Skill Check:
5 min

A company ships its products in a storage container in the shape of a rectangular prism. The base of the prism is a rectangle with a length of 4 meters and a width of 1.5 meters. The height of the container is 2.5 meters. What is the volume of the storage container in cubic meters?

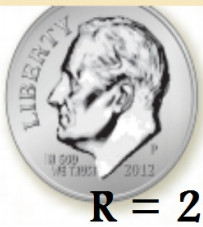
Answer to skill check:

Write using EEE to explain how you would find the volume & S.A?

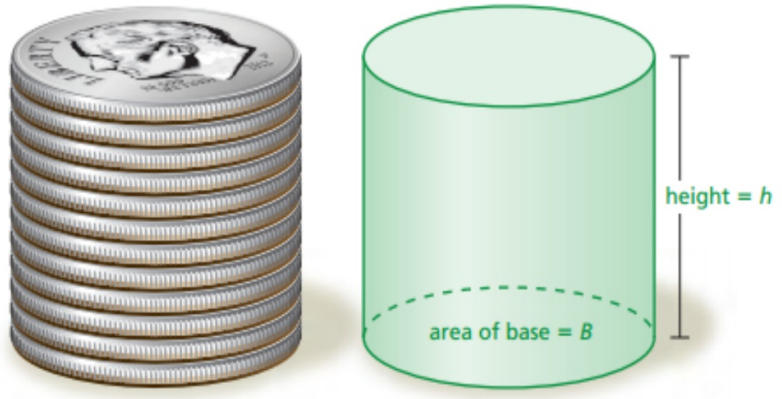
a. Find the area of the face of a coin.

b. Find the volume of a stack of a dozen coins.

c. Write a formula for the volume of a cylinder.



R = 2mm

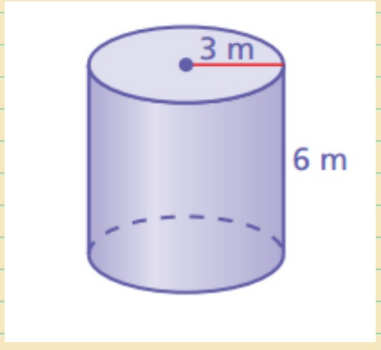


Volume of a cylinder
formula:

V = Bh

In words: Area of the base times the height

Example 1:
Find the volume of a cylinder



Check:

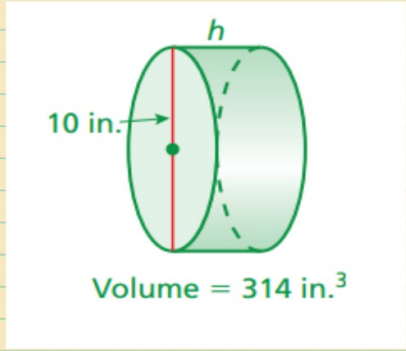
$V = Bh$ Write formula for volume.

$= \pi(3)^2(6)$ Substitute.

$= 54\pi \approx 169.6$ Use a calculator.

∴ The volume is about 169.6 cubic meters.

Example 2:
finding the height of a cylinder:



Check:

The diameter is 10 inches. So, the radius is 5 inches.

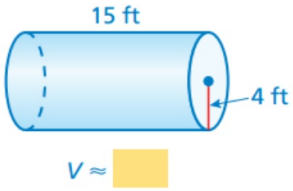
$V = Bh$	Write formula for volume.
$314 = \pi(5)^2(h)$	Substitute.
$314 = 25\pi h$	Simplify.
$4 \approx h$	Divide each side by 25π.

∴ The height is about 4 inches.

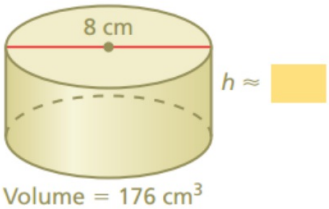
Practice

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

1.



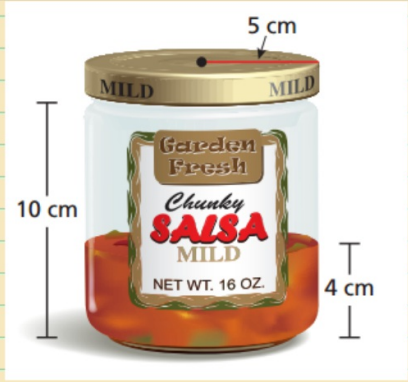
2.



Apply:

How much salsa is missing from the jar?

The empty space in the jar is a cylinder with a height of $10 - 4 = 6$ centimeters and a radius of 5 centimeters.



Check:

$V = Bh$ Write formula for volume.

$= \pi(5)^2(6)$ Substitute.

$= 150\pi \approx 471$ Use a calculator.

Interpret:

Apply:

About how many gallons of water does the watercooler bottle contain? ($1 \text{ ft}^3 \approx 7.5$ gal)

Check:

Find the volume of the cylinder. The diameter is 1 foot. So, the radius is 0.5 foot.

$V = Bh$ Write formula for volume.

$= \pi(0.5)^2(1.7)$ Substitute.

$= 0.425\pi \approx 1.3352$ Use a calculator.

Interpret:

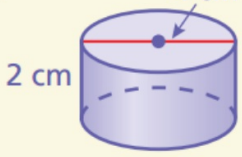
So, the bottle contains about 1.3352 cubic feet of water. To find the number of gallons it contains, multiply by the conversion factor $\frac{7.5 \text{ gal}}{1 \text{ ft}^3}$.

$$1.3352 \text{ ft}^3 \times \frac{7.5 \text{ gal}}{1 \text{ ft}^3} \approx 10 \text{ gal}$$

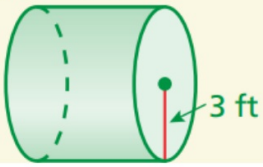
Mini-Assessment

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

1.



2.



3. Find the volume of the can of beans. Round your answer to the nearest whole number.