# Find Volume Using Formulas

Dear Family,

This week your child is learning to find the volume of a solid figure using a formula.

You can use a formula to find the volume of a rectangular prism if you know its length, width, and height. The picture shows a gift bag that is 4 inches long, 2 inches wide, and 3 inches high. The model beside the bag shows the number of 1-inch cubes that would fill the bag.

3 in.

2 in.

4 in.
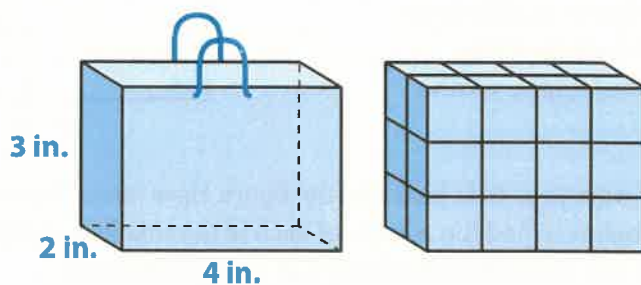
Using the model, you can find the volume of the cube by multiplying the number of cubes in each layer by the number of layers.

The equation to the right shows that multiplying the number of cubes in each layer by the number of layers is the same as multiplying length, width, and height. This is one of the volume formulas your child is learning to use.

$$\text{volume} = \frac{\text{number of cubes}}{\text{in each layer}} \times \frac{\text{number}}{\text{of layers}}$$

8 × 3

4 × 2 × 3

length   width   height

Volume = length × width × height
Volume = 4 inches × 2 inches × 3 inches
  = (8 × 3) cubic inches
  = 24 cubic inches

The volume of the gift bag is 24 cubic inches.

Invite your child to share what he or she knows about finding volume using a formula by doing the following activity together.

ACTIVITY USE A VOLUME FORMULA

Do this activity with your child to find volume using a formula.

Work with your child to use a formula to find the volume of the L-shaped solid figure shown at the right.

- The figure is composed of two rectangular prisms. Ask your child to talk about different ways to break the figure apart into two smaller rectangular prisms.

- Choose two ways to break the figure into rectangular prisms. Have your child draw pictures of the two ways to break up the figure and label the lengths, widths, and heights.

4 cm
9 cm
6 cm
10 cm
10 cm

- Start with one of the ways your child broke up the figure. Have him or her use the volume formula below to find the volume of each of the smaller rectangular prisms. Then add the volumes to find the volume of the original figure.

    Volume = length × width × height

- Repeat for the other way your child broke up the figure.

- Have your child compare the two volumes he or she found for the figure. They should be the same. Ask your child: *Suppose there were a third way to break the figure into two other rectangular prisms. Would the volume of the figure be the same?*