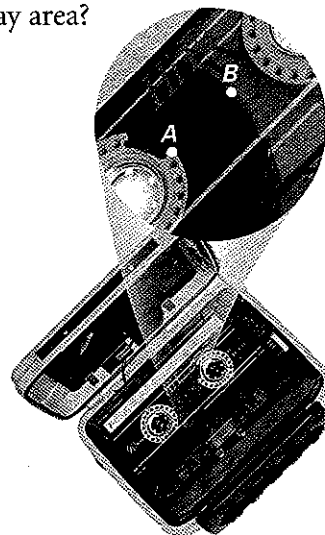


Exercises

Communicate

1. Suppose that you have 100 feet of fence to make a play area for your dog. Does a square or a circle provide more area? What other factors might you take into consideration in designing the play area?
2. There are many different approximations for π . Two commonly used values are 3.14 and $\frac{22}{7}$. Compare these values with the value your calculator gives for π . Give a reason you might choose either 3.14 or $\frac{22}{7}$. Why is it necessary to estimate π when calculating the area and circumference of a circle?
3. When the cassette in the photo is rewinding, which moves faster, point A or point B? Explain your reasoning.



Guided Skills Practice

In Exercises 4–7, give your answers exactly, in terms of π , and rounded to two decimal places.

4. Find the circumference of a circle with a radius of 3. (EXAMPLE 1)
5. Find the circumference of a circle with a diameter of 25. (EXAMPLE 1)
6. Find the area of a circle with a radius of 5. (EXAMPLE 2)
7. Find the area of a circle with a diameter of 28. (EXAMPLE 2)

Practice and Apply

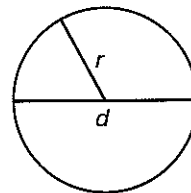
In Exercises 8–13, find the circumference and area of each circle.

Use 3.14 for π . Round your answers to the nearest tenth.

8. $r = 6$ 9. $r = 10$ 10. $d = 18$

Use $\frac{22}{7}$ for π . Leave your answers in fraction form.

11. $r = 6$ 12. $d = 21$ 13. $d = \frac{35}{8}$

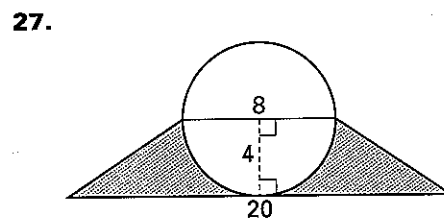
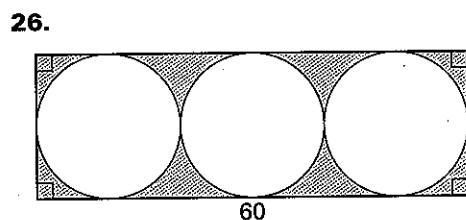
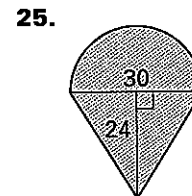
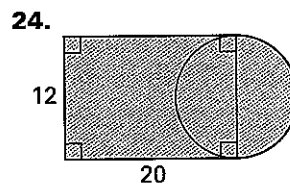
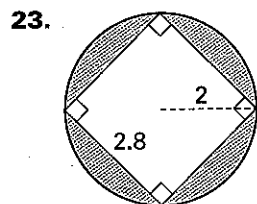
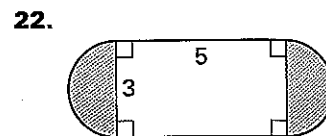
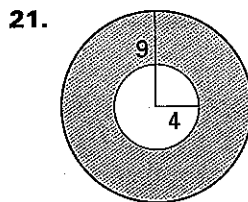
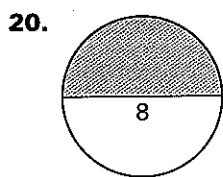


Algebra

Find the radius of the circle with the given measurement. Give your answers exactly, in terms of π , and rounded to the nearest tenth.

- | | |
|-----------------|------------------|
| 14. $C = 12$ | 15. $C = 62.8$ |
| 16. $C = 50\pi$ | 17. $A = 314$ |
| 18. $A = 50$ | 19. $A = 100\pi$ |

In Exercises 20–27, find the area of the shaded region. Give your answers exactly, in terms of π , and rounded to the nearest hundredth.



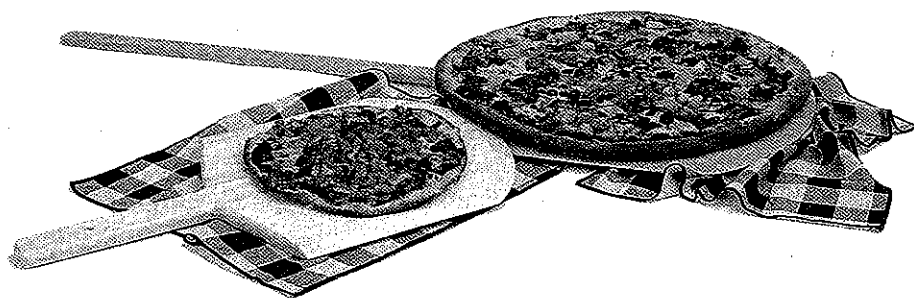
28. What happens to the circumference of a circle when the radius is doubled?

29. What happens to the area of a circle when the radius is doubled?

APPLICATIONS

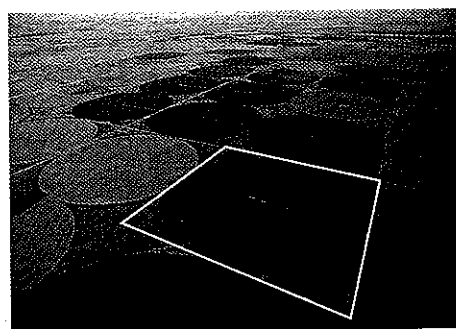
30. **MEAL PLANNING** If a 10-inch pizza is enough to feed 2 people, will an 18-inch pizza be enough to feed 6 people? Why or why not?

31. **MEAL PLANNING** If a 10-inch pizza costs \$5 and an 18-inch pizza costs \$15, which is the better deal? Explain your reasoning.



32. **IRRIGATION** *Center pivot irrigation* is a method of agricultural irrigation using a long, wheeled arm with many nozzles that pivots about the center of a circle.

If the area inside the square is one square mile, what is the area, in square feet, of the irrigated circle? (Note: 1 mile = 5280 feet)



Exercises

Communicate

internet connect

Activities Online

Go To: go.hrw.com
Keyword:
MG1 Theorem

1. State the Pythagorean Theorem in your own words.
2. What are some practical uses of the Pythagorean Theorem and its converse?
3. Explain how something called the "3-4-5 rule" could help carpenters create square corners.
4. Explain how the Greek postage stamp shown at right illustrates the Pythagorean Theorem.



Guided Skills Practice

5. A right triangle has one leg with a length of 48 and a hypotenuse with a length of 80. What is the length of the other leg? (EXAMPLE 1)
6. A triangle has side lengths of 7, 10, and 12. Is the triangle a right triangle? (EXAMPLE 2)
7. A triangle has side lengths of 8, 15, and 18. Is the triangle right, acute, or obtuse? (EXAMPLE 3)

Practice and Apply

Algebra

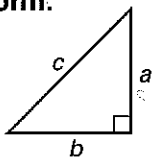
internet connect

Homework Help Online

Go To: go.hrw.com
Keyword:
MG1 Homework Help
for Exercises 8-30

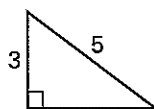
For Exercises 8–13, two side lengths of a right triangle are given. Find the missing side length. Leave your answers in radical form.

8. $a = 3, b = 4, c = ?$
9. $a = 10, b = 15, c = ?$
10. $a = 46, b = 73, c = ?$
11. $a = ?, b = 6, c = 8$
12. $a = 27, b = ?, c = 53$
13. $a = 1, b = 1, c = ?$

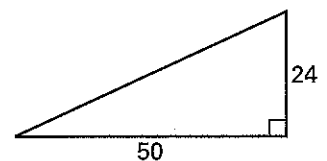


Find the perimeter of each triangle. Round your answers to the nearest tenth.

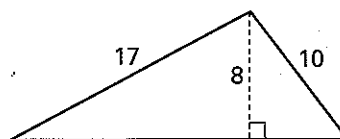
14.



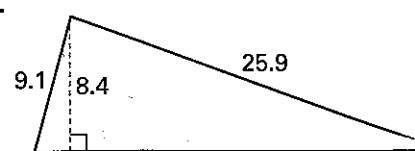
15.



16.



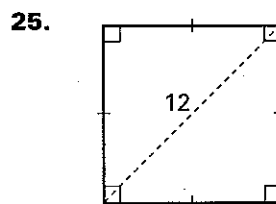
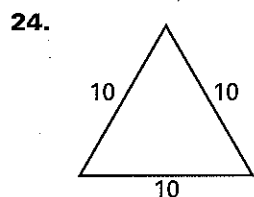
17.



Each of the following triples represents the side lengths of a triangle. Determine whether the triangle is right, acute, or obtuse.

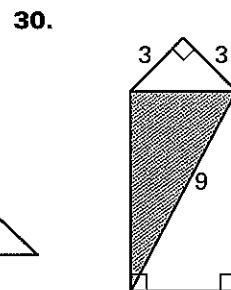
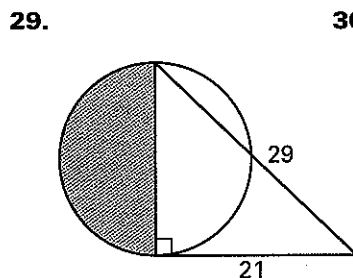
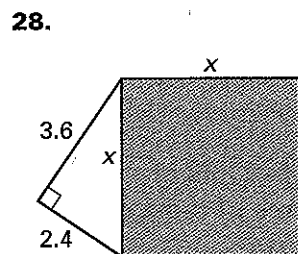
18. 5, 9, 12 19. 13, 15, 17 20. 7, 24, 25
 21. 7, 24, 26 22. 3, 4, 5 23. 25, 25, 30

Find the area of each figure. Leave your answers in radical form.



26. What is the length of a diagonal of a square with a side length of 5?
 27. What is the side length of a square with a diagonal of 16?

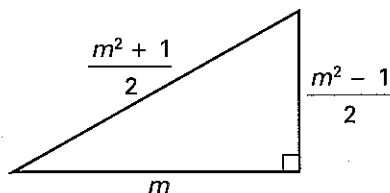
Find the area of the shaded region in each figure. Round your answers to the nearest tenth.



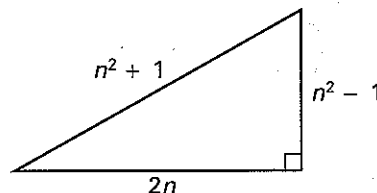
CONNECTIONS

NUMBER THEORY Mathematicians have long been fascinated with techniques for generating Pythagorean triples. For each method below, generate five sets of triples. Then use algebra to show that the method will always work.

31. **Method of Pythagoreans**
 Let m be any odd number greater than 1.



32. **Method of Plato**
 Let n be any integer greater than 1.



33. **NUMBER THEORY** Test the following conjecture for 10 different Pythagorean triples: In each Pythagorean triple, at least one of the numbers is divisible by 3, and at least one is divisible by 5.

34. **NUMBER THEORY** If you multiply each number of a Pythagorean triple by the same constant, you get another Pythagorean triple. For example, (3, 4, 5) is a Pythagorean triple. Multiplying each number by 2 results in (6, 8, 10), another Pythagorean triple.

Use algebra to show that if (x, y, z) is a Pythagorean triple, then (ax, ay, az) is also a Pythagorean triple for any positive integer a .