

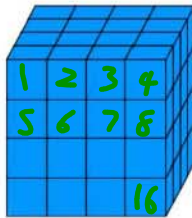
Geometry CC – Mr. Valentino  
 Unit 11 Day 4: Volume of Prisms and Cylinders

Name: \_\_\_\_\_  
 Date: \_\_\_\_\_ Per: \_\_\_\_\_

Aim: How can we find the volume of prisms and cylinders?

Do Now: How many 1 inch cubes can fit in the 4in cube?

$$4 \times 4 \times 4 = 64$$



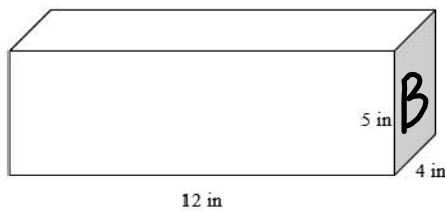
Explain your reasoning: \_\_\_\_\_

- 4 layers of 16
- length x width x height

Prism: A polyhedron with two congruent and parallel faces, which are called bases. The other faces are called lateral faces.

To find the volume of any prism:  $V = Bh$  ★ Big B - Area of the Base

1) How much water would you need to fill this tank?



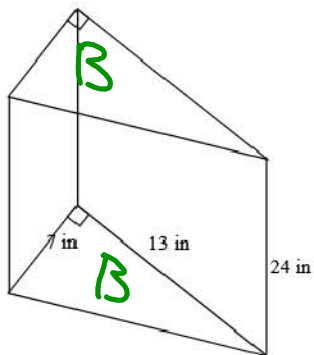
$$V = Bh$$

$$V = l \cdot w \cdot h$$

$$V = 20 \cdot 12$$

$$= 240 \text{ in}^3$$

2) How much water would you need to fill this tank?



$$V = Bh$$

$$V = \left(\frac{1}{2}bh\right) \cdot h$$

$$V = \frac{1}{2} \cdot 7 \cdot 13 \cdot 24$$

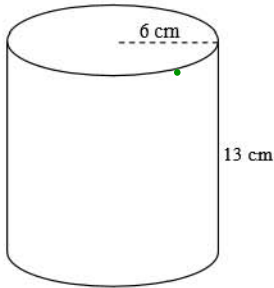
$$V = 1092 \text{ in}^3$$



Why isn't a cylinder a prism?

There are no lateral faces!

3) How much water would we need to fill this fish tank? (2 decimal places)



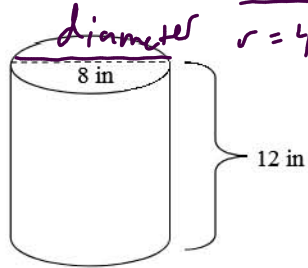
$$\star V = \pi r^2 h$$

$$V = \pi (6)^2 (13)$$

$$V = \pi (36) (13)$$

$$V = 1470.27 \text{ cm}^3$$

4) Find the volume of this can in terms of pi:



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

$$V = \pi (4)^2 (12)$$

$$V = \pi (16) (12)$$

$$V = 192 \pi \text{ in}^3$$

Practice Problems

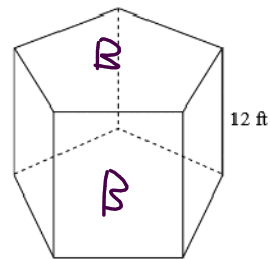
5) A rectangular prism has a length of 9 units, and a width of 8 units. If the volume of the prism is 936 cubic units, what is the height of the prism?

6) A rectangular prism has a length of 11 units, and its volume is 704 cubic units. its width and height are the same, find the remaining dimensions of the prism.

7) If this prism has a volume of  $684 \text{ ft}^3$ , what is the area of its base?

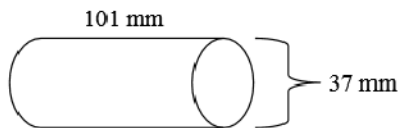
$$V = B h$$

$$684 = B (12)$$



~~8)~~ Tim has a rectangular prism with a length of 10 centimeters, a width of 2 centimeters, and an unknown height. He needs to build another rectangular prism with a length of 5 centimeters and the same height as the original prism. The volume of the two prisms will be the same. Find the width, in centimeters, of the new prism.

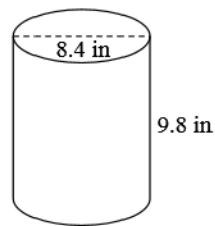
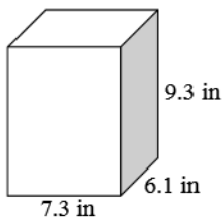
9) Find the volume of this cylinder in terms of pi:



10) The volume of a cylinder is  $468\pi$  cubic inches. If the cylinder's height is 13 inches, what is its radius?

11) The volume of a cylinder is 225 cubic inches. If the cylinder's diameter is 10 inches, what is the height of the cylinder in terms of pi?

12) Determine which popcorn container has a greater volume:



13) A can of soda is in the shape of a cylinder with a diameter of 6.4 cm and a height of 12.3 cm. How many cubic cm of liquid does the can hold?

14) The volume of a cylinder is  $128\pi$  cubic inches. If the cylinder's height is 8, what is the radius of the cylinder?