

Problem of the Day: Find the volume of a cylindrical cup with a diameter of 4 inches and height of 8 inches. Leave in terms of  $\pi$ .

Plan for the Day: Integer quiz (if needed)

Collect Homework Week 6 & Choose My Grade

Notes on volume of pyramids and cones

More practice with volume

Objective: We will be able to find the volume of pyramids and cones.

Good luck football, cheerleaders, and band vs. Fairfield!!

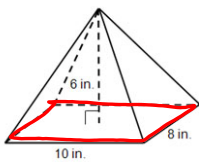
Since pyramids do not have the same width the whole way up, the formula is different from the formula for a prism.

Volume of a pyramid-

$$V = \frac{1}{3}Bh \text{ or } V = \frac{Bh}{3},$$

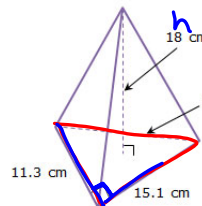
where B is the area of the base and h is the height.

Example 1: Find the volume of the object.



$$\begin{aligned} V &= \frac{1}{3}Bh & B &= bh \\ V &= \frac{1}{3} \hat{b} \cdot h \\ V &= \frac{1}{3} \cdot 8 \cdot 10 \cdot 6 \\ V &= \frac{1}{3} \cdot 480 & 2 \cdot 8 \cdot 10 \\ V &= 160 \text{ in.}^3 \end{aligned}$$

Example 2: Find the volume of the object.



$$\begin{aligned} V &= \frac{1}{3}Bh & B &= \frac{1}{2}bh \\ V &= \frac{1}{3} \hat{b} \cdot h \\ V &= \frac{1}{3} \cdot \frac{1}{2} \cdot 11.3 \cdot 15.1 \cdot 18 \\ V &= 511.89 \text{ cm}^3 \end{aligned}$$

Cones have the same formula for volume that pyramids do,  $V = \frac{1}{3}Bh$  or  $V = \frac{Bh}{3}$

But since the base of a cone is a circle, the formula changes to be

$$V = \frac{1}{3}\pi r^2 h \text{ or } V = \frac{\pi r^2 h}{3}$$

Example 3: A large ice cream cone at Sweet Treats has a diameter of 3 inches and a height of 6 inches. What is the volume of the cone to the nearest tenth?



$$\begin{aligned} d &= 3 & r &= 1.5 \\ V &= \frac{1}{3}Bh & B &= \pi r^2 \\ V &= \frac{1}{3} \hat{r} \cdot h \\ V &= \frac{1}{3} \cdot \pi \cdot 1.5^2 \cdot 6 \\ V &= \frac{1}{3} \cdot \pi \cdot 2.25 \cdot 6 \\ V &= 14.1 \text{ in.}^3 \end{aligned}$$

Example 3: Hillary is filling mini-megaphones with candy to throw out at a football game. She wants to stuff the whole megaphone with candy and then pull plastic wrap around the end to keep the candy inside. If the base of the megaphone has a diameter of 10 inches and a height of 7 inches, how much candy can she put in there?



$$d = 10$$

$$r = 5$$

$$V = \frac{1}{3} Bh$$

$$B = \pi r^2$$

$$V = \frac{1}{3} \pi r^2 h$$

$$V = \frac{1}{3} \cdot \pi \cdot 5^2 \cdot 7$$

$$V = \frac{1}{3} \cdot \pi \cdot 25 \cdot 7$$

$$V = 183.2 \text{ in}^3$$

Example 4: The construction cone is filled with sand to help keep it in place. If the height of the cone is 18 in. and the diameter is 11 in., how many cubic inches of sand are in the cone?

