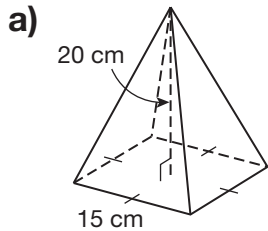
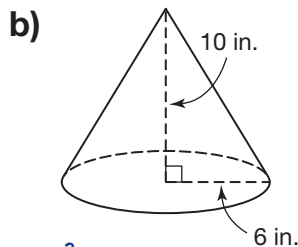


Mid-Chapter Review

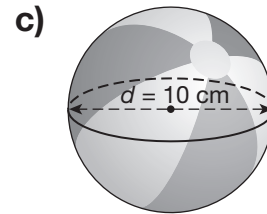
1. Determine the volume of each object.



$$\begin{aligned} V &= \frac{1}{3}(A_{\text{base}})(h) \\ &= \frac{1}{3}(15 \text{ cm})^2(20 \text{ cm}) \\ &= 1500 \text{ cm}^3 \end{aligned}$$



$$\begin{aligned} V &= \frac{\pi r^2 h}{3} \\ &= \frac{\pi(6 \text{ in.})^2(10 \text{ in.})}{3} \\ &= 376.991... \text{ cu in.}, \\ &\text{or about } 377 \text{ cu in.} \end{aligned}$$

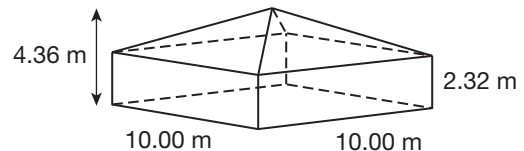


$$\begin{aligned} V &= \frac{4}{3}\pi r^3 \\ &= \frac{4}{3}\pi(5 \text{ cm})^3 \\ &= 523.598... \text{ cm}^3, \\ &\text{or about } 524 \text{ cm}^3 \end{aligned}$$

2. Describe two ways to estimate the volume of an object.

e.g., I could use a referent. I could estimate the object's measurements and use the appropriate formula to determine its volume using those measurements.

3. a) Daniel is a carpenter. He is framing a house with interior dimensions as shown. It costs about \$1.95/m³ to heat a home for a year. Estimate the heating cost for a year.



$$\begin{aligned} \text{e.g., } V &= lwh_{\text{prism}} + \frac{1}{3}(A_{\text{base}})(h_{\text{pyramid}}) \\ &= (10 \text{ m})(10 \text{ m})(2.32 \text{ m}) + \frac{1}{3}(10 \text{ m})(10 \text{ m})(2.04 \text{ m}) \\ &= 300 \text{ m}^3 \end{aligned}$$

$$\text{Cost: } 300 \text{ m}^3 \times \$1.95/\text{m}^3 = \$585$$

The heating cost is about \$585 for a year.

b) If Daniel doubled the length and width of the house, would the heating cost double?

No. e.g., If Daniel doubled the length and width, the volume would be 4 times the original heating. So the heating cost would be 4 times the original heating cost.