

Reteaching: Section 13-3

Volumes of Prisms and Cylinders

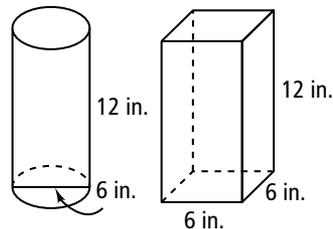
Problem

Which is greater: the volume of the cylinder or the volume of the prism?

$$\begin{aligned}
 \text{Volume of the cylinder: } V &= Bh \\
 &= \pi r^2 \cdot h \\
 &= \pi(3)^2 \cdot 12 \\
 &\approx 339.3 \text{ in.}^3
 \end{aligned}$$

$$\begin{aligned}
 \text{Volume of the prism: } V &= Bh \\
 &= s^2 \cdot h \\
 &= 6^2 \cdot 12 \\
 &= 432 \text{ in.}^3
 \end{aligned}$$

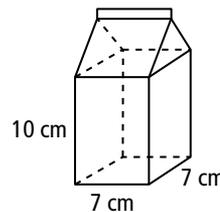
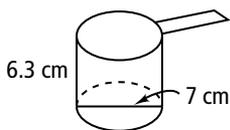
The volume of the prism is greater.



Exercises

Find the volume of each object.

- the rectangular prism part of the milk container
- the cylindrical part of the measuring cup



Find the volume of each of the following. Round your answers to the nearest tenth, if necessary.

- a square prism with base length 7 m and height 15 m
- a cylinder with radius 9 in. and height 10 in.
- a triangular prism with height 14 ft and a right triangle base with legs measuring 9 ft and 12 ft
- a cylinder with diameter 24 cm and height 5 cm

Reteaching (continued)

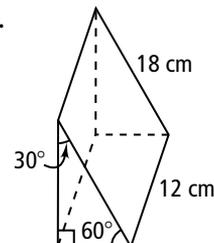
Volumes of Prisms and Cylinders

Problem

What is the volume of the triangular prism?

Sometimes the height of a triangular base in a triangular prism is not given. Use what you know about right triangles to find the missing value. Then calculate the volume as usual.

- | | |
|---------------------------|------------------------------|
| hypotenuse = 18 cm | Given |
| short leg = 9 cm | 30°-60°-90° triangle theorem |
| long leg = $9\sqrt{3}$ cm | 30°-60°-90° triangle theorem |



Volume of prism: $V = Bh$

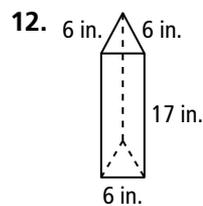
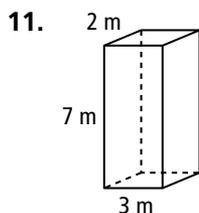
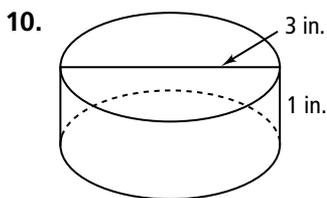
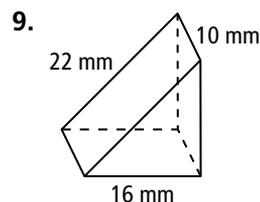
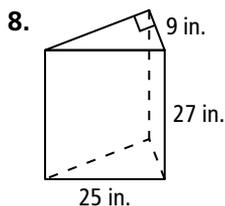
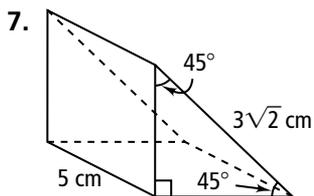
$$V = \left(\frac{1}{2}\right)(9)(9\sqrt{3})(12)$$

$$V \approx 841.8 \text{ cm}^3$$

The volume of the triangular prism is about 841.8 cm^3 .

Exercises

Find the volume of each prism. Round to the nearest tenth.



Find the volume of each composite figure to the nearest tenth.

