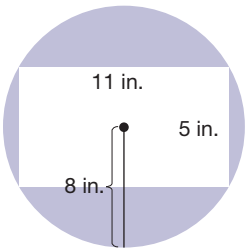
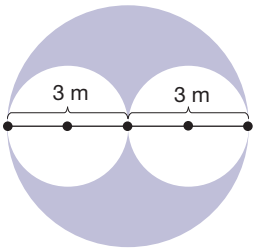
Chapter 9 Exercises

Find the area of the shaded region in each figure. Round your answer to the nearest hundredth, if necessary.

1.



2.



Solve each problem. Round your answer to the nearest hundredth, if necessary.

3. A window pane has dimensions of 30 inches by 22 inches. If glass sells for \$0.80 per square inch, how much will each window cost?

4. A 50-pound bag of fertilizer will cover 5500 square feet. If your lawn measures 215 feet by 168 feet, how many pounds of fertilizer will you need to cover the lawn?

5. Civil War cannonballs were made out of cast iron. A collector found a set of three cannonballs for sale at an auction. The balls had diameters of 4.52 in., 4.346 in., and 3.908 in., respectively. Find the total volume of cast iron contained in the three Civil War cannonballs.

6. Gregory wanted a soccer-ball piñata for his birthday. Find the maximum amount of candy Gregory's mother could put in the piñata if the tag describes the ball as 12 inches in diameter.

7. A tube of lip balm has a height of 2.75 in. and a diameter of 0.75 in.

a. If the cap on the tube is 0.20 inches high, find the maximum volume of lip balm that the tube can hold.

b. What are the minimum dimensions of a box that can hold 30 tubes of lip balm, which are placed in six rows, with five tubes in each row?

8. A stick of butter measures 4.5 in. long, 1.25 in. wide, and 1.25 in. deep.

a. How much butter is in each stick in cubic inches?

b. What is the minimum surface area of a box containing 4 sticks of butter?

9. An 8-ounce tub of sour cream needs to contain 19.32 $in.^3$ of sour cream. The tub must be in the shape of a right circular cylinder and leave a quarter inch between the top of the container and the sour cream. If the height of the container is 2 in., find the diameter of the tub of sour cream.

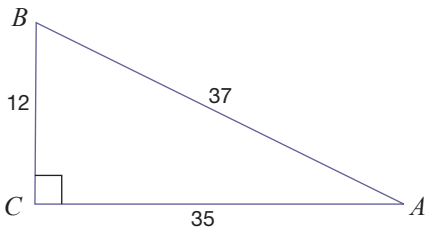
10. Oddie's Packaging Company always includes a serving size on its packages. The company has recently started making cheese balls and needs to estimate the number of servings in a ball with a diameter of three inches. Assuming the ball is a perfect sphere and that each serving is four fluid ounces, what should Oddie's estimate be? (**Hint:** There are 1.8 cubic inches in 1 fluid ounce.)

11. The measures of two complementary angles are $(18z + 5)°$ and $(2z + 5)°$. Find the measures of the angles.

12. Find $m\angle T$ if $m\angle T$ is 30 degrees larger than four times the measure of its supplement.

13. Two angles are supplementary. One angle measure is 24° larger than the other. Find the measures of the angles.

14. Use ΔABC to find sin A, cos A, tan A, sin B, cos B, and tan B.



15. An 18-foot ladder is leaning against a wall where it makes an angle of 58° with the ground and 32° with the building.

a. How far is the ladder base from the building?

b. How far does the ladder reach up the building?

16. A plane is flying at an altitude of 15,000 feet and needs to fly an altitude of 25,000 feet. The angle of elevation that should be used is 4°. Over how many miles will it take the plane to reach the correct height? (**Hint:** There are 5280 feet in 1 mile.)

17. The sun hits a building of unknown height so that the building casts a shadow of 410 feet. If the angle of elevation of the sun is 16°, how tall is the building?

18. Suppose you can see two flags from the point where you are standing. One flag is 60 yards away from where you are standing and the other is 100 yards away from where you are standing. The angle between the flags is 40 degrees. Determine how far apart the flags are from each other, rounded to the nearest tenth.