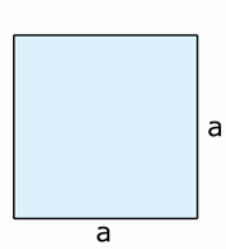
Fórmulas de área, perímetro y volumen de figuras del plano y del espacio

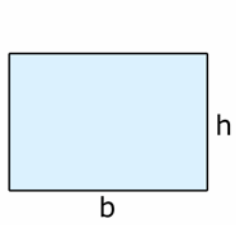
Cuadrado



$$A = a^2$$

$$P = 4a$$

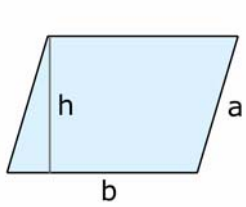
Rectángulo



$$A = b \cdot h$$

$$P = 2b + 2h$$

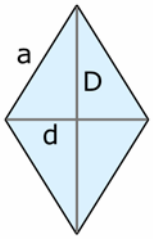
Paralelogramo



$$A = b \cdot h$$

$$P = 2b + 2a$$

Rombo

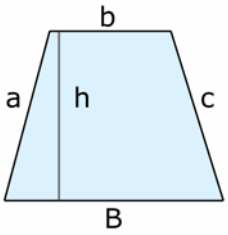


$$A = \frac{d \cdot D}{2}$$

$$P = 4a$$

$$4a^2 = d^2 + D^2$$

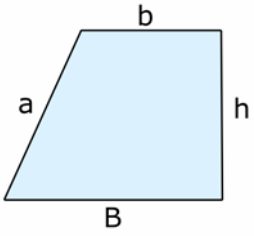
Trapecio



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

$$P = a + b + B + c$$

Trapecio recto

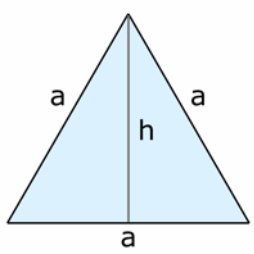


$$A = \frac{b + B}{2} h$$

$$P = a + b + B + h$$

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

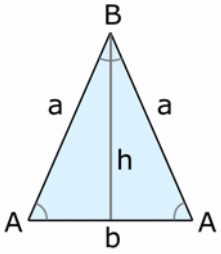
Triángulo equilátero



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

$$P = 3a\,, \qquad h = \frac{\sqrt{3}}{2} a$$

Triángulo isósceles

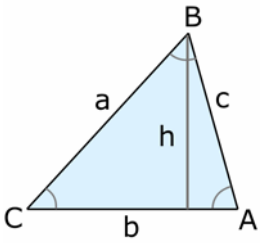


$$A = \frac{b \cdot h}{2} = \frac{a \cdot b \cdot \operatorname{sen} A}{2}$$

$$P = 2a + b\,, \qquad h = a \cdot \operatorname{sen} A$$

$$4a^2 = 4h^2 + b^2$$

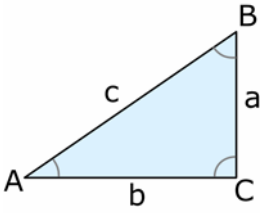
Triángulo escaleno



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

$$P = a + b + c\,, \qquad h = c \cdot \operatorname{sen} A = a \cdot \operatorname{sen} C$$

Triángulo rectángulo

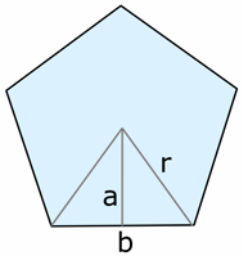


$$A = \frac{b \cdot a}{2} \qquad a = c \cdot \operatorname{sen} A = c \cdot \cos B$$

$$P = a + b + c \qquad b = c \cdot \operatorname{sen} B = c \cdot \cos A$$

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

Pentágono regular

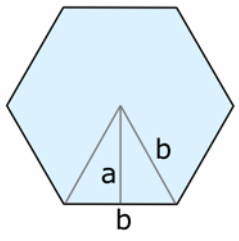


$$A = \frac{5a \cdot b}{2} = \frac{5}{8} r^2 \sqrt{10 + 2\sqrt{5}} = \frac{5}{2} r^2 \cdot \operatorname{sen} 72°$$

$$P = 5b \qquad b = \frac{r}{2} \sqrt{10 - 2\sqrt{5}} = 2r \cdot \operatorname{sen} 36°$$

$$4r^2 = 4a^2 + b^2 \qquad a = \frac{r}{4} \sqrt{6 + 2\sqrt{5}} = r \cdot \cos 36°$$

Hexágono regular

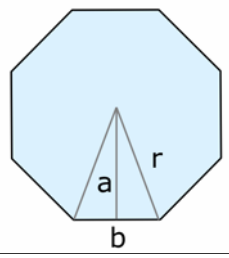


$$A = \frac{3\sqrt{3}}{2} b^2 = 3b^2 \cdot \operatorname{sen} 60°$$

$$P = 6b$$

$$a = \frac{\sqrt{3}}{2} b = b \cdot \cos 30°$$

Octágono regular

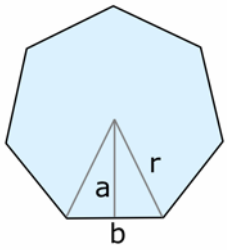


$$A = 4 \cdot a \cdot b = 8 \cdot a^2 \cdot \tan 22{,}5° = \left(8\sqrt{2} - 8\right) a^2 = \frac{2b^2}{\tan 22{,}5°} = \frac{2b^2}{\sqrt{2} - 1}$$

$$P = 8 \cdot b = 16 \cdot a \cdot \tan 22{,}5°$$

$$a = r \cdot \cos 22{,}5° \qquad b = 2r \cdot \operatorname{sen} 22{,}5°$$

Polígono regular de *n* lados

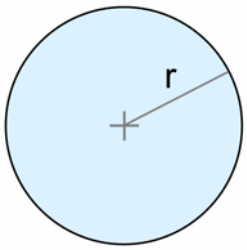


$$A = \frac{n \cdot a \cdot b}{2} = n \cdot a^2 \cdot \tan \frac{180°}{n}$$

$$P = n \cdot b = 2n \cdot a \cdot \tan \frac{180°}{n}$$

$$a = r \cdot \cos \frac{180°}{n} \qquad b = 2r \cdot \operatorname{sen} \frac{180°}{n}$$

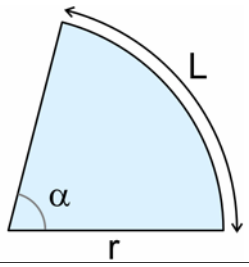
Círculo



$$A = \pi r^2$$

$$P = 2\pi r$$

Sector circular

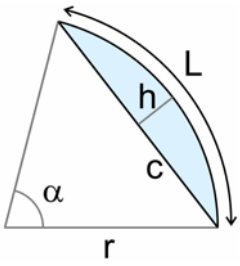


$$A = \pi r^2 \frac{\alpha}{360°}$$

$$L = \pi r \frac{\alpha}{180°}$$

$$P = 2r + L \qquad \alpha \text{ en grados sexagesimales}$$

Segmento circular

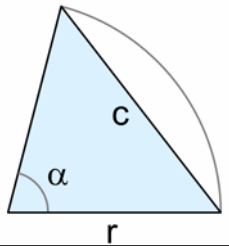


$$A = r^2 \left(\frac{\pi \cdot \alpha}{360°} - \frac{\operatorname{sen} \alpha}{2} \right)$$

$$h = r\left(1 - \cos \frac{\alpha}{2}\right) \qquad c = 2r \cdot \operatorname{sen} \frac{\alpha}{2} \qquad L = \pi r \frac{\alpha}{180°}$$

$$P = L + c \qquad r = \frac{h}{2} + \frac{c^2}{8h} \qquad \alpha \text{ en grados sexagesimales}$$

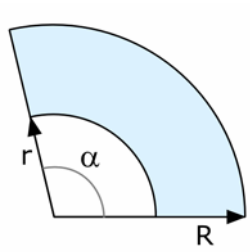
Triángulo circular



$$A = r^2 \frac{\operatorname{sen} \alpha}{2} \qquad c = 2r \cdot \operatorname{sen} \frac{\alpha}{2}$$

$$P = 2r + c \qquad \alpha \text{ en grados sexagesimales}$$

Trapecio circular

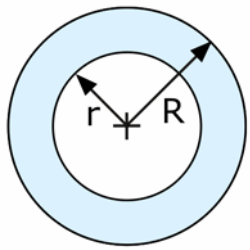


$$A = \pi \left(R^2 - r^2\right) \frac{\alpha}{360°}$$

$$P = 2\pi \,(R + r)\, \frac{\alpha}{360°} + 2(R - r)$$

α en grados sexagesimales

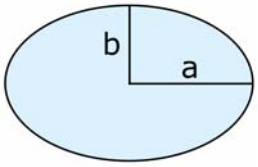
Corona circular



$$A = \pi \left(R^2 - r^2\right)$$

$$P = 2\pi \,(R + r)$$

Elipse

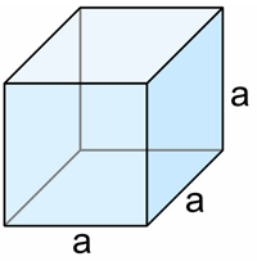


$$A = \pi \, a{\cdot}b$$

$$P \cong \pi \,(a + b)$$

$$P = 4\int_0^{\pi/2} \sqrt{a^2 \operatorname{sen}^2 t + b^2 \cos^2 t}\; dt$$

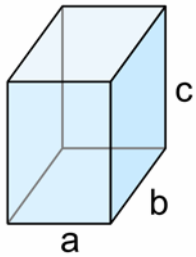
Cubo (hexaedro)



$$A = 6\, a^2$$

$$V = a^3$$

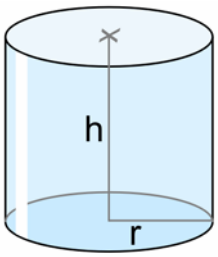
Prisma recto



$$A = 2a{\cdot}b + 2a{\cdot}c + 2b{\cdot}c$$

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

Cilindro

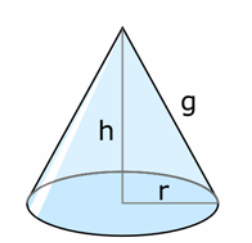


$$A_{TOTAL} = 2\pi \, r \,(h + r)$$

$$A_{BASES} = 2\pi \, r^2 \qquad A_{LATERAL} = 2\pi \, r{\cdot}h$$

$$V = \pi{\cdot}r^2{\cdot}h$$

Cono

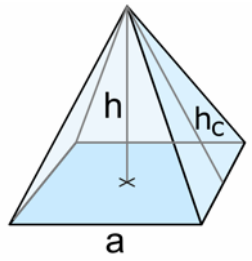


$$A_{TOTAL} = \pi\, r \cdot g + \pi\, r^2$$

$$A_{BASE} = \pi\, r^2 \qquad A_{LATERAL} = \pi\, r \cdot g$$

$$V = \frac{\pi\, r^2 \cdot h}{3} \qquad g^2 = h^2 + r^2$$

Pirámide

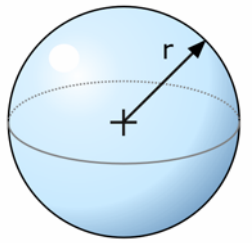


$$A_{TOTAL} = A_{LAT} + A_{BASE}$$

$$A_{LAT} = \frac{\text{Perímetro}_{BASE} \cdot h_C}{2}$$

$$V = \frac{A_{BASE} \cdot h}{3}$$

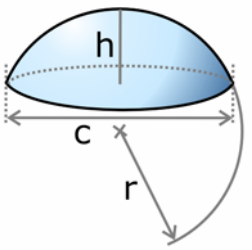
Esfera



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

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

Segmento esférico

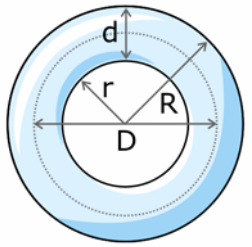


$$A_{TOTAL} = A_{SUP.CURVA} + A_{BASE}$$

$$A_{BASE} = \frac{\pi\, c^2}{4} \qquad A_{SUP.CURVA} = 2\pi\, r \cdot h = \frac{\pi}{4}\left(c^2 + 4h^2\right)$$

$$V = \frac{\pi}{6} h \left(\frac{3c^2}{4} + h^2\right) = \pi\, h^2 \left(r - \frac{h}{3}\right) \qquad r = \frac{h}{2} + \frac{c^2}{8h}$$

Toro

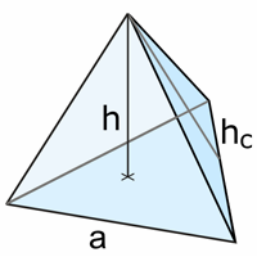


$$A = \pi^2 D \cdot d = \pi^2 (R^2 - r^2)$$

$$V = \frac{\pi^2}{4} D \cdot d^2 = \frac{\pi^2}{4} (R + r) \cdot (R - r)^2$$

$$D = R + r\,, \qquad d = R - r$$

Tetraedro

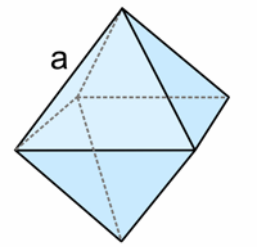


$$A = \sqrt{3}\, a^2$$

$$A_{CARA} = \frac{\sqrt{3}}{4} a^2 \qquad h_C = \frac{\sqrt{3}}{2} a \qquad h = \frac{\sqrt{6}}{3} a$$

$$V = \frac{\sqrt{2}}{12} a^3$$

Octaedro

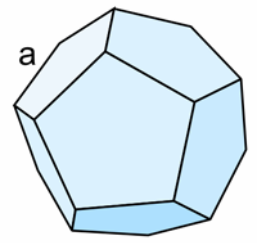


$$A = 2\sqrt{3}\, a^2$$

$$A_{CARA} = \frac{\sqrt{3}}{4} a^2$$

$$V = \frac{\sqrt{2}}{3} a^3$$

Dodecaedro

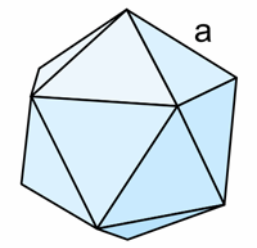


$$A = 3\sqrt{25 + 10\sqrt{5}}\, a^2$$

$$A_{CARA} = \frac{\sqrt{25 + 10\sqrt{5}}}{4} a^2$$

$$V = \frac{15 + 7\sqrt{5}}{4} a^3$$

Icosaedro



$$A = 5\sqrt{3}\, a^2$$

$$A_{CARA} = \frac{\sqrt{3}}{4} a^2$$

$$V = \frac{5}{12}\left(3 + \sqrt{5}\right) a^3$$