

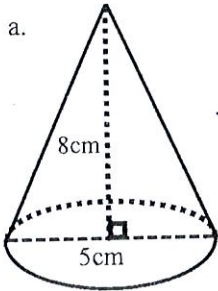
Volume of a Cone

Big Idea: A cone is $\frac{1}{3}$ the volume of a cylinder with the same diameter and height.

Volume of a Cylinder = $\pi r^2 h$

Volume of a Cone = $\frac{\pi r^2 h}{3}$

Examples:



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

$$V = \frac{\pi (2.5)^2 \cdot 8}{3}$$

$$V = \frac{6.25 \cdot 8 \cdot \pi}{3}$$

$$V = \frac{50\pi}{3}$$

$V = 16 \frac{2}{3} \pi \text{ cm}^3$ Exact
 $V \approx 52 \frac{1}{3} \text{ cm}^3$ Approx.

3m
 14m
 ?

$$a^2 + b^2 = c^2$$

$$3^2 + b^2 = 14^2$$

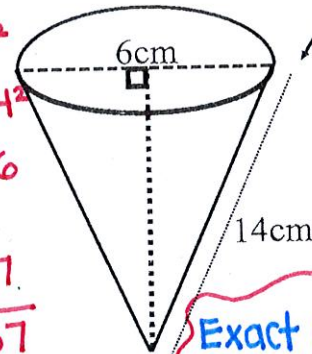
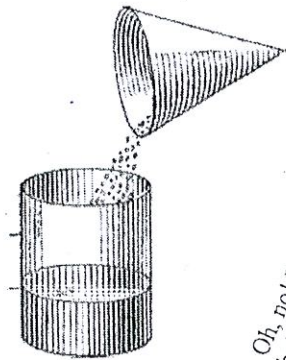
$$9 + b^2 = 196$$

$$-9 \quad -9$$

$$b^2 = 187$$

$$b = \sqrt{187}$$

$$b \approx 13.67$$



Oh, no! We don't have the height, what can we do!
 ---Pythagorean Theorem---

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

$$V = \frac{\pi 3^2 \cdot 13.67}{3}$$

$$V = \frac{\pi 93 \cdot 13.67}{31}$$

Exact $V = 41.01 \pi \text{ cm}^3$
 Approx. $V \approx 128.77 \text{ cm}^3$