

# Volume of Cylinders (pages 503–506)

A stack of coins is a model of a **cylinder**. A cylinder is a solid figure that has two congruent, parallel circles as its bases. Use the formula below to find the volume of a cylinder.

<b>Volume of a Cylinder</b>	Find the volume ( $V$ ) of a cylinder by multiplying the area of the base ( $\pi r^2$ ) by the height ( $h$ ). $V = \pi r^2 h$
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## EXAMPLE

Find the volume of a cylinder with a diameter of 8 centimeters and a height of 10 centimeters.

The diameter of the cylinder is 8 cm. Therefore, the radius is 4 cm.

Estimate:  $4^2 \times 3 \times 10 = 480$

$$V = \pi r^2 h$$

$$V \approx 3.14 \times 4^2 \times 10 \quad \text{Substitute the values for } \pi, r, \text{ and } h.$$

$$V \approx 502.4$$

The cylinder has a volume of about 502 cubic centimeters.

## Try These Together

**Find the volume of each cylinder to the nearest tenth.**

1. diameter, 2 m; height, 5 m

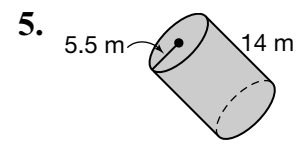
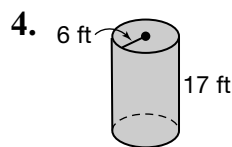
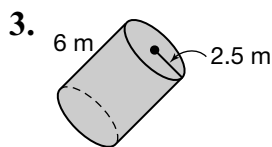
*HINT: Change the diameter to the radius and then find the area of the base. Multiply the area of the base by the height.*

2. radius, 8 in.; height, 14 in.

*HINT: Find the area of the base and then multiply it by the height.*

## PRACTICE

**Find the volume of each cylinder to the nearest tenth.**



6. **Packaging** The diameter of a can of tuna is 3 inches and the height is 2 inches. Find the approximate volume of the can.



7. **Standardized Test Practice** Stella has a can full of water that is 6 cm tall and 8 cm in diameter. She wants to pour the water into a can that is 4 cm in diameter. How tall must the can be?

**A** 12 cm

**B** 3 cm

**C** 24 cm

**D** 18cm

**Answers:** Answers are calculated using the  $\pi$  key on a calculator and then rounded. 1. 15.7 m<sup>3</sup> 2. 2,814.9 in.<sup>3</sup> 3. 117.8 m<sup>3</sup> 4. 1,922.7 ft<sup>3</sup> 5. 1,330.5 m<sup>3</sup> 6. about 14.1 in.<sup>3</sup> 7. C