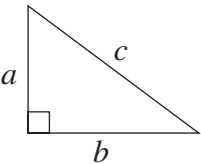
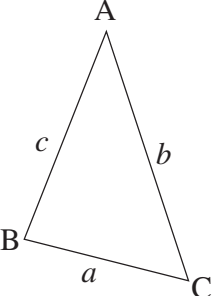


# STUDENT REFERENCE

## UNIT CONVERSION


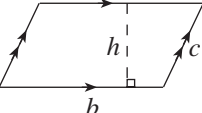
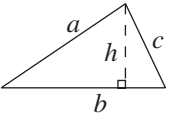
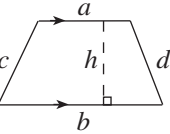
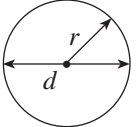
	Common Imperial	Imperial and Metric	Metric
<b>Length</b>	1 mile = 1760 yards = 5280 feet 1 yard = 3 feet = 36 inches 1 foot = 12 inches	1 mile $\cong$ 1.609 km 1 yard $\cong$ 0.9144 m 1 foot $\cong$ 0.3048 m 1 inch $\cong$ 2.54 cm	1 km = 1000 m 1 m = 100 cm 1 cm = 10 mm
<b>Capacity (Volume)</b>	1 gallon = 4 quarts = 8 pints 1 quart = 2 pints	1 gallon $\cong$ 4.546 L	1 L = 1000 mL 1 mL = 1 cm <sup>3</sup>
<b>Mass (Weight)</b>	1 imperial ton = 2000 pounds 1 pound = 16 ounces	1 pound $\cong$ 0.454 kg 1 ounce $\cong$ 28.35 g	1 t = 1000 kg 1 kg = 1000 g

## FORMULAE

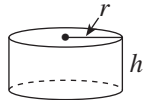
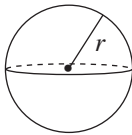
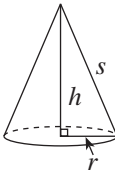
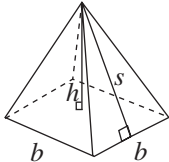
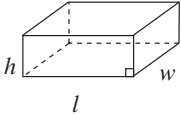
Trigonometry	Other Formulae
<p>(Put your calculator in Degree Mode)</p> <ul style="list-style-type: none"> <li>Right triangles</li> </ul> <p><b>Pythagorean Theorem</b></p> $a^2 + b^2 = c^2$ $\sin A = \frac{\text{opposite}}{\text{hypotenuse}}$ $\cos A = \frac{\text{adjacent}}{\text{hypotenuse}}$ $\tan A = \frac{\text{opposite}}{\text{adjacent}}$  <ul style="list-style-type: none"> <li>Other triangles, use Sine Law or Cosine Law</li> </ul> <p><b>Law of Sines</b></p> $\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$ <p><b>Law of Cosines</b></p> $a^2 = b^2 + c^2 - 2bc \cos A$ <p>or <math display="block">\cos A = \frac{a^2 - b^2 - c^2}{-2bc}</math></p> 	<ul style="list-style-type: none"> <li>The equation of a line: <math>y = mx + b</math></li> <li>The slope of a line: <math>m = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}</math></li> <li>The distance between two points: <math>d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}</math></li> <li>The midpoint formula: <math>\left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)</math></li> </ul>

## GEOMETRIC FORMULAE

Key Legend	
$b$ = base $h$ = height $l$ = length $w$ = width $s$ = slant height	$d$ = diameter $r$ = radius $P$ = perimeter $C$ = circumference $A$ = area $SA$ = surface area $V$ = volume

Geometric Figure	Perimeter	Area
Rectangle 	$P = 2l + 2w$  $P = 2(l + w)$	$A = lw$
Parallelogram 	$P = b + b + c + c$  $P = 2b + 2c$	$A = bh$
Triangle 	$P = a + b + c$	$A = \frac{bh}{2}$ or $A = \frac{1}{2}bh$
Trapezoid 	$P = a + b + c + d$	$A = \frac{(a + b)h}{2}$ or $A = \frac{1}{2}(a + b)h$
Circle 	$C = \pi d$ or $C = 2\pi r$	$A = \pi r^2$

**NOTE:** Use the value of  $\pi$  programmed in your calculator rather than the approximation of 3.14.

Geometric Figure	Surface Area	Volume
Cylinder 	$A_{top} = \pi r^2$ $A_{base} = \pi r^2$ $A_{side} = 2\pi r h$ $SA = 2\pi r^2 + 2\pi r h$ $SA = 2\pi r(r + h)$	$V = \pi r^2 h$
Sphere 	$SA = 4\pi r^2$	$V = \frac{4}{3}\pi r^3$
Cone 	$A_{cone} = \pi r s$ $A_{base} = \pi r^2$ $SA = A_{cone} + A_{base}$	$V = \frac{1}{3}\pi r^2 h$
Square-Based Pyramid 	$A_{triangle} = \frac{1}{2}bs$ (for each triangle) $A_{base} = b^2$ $SA = A_{4triangles} + A_{base}$	$V = \frac{1}{3}b^2 h$
Rectangular Prism 	$SA = wh + wh + lw + lw + lh + lh$ $SA = 2(wh + lw + lh)$	$V = lwh$

**NOTE:** Use the value of  $\pi$  programmed in your calculator rather than the approximation of 3.14.