

NAME \_\_\_\_\_ DATE \_\_\_\_\_ PER. \_\_\_\_\_

**MORE FUNCTION APPLICATIONS WITH AREA & VOLUME**Draw sketches as necessary, show all work, and simplify answers.

1. Given a 30-60-90 triangle:

_____	a) Express the area, $A$ , of the triangle as a function of the length, $h$ , of the hypotenuse.
_____	b) Find the area when the hypotenuse is 16 meters.

2. A water trough is in the shape of a right prism and is 12 feet long and 3 feet across the top. Its ends are isosceles triangles with heights of 3 feet.

_____	a) Find the volume of water in the trough when the trough is full.
_____	b) Find the volume of water in the trough when the water level is 1 foot deep.
_____	c) What percent of the trough is full when the water is 1 foot deep?
_____	d) Find the volume of the water in the trough in terms of the height of the water.

3. The volume of a box with a square base and no top is  $6 \text{ m}^3$ .

<hr/>	a) Find the height as a function of the width, $x$ , of the base.
<hr/>	b) Express the total surface area, $A$ , as a function of the width, $x$ , of the base.
<hr/>	c) Find the surface area when $x = 6$ meters.
<hr/>	d) When $x = 6$ meters, find the height.

4. Given an equilateral triangle with perimeter 108.

a) Sketch a picture of the problem.	
	b) Find the height of the triangle.
	c) Find the area of the triangle.
	d) If the side of the triangle is $x$ , repeat parts (b) and (c) to find the height and area as a function of the side of the triangle, $x$ .