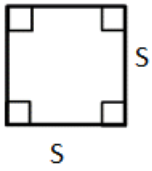
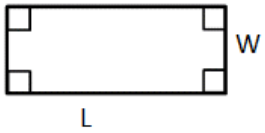
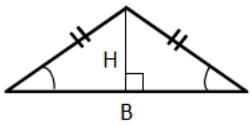
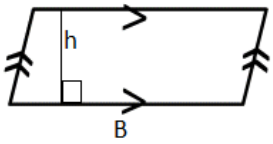
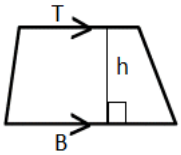
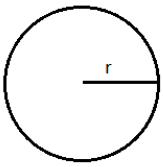
Grade 78 Math Measurement – **Formulas for Surface Area and Volume**

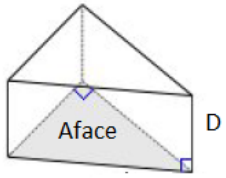
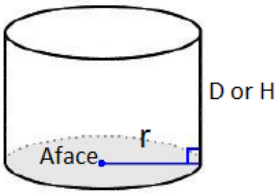
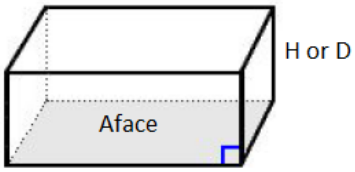
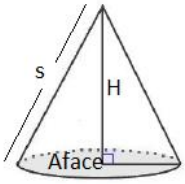
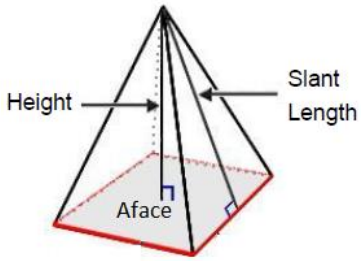
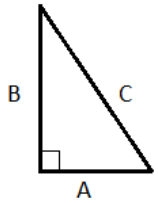
Name: _____ Class: _____ Date: _____

Shape	Formulas
Square 	A = S x S A = S^2 A = L x W
Rectangle 	A = L x W
Triangle 	A = (B x H) ÷ 2 A = ½ B x H A = B x H / 2
Parallelogram 	A = B x H (make sure you do not use the side length)
Trapezoid 	A = (T + B)/2 x h A = $\frac{T+B}{2}$ x h
Circle 	A = πr^2 A = 3.14 x r x r

You can find any missing measure by putting in all given values and solving for the missing one.

In this way, if you are given the area of a circle, you can reverse the equation and isolate for r.

$A = \pi r^2$ becomes $r = \sqrt{\frac{A}{\pi}}$

3D shapes	Formulas
Cylinders and Prisms    	SA = Sum of all faces (A1 + A2 …) SA of cylinder = 2A circle + πDH V = Aface x D V = Aface x H The face calculation is based on the shape (see formulas for 2D shapes). It does not matter what you call the third dimension (D or H) but it must be perpendicular to the Face area. The Face area must also be the shape that is the 'end' of the prism or cylinder.
Cones and Pyramids   	Pyramid = A base + side triangles (use slant height for side triangles) SA Cone = $\pi r^2 + \pi rs$ V = 1/3 Aface x H Whether it is a cone or a pyramid, the formula is one third the area of the base (face) multiplied by the height.
Pythagorean Theorem  	$A^2 + B^2 = C^2$ Since we are often using right angles to define the height of pyramids and triangles, it is valuable to remember that one can calculate the missing side of a right triangle using the Pythagorean Theorem.
Problem Solving Process 1. Understand the problem by creating a fully labeled diagram (label all sides and faces) 2. Find an overall formula that solves your question 3. Find the answers to the parts of the question 4. Put answers back into big equation 5. Find answer 6. Check for reasonableness (and units) 7. Communicate your answer in a sentence (check to see that you answered all parts of the question)	