

Name: _____ # _____

Geometry: Period _____

Ms. Pierre

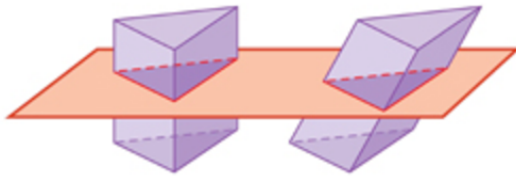
Date: _____

Volume of Prisms & Cylinders

Today's Objective

SWBAT learn and apply the formula for the volume of a prism and a cylinder.

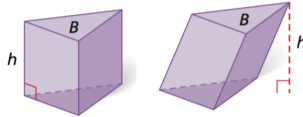
Cavalieri's principle says that if two three-dimensional figures have the same height and have the same cross-sectional area at every level, they have the same volume.



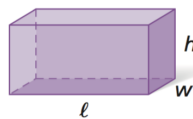
A right prism and an oblique prism with the same base and height have the same volume.

Volume of a Prism

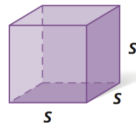
The volume of a prism with base area B and height h is $V = Bh$.



The volume of a right rectangular prism with length ℓ , width w , and height h is $V = \ell wh$.

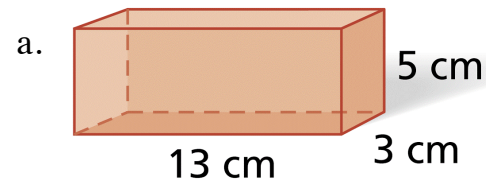


The volume of a cube with edge length s is $V = s^3$.



Example 1

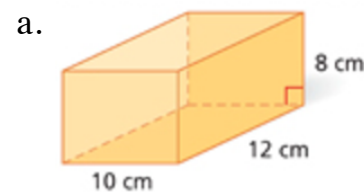
Find the volume of each prism.



b. A cube with edge length 15 in.

Check for Understanding

Find the volume of each prism.



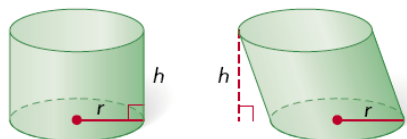
b. A cube with edge length 10 c.

Cavalieri's principle also relates to cylinders. The two stacks have the same number of CDs, so they have the same volume.



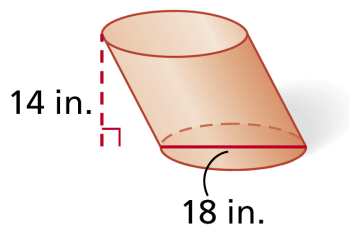
Volume of a Cylinder

The volume of a cylinder with base area B , radius r , and height h is $V = Bh$, or $V = \pi r^2 h$.



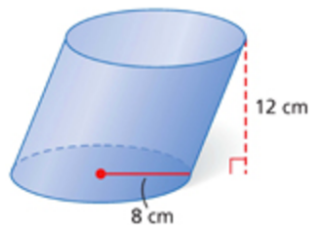
Example 2

Find the volume of the cylinder. Give your answers in terms of π and rounded to the nearest tenth.



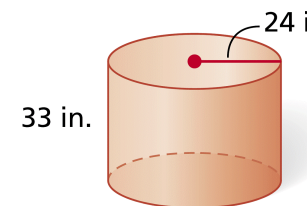
☑ Check for Understanding

Find the volume of the cylinder. Give your answers in terms of π and rounded to the nearest tenth.



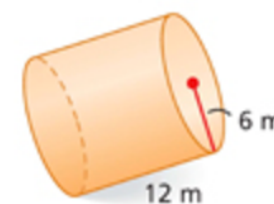
Example 3

The radius and height of the cylinder are multiplied by $\frac{2}{3}$. Describe the effect on the volume.



☑ Check for Understanding

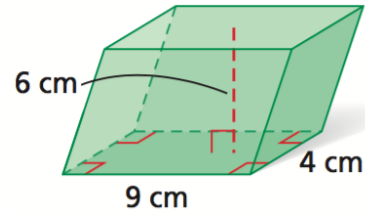
The radius and height of the cylinder are multiplied by $\frac{1}{2}$. Describe the effect on the volume.



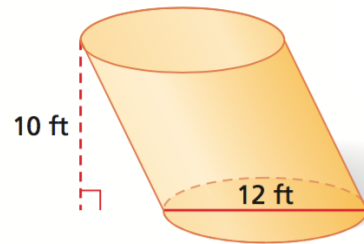


Guided Practice

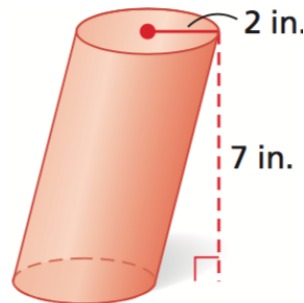
1. Find the volume of the prism.



2. Find the volume of the cylinder. Give your answers in terms of π and rounded to the nearest tenth.

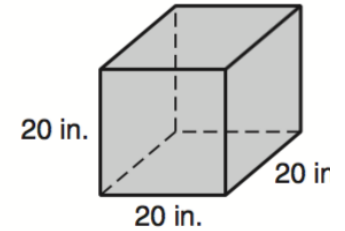


3. Describe the effect of change on the volume of the figure if the dimensions are tripled.

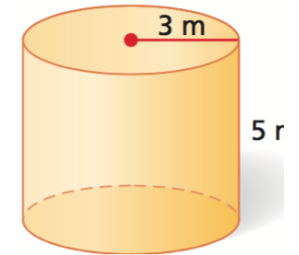


Independent Practice

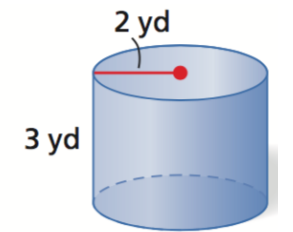
1. Find the volume of the prism.



2. Find the volume of the cylinder. Give your answers in terms of π and rounded to the nearest tenth.



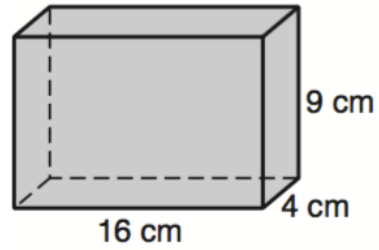
3. Describe the effect of change on the volume of the figure if the dimensions are multiplied by 5.



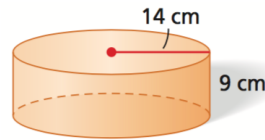


Home Work

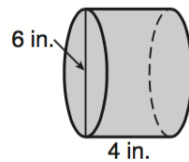
1. Find the volume of the prism.



2. Find the volume of the cylinder. Give your answers in terms of π and rounded to the nearest tenth.



3. Describe the effect of change on the volume of the figure if the dimensions are halved.



Enrichment

A cylindrical tank has a radius of 5 feet. The height of the water in the tank is 25 feet. When the drain plug is pulled, the water will drain at a rate of 30 gallons per minute. The water will stop draining when the water level reaches the height of the drain. Approximately how long will it take for the water to stop draining? $1\text{ft}^3 \approx 7.5\text{gallons}$

