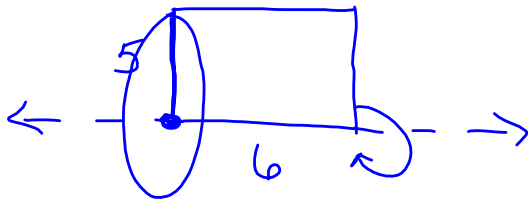


**DO NOW**

Which three-dimensional figure will result when a rectangle 6 inches long and 5 inches wide is continuously rotated about the longer side?

- ~~1) a rectangular prism with a length of 6 inches, width of 6 inches, and height of 5 inches~~
- ~~2) a rectangular prism with a length of 6 inches, width of 5 inches, and height of 5 inches~~
- 3) a cylinder with a radius of 5 inches and a height of 6 inches
- 4) a cylinder with a radius of 6 inches and a height of 5 inches



Dec 10-8:02 AM

Volume of a Solid

The volume of a solid is a measure of how much it will hold - measured in cubic units ( $\text{cm}^3$ ,  $\text{ft}^3$ ,  $\text{in}^3$ , etc.)

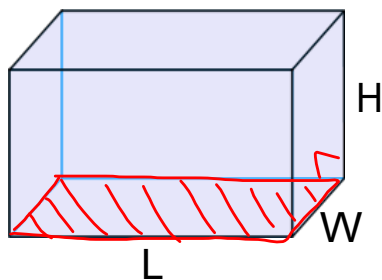
The volume of any prism is the area of one base (B) times the height of the prism

$$V = B h$$

$\downarrow$   
 area of  
 base  
 of  
 prism

Dec 10-8:06 AM

## Volume of a Rectangular Prism



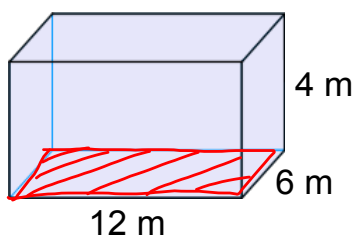
$$V = \underbrace{\text{Area of the base}} \cdot \text{height}$$

$$V = \underline{\underline{l \cdot w \cdot h}}$$

Dec 10-8:14 AM

## Volume of a Rectangular Prism

Find the volume of the rectangular prism below:



$$V = \textcircled{B}h$$

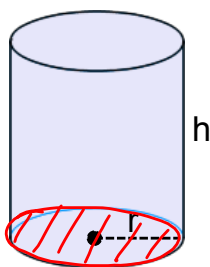
$$V = l \cdot w \cdot h$$

$$V = (12 \cdot 6) \cdot 4$$

$$V = 288 \text{ m}^3$$

Dec 10-8:20 AM

## Volume of a Right Cylinder



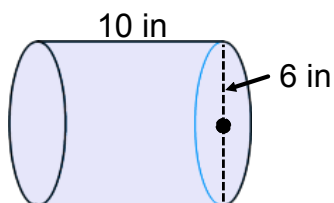
$$V = \underbrace{\text{Area of the base}} \cdot \text{height}$$

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

Dec 10-8:21 AM

## Volume of a Right Cylinder

Find the volume of the cylinder below in terms of  $\pi$



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

$$V = \pi (3)^2 (10)$$

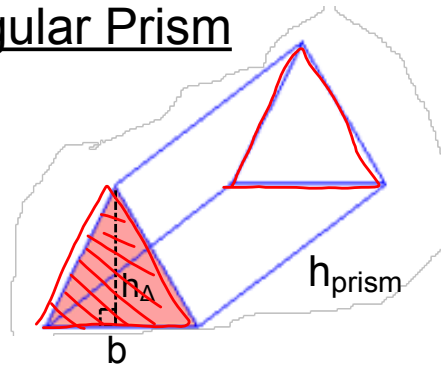
$$V = 90\pi \text{ in}^3$$

Dec 10-8:23 AM

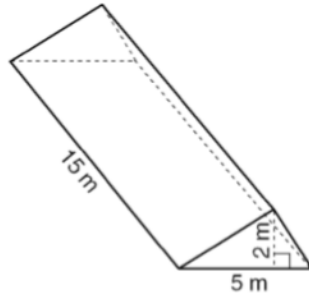
## Volume of a Triangular Prism

$$V = B \cdot h$$

$$V = \left[ \frac{1}{2} (b \cdot h_{\Delta}) \right] \cdot h_{\text{prism}}$$



**EX:** Find the volume of the triangular prism below



$$V = \frac{1}{2} (5)(2)(15)$$

$$V = 75 \text{ m}^3$$

May 10-10:09 AM

Mike buys his ice cream packed in a rectangular prism-shaped carton, while Carol buys hers in a cylindrical-shaped carton. The dimensions of the prism are 5 inches by 3.5 inches by 7 inches. The cylinder has a diameter of 5 inches and a height of 7 inches. Which container holds more ice cream? Justify your answer.

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

$$V = (5)(3.5)(7)$$

$$V = 122.5 \text{ in}^3$$

Cylindrical

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

$$V = \pi (2.5)^2 (7)$$

$$V = 137.444... \text{ in}^3$$

Determine, to the nearest tenth of a cubic inch, how much more ice cream the larger container holds.

$$137.444... - 122.5$$

$$14.9$$

Jan 2-4:55 AM

A soup can is in the shape of a cylinder. The can has a volume of  $342 \text{ cm}^3$  and a diameter of 6 cm. Express the height of the can in terms of  $\pi$ .

$$342 = \pi r^2 h$$
$$\frac{342}{9} = \frac{9\pi \cdot h}{9}$$

$$h = 38\pi$$

Determine the maximum number of soup cans that can be stacked on their base between two shelves if the distance between the shelves is exactly 36 cm. Explain your answer.



$$\frac{36}{6} = 6$$

Dec 10-8:34 AM