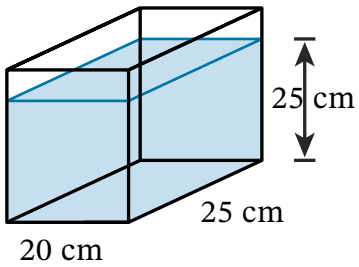
FAMILY MATH

Volume and the Operations of Multiplication and Addition

Dear Family,

Your student is learning to use the formula $V = l \times w \times h$ or $V = B \times h$ to find the volume of right rectangular prisms. They rely on what they know about the prism and use the formula to find the volume efficiently. Your student uses what they know about volume to determine the volume of composite figures. They also distinguish among situations that ask for the perimeter, area, or volume.

Kelly fills an aquarium with water to a height of 25 centimeters, as shown. The aquarium holds 15,000 milliliters. How many more milliliters of water does Kelly need to pour into the aquarium to fill it to the top?

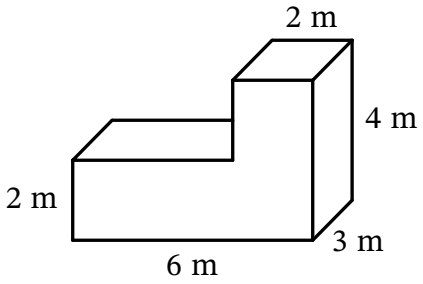


$$V = 20 \times 25 \times 25$$
$$= 500 \times 25$$
$$= 12{,}500$$

$15{,}000 - 12{,}500 = 2{,}500$

Kelly needs to pour 2,500 milliliters of water into the aquarium.

The figure is composed of right rectangular prisms. Calculate its volume.



$6 \times 3 \times 2 = 36$
$3 \times 2 \times 2 = 12$

$36 + 12 = 48$

The volume is 48 cubic meters.

At Home Activities

Prism Pursuit

Gather a ruler and some rectangular prisms such as boxes, soap bars, or books, Work with your student to measure the dimensions of each prism to the nearest centimeter. Then have them calculate the volume of the prisms by using the formula $V = l \times w \times h$ or $V = B \times h$. Here are some examples of prisms you could use with your student.

- A cereal box is 12 inches tall, 8 inches wide, and 2 inches long. The volume of the box is 192 cubic inches. $(12 \times 8 \times 2 = 192)$
- The bottom of a bar of soap is 7 centimeters long and 7 centimeters wide. The bar is 3 centimeters tall. The base of the bar is 49 square centimeters. $(7 \times 7 = 49)$
  The volume of the bar is 147 cubic centimeters. $(49 \times 3 = 147)$

Composite Figure Sculptures

Invite your student to gather 8 to 10 different small prisms such as blocks, candies, shoeboxes, or tissue boxes. Have your student find the volume of each prism. Then challenge them to use the prisms to create a sculpture by using one or more of the following guidelines. For each sculpture they create, have your student find the total volume.

- "Make a sculpture that has a volume greater than 300 cubic centimeters."
- "Make a sculpture that uses three prisms."
- "Make a sculpture that is taller than 100 centimeters."