

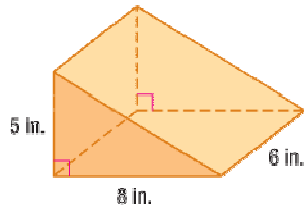
Lesson 4-7

Example 1

Find the volume.

- a. rectangular prism: 12 cm by 10 cm by 5 cm

b.



Solution

a. $V = (\square \cdot w) \cdot h$
 $V = 12 \text{ cm} \cdot 10 \text{ cm} \cdot 5 \text{ cm}$
 $V = 600 \text{ cm}^3$

Use $\square \cdot w$ to find the area of the base.
 Substitute 12 for \square , 10 for w , and 5 for h .

The volume of the rectangular prism is 600 cm^3 .

- b. Notice that the height of the triangle, which is used in finding its area, is different from the height of the triangular prism, which is used in finding its volume.

$$V = Bh$$

$$V = \frac{1}{2} \cdot b \cdot h_2 \cdot h$$

$$V = \frac{1}{2} \cdot 8 \text{ in.} \cdot 5 \text{ in.} \cdot 6 \text{ in.}$$

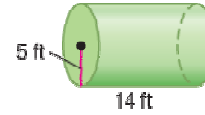
$$V = 120 \text{ in}^3$$

The volume of the triangular prism is 120 in^3 .

Example 2

Find the volume of the cylinder.

- Use 3.14 for π .
- Use $\frac{22}{7}$ for π .
- Use the π key on your calculator.
Round to the nearest hundredth.

**Solution**

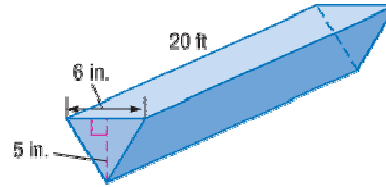
$$\begin{aligned} \text{a. } V &= \pi r^2 \cdot h \\ V &= \pi \cdot (5)^2 \cdot 14 \\ V &\square 3.14 \cdot 25 \cdot 14 \\ V &\square 2799 \text{ ft}^3 \end{aligned}$$

$$\begin{aligned} \text{b. } V &= \pi r^2 \cdot h \\ V &= \pi \cdot (5)^2 \cdot 14 \\ V &\square \frac{22}{7} \cdot \frac{25}{100} \cdot \frac{14}{1} \\ V &\square 1100 \text{ ft}^3 \end{aligned}$$

$$\begin{aligned} \text{c. } V &= \pi r^2 \cdot h \\ V &= \pi \cdot (5)^2 \cdot 14 \\ V &= \pi \cdot 25 \cdot 14 \\ V &\square 1099.56 \text{ ft}^3 \end{aligned}$$

Example 3

CONSTRUCTION A gutter has the dimensions shown. Find the amount of water that the gutter can hold.

**Solution**

The gutter is a triangular prism. First find the area of the triangular base (B).

$$B = \frac{1}{2} \cdot h$$

$$B = \frac{1}{2} \cdot 6 \text{ in.} \cdot 5 \text{ in.} \quad \text{Substitute 6 for } b \text{ and 5 for } h.$$

$$B = 15 \text{ in}^2$$

The area of the base is 15 in^2 .

Change the height of the prism to inches.

$$20 \text{ ft} = 20(12 \text{ in.}) = 240 \text{ in.}$$

Then use the volume formula for prisms. Note that the height of the prism is not the same as the height of the triangle.

$$V = Bh$$

$$V = 15 \text{ in}^2 \cdot 240 \text{ in.} \quad \text{Substitute 15 for } B \text{ and 240 for } h.$$

$$V = 3600 \text{ in}^3$$

The gutter will hold 3600 in^3 of water.