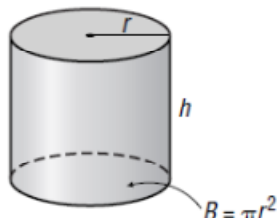


# 11-10 Study Guide and Intervention

## Volume of Cylinders

As with prisms, the area of the base of a cylinder tells the number of cubic units in one layer. The height tells how many layers there are in the cylinder. The volume  $V$  of a cylinder with radius  $r$  is the area of the base  $B$  times the height  $h$ .

$$V = Bh \text{ or } V = \pi r^2 h, \text{ where } B = \pi r^2$$

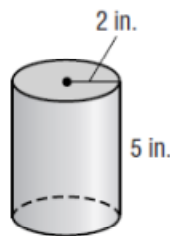


**Example** Find the volume of the cylinder. Use 3.14 for  $\pi$ . Round to the nearest tenth.

$$V = \pi r^2 h \quad \text{Volume of a cylinder}$$

$$V \approx 3.14(2)^2(5) \quad \text{Replace } \pi \text{ with 3.14, } r \text{ with 2, and } h \text{ with 5.}$$

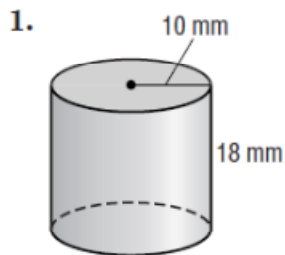
$$V \approx 62.8 \quad \text{Simplify.}$$



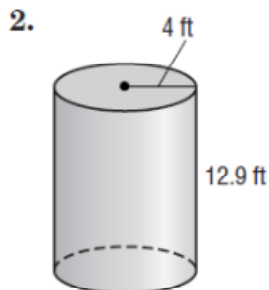
The volume is approximately 62.8 cubic inches. Check by using estimation.

### Exercises

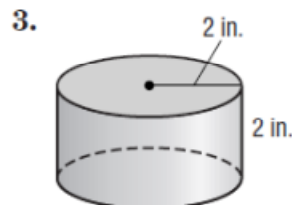
Find the volume of each cylinder. Use 3.14 for  $\pi$ . Round to the nearest tenth.



$$5,652.0 \text{ mm}^3$$



$$648.1 \text{ ft}^3$$



$$25.1 \text{ in}^3$$

4. radius = 9.5 yd  
height = 2.2 yd  
 $623.4 \text{ yd}^3$

5. diameter = 6 cm  
height = 11 cm  
 $310.9 \text{ cm}^3$

6. diameter =  $3\frac{2}{5}$  m  
height =  $1\frac{1}{4}$  m  
 $11.3 \text{ m}^3$