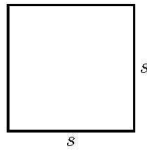


2D GEOMETRY FORMULAS

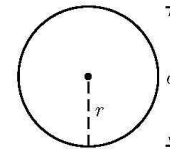
SQUARE

s = side
 Area: $A = s^2$
 Perimeter: $P = 4s$



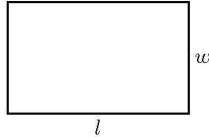
CIRCLE

r = radius, d = diameter
 Diameter: $d = 2r$
 Area: $A = \pi r^2$
 Circumference: $C = 2\pi r = \pi d$



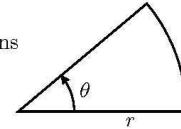
RECTANGLE

l = length, w = width
 Area: $A = lw$
 Perimeter: $P = 2l + 2w$



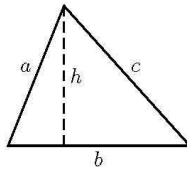
SECTOR OF CIRCLE

r = radius, θ = angle in radians
 Area: $A = \frac{1}{2}\theta r^2$
 Arc Length: $s = \theta r$



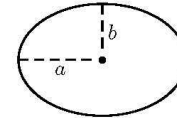
TRIANGLE

b = base, h = height
 Area: $A = \frac{1}{2}bh$
 Perimeter: $P = a + b + c$



ELLIPSE

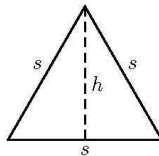
a = semimajor axis
 b = semiminor axis
 Area: $A = \pi ab$



Circumference:
 $C \approx \pi (3(a + b) - \sqrt{(a + 3b)(b + 3a)})$

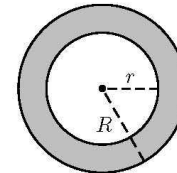
EQUILATERAL TRIANGLE

s = side
 Height: $h = \frac{\sqrt{3}}{2}s$
 Area: $A = \frac{\sqrt{3}}{4}s^2$



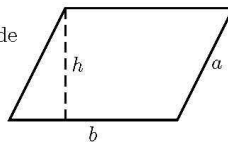
ANNULUS

r = inner radius,
 R = outer radius
 Average Radius: $\rho = \frac{1}{2}(r + R)$
 Width: $w = R - r$
 Area: $A = \pi(R^2 - r^2)$
 or $A = 2\pi\rho w$



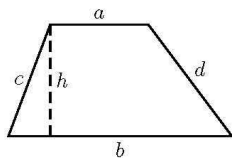
PARALLELOGRAM

b = base, h = height, a = side
 Area: $A = bh$
 Perimeter: $P = 2a + 2b$



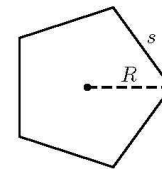
TRAPEZOID

a, b = bases; h = height;
 c, d = sides
 Area: $A = \frac{1}{2}(a + b)h$
 Perimeter:
 $P = a + b + c + d$



REGULAR POLYGON

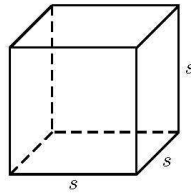
s = side length,
 n = number of sides
 Circumradius: $R = \frac{1}{2}s \csc(\frac{\pi}{n})$
 Area: $A = \frac{1}{4}ns^2 \cot(\frac{\pi}{n})$
 or $A = \frac{1}{2}nR^2 \sin(\frac{2\pi}{n})$



3D GEOMETRY FORMULAS

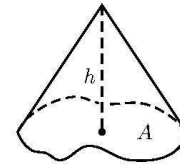
CUBE

s = side
 Volume: $V = s^3$
 Surface Area: $S = 6s^2$



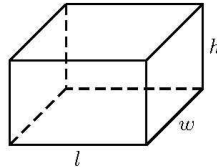
GENERAL CONE OR PYRAMID

A = area of base, h = height
 Volume: $V = \frac{1}{3}Ah$



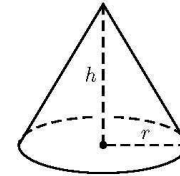
RECTANGULAR SOLID

l = length, w = width,
 h = height
 Volume: $V = lwh$
 Surface Area:
 $S = 2lw + 2lh + 2wh$



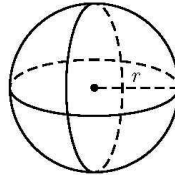
RIGHT CIRCULAR CONE

r = radius, h = height
 Volume: $V = \frac{1}{3}\pi r^2 h$
 Surface Area:
 $S = \pi r\sqrt{r^2 + h^2} + \pi r^2$



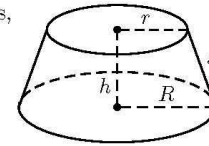
SPHERE

r = radius
 Volume: $V = \frac{4}{3}\pi r^3$
 Surface Area: $S = 4\pi r^2$



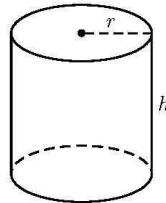
FRUSTUM OF A CONE

r = top radius, R = base radius,
 h = height, s = slant height
 Volume: $V = \frac{\pi}{3}(r^2 + rR + R^2)h$
 Surface Area:
 $S = \pi s(R + r) + \pi r^2 + \pi R^2$



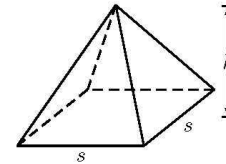
RIGHT CIRCULAR CYLINDER

r = radius, h = height
 Volume: $V = \pi r^2 h$
 Surface Area: $S = 2\pi r h + 2\pi r^2$



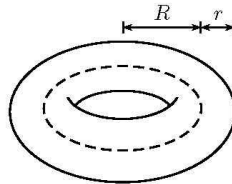
SQUARE PYRAMID

s = side, h = height
 Volume: $V = \frac{1}{3}s^2 h$
 Surface Area:
 $S = s(s + \sqrt{s^2 + 4h^2})$



TORUS

r = tube radius,
 R = torus radius
 Volume: $V = 2\pi^2 r^2 R$
 Surface Area: $S = 4\pi^2 r R$



REGULAR TETRAHEDRON

s = side
 Volume: $V = \frac{1}{12}\sqrt{2}s^3$
 Surface Area: $S = \sqrt{3}s^2$

