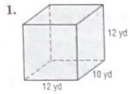


NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

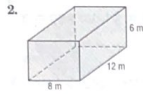
**12-2 Skills Practice**

**Surface Areas of Prisms and Cylinders**

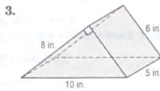
Find the lateral area and surface area of each prism. Round to the nearest tenth if necessary.



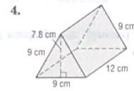
$L = 480 \text{ yd}^2$  (square base)  
 $L = 528 \text{ yd}^2$  (rectangular base)  
 $S = 768 \text{ yd}^2$



$L = 240 \text{ m}^2$  ( $8 \times 12$  base)  
 $L = 288 \text{ m}^2$  ( $12 \times 6$  base)  
 $L = 336 \text{ m}^2$  ( $8 \times 6$  base)  
 $S = 432 \text{ m}^2$



$L = 120 \text{ in}^2$   
 $S = 168 \text{ in}^2$



$L = 324 \text{ cm}^2$   
 $S = 394.2 \text{ cm}^2$

Find the lateral area and surface area of each cylinder. Round to the nearest tenth.



$L \approx 377.0 \text{ in}^2$   
 $S \approx 603.2 \text{ in}^2$



$L \approx 25.1 \text{ m}^2$   
 $S \approx 50.3 \text{ m}^2$



$L \approx 37.7 \text{ yd}^2$   
 $S \approx 94.2 \text{ yd}^2$



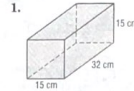
$L \approx 603.2 \text{ in}^2$   
 $S \approx 1005.3 \text{ in}^2$

NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

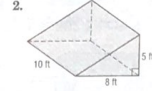
**12-2 Practice**

**Surface Areas of Prisms**

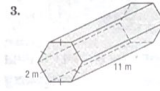
Find the lateral area and surface area of each prism. Round to the nearest tenth if necessary.



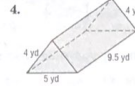
$L = 1920 \text{ cm}^2$  (square base) or  
 $L = 1410 \text{ cm}^2$  (rectangular base);  
 $S = 2370 \text{ cm}^2$



$L = 224.3 \text{ ft}^2$ ;  
 $S = 264.3 \text{ ft}^2$



$L = 132 \text{ m}^2$ ;  $S \approx 152.8 \text{ m}^2$

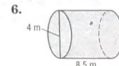


$L = 123.5 \text{ yd}^2$ ;  $S \approx 139.1 \text{ yd}^2$

Find the lateral area and surface area of each cylinder. Round to the nearest tenth.



$L \approx 219.9 \text{ ft}^2$ ;  
 $S \approx 377.0 \text{ ft}^2$



$L \approx 106.8 \text{ m}^2$ ;  
 $S \approx 131.9 \text{ m}^2$



$L \approx 1014.7 \text{ in}^2$ ;  
 $S \approx 1581.8 \text{ in}^2$



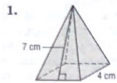
$L \approx 2261.9 \text{ m}^2$ ;  
 $S \approx 3166.7 \text{ m}^2$

NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

**12-3 Skills Practice**

**Surface Areas of Pyramids and Cones**

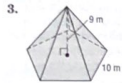
Find the lateral area and surface area of each regular pyramid. Round to the nearest tenth if necessary.



$L = 56 \text{ cm}^2$   
 $S = 72 \text{ cm}^2$



$L = 480 \text{ in}^2$   
 $S = 646.3 \text{ in}^2$



$L \approx 283.2 \text{ m}^2$   
 $S \approx 455.3 \text{ m}^2$



$L \approx 389.0 \text{ ft}^2$   
 $S \approx 585.0 \text{ ft}^2$

Find the lateral area and surface area of each cone. Round to the nearest tenth.



$L \approx 219.9 \text{ m}^2$   
 $S \approx 298.5 \text{ m}^2$



$L \approx 845.9 \text{ ft}^2$   
 $S \approx 1160.1 \text{ ft}^2$



$L \approx 527.8 \text{ in}^2$   
 $S \approx 728.8 \text{ in}^2$



$L \approx 480.7 \text{ mm}^2$   
 $S \approx 735.1 \text{ mm}^2$

NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

**12-3 Practice**

**Surface Areas of Pyramids and Cones**

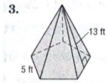
Find the lateral area and surface area of each regular pyramid. Round to the nearest tenth if necessary.



$L = 180 \text{ yd}^2$ ;  $S = 261 \text{ yd}^2$



$L = 126 \text{ m}^2$ ;  $S \approx 147.2 \text{ m}^2$

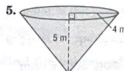


$L = 162.5 \text{ ft}^2$ ;  $S \approx 205.5 \text{ ft}^2$



$L \approx 60 \text{ cm}^2$ ;  $S \approx 76.2 \text{ cm}^2$

Find the lateral area and surface area of each cone. Round to the nearest tenth if necessary.



$L \approx 80.5 \text{ m}^2$ ;  $S \approx 130.7 \text{ m}^2$



$468.8 \text{ cm}^2$ ;  $S \approx 640.7 \text{ cm}^2$

7. Find the surface area of a cone if the height is 14 centimeters and the slant height is 16.4 centimeters.  
**669.3 cm<sup>2</sup>**

8. Find the surface area of a cone if the height is 12 inches and the diameter is 27 inches.  
**1338.6 in<sup>2</sup>**

9. **GAZEBOS** The roof of a gazebo is a regular octagonal pyramid. If the base of the pyramid has sides of 0.5 meter and the slant height of the roof is 1.9 meters, find the area of the roof.  
**3.8 m<sup>2</sup>**

10. **HATS** Cuong bought a conical hat on a recent trip to central Vietnam. The basic frame of the hat is 16 hoops of bamboo that gradually diminish in size. The hat is covered in palm leaves. If the hat has a diameter of 50 centimeters and a slant height of 32 centimeters, what is the lateral area of the conical hat?  
**about 2513.3 cm<sup>2</sup>**

NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

**12-4 Study Guide and Intervention** (continued)

**Volumes of Prisms and Cylinders**

**Volumes of Cylinders** The volume of a cylinder is the product of the height and the area of the base. When a solid is not a right solid, use Cavalieri's Principle to find the volume. The principle states that if two solids have the same height and the same cross sectional area at every level, then they have the same volume.



**Volume of a Cylinder** If a cylinder has a volume of  $V$  cubic units, a height of  $h$  units, and the bases have a radius of  $r$  units, then  $V = \pi r^2 h$ .

**Example 1** Find the volume of the cylinder.



$V = \pi r^2 h$   
 $= \pi(3)^2(4)$   
 $\approx 113.1$   
 The volume is about 113.1 cubic centimeters.

**Example 2** Find the volume of the oblique cylinder.



Use the Pythagorean Theorem to find the height of the cylinder.  
 $h^2 + 5^2 = 13^2$   
 $h^2 = 144$   
 $h = 12$   
 $V = \pi r^2 h$   
 $= \pi(4)^2(12)$   
 $\approx 603.2$   
 The Volume is about 603.2 cubic inches.

**Exercises**

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



12.6 ft<sup>3</sup>



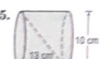
226.2 cm<sup>3</sup>



84.8 ft<sup>3</sup>



6283.2 ft<sup>3</sup>



652.4 cm<sup>3</sup>



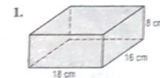
12.6 yd<sup>3</sup>

NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

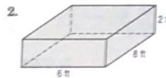
**12-4 Skills Practice**

**Volumes of Prisms and Cylinders**

Find the volume of each prism or cylinder. Round to the nearest tenth if necessary.



2304 cm<sup>3</sup>



96 ft<sup>3</sup>



90 m<sup>3</sup>



5280 in<sup>3</sup>



16,257.7 mm<sup>3</sup>



226.2 yd<sup>3</sup>

Find the volume of each oblique prism or cylinder. Round to the nearest tenth if necessary.



1224 cm<sup>3</sup>



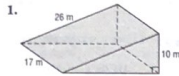
141.4 in<sup>3</sup>

NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

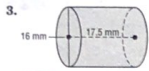
**12-4 Practice**

**Volumes of Prisms and Cylinders**

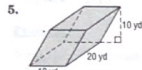
Find the volume of each prism or cylinder. Round to the nearest tenth if necessary.



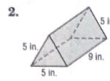
**2040 m<sup>3</sup>**



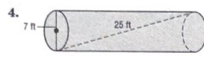
**3518.6 mm<sup>3</sup>**



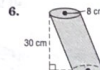
**2600 yd<sup>3</sup>**



**97.4 in<sup>3</sup>**



**923.6 ft<sup>3</sup>**



**6031.9 cm<sup>3</sup>**

7. **AQUARIUM** Mr. Gutierrez purchased a cylindrical aquarium for his office. The aquarium has a height of  $25\frac{1}{2}$  inches and a radius of 21 inches.

- What is the volume of the aquarium in cubic feet?  
**20.4 ft<sup>3</sup>**
- If there are 7.48 gallons in a cubic foot, how many gallons of water does the aquarium hold?  
**152.9 gal**
- If a cubic foot of water weighs about 62.4 pounds, what is the weight of the water in the aquarium to the nearest five pounds?  
**1275 lb**

NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

**12-4 Word Problem Practice**

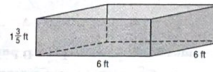
**Volumes of Prisms and Cylinders**

1. **TRASH CANS** The Meyer family uses a kitchen trash can shaped like a cylinder. It has a height of 18 inches and a base diameter of 12 inches. What is the volume of the trash can? Round your answer to the nearest tenth of a cubic inch.



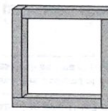
**2035.8 in<sup>3</sup>**

2. **BENCH** Inside a lobby, there is a piece of furniture for sitting. The furniture is shaped like a simple block with a square base 6 feet on each side and a height of  $1\frac{3}{5}$  feet.



What is the volume of the seat?  
**57.6 ft<sup>3</sup>**

3. **FRAMES** Margaret makes a square frame out of four pieces of wood. Each piece of wood is a rectangular prism with a length of 40 centimeters, a height of 4 centimeters, and a depth of 6 centimeters. What is the total volume of the wood used in the frame?



**3840 cm<sup>3</sup>**

4. **PENCIL GRIPS** A pencil grip is shaped like a triangular prism with a cylinder removed from the middle. The base of the prism is a right isosceles triangle with leg lengths of 2 centimeters. The diameter of the base of the removed cylinder is 1 centimeter. The heights of the prism and the cylinder are the same, and equal to 4 centimeters.



What is the exact volume of the pencil grip?

**$8 - \pi$  cm<sup>3</sup>**

5. **TUNNELS** Construction workers are digging a tunnel through a mountain. The space inside the tunnel is going to be shaped like a rectangular prism. The mouth of the tunnel will be a rectangle 20 feet high and 50 feet wide and the length of the tunnel will be 900 feet.

- What will the volume of the tunnel be?  
**900,000 ft<sup>3</sup>**
- If instead of a rectangular shape, the tunnel had a semicircular shape with a 50-foot diameter, what would be its volume? Round your answer to the nearest cubic foot.  
**883,573 ft<sup>3</sup>**



### 12-5 Study Guide and Intervention *(continued)*

#### Volumes of Pyramids and Cones

**Volumes of Cones** For a cone, the volume is one-third the product of the height and the area of the base. The base of a cone is a circle, so the area of the base is  $\pi r^2$ .

<b>Volume of a Cone</b>	If a cone has a volume of $V$ cubic units, a height of $h$ units, and the bases have a radius of $r$ units, then $V = \frac{1}{3}\pi r^2 h$ .
-------------------------	---



**Example** Find the volume of the cone.

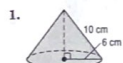
$$\begin{aligned}
 V &= \frac{1}{3}\pi r^2 h && \text{Volume of a cone} \\
 &= \frac{1}{3}\pi(5)^2 12 && r = 5, h = 12 \\
 &\approx 314.2 && \text{Simplify.}
 \end{aligned}$$



The volume of the cone is about 314.2 cubic centimeters.

#### Exercises

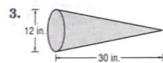
Find the volume of each cone. Round to the nearest tenth.



301.6 cm<sup>3</sup>



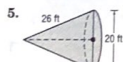
670.2 ft<sup>3</sup>



1131.0 in<sup>3</sup>



1332.9 yd<sup>3</sup>



2513.3 ft<sup>3</sup>

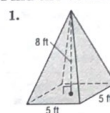


379.1 cm<sup>3</sup>

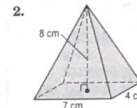
### 12-5 Skills Practice

#### Volumes of Pyramids and Cones

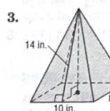
Find the volume of each pyramid or cone. Round to the nearest tenth if necessary.



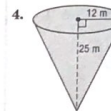
66.7 ft<sup>3</sup>



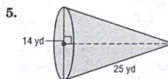
74.7 cm<sup>3</sup>



357.8 in<sup>3</sup>



3769.9 m<sup>3</sup>

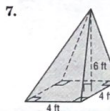


1231.5 yd<sup>3</sup>

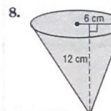


1210.6 mm<sup>3</sup>

Find the volume of each oblique pyramid or cone. Round to the nearest tenth if necessary.



31 ft<sup>3</sup>



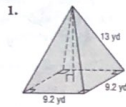
452.4 cm<sup>3</sup>

NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

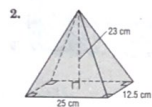
**12-5 Practice**

**Volumes of Pyramids and Cones**

Find the volume of each pyramid or cone. Round to the nearest tenth if necessary.



317.5 yd<sup>3</sup>



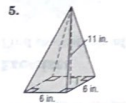
2395.8 cm<sup>3</sup>



1419.4 ft<sup>3</sup>



1104.6 mm<sup>3</sup>



132 in<sup>3</sup>



4688.3 ft<sup>3</sup>

**7. CONSTRUCTION** Mr. Ganty built a conical storage shed. The base of the shed is 4 meters in diameter and the height of the shed is 3.8 meters. What is the volume of the shed?  
about 15.9 m<sup>3</sup>

**8. HISTORY** The start of the pyramid age began with King Zoser's pyramid, erected in the 27th century B.C. In its original state, it stood 62 meters high with a rectangular base that measured 140 meters by 118 meters. Find the volume of the original pyramid.  
about 341,413.3 m<sup>3</sup>

NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

**12-5 Word Problem Practice**

**Volumes of Pyramids and Cones**

**1. ICE CREAM DISHES** The part of a dish designed for ice cream is shaped like an upside-down cone. The base of the cone has a radius of 2 inches and the height is 1.2 inches.



What is the volume of the cone? Round your answer to the nearest hundredth.  
5.03 in<sup>3</sup>

**2. GREENHOUSES** A greenhouse has the shape of a square pyramid. The base has a side length of 30 yards. The height of the greenhouse is 18 yards.



What is the volume of the greenhouse?  
5400 yd<sup>3</sup>

**3. TEEPEE** Caitlyn made a teepee for a class project. Her teepee had a diameter of 6 feet. The angle the side of the teepee made with the ground was 65°.



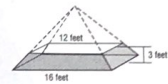
What was the volume of the teepee? Round your answer to the nearest hundredth.  
60.63 ft<sup>3</sup>

**4. SCULPTING** A sculptor wants to remove stone from a cylindrical block 3 feet high and turn it into a cone. The diameter of the base of the cone and cylinder is 2 feet.



What is the volume of the stone that the sculptor must remove? Round your answer to the nearest hundredth.  
6.28 ft<sup>3</sup>

**5. STAGES** A stage has the form of a square pyramid with the top sliced off along a plane parallel to the base. The side length of the top square is 12 feet and the side length of the bottom square is 16 feet. The height of the stage is 3 feet.



a. What is the volume of the entire square pyramid that the stage is part of?  
1024 ft<sup>3</sup>

b. What is the volume of the top of the pyramid that is removed to get the stage?  
432 ft<sup>3</sup>

c. What is the volume of the stage?  
592 ft<sup>3</sup>

NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

### 12-6 Study Guide and Intervention (continued)

#### Surface Areas and Volumes of Spheres

**Volumes of Spheres** A sphere has one basic measurement, the length of its radius. If you know the length of the radius of a sphere, you can calculate its volume.

**Volume of a Sphere** If a sphere has a volume of  $V$  cubic units and a radius of  $r$  units, then  $V = \frac{4}{3}\pi r^3$ .



**Example** Find the volume of a sphere with radius 8 centimeters.

$$V = \frac{4}{3}\pi r^3$$

Volume of a sphere  
 $r = 8$   
 $\approx 2144.7$  Simplify.



The volume is about 2144.7 cubic centimeters.

#### Exercises

Find the volume of each sphere or hemisphere. Round to the nearest tenth.



523.6 ft<sup>3</sup>



452.4 in<sup>3</sup>



8578.6 in<sup>3</sup>

4. hemisphere: radius 5 in. 261.8 in<sup>3</sup>

5. sphere: circumference of great circle  $\approx 25$  ft 263.9 ft<sup>3</sup>

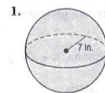
6. hemisphere: area of great circle  $\approx 50$  m<sup>2</sup> 133.0 m<sup>3</sup>

NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

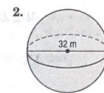
### 12-6 Skills Practice

#### Surface Areas and Volumes of Spheres

Find the surface area of each sphere or hemisphere. Round to the nearest tenth.



615.8 in<sup>2</sup>

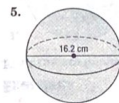


3217.0 m<sup>2</sup>

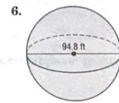
3. hemisphere: radius of great circle = 8 yd 603.2 yd<sup>2</sup>

4. sphere: area of great circle  $\approx 28.6$  in<sup>2</sup> 114.4 in<sup>2</sup>

Find the volume of each sphere or hemisphere. Round to the nearest tenth.



2226.1 cm<sup>3</sup>



446,091.2 ft<sup>3</sup>

7. hemisphere: diameter = 48 yd 28,952.9 yd<sup>3</sup>

8. sphere: circumference of a great circle  $\approx 26$  m 296.8 m<sup>3</sup>

9. sphere: diameter = 10 in. 523.6 in<sup>3</sup>

NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

**12-6 Practice**

**Surface Areas and Volumes of Spheres**

Find the surface area of each sphere or hemisphere. Round to the nearest tenth.

1.



530.9 cm<sup>2</sup>

2.



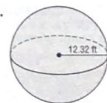
24,884.6 ft<sup>2</sup>

3. hemisphere: radius of great circle = 8.4 in. **665.0 in<sup>2</sup>**

4. sphere: area of great circle ≈ 29.8 m<sup>2</sup> **119.2 m<sup>2</sup>**

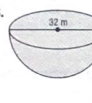
Find the volume of each sphere or hemisphere. Round to the nearest tenth.

5.



7832.9 ft<sup>3</sup>

6.



8578.6 m<sup>3</sup>

7. hemisphere: diameter = 18 mm **1526.8 mm<sup>3</sup>**

8. sphere: circumference ≈ 36 yd **787.9 yd<sup>3</sup>**

9. sphere: radius = 12.4 in. **7986.4 in<sup>3</sup>**

NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

**12-6 Word Problem Practice**

**Surface Areas and Volumes of Spheres**

1. **ORANGES** Mandy cuts a spherical orange in half along a great circle. If the radius of the orange is 2 inches, what is the area of the cross section that Mandy cut? Round your answer to the nearest hundredth.  
**12.57 in<sup>2</sup>**

2. **BILLIARDS** A billiard ball set consists of 16 spheres, each  $2\frac{1}{2}$  inches in diameter. What is the total volume of a complete set of billiard balls? Round your answer to the nearest thousandth of a cubic inch.  
**95.426 in<sup>3</sup>**

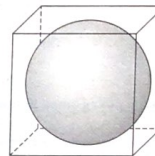
3. **MOONS OF SATURN** The planet Saturn has several moons. These can be modeled accurately by spheres. Saturn's largest moon Titan has a radius of about 2575 kilometers. What is the approximate surface area of Titan? Round your answer to the nearest tenth.



**83,322,891.2 km<sup>2</sup>**

4. **THE ATMOSPHERE** About 99% of Earth's atmosphere is contained in a 31-kilometer thick layer that wraps the planet. The Earth itself is almost a sphere with radius 6378 kilometers. What is the ratio of the volume of the atmosphere to the volume of Earth? Round your answer to the nearest thousandth.  
**0.015**

5. **CUBES** Marcus builds a sphere inside of a cube. The sphere fits snugly inside the cube so that the sphere touches the cube at one point on each side. The side length of the cube is 2 inches.



a. What is the surface area of the cube?  
**24 in<sup>2</sup>**

b. What is the surface area of the sphere? Round your answers to the nearest hundredth.  
**12.57 in<sup>2</sup>**

c. What is the ratio of the surface area of the cube to the surface area of the sphere? Round your answer to the nearest hundredth.  
**1.91**



NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

**12-8 Study Guide and Intervention** (continued)

**Congruent and Similar Solids**

**Properties of Congruent or Similar Solids** When pairs of solids are congruent or similar, certain properties are known.

- If two similar solids have a scale factor of  $a:b$  then,
- the ratio of their surface areas is  $a^2:b^2$ .
  - the ratio of their volumes is  $a^3:b^3$ .

**Example** Two spheres have radii of 2 feet and 6 feet. What is the ratio of the volume of the small sphere to the volume of the large sphere?

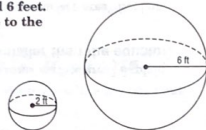
First, find the scale factor.

$$\frac{\text{radius of the small sphere}}{\text{radius of the large sphere}} = \frac{2}{6} \text{ or } \frac{1}{3}$$

The scale factor is  $\frac{1}{3}$ .

$$\frac{a^3}{b^3} = \left(\frac{1}{3}\right)^3 \text{ or } \frac{1}{27}$$

So, the ratio of the volumes is 1:27.



**Exercises**

- Two cubes have side lengths of 3 inches and 8 inches. What is the ratio of the surface area of the small cube to the surface area of the large cube?  
**9:64**
- Two similar cones have heights of 3 feet and 12 feet. What is the ratio of the volume of the small cone to the volume of the large cone?  
**1:64**
- Two similar triangular prisms have volumes of 27 square meters and 64 square meters. What is the ratio of the surface area of the small prism to the surface area of the large prism?  
**9:16**
- COMPUTERS** A small rectangular laptop has a width of 10 inches and an area of 80 square inches. A larger and similar laptop has a width of 15 inches. What is the length of the larger laptop?  
**12 in.**
- CONSTRUCTION** A building company uses two similar sizes of pipes. The smaller size has a radius of 1 inch and length of 8 inches. The larger size has a radius of 2.5 inches. What is the volume of the larger pipes?  
 **$125\pi$  cubic in.**

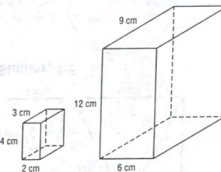
NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

**12-8 Skills Practice**

**Congruent and Similar Solids**

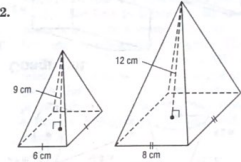
Determine whether each pair of solids is *similar*, *congruent*, or *neither*. If the solids are similar, state the scale factor.

1.



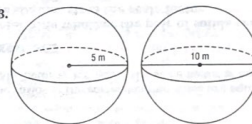
similar; 1:3

2.



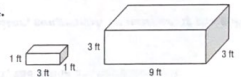
similar; 3:4

3.



congruent

4.



similar; 1:3

- Two similar pyramids have heights of 4 inches and 7 inches. What is the ratio of the volume of the small pyramid to the volume of the large pyramid?  
**64:343**

- Two similar cylinders have surface areas of  $40\pi$  square feet and  $90\pi$  square feet. What is the ratio of the height of the large cylinder to the height of the small cylinder?  
**3:2**

- COOKING** Two stockpots are similar cylinders. The smaller stockpot has a height of 10 inches and a radius of 2.5 inches. The larger stockpot has a height of 16 inches. What is the volume of the larger stockpot? Round to the nearest tenth.  **$804.2 \text{ in}^3$**

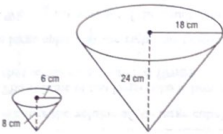
NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

**12-8 Practice**

**Congruent and Similar Solids**

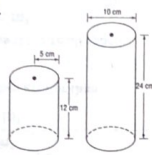
Determine whether the pair of solids is *similar*, *congruent*, or *neither*. If the solids are similar, state the scale factor.

1.



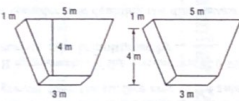
similar, 1:3

2.



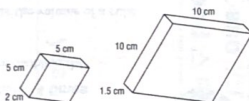
neither

3.



congruent

4.



neither

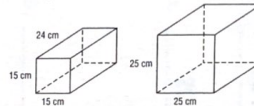
5. Two cubes have surface areas of 72 square feet and 98 square feet. What is the ratio of the volume of the small cube to the volume of the large cube?  
**216:343**
6. Two similar ice cream cones are made of a half sphere on top and a cone on bottom. They have radii of 1 inch and 1.75 inches respectively. What is the ratio of the volume of the small ice cream cone to the volume of the large ice cream cone? Round to the nearest tenth.  
**1:5.4**
7. **ARCHITECTURE** Architects make scale models of buildings to present their ideas to clients. If an architect wants to make a 1:50 scale model of a 4000 square foot house, how many square feet will the model have?  
**1.6 square feet**

NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

**12-8 Word Problem Practice**

**Congruent and Similar Solids**

1. **COOKING** A cylindrical pot is 4.5 inches tall and has a radius of 4 inches. How tall would a similar pot be if its radius is 6 inches?  
**6.75 in.**
2. **MANUFACTURING** Boxes, Inc. wants to make the two boxes below. How long does the second box need to be so that they are similar?



**40 cm**

3. **FARMING** A farmer has two similar cylindrical grain silos. The smaller silo is 25 feet tall and the larger silo is 40 feet tall. If the smaller silo can hold 1500 cubic feet of grain, how much can the larger silo hold?  
**6144 cubic feet of grain**
4. **PLANETS** Earth has a surface area of about 196,937,500 square miles. Mars has a surface area of about 89,500,000 square miles. What is the ratio of the radius of Earth to the radius of Mars? Round to the nearest tenth.  
Source: NASA  
**1.5:1**

- a. Find the ratio of the circumference of MLB baseballs to the circumference of NSA softballs.  
**3:4**
- b. Find the ratio of the volume of MLB baseballs to the volume of NSA softballs. Round to the nearest tenth.  
**27:64**