

Unit 9 - Google Drive x 9-1 Volume of a Cylinder x \*\* Hydrosphere: Water D x

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# 9-1 Volume of a Cylinder

I can find the volume of a cylinder or the missing length by using the volume formula.

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## Notes:

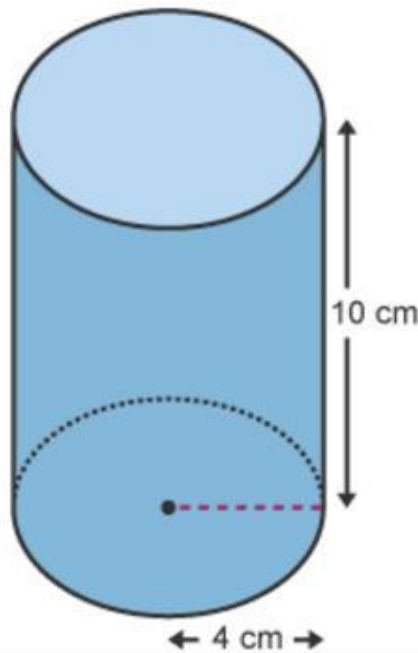
- Volume is three dimensions.  
Measured in  $\text{cm}^3$ ,  $\text{m}^3$ ,  $\text{in}^3$ ,  $\text{ft}^3$ ,  $\text{yd}^3$ .
- $\pi$  is always in the area and volume formulas for circles, cones, cylinders, and spheres.

- Diameter is the length across a circle going through the center.  $d = 2r$ .
- Radius is the length from the center to the edge of the circle.  $r = \frac{1}{2} d$ .

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- $V = \pi r^2 h$  is the formula for the volume of a cylinder.

Find the volume in terms of pi and approximate to the nearest one hundredth place.

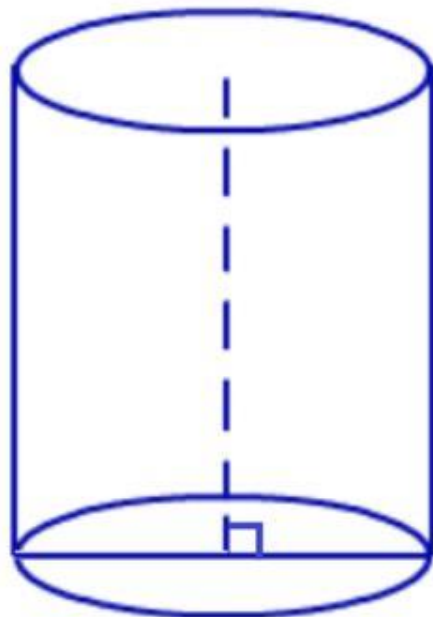


1.

$$V = \pi r^2 h$$
$$V = \pi 4^2 \cdot 10$$
$$V = 160\pi \text{ cm}^3$$

$$V = \pi r^2 h$$
$$V = 3.14 \cdot 4^2 \cdot 10$$
$$V = 502.4 \text{ cm}^3$$





2.

Diameter = 10 ft

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

$$V = \pi \cdot 5^2 \cdot 21$$

$$V = 525 \pi \text{ ft}^3$$

Height = 21 ft

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

$$V = 3.14 \cdot 5^2 \cdot 21$$

$$V = 1648.5 \text{ ft}^3$$

3. The height of the cylinder is 18 inches and the volume is  $648\pi$  in<sup>3</sup>.  
What is the length of the radius?

$$h = 18 \text{ in}, V = 648\pi \text{ in}^3, r = ?$$

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

$$648\pi = \pi \cdot r^2 \cdot 18$$

$$\frac{648\pi}{18\pi} = \frac{18\pi \cdot r^2}{18\pi}$$

$$\sqrt{36} = \sqrt{r^2}$$

$$6 = r$$
$$6 \text{ in}$$



4. The height of a soda can is 12 cm and the volume is  $339.12 \text{ cm}^3$ . Find the diameter using  $\pi = 3.14$ .

$$h = 12 \text{ cm}, v = 339.12 \text{ cm}^3, d = ?$$

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

$$339.12 = 3.14 \cdot r^2 \cdot 12$$

$$\frac{339.12}{37.68} = \frac{37.68 r^2}{37.68}$$

$$\sqrt{9} = \sqrt{r^2}$$

$$3 = r$$

$$d = 2r$$

$$d = 2 \cdot 3$$

$$d = 6 \text{ cm}$$

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# Assignment: 9-1 Volume of a Cylinder Worksheet