

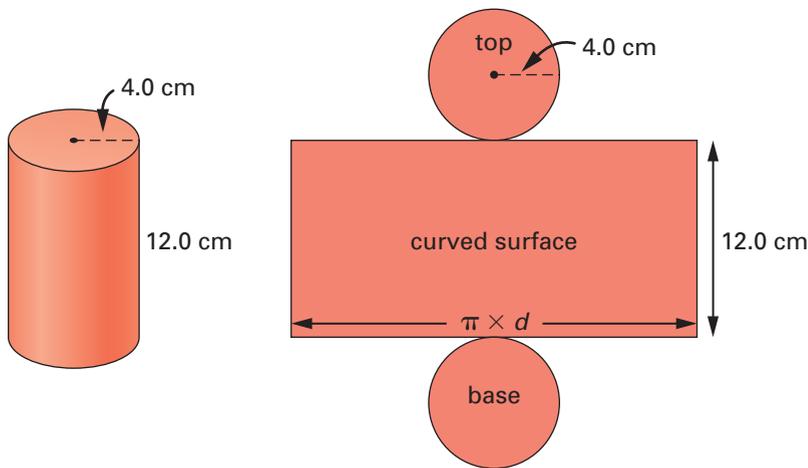
Mid-Chapter Review



Frequently Asked Questions

Q: How do you calculate the surface area of a cylinder?

A: Sketch a net of the cylinder. The surface area is the sum of the areas of the faces. Like the base and top of a rectangular prism, the base and top of a cylinder are congruent. Therefore, they have the same area. Calculate the area of the base, and double it. Add this to the area of the curved surface.

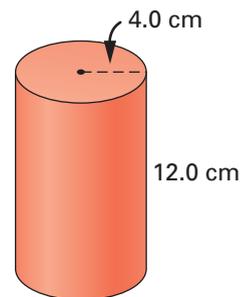


$$\begin{aligned}\text{Surface area} &= 2 \times \text{area of base} + \text{area of curved surface} \\ &= 2 \times \pi r^2 + (\pi d \times h) \\ &= 2 \times \pi \times (4.0 \text{ cm})^2 + (\pi \times 8.0 \text{ cm} \times 12.0 \text{ cm}) \\ &\doteq 402.1 \text{ cm}^2\end{aligned}$$

Q: How do you calculate the volume of a cylinder?

A: The base of a cylinder is a circle. Calculate the volume of a cylinder in the same way you would calculate the volume of a prism—multiply the area of the base by the height.

$$\begin{aligned}\text{Volume} &= \text{area of base} \times \text{height} \\ &= \pi r^2 \times h \\ &= \pi \times (4.0 \text{ cm})^2 \times 12.0 \text{ cm} \\ &\doteq 603.2 \text{ cm}^3\end{aligned}$$



Practice Questions

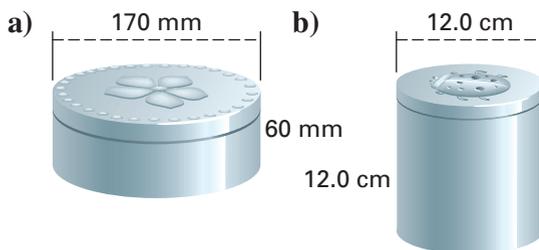
- (11.2) 1. Sketch a net for each cylinder, and label its dimensions. Then calculate the surface area.

	Item	Radius of base (cm)	Height of cylinder (cm)
a)	potato-chip container	4	8
b)	coffee can	7.5	15.0
c)	CD case	8.5	20.5
d)	oil barrel	25.0	80.0

- (11.2) 2. Karim is painting a design on a cylindrical barrel. The height of the barrel is 1.2 m. The radius of its base is 0.3 m. What area will the paint have to cover? (Remember to include the bottom and lid of the barrel.)

- (11.2) 3. Write step-by-step instructions for determining the surface area of an empty paper-towel roll.

- (11.2) 4. Determine the surface area of each tin.



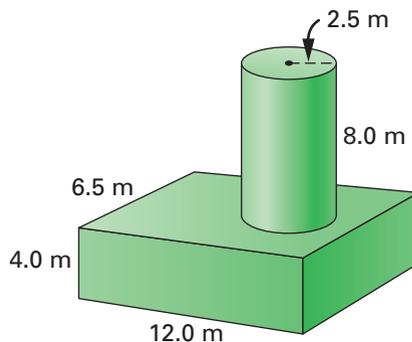
- (11.2) 5. A cylindrical candle has a radius of 6 cm and a height of 20 cm. How much waxed paper will Jake need to wrap the candle?

- (11.3) 6. Determine the volume of a cylinder that is 20 cm high and has the radius or diameter below.

- radius 13 cm
- radius 6.5 cm
- diameter 20 cm

7. Deirdre is buying birdseed for the class bird feeder. The bird feeder is a cylinder with a diameter of 25 cm and a height of 45 cm. How many millilitres of seed should she buy? (11.3)

8. Determine the volume of this figure. Explain what you did. (11.3)



9. A soup can has a radius of 4 cm and a height of 11 cm. There are 24 cans in one case. How many litres of soup are in one case? (11.3)

10. The height of each cylinder in a set of food-storage containers is 30 cm. The radius of the largest container is 10 cm. The volume of the smallest container is $\frac{1}{3}$ the volume of the largest container. The volume of the middle-sized container is $\frac{2}{3}$ the volume of the largest container. What is the volume of each container? (11.4)

