



**High School Reference Sheet**

**Formulas**

**Area ( A ) and Circumference ( C )**

Name	Shape	Formula
Rectangle		$A = lw$
Parallelogram		$A = bh$
Triangle		$A = \frac{1}{2}bh$
Trapezoid		$A = \frac{1}{2}(b_1 + b_2)h$
Circle		$A = \pi r^2$ $C = 2\pi r$ $C = \pi d$

**Volume ( V ) and Surface Area ( SA )**

Name	Shape	Formula
Right Rectangular Prism		$v = lwh$ $SA = 2lw + 2hw + 2lh$
General Prism		$v = Bh$ $SA = \text{Sum of the areas of the faces}$
Right Circular Cylinder		$V = \pi r^2 h$ $SA = 2\pi r^2 + 2\pi r h$
Right Circular Cone		$v = \frac{1}{3}\pi r^2 h$ $SA = \pi r^2 + \pi r l$
Right Pyramid		$v = \frac{1}{3}Bh$ $SA = B + \frac{1}{2}Pl$
Sphere		$V = \frac{4}{3}\pi r^3$ $SA = 4\pi r^2$

**Formulas for Right Triangles**

Shape	Formula
	<b>Pythagorean Theorem</b> $a^2 + b^2 = c^2$ <b>Trigonometric Ratios</b> $\sin \theta = \frac{a}{c}$ $\cos \theta = \frac{b}{c}$ $\tan \theta = \frac{a}{b}$

**Special Right Triangles**

30°–60°–90°	45°–45°–90°

**Polygon Angle Formulas**

Interior Angle Formulas
Sum of the Interior Angles of a polygon with $n$ sides = $180^\circ(n - 2)$
Measure of an interior angle of an $n$ -sided regular polygon = $\frac{180^\circ(n-2)}{n}$

## Formulas

Equations of a Line
Standard Form: $Ax + By = C$ where A and B are not both zero
Slope-Intercept Form: $y = mx + b$ where $m$ = slope and $b$ = y-intercept
Point-Slope Form: $y - y_1 = m(x - x_1)$ where $m$ = slope and $(x_1, y_1)$ is a point on the line

Coordinate Geometry Formulas
Let $(x_1, y_1)$ and $(x_2, y_2)$ be two coordinate pairs
$\text{slope} = \frac{y_2 - y_1}{x_2 - x_1}$ where $x_2 \neq x_1$
$\text{midpoint} = \left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$
$\text{distance} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Arithmetic Sequence	Geometric Sequence	Geometric Series
$a_n = a_1 + (n - 1)d$	$a_n = a_1 r^{n-1}$	$S_n = \frac{a_1 - a_1 r^n}{1 - r}$ where $r \neq 1$
Quadratic Formula	Distance Traveled	Arc Length
$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$	$d = rt$	$S = r\theta$ (where $\theta$ is in radians)
Simple Interest	Compound Interest	Continuously Compounded Interest
$I = prt$	$A = P \left( 1 + \frac{r}{n} \right)^{nt}$	$A = Pe^{rt}$

## Conversions

Angle Measurements	Weights
$1 \text{ Radian} = \frac{180}{\pi} \text{ Degrees}$  $1 \text{ Degree} = \frac{\pi}{180} \text{ Radians}$	1 pound = 16 ounces 1 pound = 0.454 kilograms 1 ton = 2000 pounds 1 kilogram = 2.2 pounds
Distances	Volumes
1 mile = 5280 feet 1 mile = 1760 yards 1 mile = 1.609 kilometers  1 kilometer = 0.62 mile 1 meter = 39.37 inches 1 inch = 2.54 centimeters	1 cup = 8 fluid ounces 1 gallon = 4 quarts 1 pint = 2 cups 1 gallon = 3.785 liters 1 quart = 2 pints 1 liter = 0.264 gallons 1 liter = 1000 cubic centimeters

