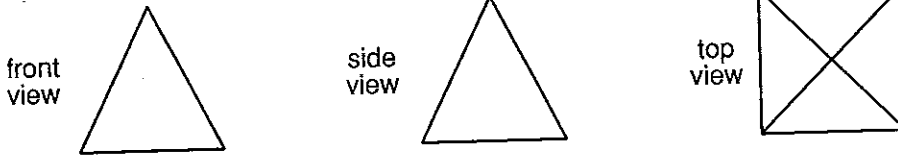
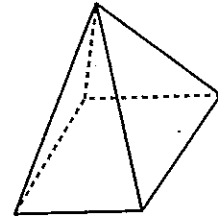


Enrichment Worksheet 11-4

Point of View

At the right is a square pyramid as seen from a point of view that is slightly above and to the right. Here is the same pyramid when you look at it from three different points of view.



Notice that these views appear two-dimensional. Architects, engineers, and designers often use views like these to provide a detailed description of a three-dimensional object.

Identify the figure that each set of views represents.

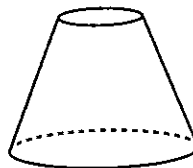
1. front view: side view: top view:

2. front view: side view: top view:

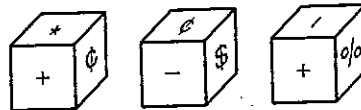
3. front view: side view: top view:

4. front view: side view: top view:

5. This figure is called a *truncated cone*. In the space at the right, sketch front, side, and top views of the figure.



6. **CHALLENGE** At the right, you see three different views of the same cube. What symbol is on the face opposite the plus sign?



Enrichment Worksheet 11-6

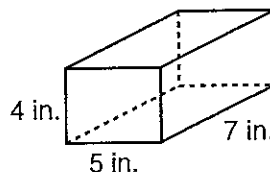
Volume and Liquid Capacity

The volume of a three-dimensional figure is the amount of *space* it contains. Volume is usually measured in cubic units—cubic meters, cubic inches, and so on.

The liquid capacity of a container is the amount of *liquid* it can hold. Liquid capacity generally is measured in units like liters, milliliters, cups, pints, quarts, and gallons.

The chart at the right shows the relationship between volume and liquid capacity. If a container were shaped like the rectangular prism below the chart, this is how you would find its liquid capacity.

Volume and Liquid Capacity	
Metric	
$1 \text{ cm}^3 = 1 \text{ mL}$	
$1 \text{ m}^3 = 1,000 \text{ L}$	
Customary	
$1 \text{ in}^3 = 0.544 \text{ fl oz}$	
$1 \text{ ft}^3 = 7.481 \text{ gal}$	



Volume	Liquid Capacity
$V = lwh$	$1 \text{ in}^3 \approx 0.544 \text{ fl oz}$
$V = 7 \times 5 \times 4$	$140 \text{ in}^3 \approx (140 \times 0.544) \text{ fl oz}$
$V = 140$	$140 \text{ in}^3 \approx 76.16 \text{ fl oz}$

So, the liquid capacity of the container is about 76 fluid ounces.

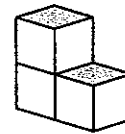
Find the liquid capacity of a container shaped like a rectangular prism with the given dimensions. If necessary, round to the nearest whole number.

- | | |
|--|--|
| <p>1. length, 8 cm
width, 4 cm
height, 6 cm</p> | <p>2. length, 7 ft
width, 2 ft
height, 3 ft</p> |
| <p>3. length, 3.5 m
width, 1.5 m
height, 5 m</p> | <p>4. length, 5 in.
width, $1\frac{1}{2}$ in.
height, $3\frac{1}{2}$ in.</p> |
5. An aquarium is 36 inches long, 18 inches wide, and 18 inches tall. It is filled with water to a height of 12 inches. How many gallons of water are in the aquarium? (Round to the nearest gallon.)
6. **CHALLENGE** How many cubic inches of space are occupied by one quart of water?

Enrichment Worksheet 11-7

Modeling with Cubes

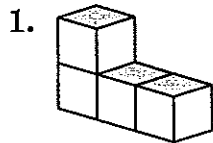
Some three-dimensional figures have irregular shapes, like the one shown at the right. When a problem involves a figure like this, you may find it helpful to model the figure using small cubes.



Volume =
3 cubic units

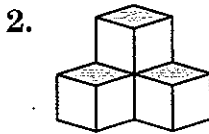
Surface Area =
14 square units

Find the volume and surface area of each figure.



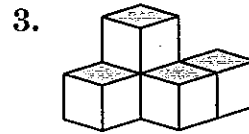
Volume =

Surface Area =



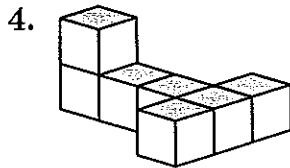
Volume =

Surface Area =



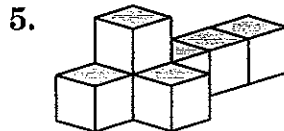
Volume =

Surface Area =



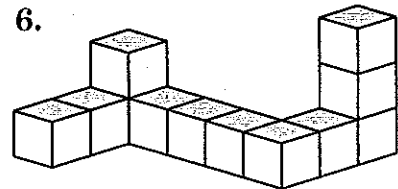
Volume =

Surface Area =



Volume =

Surface Area =



Volume =

Surface Area =

7. **CHALLENGE** There are five different three-dimensional figures that can be formed using four cubes. The volume of each figure, of course, is four cubic units. In the space at the right, sketch the one that has the least surface area.

