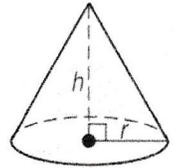


# Volume of a Cone

**Volumes of Cones** For a cone, the volume is one-third the product of the height and the area of the base. The base of a cone is a circle, so the area of the base is  $\pi r^2$ .



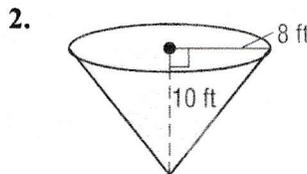
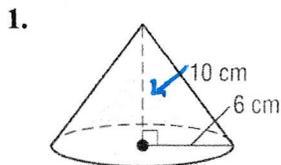
**Volume of a Cone** If a cone has a volume of  $V$  cubic units, a height of  $h$  units, and the bases have a radius of  $r$  units, then  $V = \frac{1}{3}\pi r^2 h$ .

**Example: Find the volume of the cone.**

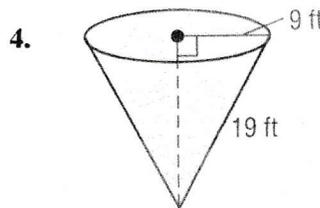
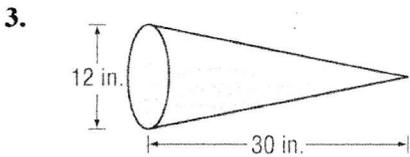
$$\begin{aligned}
 V &= \frac{1}{3}\pi r^2 h && \text{Volume of a cone} \\
 &= \frac{1}{3}\pi(5)^2 12 && r = 5, h = 12 \\
 &\approx 314.2 && \text{Simplify.}
 \end{aligned}$$

The volume of the cone is about 314.2 cubic centimeters.

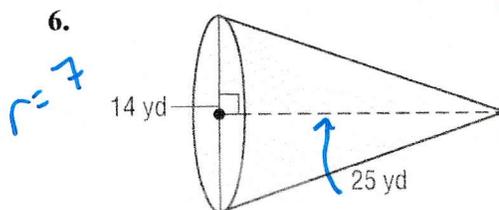
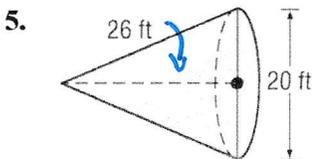
**Find the volume of each cone. Round to the nearest hundredth.**



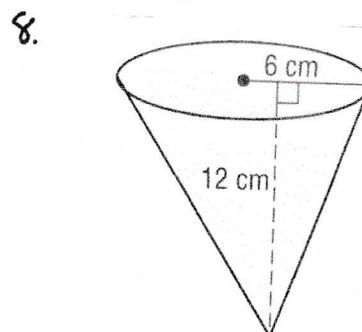
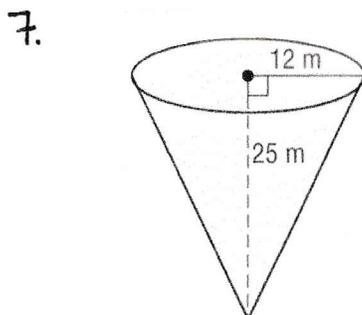
$$\begin{aligned}
 V &= \frac{1}{3}\pi 8^2 \cdot 10 \\
 &= 669.87 \text{ ft}^3
 \end{aligned}$$



$$\begin{aligned}
 V &= \frac{1}{3}\pi 9^2 \cdot 19 \\
 &= 1610.82 \text{ ft}^3
 \end{aligned}$$



$$\begin{aligned}
 V &= \frac{1}{3}\pi 7^2 \cdot 25 \\
 &= 1282.17 \text{ yd}^3
 \end{aligned}$$



$$\begin{aligned}
 V &= \frac{1}{3}\pi \cdot 6^2 \cdot 12 \\
 &= 452.16 \text{ cm}^3
 \end{aligned}$$