

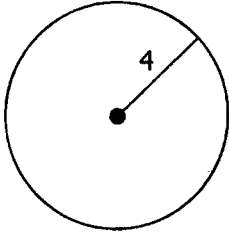
CHAPTER 11 WARM-UP

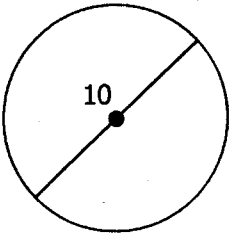
1) Give the formulas for the area and circumference of a circle:

$A = \underline{\hspace{2cm}}$

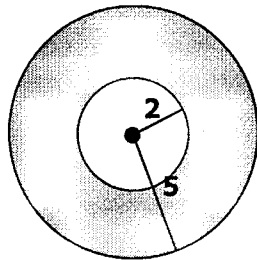
$C = \underline{\hspace{2cm}}$ or $\underline{\hspace{2cm}}$

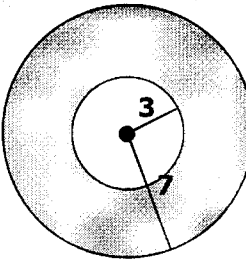
2) Find the circumference and area. Give answers in exact form (in terms of pi) AND as a decimal approximated to the nearest hundredth.

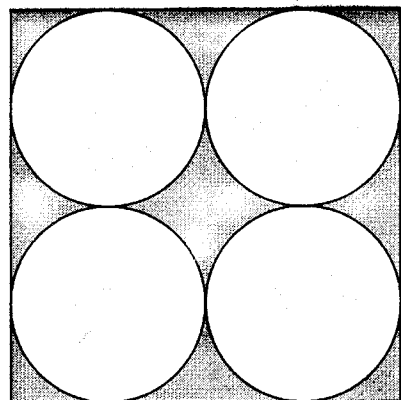
a)  $C = \underline{\hspace{1cm}} \approx \underline{\hspace{1cm}}$
 $A = \underline{\hspace{1cm}} \approx \underline{\hspace{1cm}}$

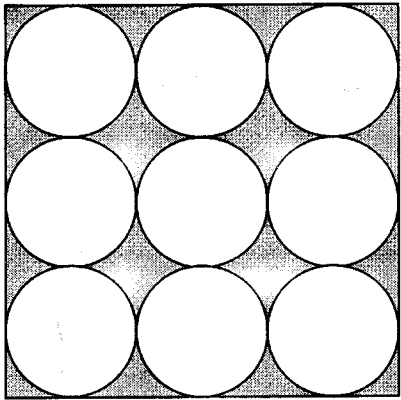
b)  $C = \underline{\hspace{1cm}} \approx \underline{\hspace{1cm}}$
 $A = \underline{\hspace{1cm}} \approx \underline{\hspace{1cm}}$

3) Find the area of the shaded region. Give answers in exact form (in terms of pi) AND as a decimal approximated to the nearest hundredth.

a) 

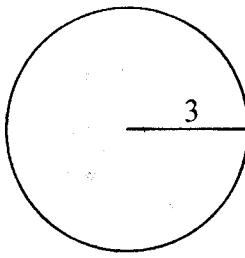
b) 

c)  12 cm
 12 cm

d)  30 cm
 30 cm

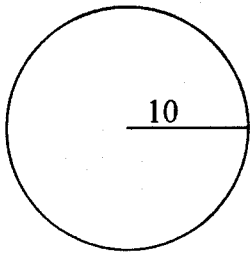
Name: _____
 Per _____ Date _____

Circumference and Area in "exact" or "pi" form.

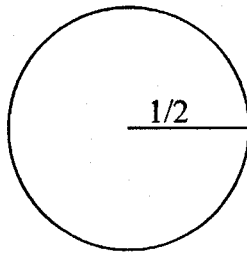
	<p>Circumference = $2\pi r$ Area = πr^2</p>
<p>$C = 2\pi r$ $C = 2\pi(3)$ $C = 6\pi$ units</p>	<p>$A = \pi r^2$ $A = \pi(3)^2$ $A = 9\pi$ square units</p>

Find the circumference and area of each circle. Leave answers in "exact" form (pi).

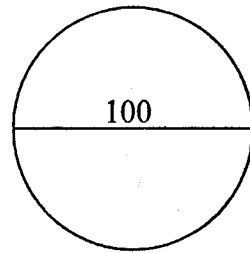
1.



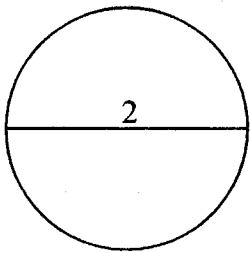
2.



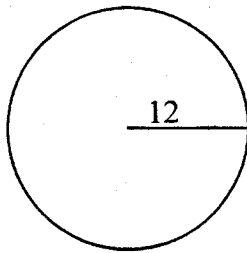
3.



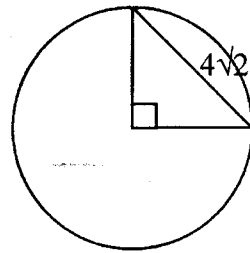
4.



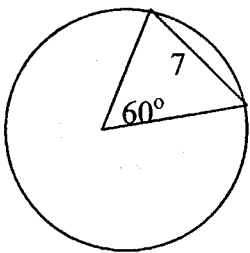
5.



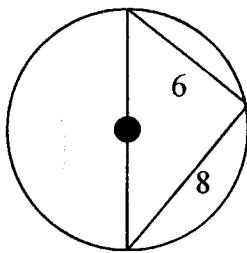
6.



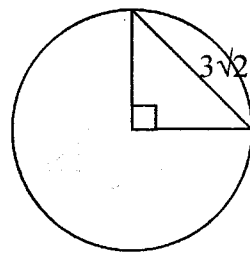
7.



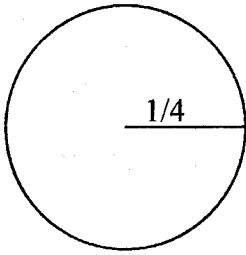
8.



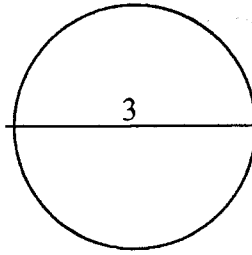
9.



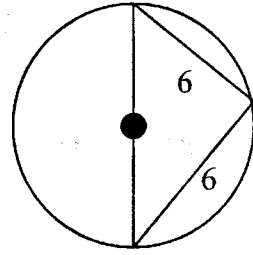
10.



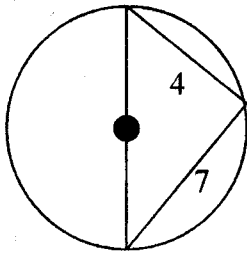
11.



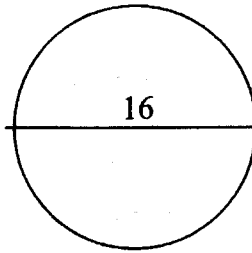
12.



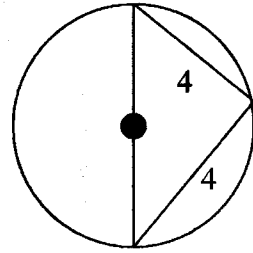
13.



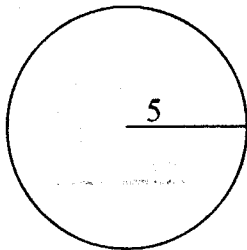
14.



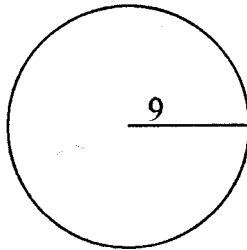
15.



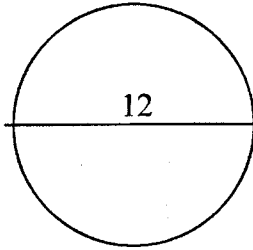
16.



17.



18.



teaching with Practice

For use with pages 661-668

GOAL Find the measures of interior and exterior angles of polygons

VOCABULARY

Theorem 11.1 Polygon Interior Angles Theorem

The sum of the measures of the interior angles of a convex n -gon is $(n - 2) \cdot 180^\circ$.

Corollary to Theorem 11.1

The measure of each interior angle of a regular n -gon is

$$\frac{1}{n} \cdot (n - 2) \cdot 180^\circ, \text{ or } \frac{(n - 2) \cdot 180^\circ}{n}$$

Theorem 11.2 Polygon Exterior Angles Theorem

The sum of the measures of the exterior angles of a convex polygon, one angle at each vertex, is 360° .

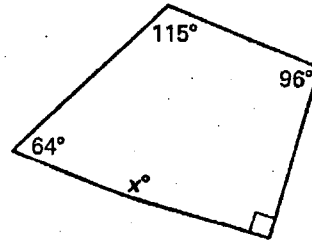
Corollary to Theorem 11.2

The measure of each exterior angle of a regular n -gon is

$$\frac{1}{n} \cdot 360^\circ, \text{ or } \frac{360^\circ}{n}$$

EXAMPLE 1 Finding Measures of Interior Angles of Polygons

Find the value of x .



SOLUTION

The sum of the measure of the interior angles of any pentagon is

$$(5 - 2) \cdot 180^\circ = 3 \cdot 180^\circ = 540^\circ.$$

Add the measures of the interior angles of the pentagon.

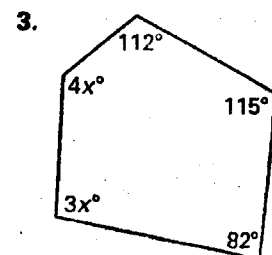
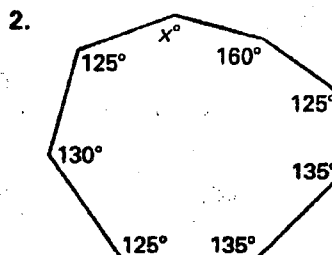
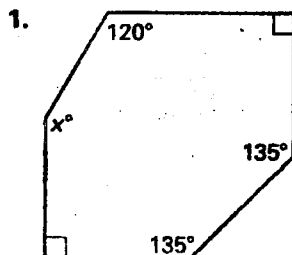
$$64^\circ + 115^\circ + 96^\circ + 90^\circ + x^\circ = 540^\circ \quad \text{The sum is } 540^\circ.$$

$$365 + x = 540 \quad \text{Simplify.}$$

$$x = 175 \quad \text{Subtract 365 from each side.}$$

Exercises for Example 1

In Exercises 1-3, find the value of x .



Find the sum of the measures of the interior angles of the convex polygon.

1. heptagon

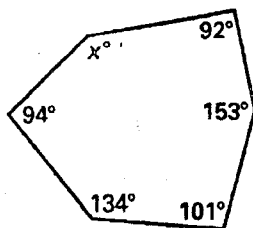
2. decagon

3. 16-gon

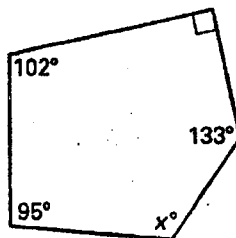
4. 24-gon

Find the value of x .

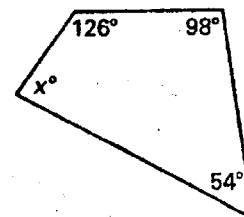
5.



6.



7.



You are given the measure of each interior angle of a regular n -gon. Find the value of n .

8. 135°

9. 156°

10. 162°

11. $172\frac{4}{5}^\circ$

You are given the measure of each exterior angle of a regular n -gon. Find the value of n .

12. 40°

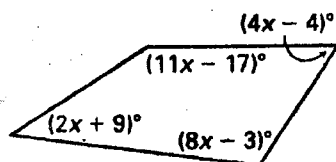
13. 36°

14. $7\frac{1}{2}^\circ$

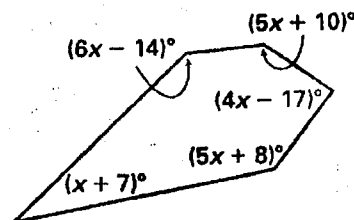
15. 2°

Find the value of x .

16.



17.



Would it be possible for a regular polygon to have interior angles with the angle measure described? Explain.

18. 155°

19. 160°

20. 165°

21. 168°

Tell whether each statement is *always*, *sometimes*, or *never* true.

22. As the number of sides of a polygon increases, the sum of the interior angles increases.

23. As the number of sides of a polygon increases, the sum of the exterior angles decreases.

24. A regular polygon is equilateral.

25. An equilateral polygon is regular.

26. If the number of sides of an equiangular polygon is doubled, the measure of each exterior angle is halved.

27. The measure of an exterior angle of a decagon is greater than the measure of an exterior angle of a pentagon.

NAME _____ DATE _____

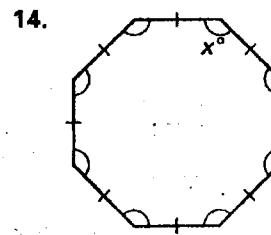
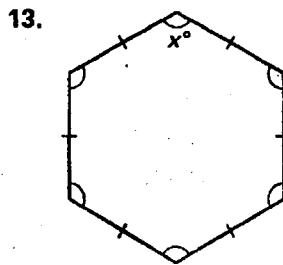
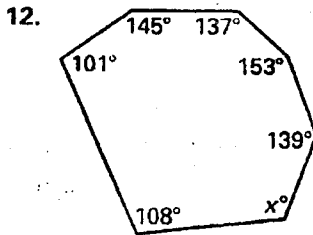
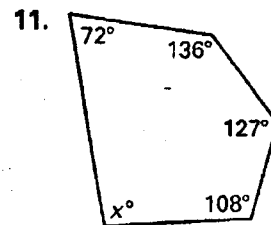
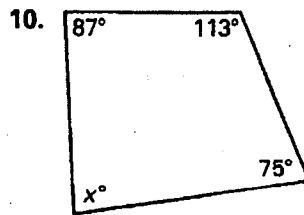
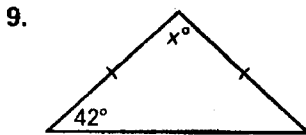
State the number of sides and the number of interior angles of the polygon.

1. quadrilateral 2. hexagon 3. decagon 4. pentagon

Find the sum of the measures of the interior angles of the convex polygon.

5. hexagon 6. octagon 7. 12-gon 8. 15-gon

Find the value of x .



You are given the measure of each interior angle of a regular n -gon. Find the value of n .

15. 90° 16. 108° 17. 135° 18. 144°

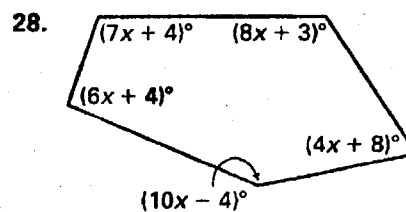
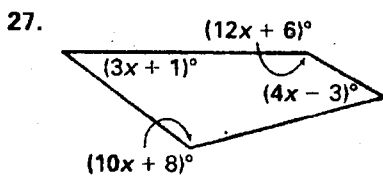
Find the sum of the measures of the exterior angles of the convex polygon.

19. hexagon 20. octagon 21. 12-gon 22. 15-gon

You are given the measure of each exterior angle of a regular n -gon. Find the value of n .

23. 90° 24. 60° 25. 45° 26. 30°

Find the value of x .



Find the sum of the measures of the interior angles of the convex polygon.

1. pentagon

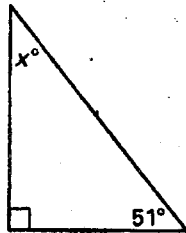
2. nonagon

3. 13-gon

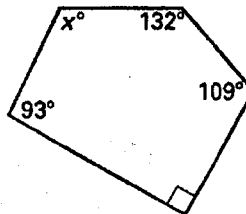
4. 18-gon

Find the value of x .

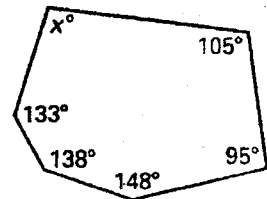
5.



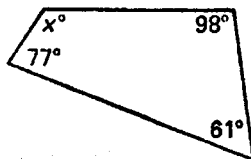
6.



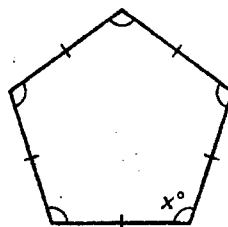
7.



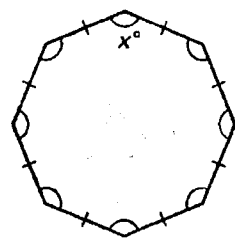
8.



9.



10.



You are given the measure of each interior angle of a regular n -gon. Find the value of n .

11. 108°

12. $128\frac{4}{7}^\circ$

13. 150°

14. 162°

Find the sum of the measures of the exterior angles of the convex polygon.

15. pentagon

16. nonagon

17. 15-gon

18. 20-gon

You are given the measure of each exterior angle of a regular n -gon. Find the value of n .

19. 72°

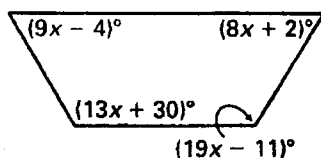
20. 45°

21. 20°

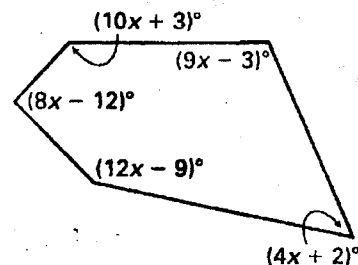
22. 15°

Find the value of x .

23.

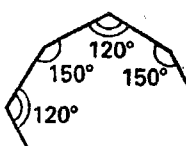


24.

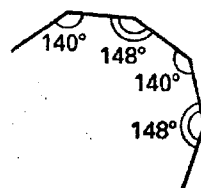


You are shown part of a convex n -gon. The pattern of the congruent angles continues around the polygon. Find n .

25.



26.



Geometry Ch. 11 Review Sheet

- 11.1** *Know how to identify the formulas for finding the sum of the interior angles of a polygon (Thm11.1).
*Know how to find the measure of each int. angle of a regular poly (corollary Thm 11.1) Pg. 665 #s 3, 4, 14-21.
*Know how to find n (the number of sides of a regular n -gon) Pg. 665 #s 22-25.
- 11.2** *Know the sum of the exterior angles of a polygon = 360° (Thm 11.2) and how to find each exterior angle of a regular polygon (Corollary to Thm 11.2) Pg. 665-666 #s 5, 29-32.
*Know how to find n (the number of sides of a regular n -gon) Pg. 666 #s 33-36.
- 11.3** *Know how to find the area of an equilateral triangle(Thm 11.3) Pg. 672 #s 9-11.
*Know how to find the area of a regular polygon (Thm 11.4) Pg. 672 #s 16-22.
- 11.4** *Know how to find circumference, area and radius of a circle in both exact (π) form and approx Pg. 686 #s 15-19.
*Know how to find the arc length of a circle. Pg. 686 #s 15-22.
- 11.5** *Know how to find the sector area of a circle Pg. 695 #s 3-15, 23

Always, pay attention to any vocab. from previous lessons.

Don't forget to review your homework, notes, warm-ups, etc.