8 Chapter Review

Review Key Vocabulary

sphere, *p. 348*   hemisphere, *p. 351*   similar solids, *p. 356*
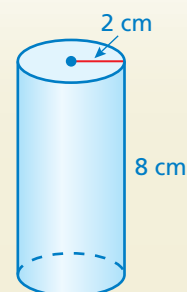
Review Examples and Exercises

8.1 Volumes of Cylinders *(pp. 334–339)*

Find the volume of the cylinder. Round your answer to the nearest tenth.
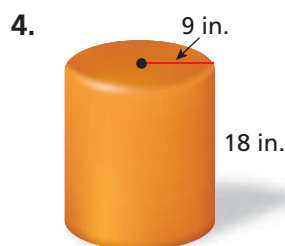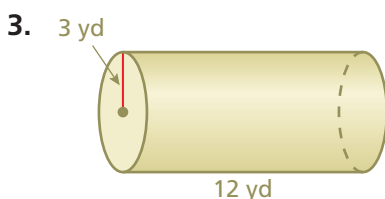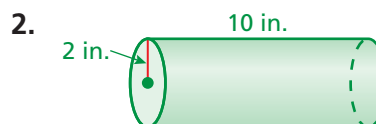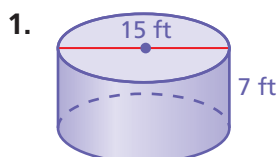
$$V = Bh \qquad \text{Write formula for volume.}$$
$$= \pi(2)^2(8) \qquad \text{Substitute.}$$
$$= 32\pi \approx 100.5 \qquad \text{Use a calculator.}$$

2 cm

8 cm

∴ The volume is about 100.5 cubic centimeters.

Exercises

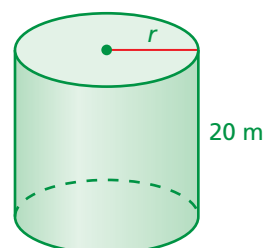**Find the volume of the cylinder. Round your answer to the nearest tenth.**

1.   15 ft   7 ft

2.   10 in.   2 in.

3.   3 yd   12 yd

4.   9 in.   18 in.

Find the missing dimension of the cylinder. Round your answer to the nearest whole number.

5. Volume = 25 in.^{3}

3 in.

h

6. Volume = 7599 m^3

r

20 m
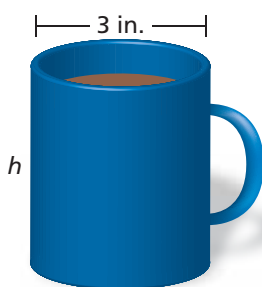
Volumes of Cones (pp. 340–345)

Find the height of the cone. Round your answer to the nearest tenth.

$$V = \frac{1}{3}Bh \qquad \text{Write formula for volume.}$$
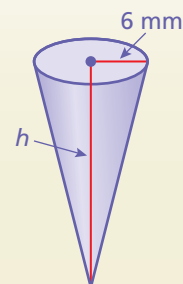
$$900 = \frac{1}{3}\pi(6)^2(h) \qquad \text{Substitute.}$$

$$900 = 12\pi h \qquad \text{Simplify.}$$

$$23.9 \approx h \qquad \text{Divide each side by } 12\pi.$$

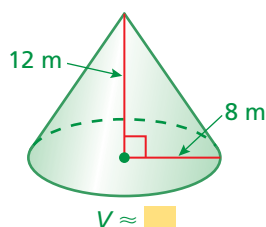The height is about 23.9 millimeters.

6 mm

h

Volume = 900 mm³

Exercises

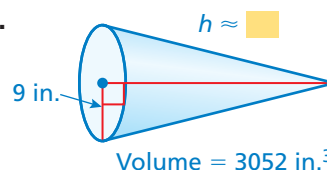**Find the volume V or height h of the cone. Round your answer to the nearest tenth.**

7.

12 m

8 m

$V \approx \blacksquare$

8.

4 cm

10 cm

$V \approx \blacksquare$

9.

$h \approx \blacksquare$

9 in.
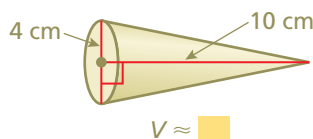
Volume = 3052 in.³

Volumes of Spheres (pp. 348–353)

a. Find the volume of the sphere. Round your answer to the nearest tenth.

$$V = \frac{4}{3}\pi r^3 \qquad \text{Write formula for volume.}$$

$$= \frac{4}{3}\pi(11)^3 \qquad \text{Substitute 11 for } r.$$

$$= \frac{5324}{3}\pi \qquad \text{Simplify.}$$

$$\approx 5575.3 \qquad \text{Use a calculator.}$$

11 m

The volume is about 5575.3 cubic meters.
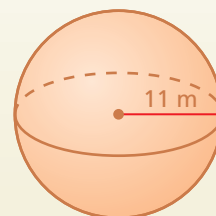
b. Find the volume of the composite solid. Round your answer to the nearest tenth.

Square Prism
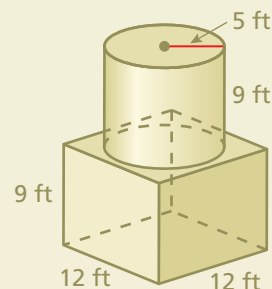
$$V = Bh$$
$$= (12)(12)(9)$$
$$= 1296$$

Cylinder

$$V = Bh$$
$$= \pi(5)^2(9)$$
$$= 225\pi \approx 706.9$$
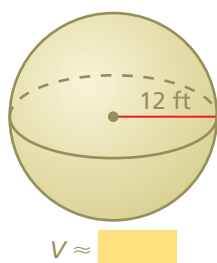
5 ft

9 ft

9 ft

12 ft   12 ft
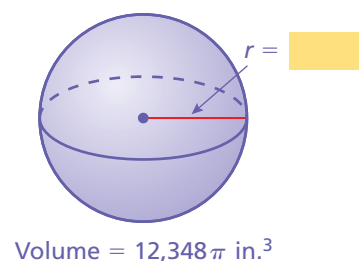
So, the volume is about $1296 + 706.9 = 2002.9$ cubic feet.

Exercises

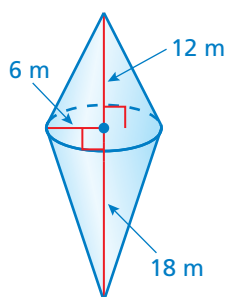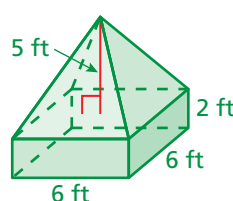**Find the volume V or radius r of the sphere. Round your answer to the nearest tenth, if necessary.**

10.

12 ft

$V \approx$ ⬜

11.

$r =$ ⬜

Volume $= 12{,}348\pi$ in.^{3}

Find the volume of the composite solid. Round your answer to the nearest tenth.

12.

6 m

12 m

18 m

13.

5 ft

2 ft

6 ft

6 ft

14.

2 cm

4 cm

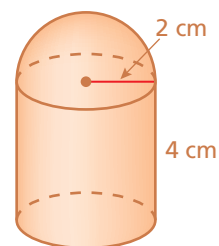**8.4** **Surface Areas and Volumes of Similar Solids** *(pp. 354–361)*

The cones are similar. What is the volume of the red cone? Round your answer to the nearest tenth.

$$\boxed{\frac{\text{Volume of A}}{\text{Volume of B}} = \left(\frac{\text{Height of A}}{\text{Height of B}}\right)^3}$$

$\dfrac{V}{157} = \left(\dfrac{4}{6}\right)^3$ Substitute.

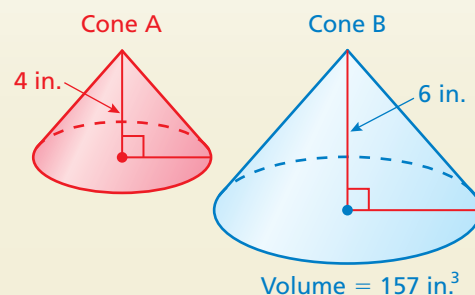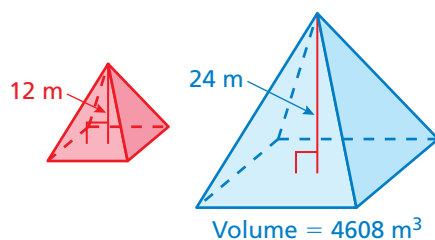$\dfrac{V}{157} = \dfrac{64}{216}$ Evaluate.

$V \approx 46.5$ Solve for V.

∴ The volume is about 46.5 cubic inches.

Cone A

4 in.

Cone B

6 in.

Volume $= 157$ in.^{3}

Exercises

The solids are similar. Find the surface area S or volume V of the red solid. Round your answer to the nearest tenth.

15.

12 m

24 m

Volume $= 4608$ m^3

16.

6 yd

8 yd

Surface Area $= 154$ yd^2