

Mathematical Formulas

Shape	Area (A) and Circumference (C) Formulas
Circle	$A = \pi r^2 = \pi \times \text{square of radius}$ $C = 2 \pi r = 2 \times \pi \times \text{radius}$ $C = \pi d = \pi \times \text{diameter}$
Parallelogram	$A = bh = \text{base} \times \text{height}$
Rectangle	$A = lw = \text{length} \times \text{width}$
Trapezoid	$A = \frac{1}{2} (b_1 + b_2)h = \frac{1}{2} \times \text{sum of bases} \times \text{height}$
Triangle	$A = \frac{1}{2}bh = \frac{1}{2} \times \text{base} \times \text{height}$

Figure	Surface Area (SA) and Volume (V) Formulas
General Prism	$V = Bh = \text{area of base} \times \text{height}$ $SA = \text{sum of the areas of the faces}$
Rectangular Prism	$V = lwh = \text{length} \times \text{width} \times \text{height}$ $SA = 2lw + 2hw + 2lh$ $= 2(\text{length} \times \text{width}) + 2(\text{height} \times \text{width}) + 2(\text{length} \times \text{height})$
Right Circular Cone	$V = \frac{1}{3}bh = \frac{1}{3} \times \text{area of base} \times \text{height}$ $SA = B + \frac{1}{2}C\ell$ $= \text{area of base} + (\frac{1}{2} \times \text{circumference} \times \text{slant height})$
Right Circular Cylinder	$V = Bh = \text{area of base} \times \text{height}$ $SA = 2B + Ch$ $= (2 \times \text{area of base}) + (\text{circumference} \times \text{height})$
Sphere	$V = \frac{4}{3}\pi r^3 = \frac{4}{3} \times \pi \times \text{cube of radius}$ $SA = 4\pi r^2 = 4 \times \pi \times \text{square of radius}$
Square Pyramid	$V = \frac{1}{3}Bh = \frac{1}{3} \times \text{area of base} \times \text{height}$ $SA = B + \frac{1}{2}P\ell$ $= \text{area of base} + (\frac{1}{2} \times \text{perimeter of base} \times \text{slant height})$

Equations of a Line:

Standard Form: $Ax + By = C$ where A and B are not both zero

Slope-Intercept Form:

$y = mx + b$ or $y = b + mx$ where $m = \text{slope}$ and $b = \text{y-intercept}$

Point-slope Form:

$y - y_1 = m(x - x_1)$ where $m = \text{slope}$, $(x_1, y_1) = \text{point on line}$

Coordinate Geometry:

Let (x_1, y_1) and (x_2, y_2) be two points in the plane.

Slope = $\frac{y_2 - y_1}{x_2 - x_1}$ where $x_2 \neq x_1$

Midpoint = $(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2})$

Distance = $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Distance Formula:

$d = rt$ distance = rate X time

Simple Interest:

$I = prt$ interest = principal X interest rate X time

Polygon Angles:

Sum of degree measures of the interior angles of a polygon: $180(n-2)$

Degree measure of an interior angle of a regular polygon $\frac{180(n-2)}{n}$ where n is the number of sides of the polygon.

Formulas for Right Triangles:

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