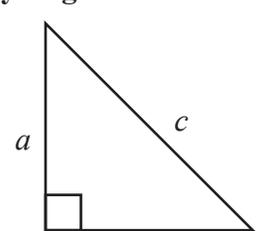
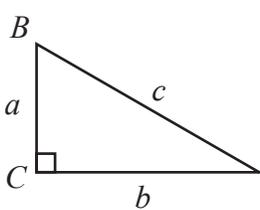
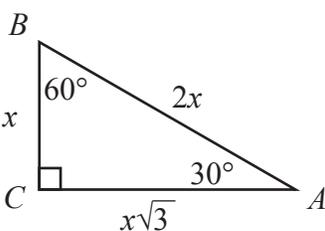
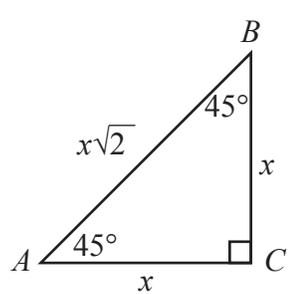


Shape	Area	Circumference
Circle	$A = \pi r^2$	$C = \pi d = 2\pi r$
Triangle	$A = \frac{1}{2}bh$	<b>Perimeter</b>
Rectangle	$A = lw$	$P = 2l + 2w$
Trapezoid	$A = \frac{1}{2}h(b_1 + b_2)$	
Parallelogram	$A = bh$	

Key	
$b$ = base	$w$ = width
$B$ = area of base	$d$ = diameter
$h$ = height	$r$ = radius
$l$ = length	$\ell$ = slant
Use 3.14 for $\pi$	

3-Dimensional Shape	Volume	Total Surface Area
Right Circular Cone	$V = \frac{1}{3}\pi r^2 h$	$T = \frac{1}{2}(2\pi r)\ell + \pi r^2 = \pi r\ell + \pi r^2$
Pyramid	$V = \frac{1}{3}Bh$	$T = B + \frac{1}{2}P\ell$
Sphere	$V = \frac{4}{3}\pi r^3$	$T = 4\pi r^2$
Right Circular Cylinder	$V = \pi r^2 h$	$T = 2\pi r h + 2\pi r^2$
Right Prism	$V = Bh$	$T = 2B + Ph$

Formulas	
<p>Distance, rate, and time formula, where  <math>d</math> = distance, <math>r</math> = rate, <math>t</math> = time:  <math display="block">d = rt</math></p>	<p style="text-align: center;"><b>Pythagorean Theorem</b></p>  <p style="text-align: center;"><math>c^2 = a^2 + b^2</math></p>

Right-Triangle Relationships		
Trigonometric Ratios	30°-60°-90° Triangle Relationships	45°-45°-90° Triangle Relationships
 <p style="margin-left: 100px;"> <math>\sin A = \frac{a}{c}</math>  <math>\cos A = \frac{b}{c}</math>  <math>\tan A = \frac{a}{b}</math> </p>		

## NeSA-M High School Reference Sheet

Linear Equation Forms
<p><b><u>Point-Slope Form:</u></b></p> $y - y_1 = m(x - x_1)$
<p><b><u>Standard or General Form:</u></b></p> $Ax + By = C$
<p><b><u>Slope-Intercept Form:</u></b></p> $y = mx + b$

Coordinate Geometry
Given: Points $A(x_1, y_1)$ , $B(x_2, y_2)$
<p><b><u>Distance between two points:</u></b></p> $AB = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
<p><b><u>Midpoint between two points:</u></b></p> $\text{Midpoint of } \overline{AB} = \left( \frac{x_2 + x_1}{2}, \frac{y_2 + y_1}{2} \right)$
<p><b><u>Slope of line through two points:</u></b> <math>m = \frac{y_2 - y_1}{x_2 - x_1}</math></p>

Equation of a Circle
$(x - h)^2 + (y - k)^2 = r^2$
$(h, k)$ = center $r$ = radius

Quadratic Formula
$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
$ax^2 + bx + c = 0$

Standard Units	Metric Units
<b>Conversions – Length</b>	
1 foot (ft) = 12 inches (in.)	1 centimeter (cm) = 10 millimeters (mm)
1 yard (yd) = 3 feet (ft) = 36 inches (in.)	1 meter (m) = 100 centimeters (cm)
1 mile (mi) = 1,760 yards (yd) = 5,280 feet (ft)	1 kilometer (km) = 1,000 meters (m)
<b>Conversions – Area</b>	
1 square foot (sq. ft) = 144 square inches (sq. in.)	
1 square yard (sq. yd) = 9 square feet (sq. ft)	
<b>Conversions – Volume</b>	
1 cubic yard (cu. yd) = 27 cubic feet (cu. ft)	
1 cubic foot (cu. ft) = 1,728 cubic in. (cu. in.)	
<b>Conversions – Capacity</b>	
1 cup = 8 fluid ounces (fl oz)	1 liter (l) = 1,000 milliliters (ml)
1 pint (pt) = 2 cups	1 liter (l) = 1,000 cubic centimeters (cu. cm)
1 quart (qt) = 2 pints (pt)	1 kiloliter (kl) = 1,000 liters (l)
1 gallon (gal.) = 4 quarts (qt)	
<b>Conversions – Weight/Mass</b>	
1 pound (lb) = 16 ounces (oz)	1 gram (g) = 1,000 milligrams (mg)
1 ton = 2,000 pounds (lb)	1 kilogram (kg) = 1,000 grams (g)