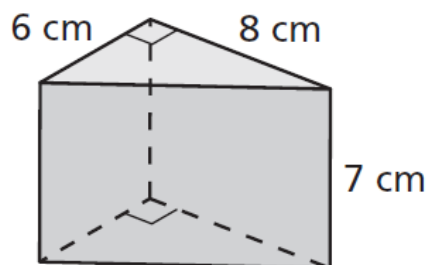
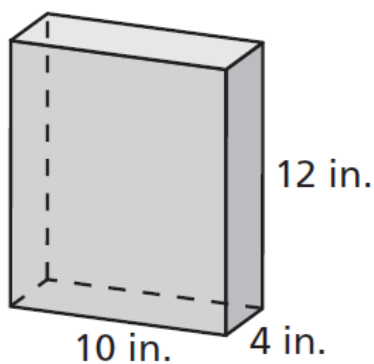


Find the volume of the solid.

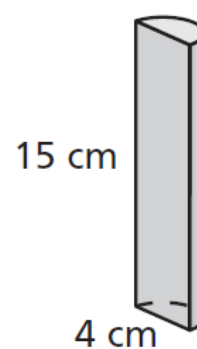
1.



2.



3.



## **Essential Question**

How can you find the volume of a prism or cylinder that is not a right prism or right cylinder?

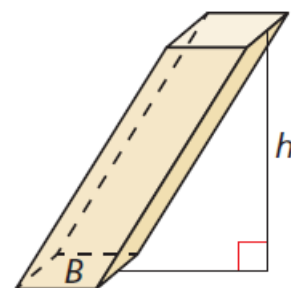
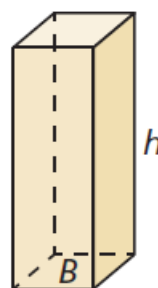
## Core Concept

### Volume of a Prism

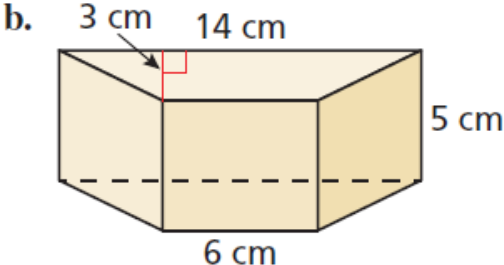
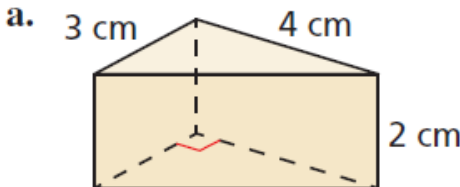
The volume  $V$  of a prism is

$$V = Bh$$

where  $B$  is the area of a base and  $h$  is the height.



Find the volume of each prism.



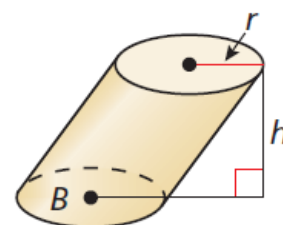
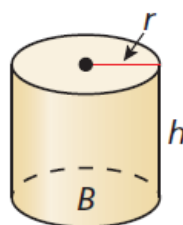
## Core Concept

### Volume of a Cylinder

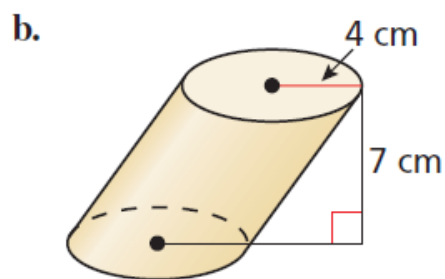
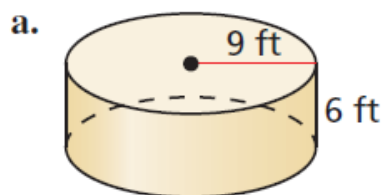
The volume  $V$  of a cylinder is

$$V = Bh = \pi r^2 h$$

where  $B$  is the area of a base,  $h$  is the height, and  $r$  is the radius of a base.

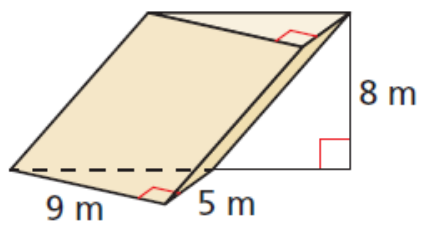


Find the volume of each cylinder.

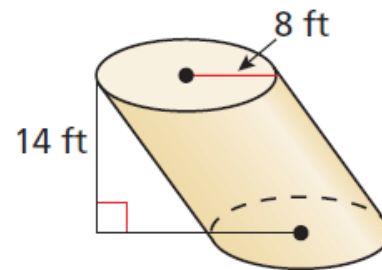


Find the volume of the solid.

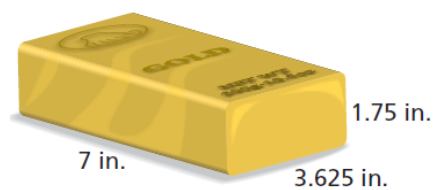
1.



2.

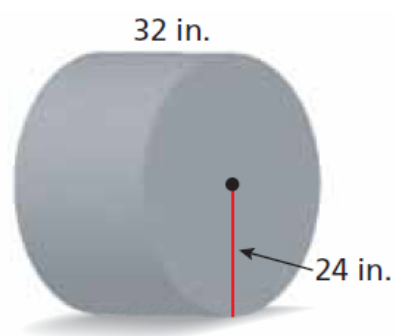


The diagram shows the dimensions of a standard gold bar at Fort Knox. Gold has a density of 19.3 grams per cubic centimeter. Find the mass of a standard gold bar to the nearest gram.

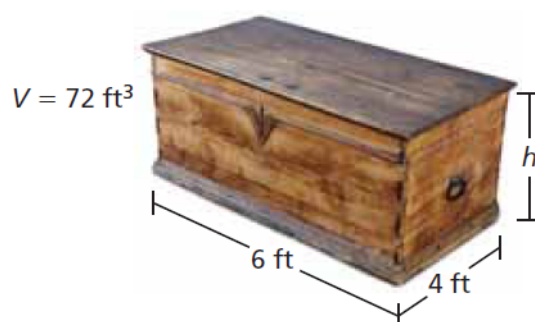




3. The diagram shows the dimensions of a concrete cylinder. Concrete has a density of 2.3 grams per cubic centimeter. Find the mass of the concrete cylinder to the nearest gram.



You are building a rectangular chest.  
You want the length to be 6 feet, the  
width to be 4 feet, and the volume to  
be 72 cubic feet. What should the  
height be?



You are building a 6-foot-tall dresser. You want the volume to be 36 cubic feet. What should the area of the base be? Give a possible length and width.



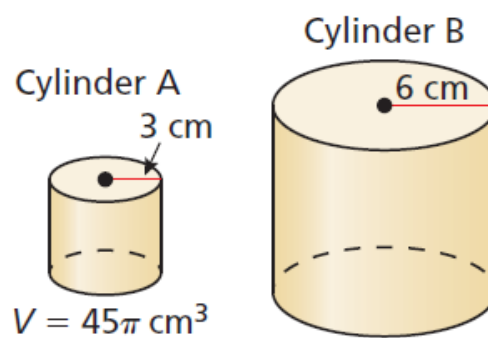
4. **WHAT IF?** In Example 4, you want the length to be 5 meters, the width to be 3 meters, and the volume to be 60 cubic meters. What should the height be?

5. **WHAT IF?** In Example 5, you want the height to be 5 meters and the volume to be 75 cubic meters. What should the area of the base be? Give a possible length and width.

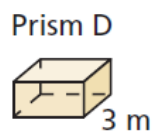
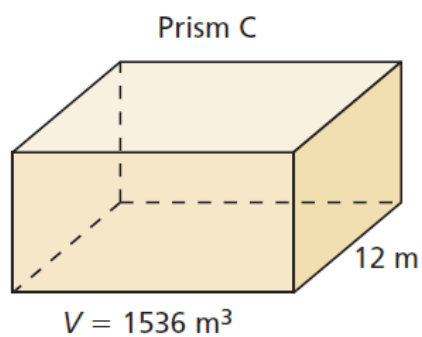
 **Core Concept****Similar Solids**

Two solids of the same type with equal ratios of corresponding linear measures, such as heights or radii, are called **similar solids**. The ratio of the corresponding linear measures of two similar solids is called the *scale factor*. If two similar solids have a scale factor of  $k$ , then the ratio of their volumes is equal to  $k^3$ .

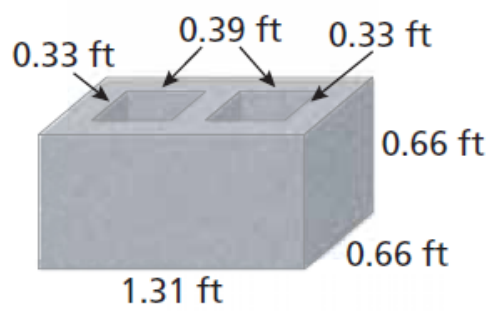
Cylinder A and cylinder B are similar.  
Find the volume of cylinder B.



6. Prism C and prism D are similar. Find the volume of prism D.

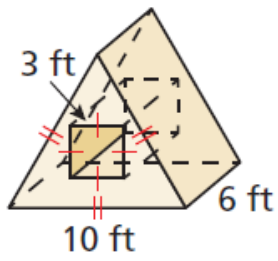


Find the volume of the concrete block.





7. Find the volume of the composite solid.



- **Exit Ticket:** Assume the Leaning Tower of Pisa is approximately a cylinder of height 55.9 meters and diameter of 15.5 meters. Find its volume.