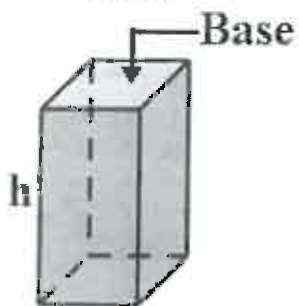


## Volume

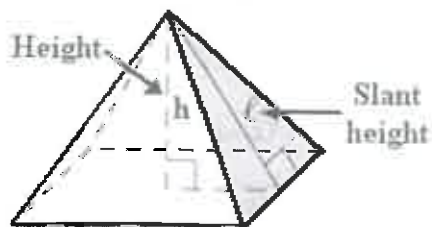
Volume: \_\_\_\_\_

Prism



$$\text{Volume} = (\text{Base Area}) * (\text{Height})$$

Regular Pyramid



$$\text{Volume} = \frac{1}{3} (\text{Base Area}) * (\text{Height})$$

Right Cylinder



$$\begin{aligned} \text{Volume} &= (\text{Base Area}) * (\text{Height}) \\ &= \pi r^2 h \end{aligned}$$

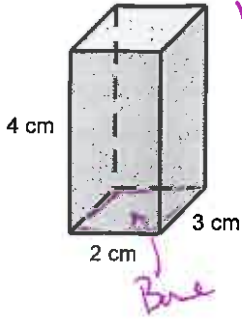
Right Cone



$$\begin{aligned} \text{Volume} &= \frac{1}{3} (\text{Base Area}) * (\text{Height}) \\ &= \frac{1}{3} \pi r^2 h \end{aligned}$$

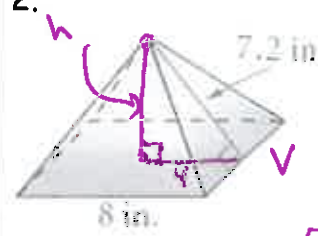
Examples: Find the Volume of each.

1.



$$\begin{aligned}
 V &= (\text{Base Area})(\text{height}) \\
 &= (2 \cdot 3)(4) \\
 &= 6 \cdot 4 \\
 &= 24 \text{ cm}^3
 \end{aligned}$$

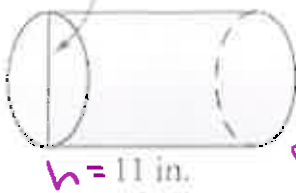
2.



$$\begin{aligned}
 h^2 + 4^2 &= 7.2^2 \\
 h^2 + 16 &= 51.84 \\
 h^2 &= 35.84 \\
 h &= \sqrt{35.84}
 \end{aligned}$$

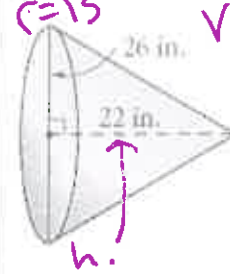
$$\begin{aligned}
 V &= \frac{1}{3}(\text{Base Area})(\text{height}) \\
 V &= \frac{1}{3}(8 \cdot 8)(\sqrt{35.84}) \\
 &\approx 127.7 \text{ in}^3
 \end{aligned}$$

3.  $r = 3.5$



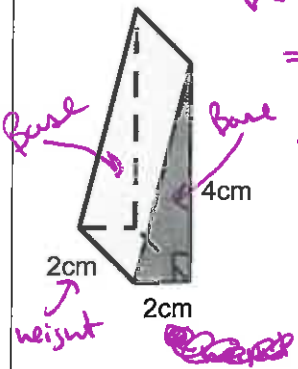
$$\begin{aligned}
 V &= (\text{Base Area})(\text{height}) \\
 &= \pi r^2 (H) \\
 &= \pi (3.5)^2 (11) \\
 &\approx 423.3 \text{ in}^3
 \end{aligned}$$

4.

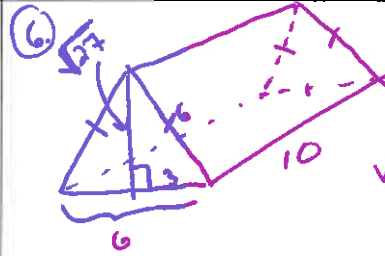


$$\begin{aligned}
 V &= \frac{1}{3}(\text{Base Area})(\text{height}) \\
 &= \frac{1}{3}(13^2 \pi)(22) \\
 &\approx 3893.5 \text{ in}^3
 \end{aligned}$$

5.



$$\begin{aligned}
 V &= (\text{Base Area})(\text{height}) \\
 &= \left(\frac{1}{2} \cdot 2 \cdot 2\right)(2) \\
 &= 4 \cdot 2 \\
 &= 8 \text{ cm}^2
 \end{aligned}$$



$$\begin{aligned}
 V &= (\text{Base Area})(\text{height}) \\
 &= \frac{1}{2}(6 \cdot 6\sqrt{27})(10) \\
 &\approx 155.9 \text{ units}^3
 \end{aligned}$$

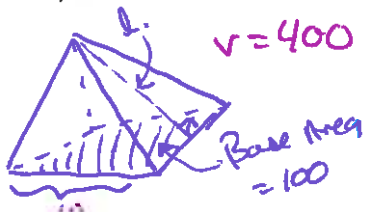
7. The volume of a right cylinder is  $144\pi \text{ m}^3$ . If the height is 4 m, what is the measure of the radius of the base?



$$V = 144\pi$$

$$\begin{aligned}
 V &= \pi r^2 h \\
 144\pi &= \pi(r^2)(4) \quad \leftarrow \text{solve for } r \\
 36 &= r^2 \\
 r &= 6 \text{ cm}
 \end{aligned}$$

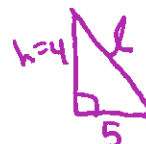
8. The volume of a regular pyramid is  $400 \text{ ft}^3$ . If the area of the base of the pyramid is  $100 \text{ ft}^2$ , what is the measure of the slant height?



$$V = 400$$

$$\text{Base Area} = 100$$

$$\begin{aligned}
 V &= (\text{Base Area})(\text{height}) \\
 400 &= (100)(h) \\
 h &= 4 \text{ ft.}
 \end{aligned}$$



$$\begin{aligned}
 l^2 &= 4^2 + 5^2 \\
 l^2 &= 16 + 25 \\
 l^2 &= 41 \\
 l &= \sqrt{41} \text{ ft}
 \end{aligned}$$