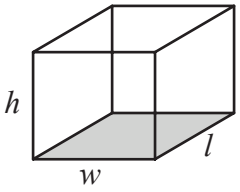
NSCAS NEBRASKA STUDENT-CENTERED ASSESSMENT SYSTEM

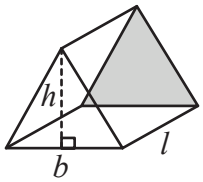
Mathematics Reference Sheet

2-Dimensional Shape	Area	Circumference
Circle	$A = \pi r^2$	$C = \pi d = 2\pi r$
Triangle	$A = \frac{1}{2} bh$	**Perimeter**
Rectangle	$A = l \times w$	$P = 2l + 2w$ $= 2(l + w)$
Square	$A = s \times s$	$P = s + s + s + s$
Trapezoid	$A = \frac{1}{2} h (b_1 + b_2)$	
Parallelogram	$A = bh$	

3-Dimensional Shape	Volume	Surface Area
Rectangular Prism	$V = lwh = Bh$	SA = the sum of the areas of all the faces
Triangular Prism	$V = \frac{1}{2} bhl = Bl$	SA = the sum of the areas of all the faces
Cone	$V = \frac{1}{3} \pi r^2 h$	
Cylinder	$V = \pi r^2 h$	
Sphere	$V = \frac{4}{3} \pi r^3$	

In the images to the right, the shaded faces are the bases.





2-Dimensional Shape Key		
b = base length	l = length	s = side
h = height	w = width	
d = diameter	r = radius	

Use 3.14 for π.

3-Dimensional Shape Key		
d = diameter	l = length	w = width
r = radius	h = height of shape	B = area of base
	b = base length	

Percent Change	Pythagorean Theorem
% change = $\frac{\text{difference in amounts}}{\text{original amount}}$	$c^2 = a^2 + b^2$

Standard Units	Metric Units
Conversions – Length	
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 meter (m) = 1,000 millimeters (mm)
	1 kilometer (km) = 1,000 meters (m)
Conversions – Volume	
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 gallon (gal.) = 4 quarts (qt)	
Conversions – Weight/Mass	
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)