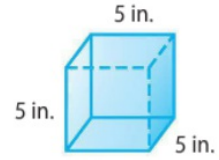
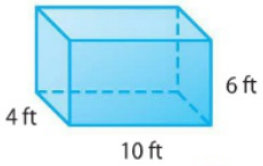
Got It? Do these problems to find out.

a.



5×5×5

b.



4×6×10

Show your work.

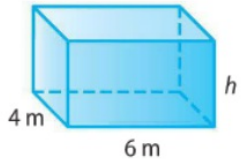
a. 125 in³

b. 240 ft³

Example

Tutor

3. **Find the missing dimension of the prism.**



$V = 84\ m^3$

$V = \ell wh$	Volume of rectangular prism
$84 = 6 \times 4 \times h$	Replace V with 84, ℓ with 6, and w with 4.
$84 = 24h$	Multiply.
$\frac{84}{24} = \frac{24h}{24}$	Divide each side by 24.
$3.5 = h$	Simplify.

The height of the prism is 3.5 meters.

Check $6 \times 4 \times 3.5 = 84$ ✓

$V = l \times w \times h$

$94.5 = (7)(3)w$

$94.5 = 21w$

$\frac{94.5}{21}$

Show your work.

Got It? Do this problem to find out.

d. $V = 94.5\ km^3$, $\ell = 7$ km, $h = 3$ km, $w = ?$

d. 4.5 km

Check

1. A rectangular kitchen sink is 25.25 inches long, 19.75 inches wide, and 10 inches deep. Find the amount of water that can be contained in the sink. (Examples 1 and 2) **4,986.875 in^3**

Show your work.

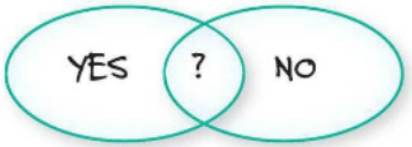
2. Find the missing dimension of a rectangular prism with a volume of 126 cubic centimeters, a width of $7\frac{7}{8}$ centimeters, and a height of 2 centimeters. (Example 3) **8 cm**

3. **Building on the Essential Question** Why can you use either the formula $V = \ell wh$ or $V = Bh$ to find the volume of a rectangular prism?

Sample answer: The area of the base can be represented as $\ell \times w$ or as B. To find the volume of the prism, multiply the area of the base by the height of the prism.

Rate Yourself!

Are you ready to move on? Shade the section that applies.



For more help, go online to access a Personal Tutor.

Tutor

Time to update your Foldable!

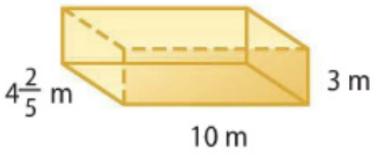
Independent Practice

Go online for Step-by-Step Solutions

eHelp

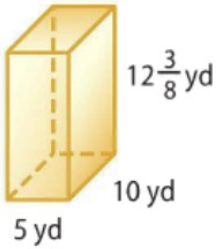
Find the volume of each prism. (Example 1)

1. $132\ m^3$

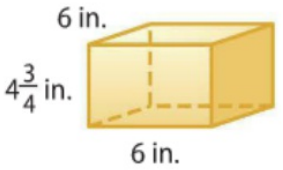


Show your work.

2. $618.75\ yd^3$



3 $171\ in^3$



4. A fishing tackle box is 13 inches long, 6 inches wide, and $2\frac{1}{2}$ inches high. What is the volume of the tackle box?

(Example 2)

$195\ in^3$

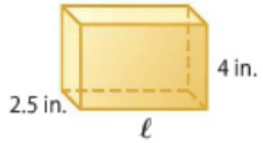
5. Find the length of a rectangular prism having a volume of 2,830.5 cubic meters, width of 18.5 meters, and height of 9 meters.

(Example 3)

17 m

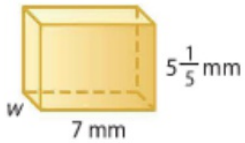
Find the missing dimension of each prism. (Example 3)

6. **6 in.**



$V = 60 \text{ in}^3$

7. **3 mm**

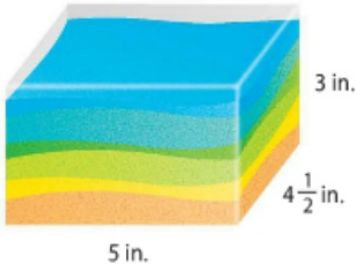


$V = 109\frac{1}{5} \text{ mm}^3$

8. **Be Precise** In Japan, farmers have created watermelons in the shape of rectangular prisms. Find the volume of a prism-shaped watermelon in cubic inches if its length is 10 inches, its width is $\frac{2}{3}$ foot, and its height is 9 inches.

720 in³

9. The glass container shown is filled to a height of 2.25 inches.



a. How much sand is currently in the container?
$50\frac{5}{8}$ in³

b. How much more sand could the container hold before it overflows? **$16\frac{7}{8}$ in³**

c. What percent of the container is filled with sand? **75%**

10. CCSS **Identify Structure** Refer to the graphic novel frame below for Exercises a–c.

a. Pilar chose the box on the left. If it is 8 inches long, 8 inches wide, and 8 inches tall, what is the volume of Pilar's box?

512 in^3

b. Amanda chose the box on the right. If it is 8 inches long, 6 inches wide, and 10 inches tall, what is the volume of Amanda's box?

480 in^3

c. Who received more popcorn, Pilar or Amanda? How much more?

Pilar; 32 in^3

H.O.T. Problems Higher Order Thinking

11. **Persevere with Problems** Refer to the prism at the right. If all the dimensions of the prism doubled, would the volume double? Explain your reasoning.

No; the volume of the figure is 3^3 or 27 cubic units. If the dimensions doubled, the volume would be 6^3 or 216 cubic units, eight times greater.

12. **Justify Conclusions** Which has the greater volume: a prism with a length of 5 inches, a width of 4 inches, and a height of 10 inches, or a prism with a length of 10 inches, a width of 5 inches, and a height of 4 inches? Justify your selection. **They both have the same volume. Volume of the first prism: $5 \times 4 \times 10$ or 200 in^3. Volume of the second prism: $10 \times 5 \times 4$ or 200 in^3.**

13. **Model with Mathematics** Write a real-world problem in which you need to find the volume of a right rectangular prism. Solve your problem.

Sample answer: A gift box is 7 inches long, 9 inches wide, and 4 inches tall. What is the volume of the gift box?; 252 in^3