Name _____ Date _____ Class _____

Math Skills for Science

MATH IN SCIENCE: EARTH SCIENCE

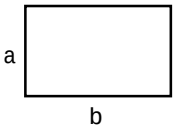
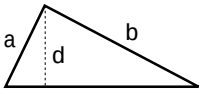
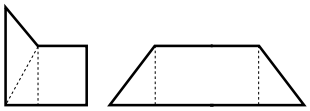
MATH SKILLS USED
Addition
Multiplication
Division
Decimals
Geometry

Mapping and Surveying

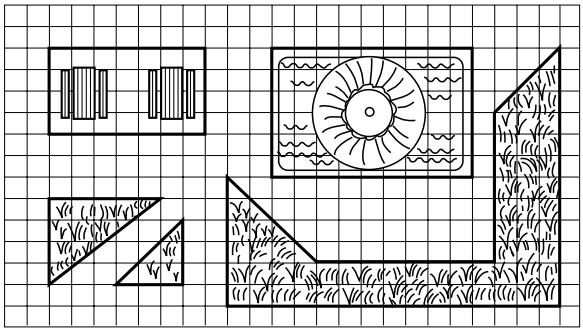
Use geometry to analyze maps and solid figures.

When scientists survey an area, they often represent the length, width, and other measurements on a map or diagram. This data can then be used in mathematical equations to determine the area of a piece of land, the volume of a lake, or the dimensions of a mountainside.

Part 1: Perimeter and Area

	Rectangle	Triangle	Odd shapes
			
Perimeter	$(2 \times a) + (2 \times b)$	$a + b + c$	Divide or approximate to a combination of rectangles and triangles, and add their perimeters or areas.
Area	$a \times b$	$\frac{c \times d}{2}$	

The map below shows a survey of a park. Each square of the grid represents one square meter, or 1 m^2. Use the equations above to answer the questions below.



Map It Out!

1. How long is the perimeter of the picnic area?

_____

2. What is the total area of the picnic area?

_____

3. How much area in the park has grass?

_____

4. Estimate the area covered by the fountain, not including the rectangular pool.

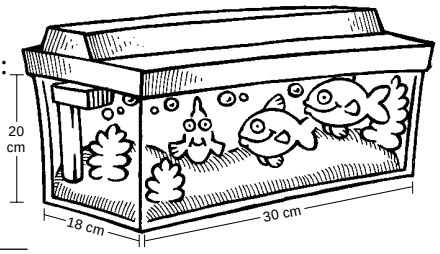
_____

Part 2: Calculating Volume

To find the volume of a cube or prism, multiply the height times the width times the length, as follows:

$$\text{Volume} = 5 \text{ m} \times 8 \text{ m} \times 15 \text{ m}$$
$$\text{Volume} = 600 \text{ m}^3$$

Use the equation for volume to answer the following questions:



5. Each fish in the aquarium shown at right needs 3500 cm^3 of water to live comfortably. Do the fish in this tank have enough space?

_____

_____

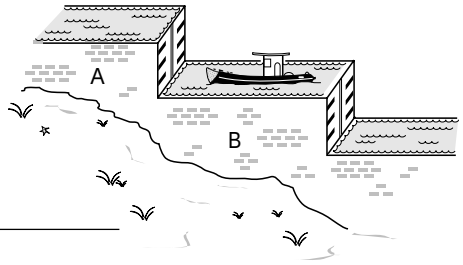
6. The Burnside family vegetable garden measures 4 m × 3.5 m. A garden planning guide suggests mixing fertilizer with the soil to a depth of 25 cm. In cubic meters, what will be the total volume of fertilizer-soil mix in the garden?

_____

A Lock System

A lock is an enclosed part of a canal or waterway equipped with gates that allow the water level in each lock to be changed. Locks are used to raise or lower boats from one level to another.

7. Lock A is 8 m deep, 16 m wide, and 22 m long. What is the capacity of the lock?



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_____

Challenge Yourself!

8. Lock B, which is the same width as Lock A, is 1.5 times as long and has a volume of 4488 m^3. How deep is Lock B?

_____

_____