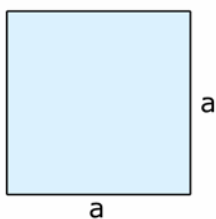


Fórmulas de área, perímetro y volumen de figuras del plano y del espacio

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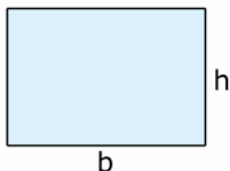
Cuadrado



$$A = a^2$$

$$P = 4a$$

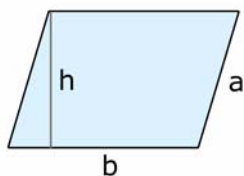
Rectángulo



$$A = b \cdot h$$

$$P = 2b + 2h$$

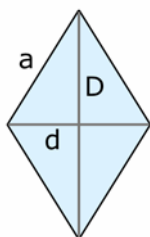
Paralelogramo



$$A = b \cdot h$$

$$P = 2b + 2a$$

Rombo

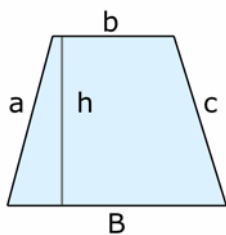


$$A = \frac{d \cdot D}{2}$$

$$P = 4a$$

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

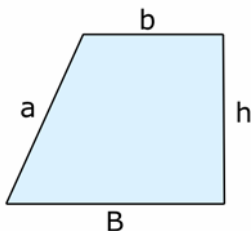
Trapezio



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

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

Trapezio recto

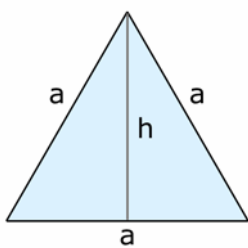


$$A = \frac{b + B}{2} h$$

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

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

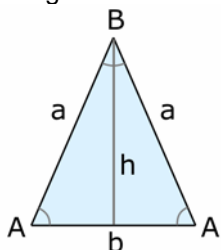
Triángulo equilátero



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

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

Triángulo isósceles

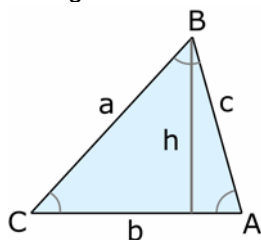


$$A = \frac{b \cdot h}{2} = \frac{a \cdot b \cdot \text{sen } A}{2}$$

$$P = 2a + b, \quad h = a \cdot \text{sen } A$$

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

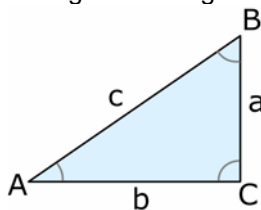
Triángulo escaleno



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

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

Triángulo rectángulo



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

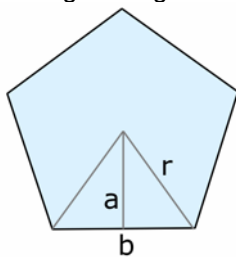
$$a = c \cdot \text{sen } A = c \cdot \text{cos } B$$

$$P = a + b + c$$

$$b = c \cdot \text{sen } B = c \cdot \text{cos } A$$

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

Pentágono regular



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

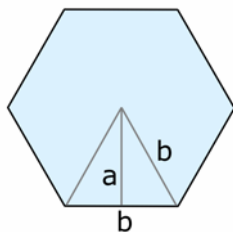
$$P = 5b$$

$$b = \frac{r}{2} \sqrt{10 - 2\sqrt{5}} = 2r \cdot \text{sen } 36^\circ$$

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

$$a = \frac{r}{4} \sqrt{6 + 2\sqrt{5}} = r \cdot \text{cos } 36^\circ$$

Hexágono regular

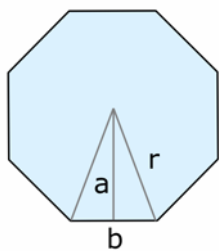


$$A = \frac{3\sqrt{3}}{2} b^2 = 3b^2 \cdot \text{sen } 60^\circ$$

$$P = 6b$$

$$a = \frac{\sqrt{3}}{2} b = b \cdot \text{cos } 30^\circ$$

Octógono regular

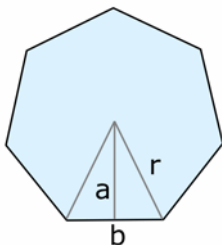


$$A = 4 \cdot a \cdot b = 8 \cdot a^2 \cdot \tan 22,5^\circ = (8\sqrt{2} - 8)a^2 = \frac{2b^2}{\tan 22,5^\circ} = \frac{2b^2}{\sqrt{2} - 1}$$

$$P = 8 \cdot b = 16 \cdot a \cdot \tan 22,5^\circ$$

$$a = r \cdot \cos 22,5^\circ \quad b = 2r \cdot \sin 22,5^\circ$$

Polígono regular de n lados

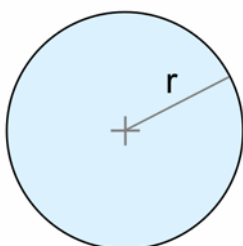


$$A = \frac{n \cdot a \cdot b}{2} = n \cdot a^2 \cdot \tan \frac{180^\circ}{n}$$

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

$$a = r \cdot \cos \frac{180^\circ}{n} \quad b = 2r \cdot \sin \frac{180^\circ}{n}$$

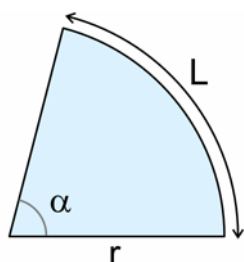
Círculo



$$A = \pi r^2$$

$$P = 2\pi r$$

Sector circular

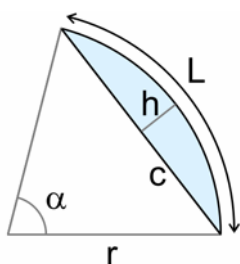


$$A = \pi r^2 \frac{\alpha}{360^\circ}$$

$$L = \pi r \frac{\alpha}{180^\circ}$$

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

Segmento circular



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

$$h = r \left(1 - \cos \frac{\alpha}{2} \right)$$

$$c = 2r \cdot \sin \frac{\alpha}{2}$$

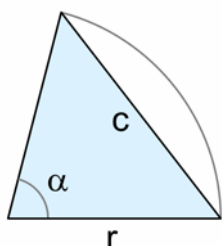
$$L = \pi r \frac{\alpha}{180^\circ}$$

$$P = L + c$$

$$r = \frac{h}{2} + \frac{c^2}{8h}$$

$$\alpha \text{ en grados sexagesimales}$$

Triángulo circular



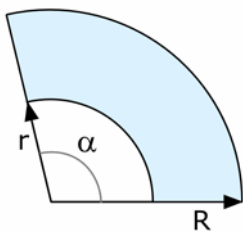
$$A = r^2 \frac{\sin \alpha}{2}$$

$$c = 2r \cdot \sin \frac{\alpha}{2}$$

$$P = 2r + c$$

$$\alpha \text{ en grados sexagesimales}$$

Trapezio circular

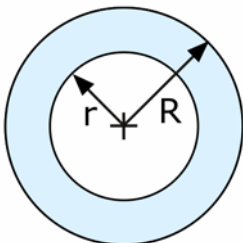


$$A = \pi (R^2 - r^2) \frac{\alpha}{360^\circ}$$

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

α en grados sexagesimales

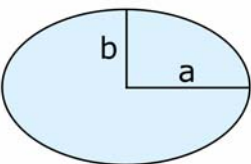
Corona circular



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

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

Elipse

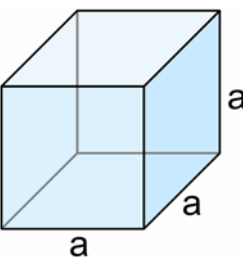


$$A = \pi a \cdot b$$

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

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

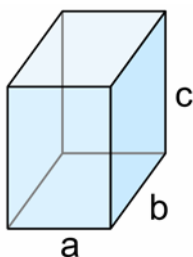
Cubo (hexaedro)



$$A = 6 a^2$$

$$V = a^3$$

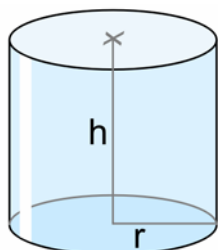
Prisma recto



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

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

Cilindro



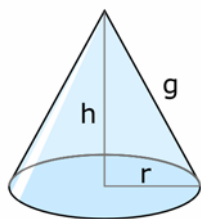
$$A_{TOTAL} = 2\pi r (h + r)$$

$$A_{BASES} = 2\pi r^2$$

$$A_{LATERAL} = 2\pi r \cdot h$$

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

Cono



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

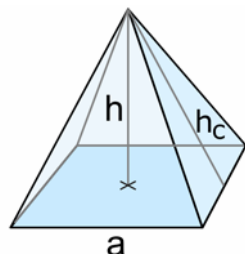
$$A_{BASE} = \pi r^2$$

$$A_{LATERAL} = \pi r \cdot g$$

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

$$g^2 = h^2 + r^2$$

Pirámide

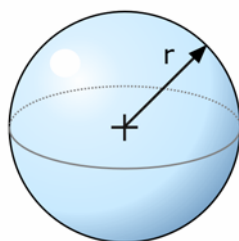


$$A_{TOTAL} = A_{LAT} + A_{BASE}$$

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

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

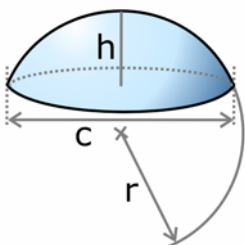
Esfera



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

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

Segmento esférico



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

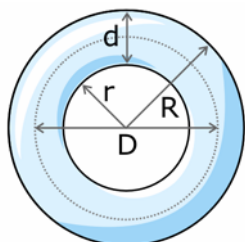
$$A_{BASE} = \frac{\pi c^2}{4}$$

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

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

$$r = \frac{h}{2} + \frac{c^2}{8h}$$

Toro

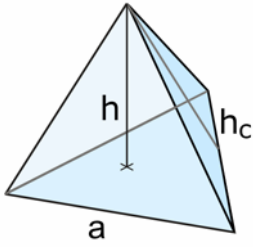


$$A = \pi^2 D \cdot d = \pi^2 (R^2 - r^2)$$

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

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

Tetraedro



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

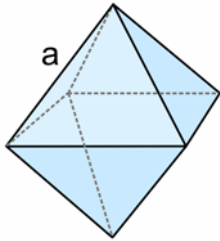
$$A_{\text{CARA}} = \frac{\sqrt{3}}{4} a^2$$

$$h_c = \frac{\sqrt{3}}{2} a$$

$$h = \frac{\sqrt{6}}{3} a$$

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

Octaedro

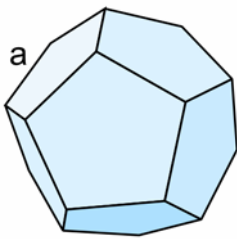


$$A = 2\sqrt{3} a^2$$

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

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

Dodecaedro

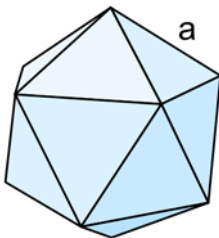


$$A = 3\sqrt{25 + 10\sqrt{5}} a^2$$

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

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

Icosaedro



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

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

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

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 Modificación interactiva de valores sobre la misma gráfica de McCabe



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