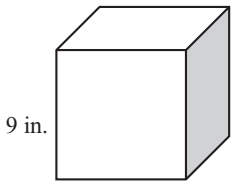
NAME_____

Module 13 **Perimeter, Area, and Volume**
Lesson 5 **Volume: Prisms, Cylinders, and Spheres**

Independent Practice 13.5

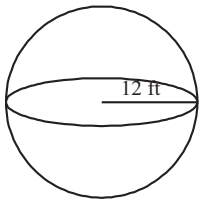
Find the volume.

1.



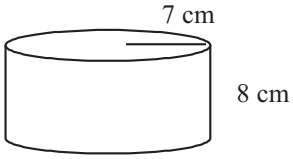
729 in.^{3}

2.



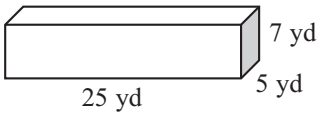
About 7,234.56 ft^3

3.



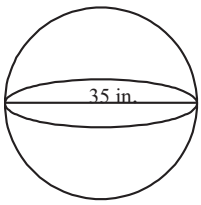
About 1,230.88 cm^3

4.



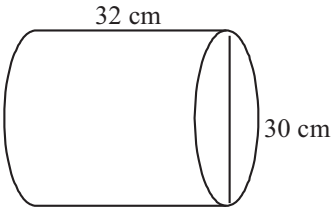
875 yd^3

5.



About 22,437.91 in.^{3}

6.



About 22,608 cm^3

7. The volume of a cube is 125 ft^3. What is the length of a side of the cube?

The length of the side of the cube is five feet.

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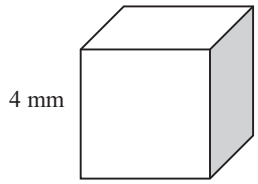
8. A cereal box measures 3 in. by 8 in. by 10 in. What is the volume of the cereal box?

The volume of the cereal box is 240 cubic inches.

9. A cylinder has a volume of about 4,710 ft^3 and a radius of 10 ft. What is the approximate height of the cylinder?

The height of the cylinder is about 15 feet.

10. All the lengths of the sides of the cube below are doubled. How many times greater is the volume of the new cube than the original cube?

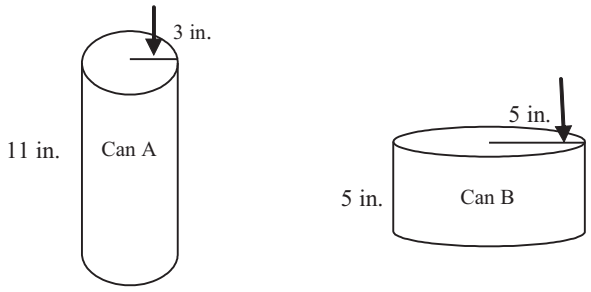


The new cube's volume is eight times greater than the volume of the original cube.

11. A rectangular storage bin has a volume of 2,310 cubic inches. The bin is 22 inches long and 15 inches wide. What is the height of the bin?

The height of the bin is seven inches.

12. Which of the cans below has the lesser volume? How much less volume?



Can A contains about 81.64 fewer cubic inches than Can B.

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Lesson 5 **Volume: Prisms, Cylinders, and Spheres**

Journal

1. Explain how to use unit cubes to find the volume of a cube with a side length of 10 units. Then, tell how to find the volume by using a formula.

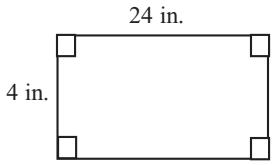
2. How is the formula for finding the volume of a rectangular prism similar to the formula for finding the volume of a cylinder?

3. Explain how to find volume of a sphere if you are given the diameter of the sphere.

Cumulative Review

Find the area and perimeter.

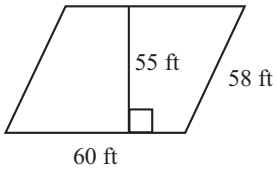
1.



$P = 56$ in.

$A = 96$ in.^{2}

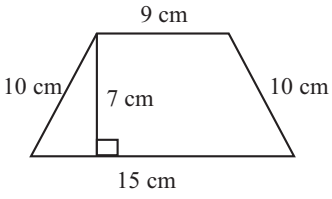
2.



$P = 236$ ft

$A = 3{,}300$ ft^2

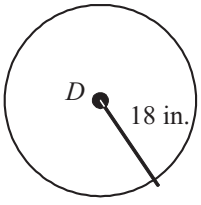
3.



$P = 44$ cm

$A = 84$ cm^2

4. Circle D



$C \approx 113.10$ in.

$A \approx 1{,}017.88$ in.^{2}

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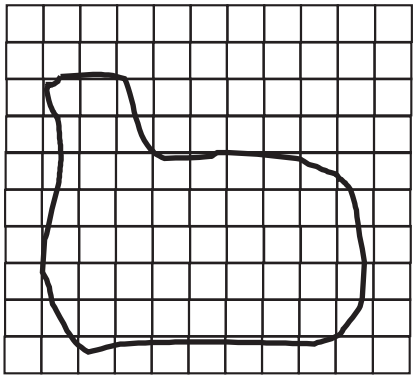
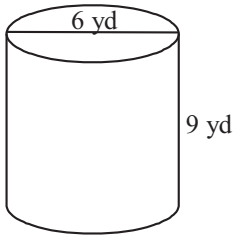
5. Estimate the area of the shape.
Each ☐ is 1 mi^2.



About 46 mi^2

6. Find the surface area of the cylinder.



About 226.08 yd^2

Possible Journal Answers

1. To cover the base with unit cubes would require laying down a layer of 100 cubes because it would have 10 rows and 10 columns of cubes and $10 \times 10 = 100$. Because the height is 10, 10 layers of 100 cubes would be needed to fill the cube. Because $10 \times 100 = 1{,}000$, the volume of the cube is 1,000 cubic units.

The formula for the volume of a cube is $V = e^3$, where e is the length of an edge. Since $10^3 = 1{,}000$, the volume is 1,000 cubic units.

2. The formula for finding the volume of a rectangular prism is $V = lwh$. The formula for finding the volume of a cylinder is $\pi r^2 h$. Both formulas require multiplying the area of the base of the solid by the height of the solid because the area of a rectangle is found by multiplying the length by the width and the area of a circle is found by multiplying π times the radius squared.

3. To find the volume of a sphere, given its diameter, first divide the diameter by two to find the radius. Then, cube the radius and multiply this value by $\frac{4}{3}\pi$.

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