

LESSON
11.6

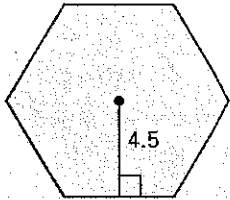
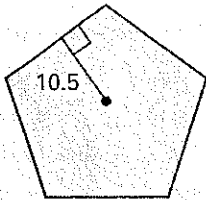
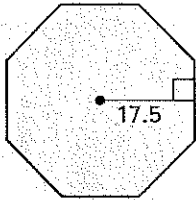
Practice C

For use with pages 762–769

Find the measure of a central angle of a regular polygon with the given number of sides. Round answers to the nearest tenth of a degree, if necessary.

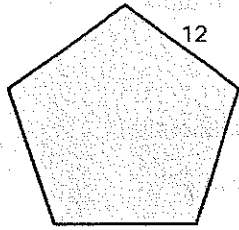
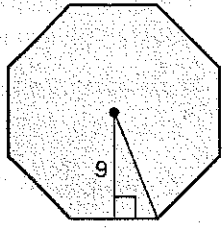
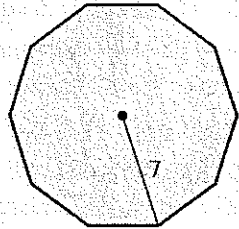
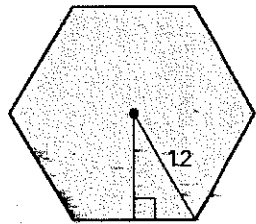
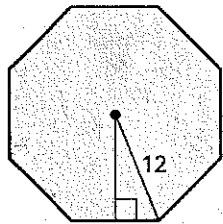
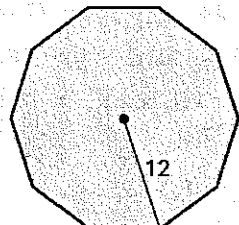
1. 15 sides
 2. 25 sides
 3. 32 sides
 4. 70 sides
5. A regular octagon has a radius of 11.5 inches. What is the length of its apothem?
Round your answer to the nearest tenth.
 6. A regular decagon has a diameter of 35 meters. What is the length of its apothem?
Round your answer to the nearest tenth.

Find the area of the regular polygon.

7. 
8. 
9. 

10. What is the area of an equilateral triangle with radius 15 centimeters? Round your answer to the nearest tenth, if necessary.
11. What is the area of a regular hexagon with radius 8.5 inches? Round your answer to the nearest tenth, if necessary.
12. What is the area of a square with diagonal 6.3 centimeters? Round your answer to the nearest tenth, if necessary.
13. What is the side length of a regular hexagon with area 100 square centimeters? Round your answer to the nearest tenth, if necessary.

Find the perimeter and area of the regular polygon. Round answers to the nearest tenth, if necessary.

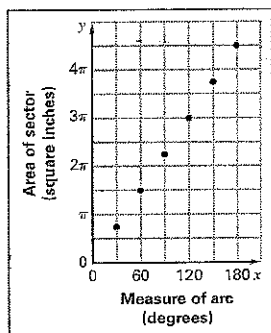
14. 
15. 
16. 
17. 
18. 
19. 

Lesson 11.5, continued

6. a.

x	30°	60°	90°	120°	150°	180°
y	$\frac{3\pi}{4}$	$\frac{3\pi}{2}$	$\frac{9\pi}{4}$	3π	$\frac{15\pi}{4}$	$\frac{9\pi}{2}$

b.



The data appear to follow a linear pattern.

$$c. y = \frac{\pi}{40}x$$

Lesson 11.6

Teaching Guide

1. You should partition the shape or polygon into shapes or polygons for which you do know the formula for the area. 2. The best way to partition a regular polygon is by creating congruent isosceles triangles by connecting the center to each vertex.

3. It's advantageous to partition a regular polygon into congruent isosceles triangles because the area of the polygon is the sum of the areas of the triangles, which can be expressed as a formula.

Practice Level A

- 30°
- 22.5°
- 9°
- 17.1°
- 60°
- 90°
- 30°
- 120°
- 6.1 in.
- 8.3 ft
- 64 square units
- about 41.6 square units
- about 58.1 square units
- about 187.1 square units
- about 1039.2 square units
- about 152.8 square units
- 277.0 m^2
- 906.9 cm^2
- 688.8 ft^2
- 24 units; 41.6 square units
- 45.3 units; 128 square units
- 53.0 units; 212.1 square units
- 41.6 units; 83.1 square units
- 33.9 units; 72 square units
- 72.7 units; 363.3 square units
- false
- true
- false
- a. 45° b. 15 in.; about 16.2 in.; 745.6 in.^2
- about 15.5 in.^2

Practice Level B

- 18°
- 10°
- 3°
- 15.7°
- 30°
- 15°
- 75°
- 120°
- 90°
- 105°
- C
- 9.5 in.
- 3.9 ft
- 48 units; 166.3 square units
- 100 units; 688.2 square units
- 30.4 units; 68.4 square units
- 29.8 units; 67.1 square units
- 60 units; 279.9 square units
- 16.4 units; 20.5 square units
- 1633.3 m^2
- 4557.5 in.^2
- 1247.5 ft^2
- 38.0 square units
- 70.7 square units
- 139.1 square units
- 184.3 square units
- 4.0 square units
- 28.3 square units
- 93.5 in.^2
- at least 93 tiles
- a. 2.6 in. b. 17.0 in.; 22.2 square inches

Practice Level C

- 24°
- 14.4°
- 11.3°
- 5.1°
- 10.6 in.
- 16.6 m
- about 70.1 square units
- about 400.5 square units
- about 1014.8 square units
- 292.3 cm^2
- 187.7 in.^2
- 19.8 cm^2
- 6.2 cm
- 60 units; 247.8 square units
- 59.7 units; 268.4 square units
- 43.3 units; 144.0 square units
- 72 units; 374.1 square units
- 73.5 units; 407.3 square units
- 74.2 units; 423.2 square units
- always
- always
- never
- about 6.9 in.^2
- about 41.6 in.^2
- about 22.2%
- \$9.35
- a. 3 colors b. about 166.3 in.^2
- about 28 tiles

Study Guide

- 40°
- 20°
- 90°
- $P = 49.2$ units; $A = 172.2$ square units
- $P \approx 17.63$ units; $A \approx 21.40$ square units
- $P = 48$ units; $A \approx 173.82$ square units

Real-Life Application

- 4605 ft
- 72° ; isosceles
- about 633.8 ft
- about $1,459,324.5 \text{ ft}^2$
- about $\frac{1}{9}$

Challenge Practice

- about 110.1 cm^2
- $A = n \cos\left(\frac{180}{n}\right) \sin\left(\frac{180}{n}\right)$