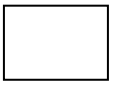
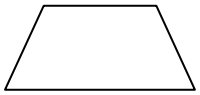
Formulas for Area (A), Circumference (C), and Arc Length (L)

Area of a Triangle: $A = \frac{1}{2}bh$

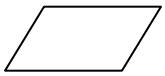
Area of a Rectangle: $A = bh$



Area of a Trapezoid: $A = \frac{1}{2}(b_1 + b_2)h$

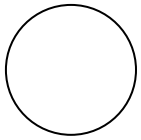


Area of a Parallelogram: $A = bh$



Area of a Circle: $A = \pi r^2$

Circumference of a Circle: $C = 2\pi r = \pi d$



Arc Length of a Circle: $L = \frac{m^o}{360^o}(2\pi r) = \frac{m^o}{360^o}(\pi d)$

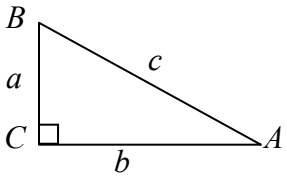
Area of a Sector of a Circle: $A = \frac{m^o}{360^o}(\pi r^2)$

Area of a Segment of a Circle = Area of sector – Area of Triangle

Area of a Regular Polygon:

$A = \frac{1}{2}aP = \frac{1}{2} \times$ apothem $\times$ perimeter

Formulas for Right Triangles



Pythagorean Theorem:

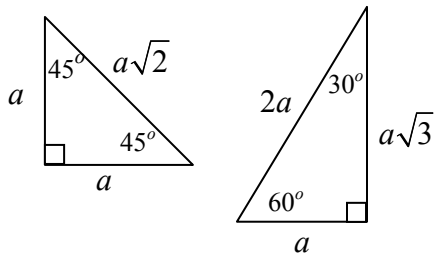
$a^2 + b^2 = c^2$

$\sin A = \frac{a}{c} = \frac{\text{opposite}}{\text{hypotenuse}}$

$\cos A = \frac{b}{c} = \frac{\text{adjacent}}{\text{hypotenuse}}$

$\tan A = \frac{a}{b} = \frac{\text{opposite}}{\text{adjacent}}$

Special Triangles



Law of Sines and Cosines

Law of Sines:

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

Law of Cosines:

$$c^2 = a^2 + b^2 - 2ab\cos C$$

Coordinate Geometry Formulas

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 $x_2 \neq x_1$

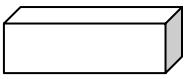
midpoint = $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$

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

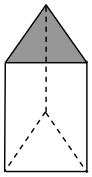
Formulas for Volume (V) and Surface Area (SA)

Right Prism

$V = Bh = \text{area of base} \times \text{height}$

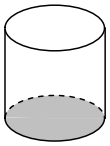


$SA = 2B + Ph = 2 \times \text{area of base} + (\text{perimeter} \times \text{height})$



Right Circular Cylinder

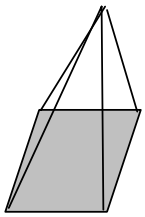
$V = Bh = \text{area of base} \times \text{height} = \pi r^2 h$



$SA = 2B + Ch = 2 \times \text{base} + (\text{circumference} \times \text{height}) = 2\pi r^2 + 2\pi rh$

Regular Pyramid

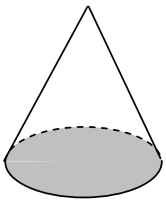
$V = \frac{1}{3}Bh = \frac{1}{3} \times \text{area of base} \times \text{height}$



$SA = B + \frac{1}{2}Pl = \text{area of base} + \frac{1}{2} \times \text{perimeter of base} \times \text{slant height}$

Right Circular Cone

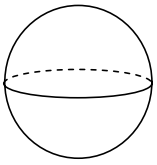
$V = \frac{1}{3}Bh = \frac{1}{3} \times \text{area of base} \times \text{height} = \frac{1}{3}\pi r^2 h$



$SA = \pi r^2 + \pi rl$

Sphere

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



$SA = 4\pi r^2$