

10-8 Practice

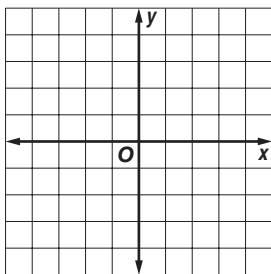
Equations of Circles

Write an equation for each circle.

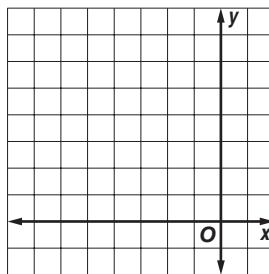
1. center at origin, $r = 7$
2. center at $(0, 0)$, $d = 18$
3. center at $(-7, 11)$, $r = 8$
4. center at $(12, -9)$, $d = 22$
5. center at $(-6, -4)$, $r = \sqrt{5}$
6. center at $(3, 0)$, $d = 28$
7. a circle with center at $(-5, 3)$ and a radius with endpoint $(2, 3)$
8. a circle whose diameter has endpoints $(4, 6)$ and $(-2, 6)$

Graph each equation.

9. $x^2 + y^2 = 4$



10. $(x + 3)^2 + (y - 3)^2 = 9$

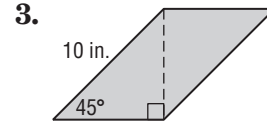
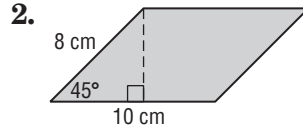
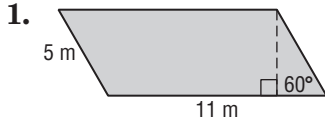


11. **EARTHQUAKES** When an earthquake strikes, it releases seismic waves that travel in concentric circles from the epicenter of the earthquake. Seismograph stations monitor seismic activity and record the intensity and duration of earthquakes. Suppose a station determines that the epicenter of an earthquake is located about 50 kilometers from the station. If the station is located at the origin, write an equation for the circle that represents a possible epicenter of the earthquake.

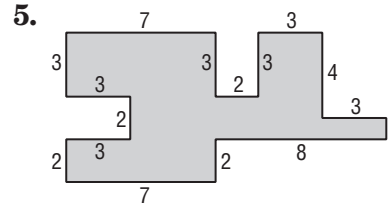
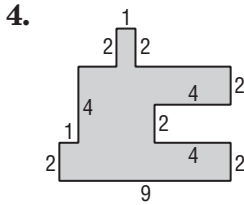
11-1 Practice

Areas of Parallelograms

Find the perimeter and area of each parallelogram. Round to the nearest tenth if necessary.



Find the area of each figure.



COORDINATE GEOMETRY Given the coordinates of the vertices of a quadrilateral, determine whether it is a *square*, a *rectangle*, or a *parallelogram*. Then find the area of the quadrilateral.

6. $C(-4, -1), D(-4, 2), F(1, 2), G(1, -1)$

7. $W(2, 2), X(1, -2), Y(-2, -2), Z(-1, 2)$

8. $M(0, 4), N(4, 6), O(6, 2), P(2, 0)$

9. $P(-5, 2), Q(4, 2), R(5, 5), S(-4, 5)$

FRAMING For Exercises 10–12, use the following information.

A rectangular poster measures 42 inches by 26 inches. A frame shop fitted the poster with a half-inch mat border.

10. Find the area of the poster.

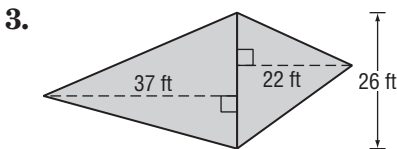
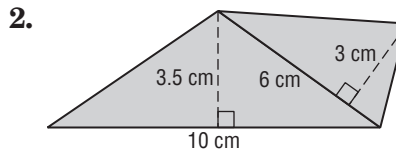
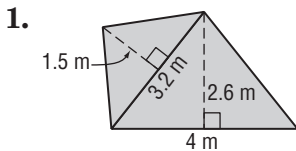
11. Find the area of the mat border.

12. Suppose the wall is marked where the poster will hang. The marked area includes an additional 12-inch space around the poster and frame. Find the total wall area that has been marked for the poster.

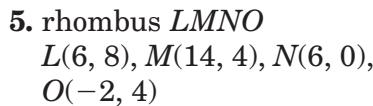
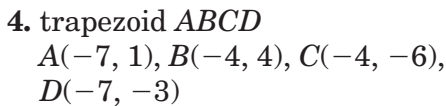
11-2 Practice

Areas of Triangles, Trapezoids, and Rhombi

Find the area of each figure. Round to the nearest tenth if necessary.

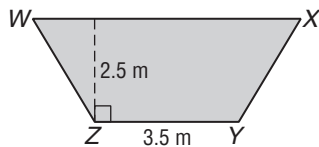


Find the area of each quadrilateral given the coordinates of the vertices.

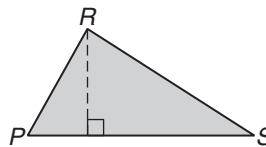


Find the missing measure for each figure.

6. Trapezoid $WXYZ$ has an area of 13.75 square meters. Find WX .



7. Triangle PRS has an area of 68 square yards. If the height of $\triangle PRS$ is 8 yards, find the base.



DESIGN For Exercises 8 and 9, use the following information.

Mr. Hagarty used 16 congruent rhombi-shaped tiles to design the midsection of the backsplash area above a kitchen sink. The length of the design is 27 inches and the total area is 108 square inches.



- Find the area of one rhombus.
- Find the length of each diagonal.

11-3 Practice

Areas of Regular Polygons and Circles

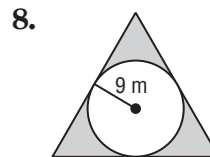
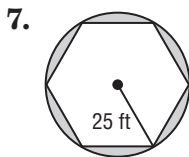
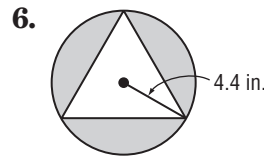
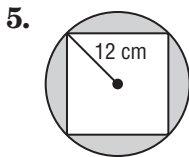
Find the area of each regular polygon. Round to the nearest tenth.

1. a nonagon with a perimeter of 117 millimeters
2. an octagon with a perimeter of 96 yards

Find the area of each circle. Round to the nearest tenth.

3. a circle with a diameter of 26 feet
4. a circle with a circumference of 88 kilometers

Find the area of each shaded region. Assume that all polygons are regular. Round to the nearest tenth.



DISPLAYS For Exercises 9 and 10, use the following information.

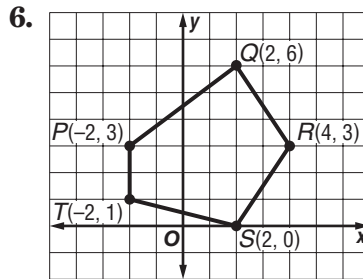
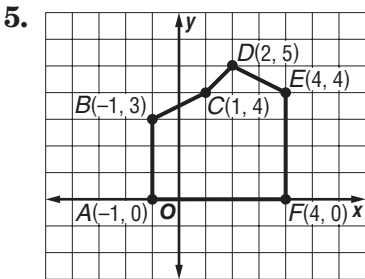
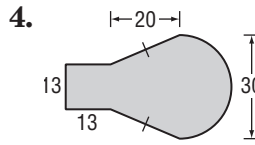
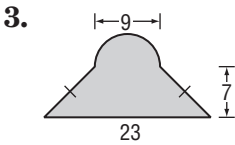
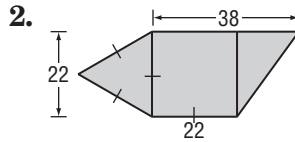
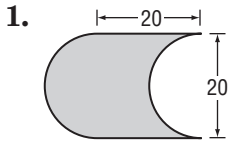
A display case in a jewelry store has a base in the shape of a regular octagon. The length of each side of the base is 10 inches. The owners of the store plan to cover the base in black velvet.

9. Find the area of the base of the display case.
10. Find the number of square yards of fabric needed to cover the base.

11-4 Practice

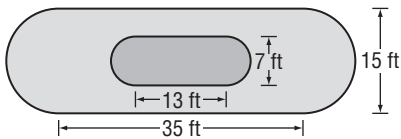
Areas of Composite Figures

Find the area of each figure. Round to the nearest tenth if necessary.



LANDSCAPING For Exercises 7 and 8, use the following information.

One of the displays at a botanical garden is a koi pond with a walkway around it. The figure shows the dimensions of the pond and the walkway.



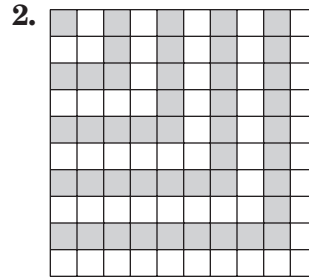
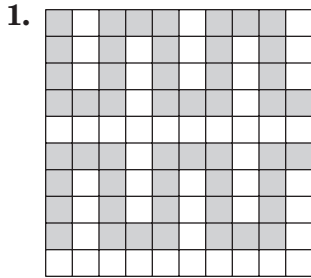
7. Find the area of the pond to the nearest tenth.

8. Find the area of the walkway to the nearest tenth.

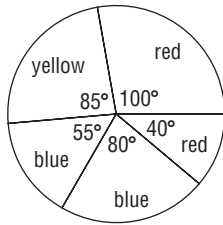
11-5 Practice

Geometric Probability and Areas of Sectors

Find the probability that a point chosen at random lies in the shaded region.

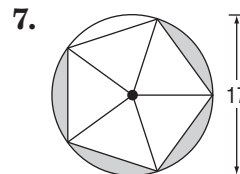
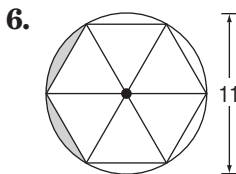


Find the area of the indicated sector. Then find the probability of spinning the color indicated if the diameter of the spinner is 9 meters.

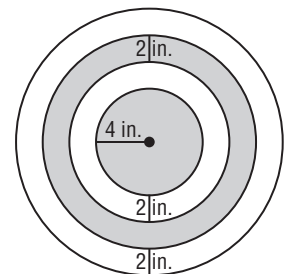


- 3. red
- 4. blue
- 5. yellow

Find the area of the shaded region. Then find the probability that a point chosen at random is in the shaded region. Assume that all inscribed polygons are regular.



- 8. **ARCHERY** A target consists of four concentric rings. The radius of the center circle is 4 inches, and the circles are spaced 2 inches apart. Find the probability that an arrow shot at random by an inexperienced archer will land in a shaded region.

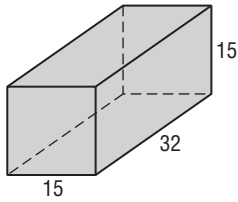


12-2 Practice

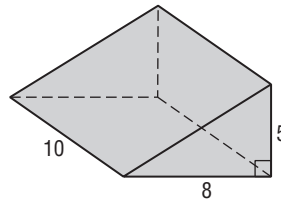
Surface Areas of Prisms

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

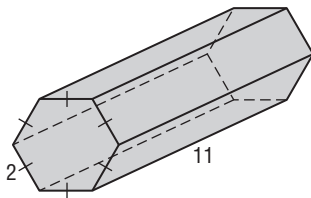
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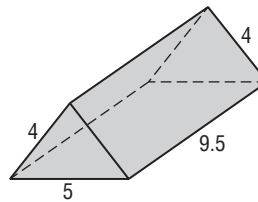
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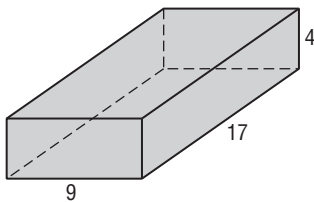


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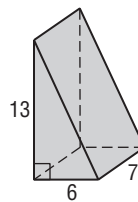


Find the surface area of each prism. Round to the nearest tenth if necessary.

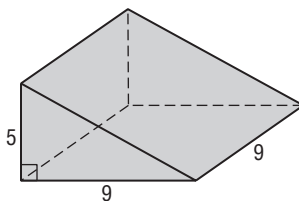
5.



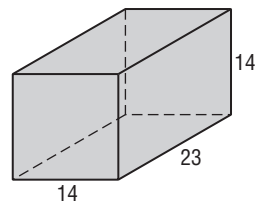
6.



7.



8.



9. CRAFTS Becca made a rectangular jewelry box in her art class and plans to cover it in red silk. If the jewelry box is $6\frac{1}{2}$ inches long, $4\frac{1}{2}$ inches wide, and 3 inches high, find the surface area that will be covered.

12-3 Practice**Surface Areas of Cylinders**

Find the surface area of a cylinder with the given dimensions. Round to the nearest tenth.

1. $r = 8$ cm, $h = 9$ cm

2. $r = 12$ in., $h = 14$ in.

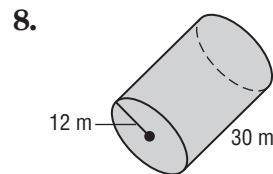
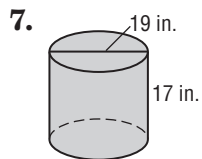
3. $d = 14$ mm, $h = 32$ mm

4. $d = 6$ yd, $h = 12$ yd

5. $r = 2.5$ ft, $h = 7$ ft

6. $d = 13$ m, $h = 20$ m

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



Find the radius of the base of each right cylinder.

9. The surface area is 628.3 square millimeters, and the height is 15 millimeters.

10. The surface area is 892.2 square feet, and the height is 4.2 feet.

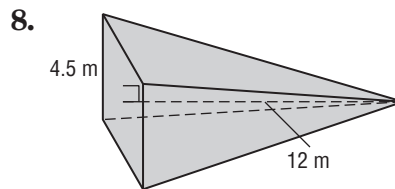
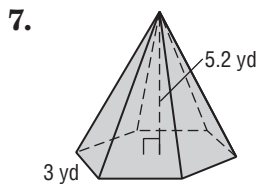
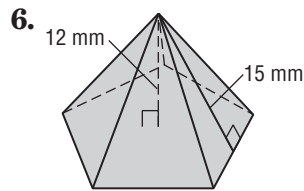
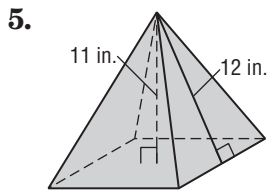
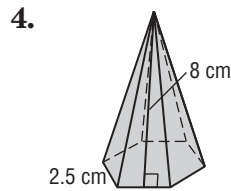
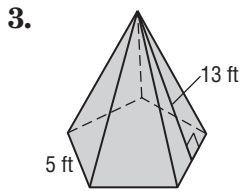
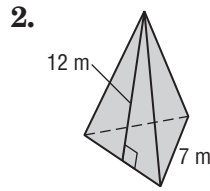
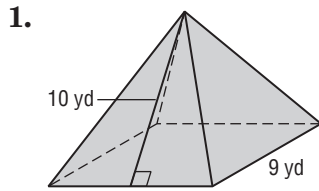
11. The surface area is 158.3 square inches, and the height is 5.4 inches.

12. **KALEIDOSCOPIES** Nathan built a kaleidoscope with a 20-centimeter barrel and a 5-centimeter diameter. He plans to cover the barrel with embossed paper of his own design. How many square centimeters of paper will it take to cover the barrel of the kaleidoscope?

12-4 Practice

Surface Areas of Pyramids

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

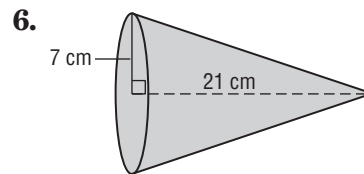
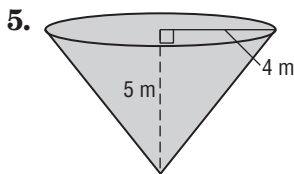
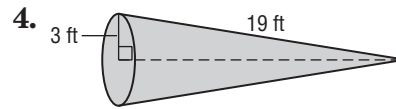
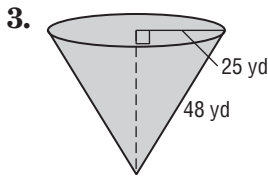
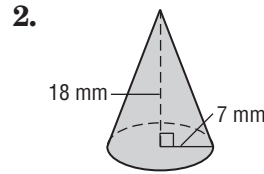
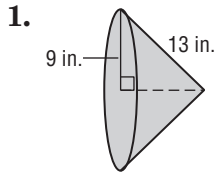


9. **GAZEBOS** The roof of a gazebo is a regular octagonal pyramid. If the base of the pyramid has sides of 0.5 meters and the slant height of the roof is 1.9 meters, find the area of the roof.

12-5 Practice

Surface Areas of Cones

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

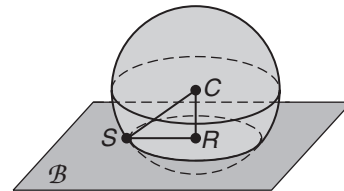


7. Find the surface area of a cone if the height is 8 feet and the slant height is 10 feet.
8. Find the surface area of a cone if the height is 14 centimeters and the slant height is 16.4 centimeters.
9. Find the surface area of a cone if the height is 12 inches and the diameter is 27 inches.
10. **HATS** 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?

12-6 Practice

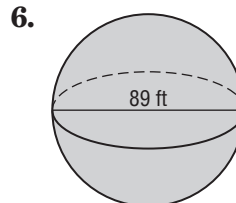
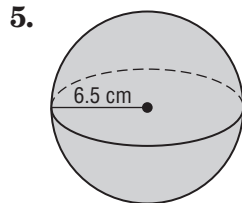
Surface Areas of Spheres

In the figure, C is the center of the sphere, and plane \mathcal{B} intersects the sphere in circle R . Round to the nearest tenth if necessary.



- If $CR = 4$ and $SR = 14$, find CS .
- If $CR = 7$ and $SR = 24$, find CS .
- If the radius of the sphere is 28 units and the radius of $\odot R$ is 26 units, find CR .
- If J is a point on $\odot R$ and $CS = 7.3$, find CJ .

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

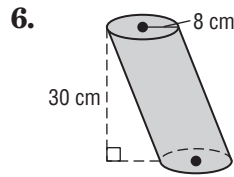
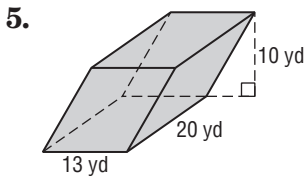
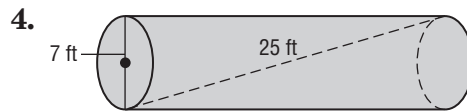
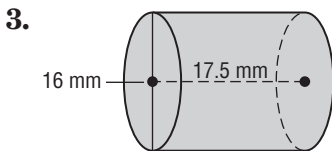
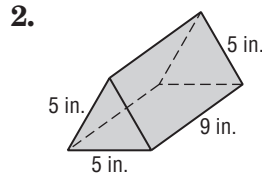
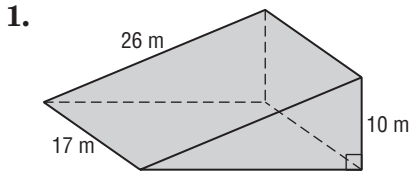


- a sphere with the area of a great circle 29.8 meters
- a hemisphere with a radius of the great circle 8.4 inches
- a hemisphere with the circumference of a great circle 18 millimeters
- SPORTS** A standard size 5 soccer ball for ages 13 and older has a circumference of 27–28 inches. Suppose Breck is on a team that plays with a 28-inch soccer ball. Find the surface area of the ball.

13-1 Practice

Volumes of Prisms and Cylinders

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



AQUARIUM For Exercises 7–9, use the following information. Round answers to the nearest tenth.

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.

7. What is the volume of the aquarium in cubic feet?

8. If there are 7.48 gallons in a cubic foot, how many gallons of water does the aquarium hold?

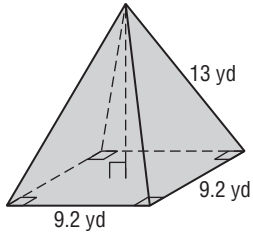
9. If a cubic foot of water weighs about 62.4 pounds, what is the weight of the water in the aquarium to the nearest five pounds?

13-2 Practice

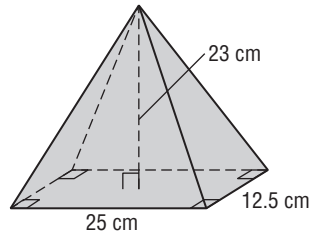
Volumes of Pyramids and Cones

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

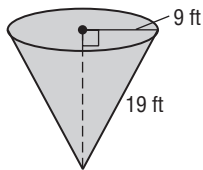
1.



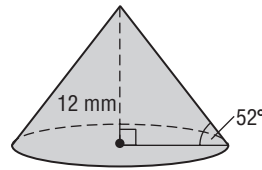
2.



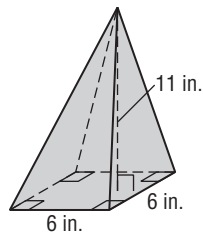
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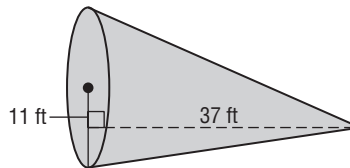
4.



5.



6.



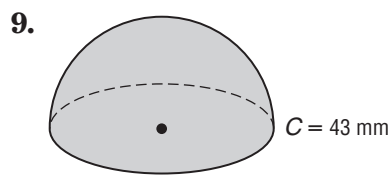
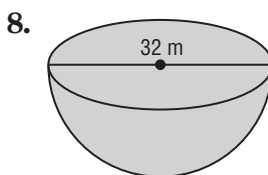
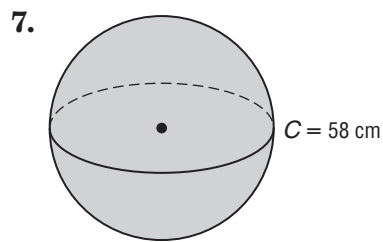
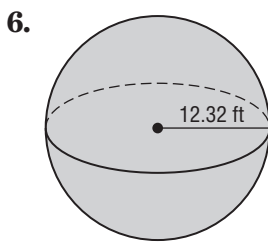
7. CONSTRUCTION Mr. Ganty built a conical storage shed. The base of the shed is 4 meters in diameter, and the height of the shed is 3.8 meters. What is the volume of the shed?

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.

13-3 Practice**Volumes of Spheres**

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

- The radius of the sphere is 12.4 centimeters.
- The diameter of the sphere is 17 feet.
- The circumference of the sphere is 38 meters.
- The diameter of the hemisphere is 21 inches.
- The circumference of the hemisphere is 18 millimeters.

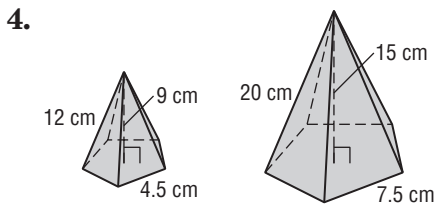
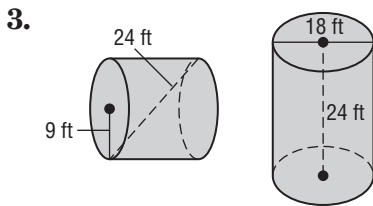
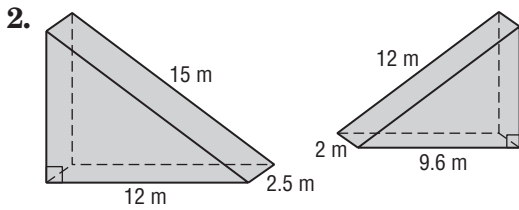
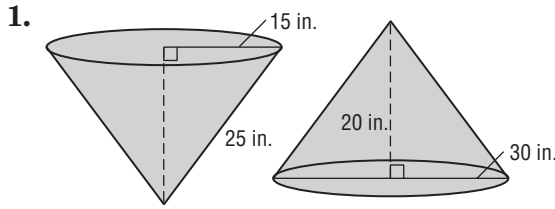


10. **PACKAGING** Amber plans to ship a mini-basketball she bought for her nephew. The circumference of the ball is 24 inches and the package she wants to ship it in is a rectangular box that measures 8 inches \times 8 inches \times 9 inches. Will the basketball fit in the box? Explain.

13-4 Practice

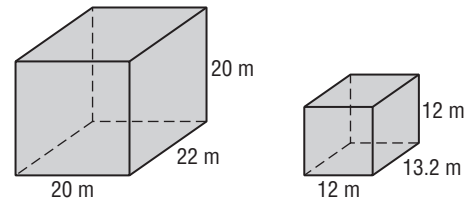
Congruent and Similar Solids

Determine whether each pair of solids are *similar*, *congruent*, or *neither*.



For Exercises 5–8, refer to the two similar prisms.

5. Find the scale factor of the two prisms.
6. Find the ratio of the surface areas.
7. Find the ratio of the volumes.



8. Suppose the surface area of the larger prism is 2560 square meters. Find the surface area of the smaller prism.

9. **MINIATURES** Frank Lloyd Wright designed every aspect of the Imperial Hotel in Tokyo, including the chairs. The dimensions of a miniature Imperial Hotel chair are 6.25 inches \times 3 inches \times 2.5 inches. If the scale of the replica is 1:6, what are the dimensions of the original chair?