$



icosaedro

$$A = s^2 \cdot 8,6602$$

$$V = s^3 \cdot 2,1816$$



dodecaedro

$$A = s^2 \cdot 20,6457$$

$$V = s^3 \cdot 7,6631$$