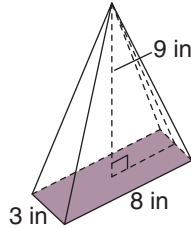


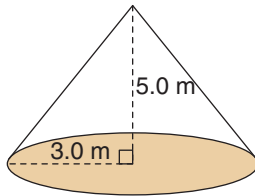


Check Up

1. Determine the volume of the right pyramid, to the nearest cubic inch.



2. Determine the volume of the right cone, to the nearest tenth of a cubic metre.

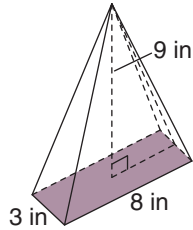


3. Determine the radius of a volleyball with a volume of $5\,575.3\text{ cm}^3$, to the nearest centimetre.



Compare your answers.

- Determine the volume of the right pyramid, to the nearest cubic inch.



Let $l = 8$ in, $w = 3$ in, and $h = 9$ in

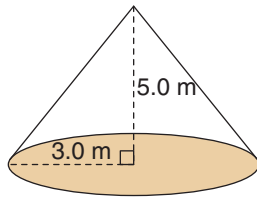
$$V_{\text{right rectangular pyramid}} = \frac{1}{3}lwh$$

$$V_{\text{right rectangular pyramid}} = \frac{1}{3} \cdot 8 \text{ in} \cdot 3 \text{ in} \cdot 9 \text{ in}$$

$$V_{\text{right rectangular pyramid}} = \frac{1}{3} \cdot 216 \text{ in}^3$$

$$V_{\text{right rectangular pyramid}} = 72 \text{ in}^3$$

- Determine the volume of the right cone, to the nearest tenth of a cubic metre.



Let $r = 3.0$ m, and $h = 5.0$ m

$$V_{\text{right cone}} = \frac{1}{3}\pi r^2 h$$

$$V_{\text{right cone}} = \frac{1}{3}\pi(3.0 \text{ m})^2 \cdot 5.0 \text{ m}$$

$$V_{\text{right cone}} = \frac{1}{3}\pi \cdot 45.0 \text{ m}^3$$

$$V_{\text{right cone}} \doteq 47.1 \text{ m}^3$$

3. Determine the radius of a volleyball with a volume of $5\,575.3\text{ cm}^3$, to the nearest centimetre.

$$\text{Let } V = 5\,575.3\text{ cm}^3$$

$$V_{\text{sphere}} = \frac{4}{3}\pi r^3$$

$$5\,575.3\text{ cm}^3 = \frac{4}{3}\pi r^3$$

$$3 \cdot 5\,575.3\text{ cm}^3 = \cancel{3} \cdot \left(\frac{4}{\cancel{3}}\right)\pi r^3$$

$$16\,725.9\text{ cm}^3 = 4\pi \cdot r^3$$

$$\frac{16\,725.9\text{ cm}^3}{4\pi} = \frac{\cancel{4}\pi}{\cancel{4}\pi} \cdot r^3$$

$$1\,331.004\dots\text{ cm}^3 = r^3$$

$$\sqrt[3]{1\,331.004\dots\text{ cm}^3} = \sqrt[3]{r^3}$$

$$11\text{ cm} \doteq r$$

The volleyball has a radius of approximately 11 cm.

Advancements in technology utilize the basics of volume in various ways. Manipulating formulas to solve for a desired variable is only one such way. Combining and manipulating formulas to find volumes of composite objects is another way, which will be discussed in the *Lesson 2.3*.

►► Multimedia



Additional video examples pertaining to this lesson are available.