

# Lesson 12.1 Skills Practice

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## Introduction to Circles Circle, Radius, and Diameter

### Vocabulary

Define each term in your own words.

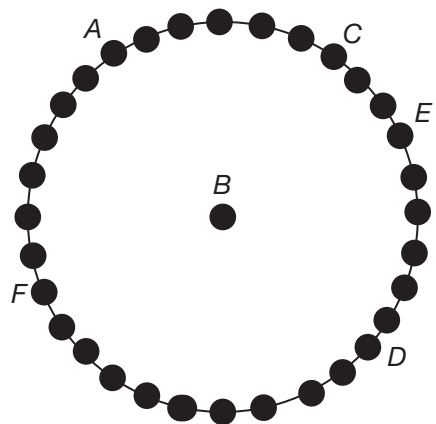
1. circle
2. center of a circle
3. radius of a circle
4. diameter of a circle

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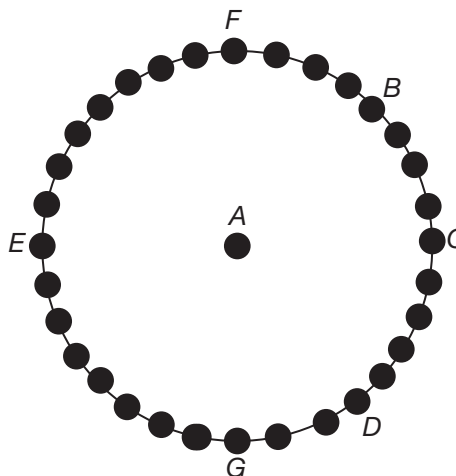
### Problem Set

Use the circle shown to answer each question.

1. Name the circle.  
The circle shown is Circle *B*.
2. Identify a radius of the circle.
3. Identify a diameter of the circle.



4. Name the circle.



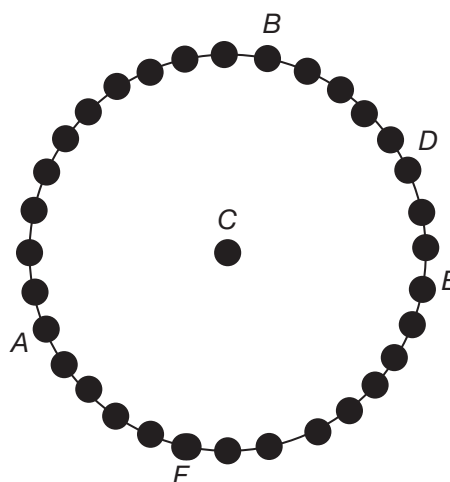
5. Identify a radius of the circle.

6. Identify a diameter of the circle.

7. Identify a different diameter of the circle.

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8. Name the circle.

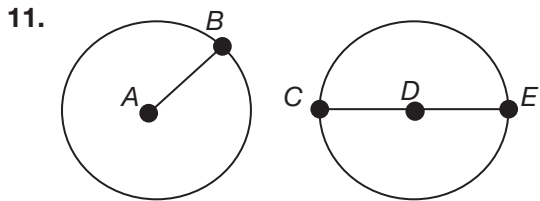


9. Identify a radius of the circle.

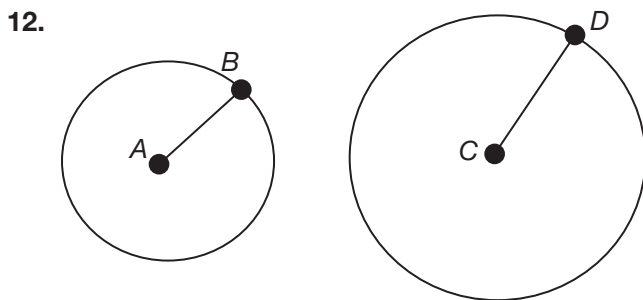
10. Identify a diameter of the circle.

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Determine if the circles are congruent.



Line segment  $AB$  is a radius of Circle  $A$  and is 2 centimeters.  
Line segment  $CE$  is a diameter of Circle  $D$  and is 4 centimeters.  
The diameter of Circle  $A$  equals 4 centimeters.  
The diameter of Circle  $A$  equals the diameter of Circle  $D$ .  
Circle  $A$  and Circle  $D$  are congruent.



Line segment  $AB$  is a radius of Circle  $A$  and is 7 inches.  
Line segment  $CD$  is a radius of Circle  $C$  and is 12 inches.

13. The radius of Circle  $A$  is 5 centimeters. The radius of Circle  $B$  is 5 centimeters.

14. The diameter of Circle  $A$  is 7 millimeters. The radius of Circle  $B$  is 7 millimeters.

15. The radius of Circle  $A$  is 3 inches. The diameter of Circle  $B$  is 6 inches.

16. The radius of Circle  $A$  is 5 centimeters. The radius of Circle  $B$  is 8 centimeters.

**12**

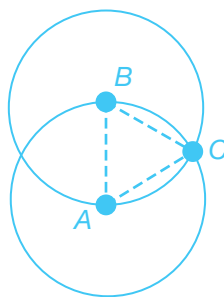
17. The radius of Circle  $A$  is 4 inches. The diameter of Circle  $B$  is 7 inches.

18. The diameter of Circle  $A$  is 12 centimeters. The radius of Circle  $B$  is 6 centimeters.

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Construct each figure using congruent circles.

19. Construct an equilateral triangle using congruent circles.



20. Construct an equilateral quadrilateral using congruent circles.

21. Construct an equilateral hexagon using congruent circles.



## Lesson 12.2 Skills Practice

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### But Most of All, I Like Pi! Circumference of a Circle

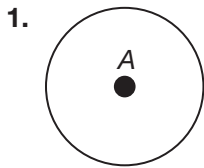
#### Vocabulary

Define the term in your own words.

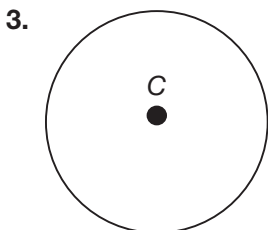
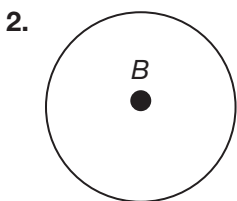
1. pi

#### Problem Set

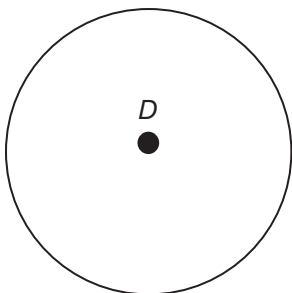
Use a string and a centimeter ruler to measure the radius and circumference of each circle. Calculate the ratio of the circumference of the circle to its diameter.



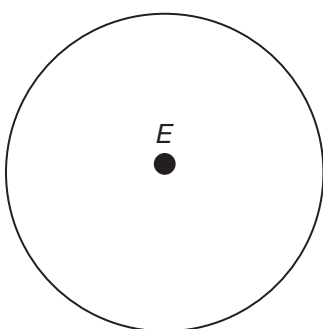
Answers will vary. The ratio should be  $\approx 3.14$ .



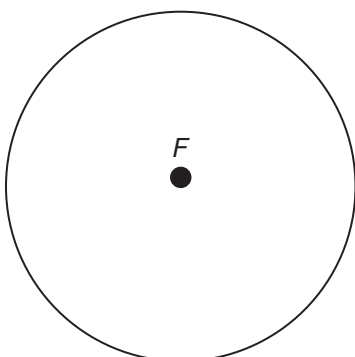
4.



5.



6.



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Calculate each value using the formula for the circumference of a circle. Round your answer to the nearest hundredth, if necessary.

7. The diameter of a circle is 6 centimeters. Calculate the circumference of the circle using the circumference formula. Let  $\pi = 3.14$ .

$$C = \pi d$$

$$C = (3.14)(6)$$

$$C = 18.84$$

The circumference of the circle is 18.84 centimeters.

8. The radius of a circle is 8.2 centimeters. Calculate the circumference of the circle using the circumference formula. Let  $\pi = 3.14$ .

9. The diameter of a circle is 7.5 inches. Calculate the circumference of the circle using the circumference formula. Let  $\pi = 3.14$ .

10. The radius of a circle is 16.3 millimeters. Calculate the circumference of the circle using the circumference formula. Let  $\pi = 3.14$ .
11. The diameter of a circle is 14 centimeters. Calculate the circumference of the circle using the circumference formula. Let  $\pi = 3.14$ .
12. The radius of a circle is 2.1 inches. Calculate the circumference of the circle using the circumference formula. Let  $\pi = 3.14$ .

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Calculate each value using the formula for the circumference of a circle. Round your answer to the nearest hundredth, if necessary.

- 13.** The circumference of a circle is 56 centimeters. Calculate the diameter of the circle using the circumference formula. Let  $\pi = 3.14$ .

$$C = \pi d$$

$$56 = (3.14)d$$

$$\frac{56}{3.14} = \frac{3.14d}{3.14}$$

$$17.83 \approx d$$

The diameter of the circle is approximately 17.83 centimeters.

- 14.** The circumference of a circle is 25.12 centimeters. Calculate the radius of the circle using the circumference formula. Let  $\pi = 3.14$ .

15. The circumference of a circle is 112.8 millimeters. Calculate the diameter of the circle using the circumference formula. Let  $\pi = 3.14$ .

16. The circumference of a circle is 49.6 inches. Calculate the radius of the circle using the circumference formula. Let  $\pi = 3.14$ .

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17. The circumference of a circle is 47.73 millimeters. Calculate the diameter of the circle using the circumference formula. Let  $\pi = 3.14$ .

18. The circumference of a circle is 56.52 centimeters. Calculate the radius of the circle using the circumference formula. Let  $\pi = 3.14$ .



## Lesson 12.3 Skills Practice

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### One Million Sides Area of a Circle

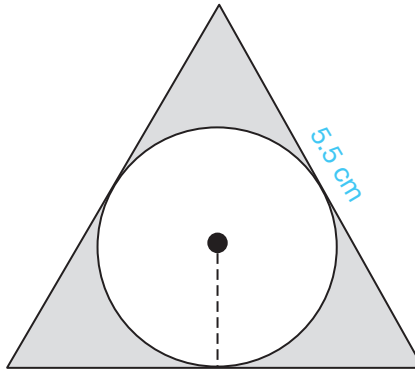
#### Vocabulary

Define the term in your own words.

1. inscribed circle

#### Problem Set

Use the figure to answer each question. Let  $\pi = 3.14$ . Round your answer to the nearest hundredth, if necessary.



1. Use a centimeter ruler to measure the sides of the equilateral triangle. Then calculate the perimeter of the equilateral triangle.

$$P = 3s$$

$$P = 3(5.5)$$

$$P = 16.5$$

The perimeter of the triangle is 16.5 centimeters.

2. Use a centimeter ruler to measure the radius of the inscribed circle. Then calculate the circumference of the inscribed circle.

3. Calculate the area of the equilateral triangle in terms of the perimeter.

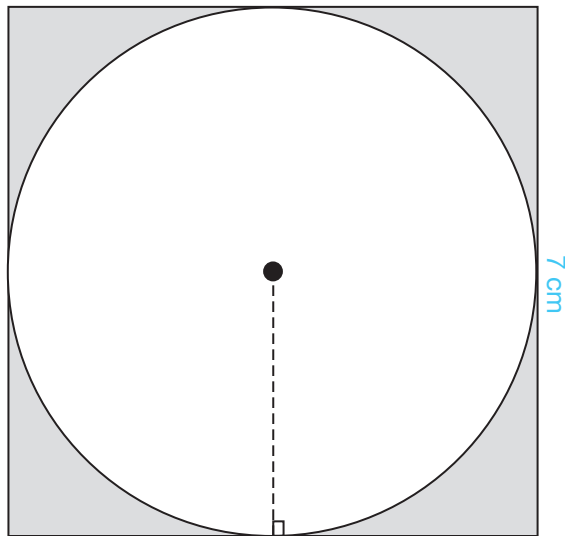
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4. Calculate the area of the inscribed circle.



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Use the figure to answer each question. Let  $\pi = 3.14$ . Round your answer to the nearest hundredth, if necessary.



5. Use a centimeter ruler to measure the sides of the square. Then calculate the perimeter of the square.

$P = 4s$

$P = 4(7)$

$P = 28$

The perimeter of the square is 28 centimeters.

6. Use a centimeter ruler to measure the radius of the inscribed circle. Then calculate the circumference of the inscribed circle.

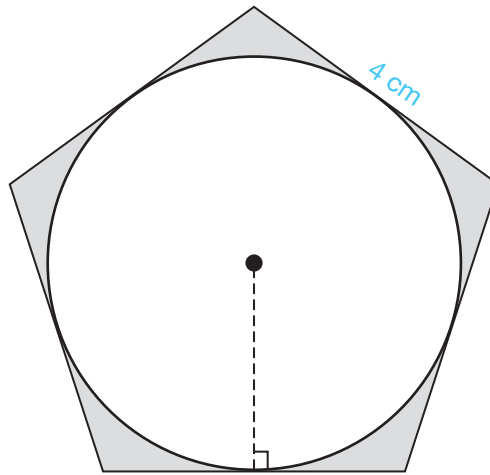
7. Calculate the area of the square in terms of the perimeter.

12

8. Calculate the area of the inscribed circle.

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Use the figure to answer each question. Let  $\pi = 3.14$ . Round your answer to the nearest hundredth, if necessary.



9. Use a centimeter ruler to measure the sides of the equilateral pentagon. Then calculate the perimeter of the equilateral pentagon.

$P = 5s$

$P = 5(4)$

$P = 20$

The perimeter of the pentagon is 20 centimeters.

10. Use a centimeter ruler to measure the radius of the inscribed circle. Then calculate the circumference of the inscribed circle.

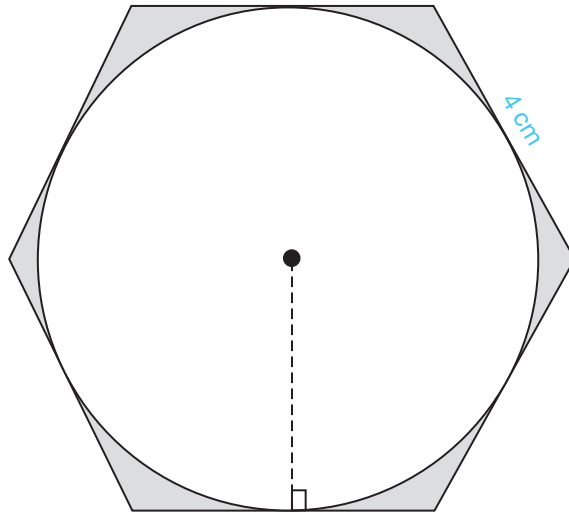
11. Calculate the area of the equilateral pentagon in terms of the perimeter.

12

12. Calculate the area of the inscribed circle.

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Use the figure to answer question. Let  $\pi = 3.14$ . Round your answer to the nearest hundredth, if necessary.



13. Use a centimeter ruler to measure the sides of the equilateral hexagon. Then calculate the perimeter of the equilateral hexagon.

$P = 6s$

$P = 6(4)$

$P = 24$

The perimeter of the hexagon is 24 centimeters.

14. Use a centimeter ruler to measure the radius of the inscribed circle. Then calculate the circumference of the inscribed circle.

15. Calculate the area of the equilateral hexagon in terms of the perimeter.

12

16. Calculate the area of the inscribed circle.

## Lesson 12.4 Skills Practice

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### It's About Circles! Unknown Measurements

#### Problem Set

Use the area and circumference formulas to answer each question. Let  $\pi = 3.14$ . Round your answer to the nearest hundredth, if necessary.

1. Jaleesa is buying a round backyard pool. The distance around the edge of the pool is 38 feet. Find the area that the pool will cover.

$$C = 2\pi r$$

$$38 = 2(3.14)r$$

$$38 = 6.28r$$

$$6.05 \approx r$$

$$A = \pi r^2$$

$$A = (3.14)(6.05)^2$$

$$A \approx 114.93$$

The pool will cover about 114.93 square feet.

2. Belinda is digging a round flower garden in her backyard. She has 19 feet of rubber edging to place around the garden. What is the area of the new garden?
3. Carlos is spreading mulch in a circle on top of an area where he has planted some seeds. He has enough mulch to cover an area that is 12.5 square feet. How much rubber edging does Carlos need to encircle the mulch that will cover the seeds?



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4. Jose is adding mulch to an existing round flower bed. The length of the rubber edging around the flower bed is 25.12 feet. What is the area that Jose needs to cover with mulch?

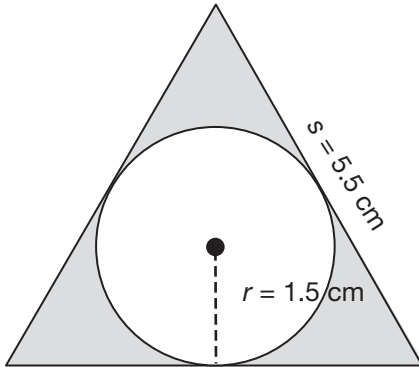
5. Eva is decorating for a birthday party. She would like to add a paper streamer around the edge of a round table. The table covers an area of 19.5 square feet. What is the minimum length of the paper streamer Eva needs?

6. Nami is adding a mosaic pattern to the top of a small round table. The distance around the edge of the table top is 4.7 feet. What is the area that Nami needs to cover with the mosaic pattern?

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Find the area of each shaded region. Let  $\pi = 3.14$ . Round your answer to the nearest hundredth, if necessary.

7.



Area of the triangle:

$$A = \frac{1}{2}Pr$$

$$A = \frac{1}{2}(3 \times 5.5)(1.5)$$

$$A \approx 12.38$$

Area of the circle:

$$A = \pi r^2$$

$$A = (3.14)(1.5)^2$$

$$A \approx 7.07$$

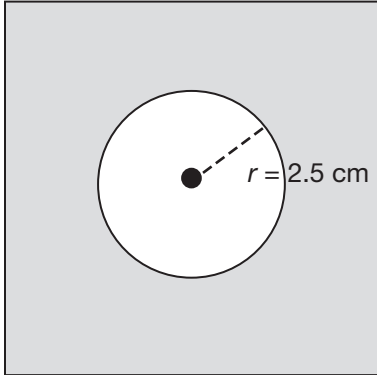
Area of the shaded region = Area of the triangle – Area of the circle

$$\approx 12.38 - 7.07$$

$$\approx 5.31$$

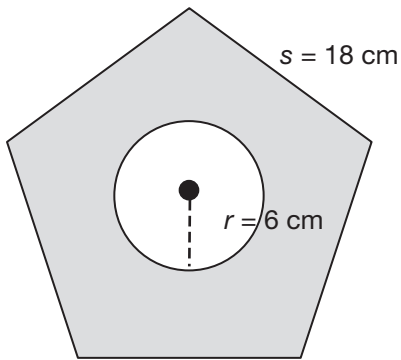
The area of the shaded region is approximately 5.31 square centimeters.

8.  $s = 10$  cm

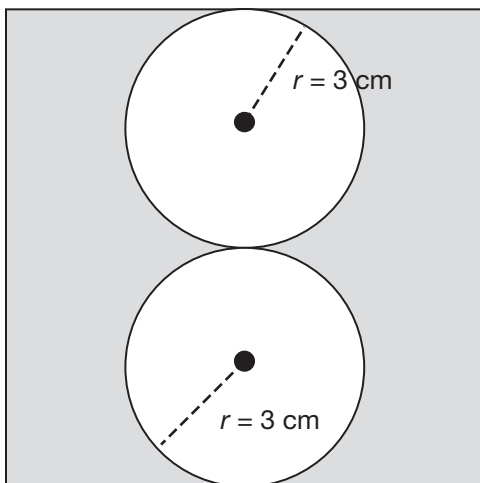


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9.

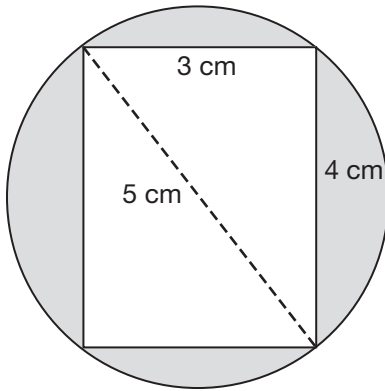


10.

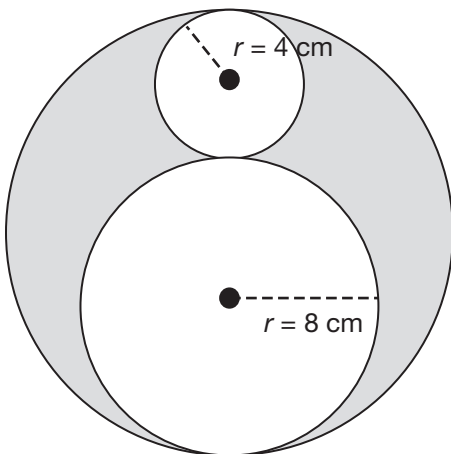


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11.



12.



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