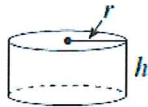
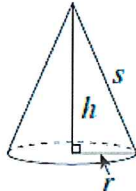
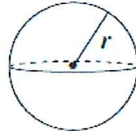


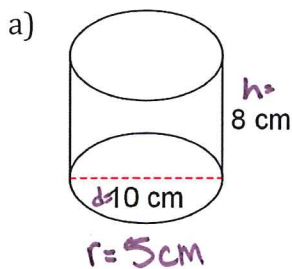
3.5 Volumes of Cylinders, Cones and Spheres

We will use these formulas to find the volumes of cylinders, cones and spheres.

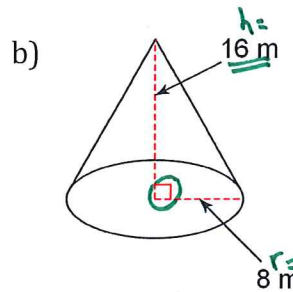
3D Figure	Volume
<p>Cylinder</p> 	$V = A_{\text{circle base}} \times \text{height}$ OR $V = \pi r^2 h$
<p>Cone</p> 	$V = \frac{1}{3} \times A_{\text{circle base}} \times \text{height}$ OR $V = \frac{1}{3} \pi r^2 h$
<p>Sphere</p> 	$V = \frac{4}{3} \pi r^3$

Examples

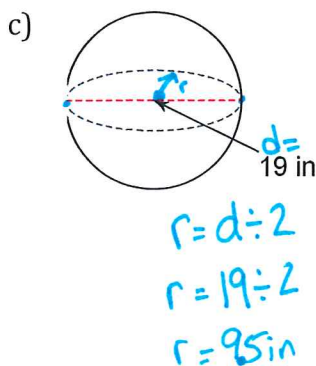
Ex 1. Find the volume of each of the following. Round to the nearest hundredth.



$$\begin{aligned}
 V &= \pi r^2 h \\
 &= \pi \times (5)^2 \times 8 \\
 &= 628.32 \text{ cm}^3
 \end{aligned}$$



$$\begin{aligned}
 V &= \frac{1}{3} \pi r^2 h \\
 &= \frac{1}{3} \times \pi \times (8)^2 \times 16 \\
 &= 1072.33 \text{ m}^3
 \end{aligned}$$



$$\begin{aligned}
 V &= \frac{4}{3} \pi r^3 \\
 &= \frac{4}{3} \times \pi \times (9.5)^3 \\
 &= 3591.36 \text{ in}^3
 \end{aligned}$$