

# Unit 3: Arcs and Angles in Circles

<i>February and Beginning of March</i> ●				
<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>
<b>22</b> Circle Vocabulary and Central Angles	<b>23</b> Inscribed Angles and Polygons	<b>24</b> Delta Math	<b>25</b> Secant and Tangent Angles	<b>26</b> More Secant and Tangent and QUIZ
<b>1</b> Arclength	<b>2</b> Sector Area	<b>3</b> Delta Math	<b>4</b> Review	<b>5</b> Test



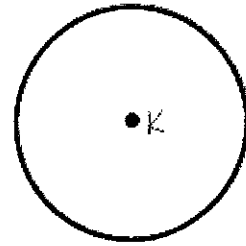
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# Circle Vocabulary and Central Angles: Notes

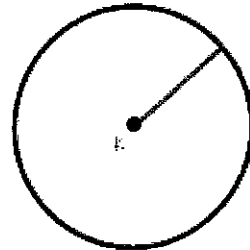
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1. A \_\_\_\_\_ is the set of all points \_\_\_\_\_ from a given point, called the \_\_\_\_\_.

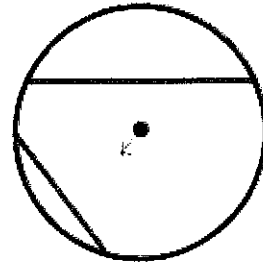
A \_\_\_\_\_ is named by its center point. The circle shown here would be called \_\_\_\_\_. Notation: \_\_\_\_\_



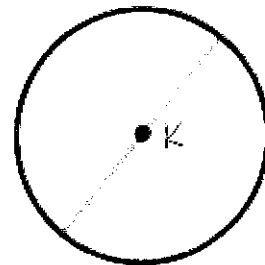
2. The \_\_\_\_\_ is the distance from the center point to any point on the circle. The \_\_\_\_\_ is a line segment and will have one endpoint at the \_\_\_\_\_ and the other endpoint on the \_\_\_\_\_ of the circle. Every \_\_\_\_\_ in the same circle will have the same length.



3. A \_\_\_\_\_ is any line segment that has it's \_\_\_\_\_ on the circumference of the circle.



4. A \_\_\_\_\_ is a special type of chord that passes through the \_\_\_\_\_ of the circle. It is the \_\_\_\_\_ across the circle, and will always be the \_\_\_\_\_ chord in a circle.



Special relationships: The radius will always be \_\_\_\_\_ the length of the diameter.

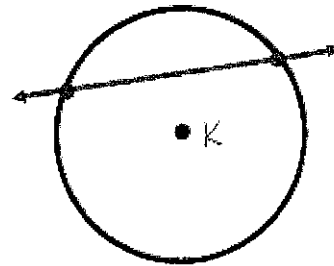
The diameter will always be \_\_\_\_\_ the length of the radius.

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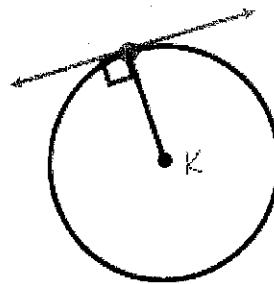
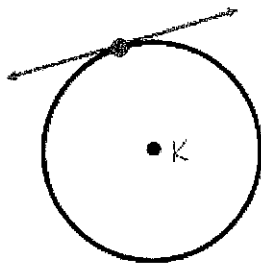
Formulas:

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5. A \_\_\_\_\_ line intersects the circle at two points.



6. A \_\_\_\_\_ line intersects the circle at exactly one point. This point is called the point of \_\_\_\_\_. If you draw a radius from the point of \_\_\_\_\_, a right angle is always formed at their intersection.



7. You Try: Using our new vocabulary words, decide which word best describes the requested line or segment:

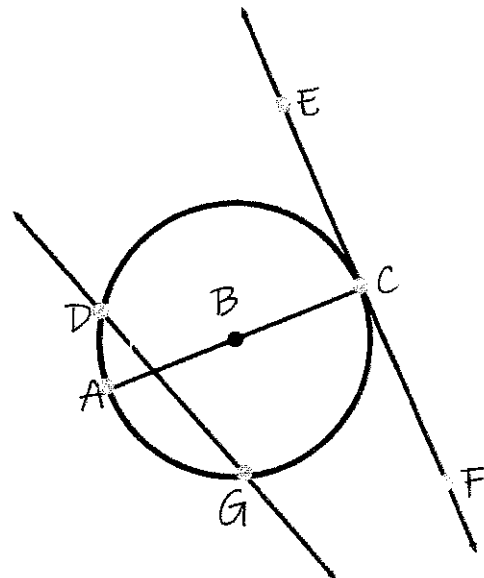
a.  $\overline{AB}$  \_\_\_\_\_ b.  $\overline{AC}$  \_\_\_\_\_ c.  $\overline{DG}$  \_\_\_\_\_

d.  $\overline{DG}$  \_\_\_\_\_ e.  $\overline{EF}$  \_\_\_\_\_

f.  $C$  \_\_\_\_\_ g.  $B$  \_\_\_\_\_

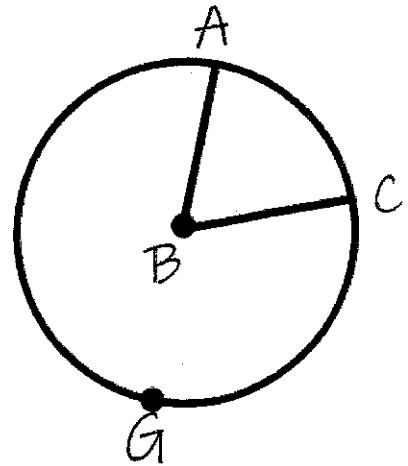
h. If  $\overline{AB} = 7$ , then  $\overline{AC} =$  \_\_\_\_\_.

i.  $\overline{AC}$  and  $\overline{EF}$  meet to form a \_\_\_\_\_ angle.



8. Recall: How many degrees are in a circle? \_\_\_\_\_.

9. A \_\_\_\_\_ angle is an angle with its vertex at the \_\_\_\_\_ point of the circle.  $\angle$  \_\_\_\_\_ is a central angle. A central angle will always be equal to its arc!



10. A \_\_\_\_\_ arc is an arc with a measure that is less than  $180^\circ$ .

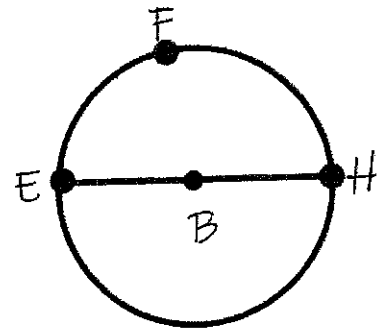
$\widehat{AC}$  is a minor arc. You use \_\_\_\_\_ letters to name a minor arc.

11. A \_\_\_\_\_ arc is an arc with a measure that is greater than  $180^\circ$ .

$\widehat{AGC}$  is a major arc. You must use \_\_\_\_\_ letters to name a major arc.

12. A \_\_\_\_\_ is an arc that is exactly  $180^\circ$ . A \_\_\_\_\_ is \_\_\_\_\_ a circle.

$\widehat{EGH}$  is a semicircle.



13. Important things to look for when dealing with angles and arcs in circles:

Vertical angles are always \_\_\_\_\_, Linear Pairs are always \_\_\_\_\_. All the arcs of a circle will add up to be \_\_\_\_\_. The arcs that form a semicircle will add up to be \_\_\_\_\_.

14. You try!

C is the center point.  $\overline{AD}$  is a diameter.

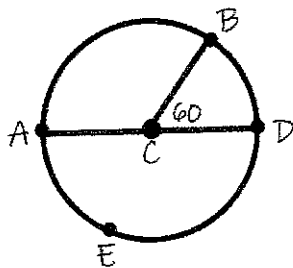
F is the center point.  $\overline{GI}$  and  $\overline{JH}$  are diameters.

a.  $m\widehat{AB} =$  \_\_\_\_\_

b.  $m\widehat{BD} =$  \_\_\_\_\_

c.  $m\angle ACB =$  \_\_\_\_\_

d.  $m\widehat{AED} =$  \_\_\_\_\_

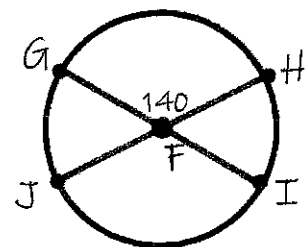


e.  $m\angle GFJ =$  \_\_\_\_\_

f.  $m\widehat{GH} =$  \_\_\_\_\_

g.  $m\widehat{HI} =$  \_\_\_\_\_

h.  $m\widehat{JIH} =$  \_\_\_\_\_

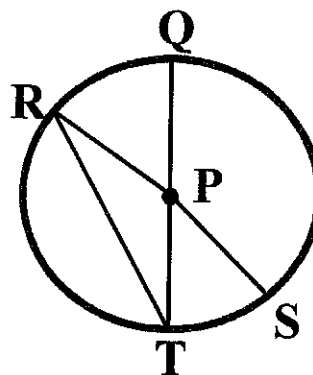


Use  $\odot P$  to determine whether each statement is *true* or *false*.

1.  $\overline{RT}$  is a diameter.

2.  $\overline{PS}$  is a radius.

3.  $\overline{QT}$  is a chord.



3

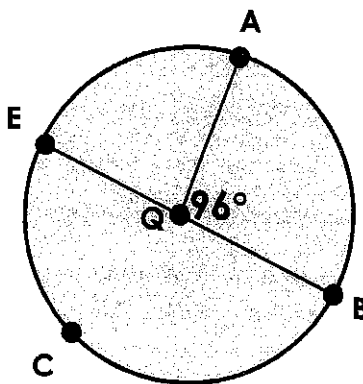
Find the measures.

$EB$  is a diameter.

$$m \widehat{AB} =$$

$$m \widehat{ACB} =$$

$$m \widehat{AE} =$$



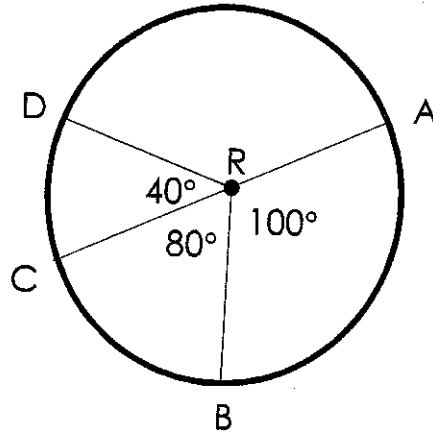
4

Tell me the measure of the following arcs.

AC is a diameter.

$$m \widehat{DAB} =$$

$$m \widehat{BCA} =$$



Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Central Angles Practice**

**1. Identify and name each of the following from  $\odot O$ . Be sure to use the correct notation.  $BD$  is a diameter.**

\_\_\_\_\_ a. Two different central angles

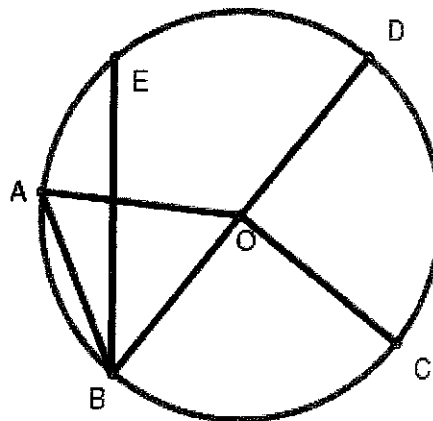
\_\_\_\_\_ b. A minor arc

\_\_\_\_\_ c. A major arc

\_\_\_\_\_ d. A semicircle

\_\_\_\_\_ e. Two different chords

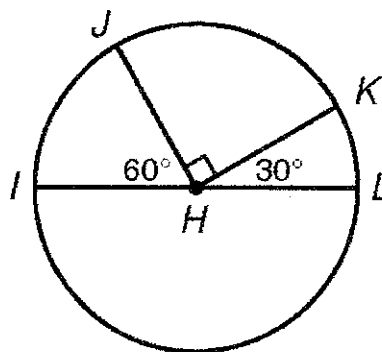
\_\_\_\_\_ f. The central angle the creates  $AD$



**Find each measure.**

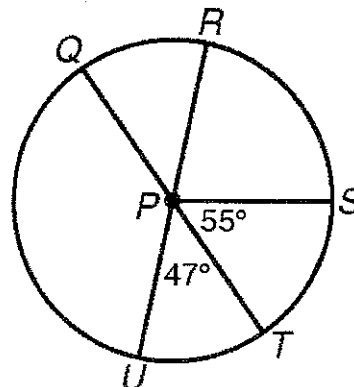
$IL$  is a diameter.

2.  $m\angle LK$  \_\_\_\_\_,  $m\angle IK$  \_\_\_\_\_



$RU$  &  $QT$  are diameters.

3.  $m\angle QS$  \_\_\_\_\_,  $m\angle RQT$  \_\_\_\_\_



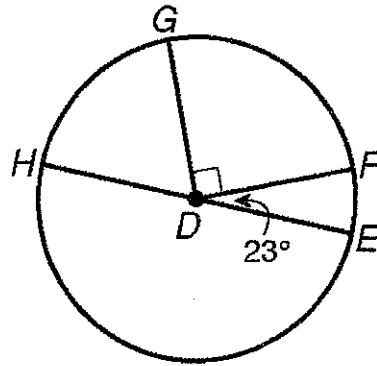


Geometry  
HE is a diameter

Circle Angles and Arcs

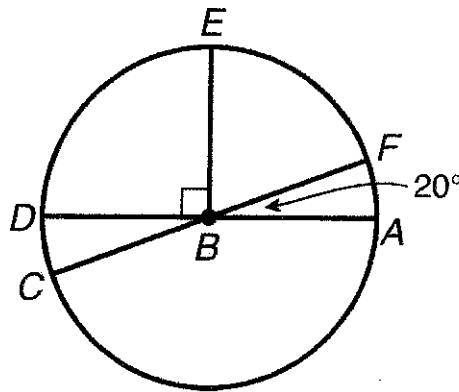
Practice

4.  $mHG$  \_\_\_\_\_,  $mFEH$  \_\_\_\_\_

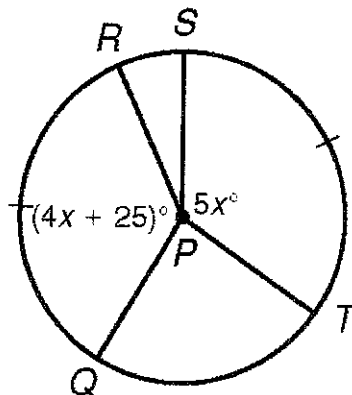


DA and FC are diameters.

5.  $mEF$  \_\_\_\_\_,  $mCEA$  \_\_\_\_\_

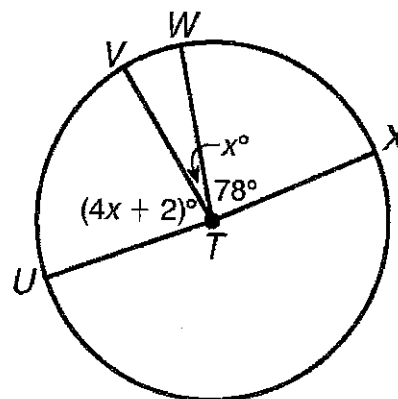


6.  $\angle QPR$  \_\_\_\_\_



UX is a diameter.

7.  $\angle UTW$  \_\_\_\_\_,  $mUV$  \_\_\_\_\_



**Warm up**

a.  $m\widehat{JK}$   
 b.  $m\widehat{NM}$   
 c.  $m\widehat{LM}$   
 d.  $m\widehat{KNM}$   
 e.  $m\widehat{NK}$   
 f.  $m\widehat{LJM}$

1

**Case I: Central Angle:** Vertex is AT the center

Central ANGLE = ARC

2

**Case II: Inscribed Angle:** Vertex is ON circle

\_\_\_\_\_ = \_\_\_\_\_ / 2

3

$$\text{Inscribed Angle} = \frac{\text{Intercepted Arc}}{2}$$

The arc is twice as big as the angle!!

4

Find the value of x and y

5

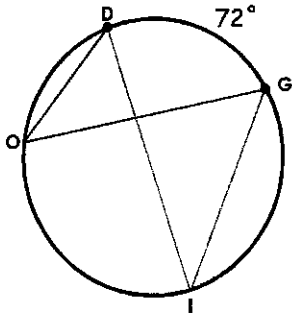
**Examples**

- If  $m\widehat{JK} = 80^\circ$  and  $\angle JMK = 2x - 4$ , find x.
- If  $m\angle MKS = 56^\circ$ , find  $m\widehat{MS}$ .

6

Find the measure of  $\angle DOG$  and  $\angle DIG$ .

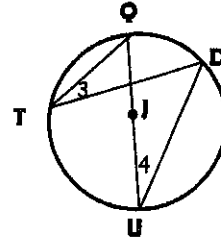
If two inscribed angles intercept the same arc, then they are \_\_\_\_\_.



7

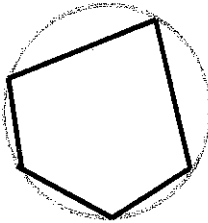
Example 3

In  $\odot J$ ,  $m\angle 3 = 5x$  and  $m\angle 4 = 2x + 9$ . Find the value of  $x$ .



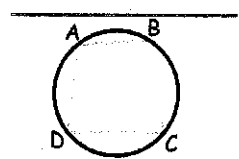
8

If all the vertices of a polygon touch the edge of the circle, the polygon is \_\_\_\_\_ and the circle is **CIRCUMSCRIBED**.



9

**a quadrilateral inscribed in a circle: opposite angles are**

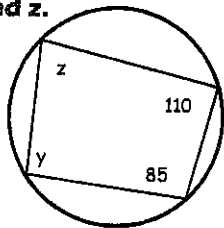


$$m\angle A + m\angle C = 180$$

$$m\angle B + m\angle D = 180$$

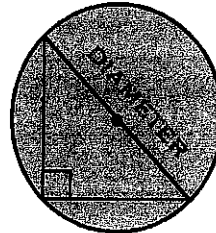
10

Example 4 Find  $y$  and  $z$ .



11

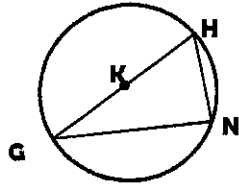
If a right triangle is inscribed in a circle then the \_\_\_\_\_ will be the diameter of the circle.



12

**Example 5**

In  $\odot K$ ,  $\overline{GH}$  is a diameter and  $m\angle GNH = 4x - 14$ .  
Find the value of  $x$ .

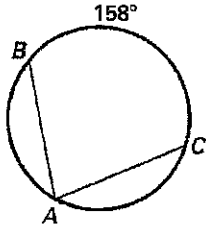


Bonus: What type of triangle is this? Why?

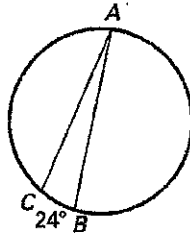
LESSON **6.4 Practice**

Find the indicated measure.

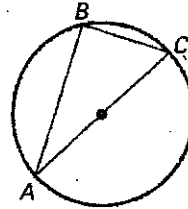
1.  $m\angle A$



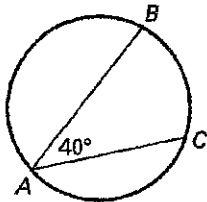
2.  $m\angle A$



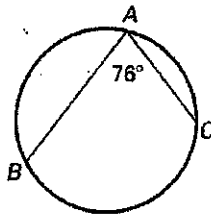
3.  $m\angle B$



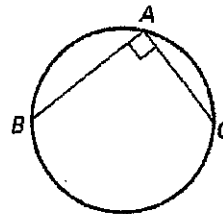
4.  $m\widehat{BC}$



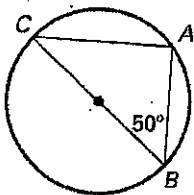
5.  $m\widehat{BC}$



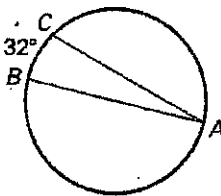
6.  $m\widehat{BC}$



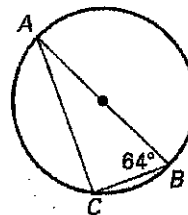
7.  $m\angle C$



8.  $m\angle A$



9.  $m\widehat{BC}$



Name \_\_\_\_\_

Date \_\_\_\_\_

LESSON  
**6.4 Practice** *continued*

Find the indicated measure in  $\odot M$ .

10.  $m\angle PNO$

11.  $m\angle QNP$

12.  $m\widehat{PQ}$

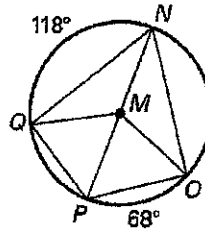
13.  $m\widehat{QO}$

14.  $m\angle NMO$

15.  $m\widehat{NOP}$

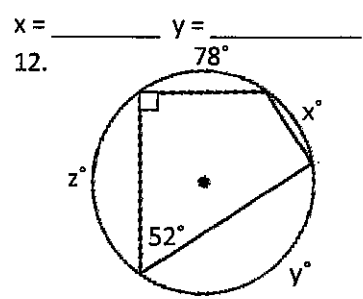
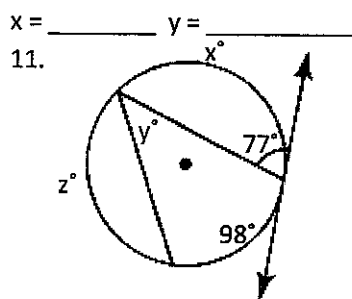
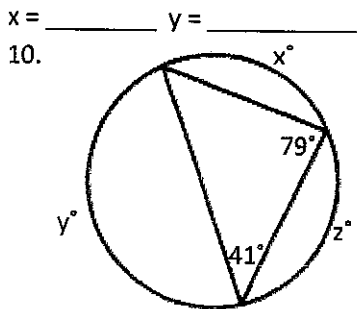
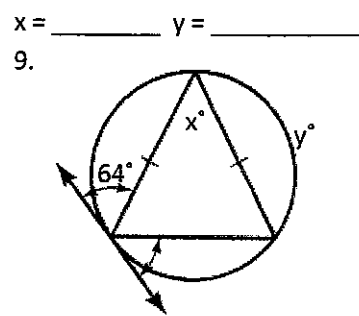
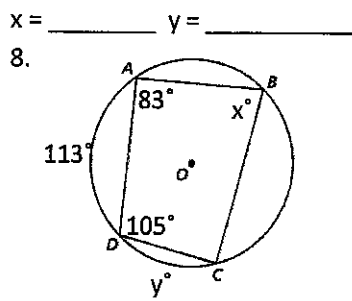
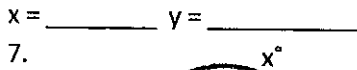
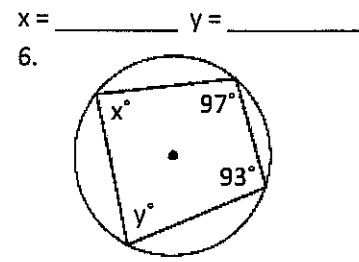
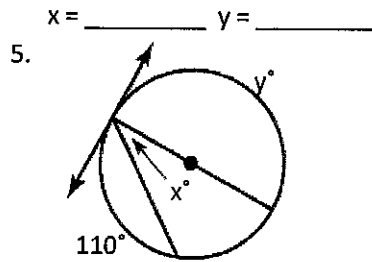
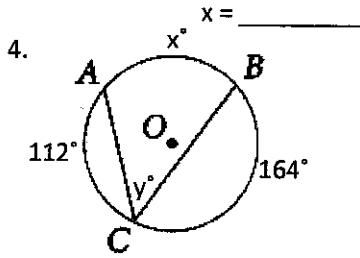
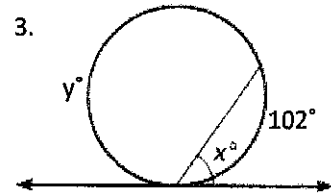
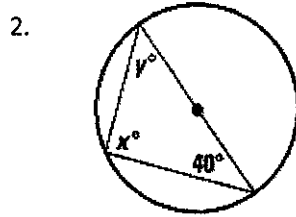
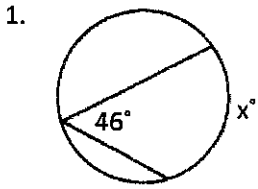
16.  $m\angle QMP$

17.  $m\widehat{OQN}$



Inscribed angle =  $\frac{1}{2}$  · intercepted arc

Find the value of each variable.



x = \_\_\_\_\_ y = \_\_\_\_\_ z = \_\_\_\_\_ x = \_\_\_\_\_ y = \_\_\_\_\_ z = \_\_\_\_\_ x = \_\_\_\_\_ y = \_\_\_\_\_ z = \_\_\_\_\_

# Quiz Review

## Section 1: Vocabulary

Fill in the blank with the appropriate term. There is a word bank below.

- 1) A \_\_\_\_\_ is the set of all points equidistant from a given point, called the center.
- 2) The distance from the center point to a point on the circle is called the \_\_\_\_\_.
- 3) When a line intersects a circle in two places, it is called a \_\_\_\_\_ line.
- 4) When a line intersects a circle in exactly one place, it is called a \_\_\_\_\_ line.
- 5) The diameter is \_\_\_\_\_ the length of the radius.
- 6) The a chord that goes through the center point of the circle will be the longest chord in that circle, its called the \_\_\_\_\_.

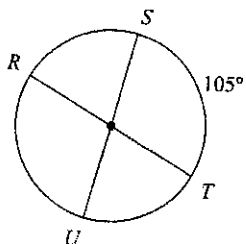
Word bank, the term can only be used on time. Not all terms will be used: Radius, diameter, chord, secant, tangent, circle, circumference, double, half.

## Section 2: Central angles.

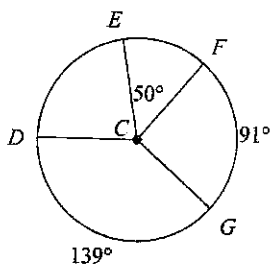
Find the Measure of the requested arc or angle

FORMULA:  
 $m\text{Central Angle} = m\text{Arc}$

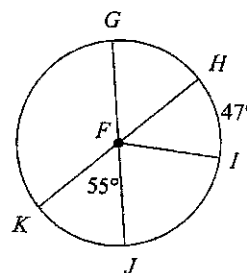
7)  $m\overline{RS}$



8)  $m\angle DCE$

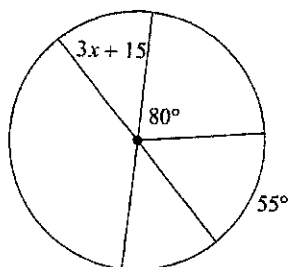


9)  $m\angle GFI$

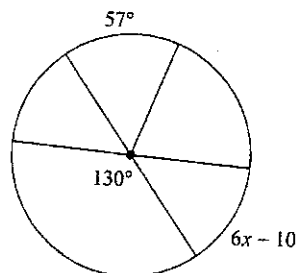


For 10 and 11, solve for x

10)



11)



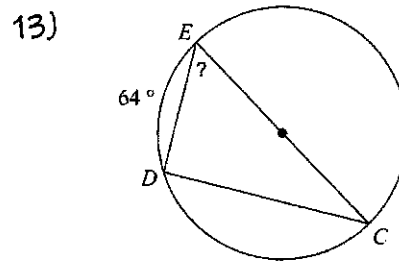
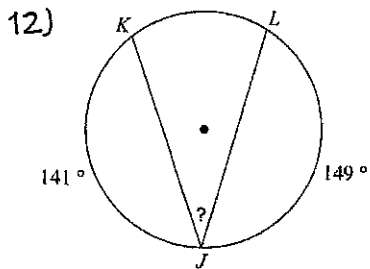
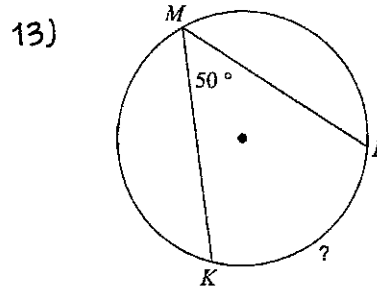
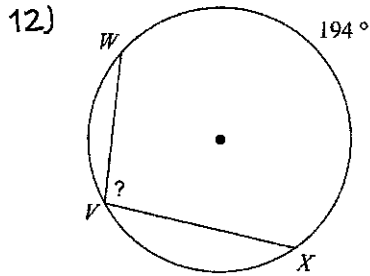


Section 3: Inscribed Angles and Inscribed Polygons

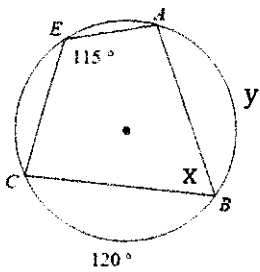
FORMULA:

$$m\text{Inscribed Angle} = \frac{m\text{Arc}}{2}$$

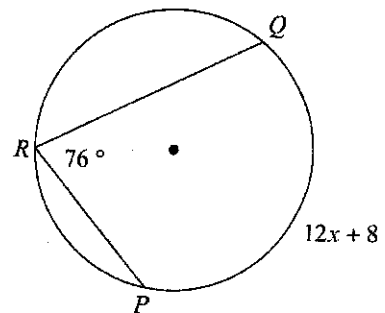
Find the measure of the requested angle or arc.



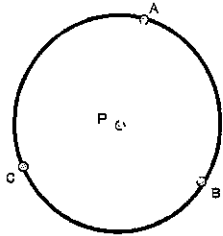
14) Solve for x and y



15) Solve for x:



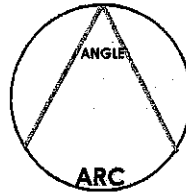
**Case I:** Vertex is **AT** the center



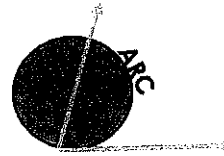
ANGLE = ARC

1

**Case II:** Vertex is **ON** circle

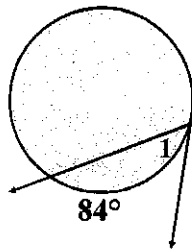


ANGLE =  $\frac{\text{ARC}}{2}$



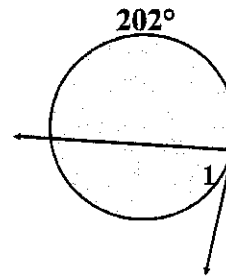
2

Ex. 1 Find  $m\angle 1$ .



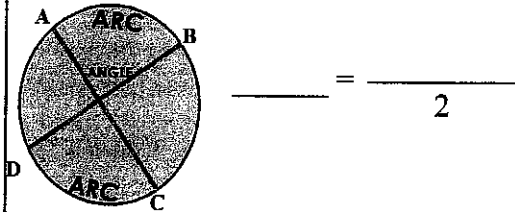
3

Ex. 2 Find  $m\angle 1$ .



4

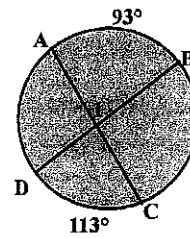
**Case III:** Vertex is **INSIDE** circle



Looks like a PLUS sign!

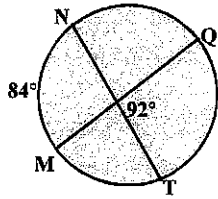
5

Ex. 3 Find  $m\angle 1$ .



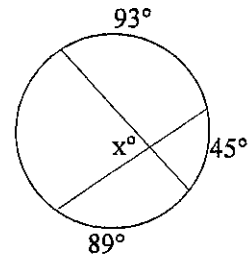
6

Ex. 4 Find  $m\widehat{QT}$ .



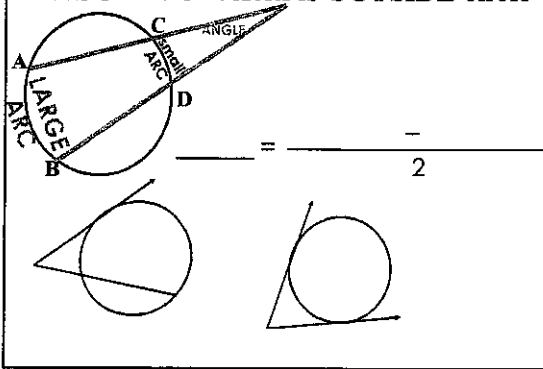
7

Ex. 5 Find  $x$ .



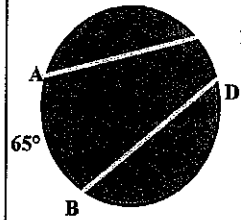
8

Case IV: Vertex is OUTSIDE circle



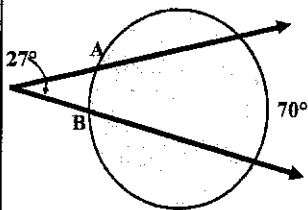
9

Ex. 6 Find  $m\angle 1$ .



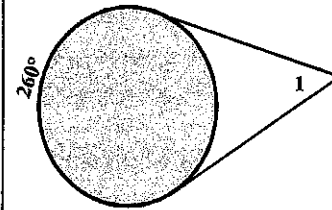
10

Ex. 7 Find  $m\widehat{AB}$ .



11

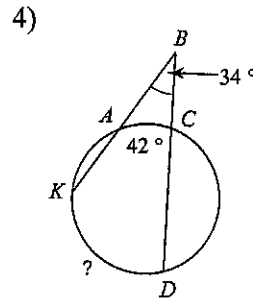
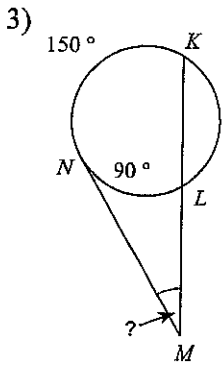
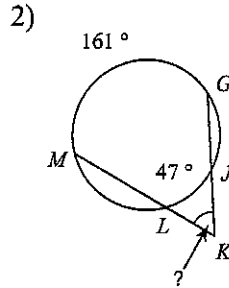
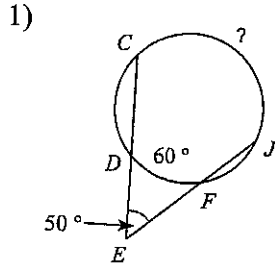
Ex. 8 Find  $m\angle 1$ .



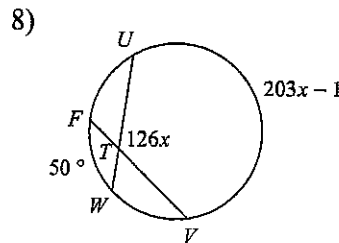
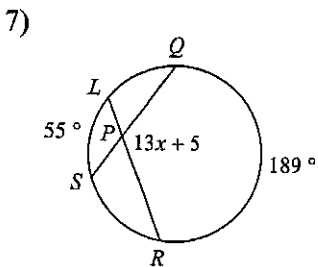
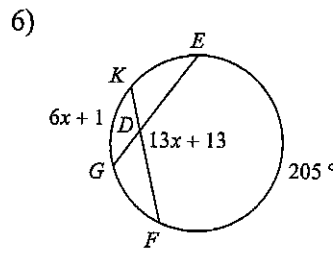
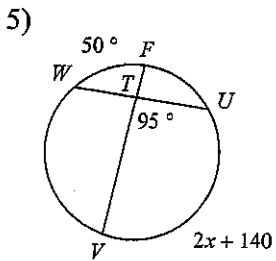
12

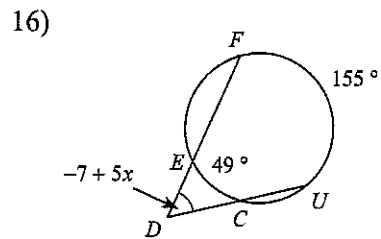
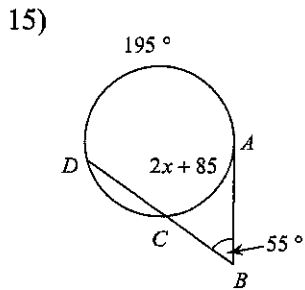
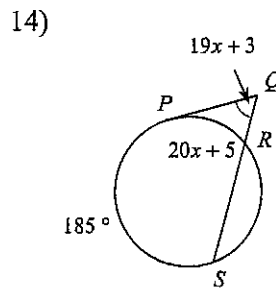
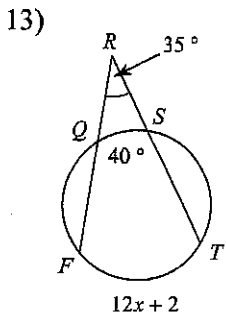
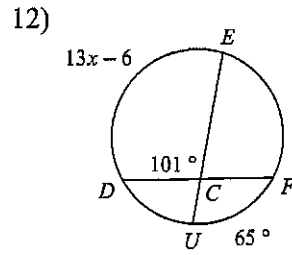
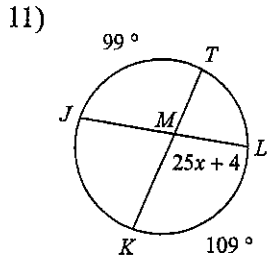
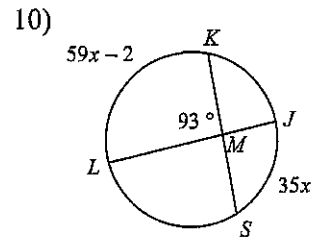
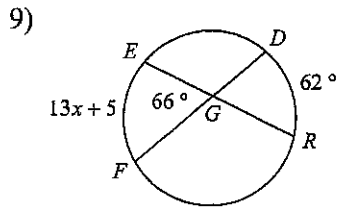
Angles in Circles

Find the measure of the arc or angle indicated. Assume that lines which appear tangent are tangent.



Solve for  $x$ . Assume that lines which appear tangent are tangent.





<p>1.</p>	<p>2.</p>
<p>3.</p>	<p>4.</p>
<p>5.</p>	<p>6.</p>
<p>7.</p>	<p>8.</p>
<p>9.</p>	<p>10.</p>
<p>11.</p>	<p>12.</p>

Name: \_\_\_\_\_ Date: \_\_\_\_\_

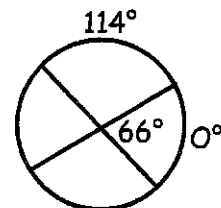
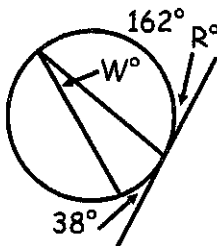
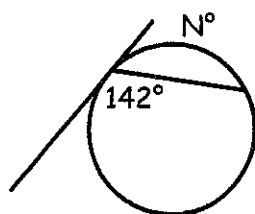
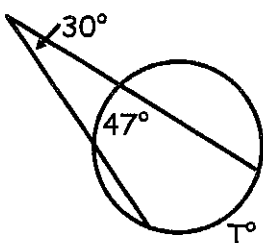
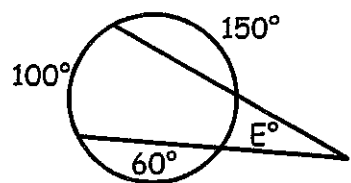
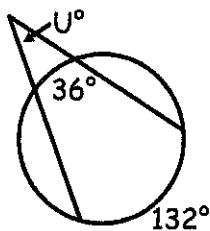
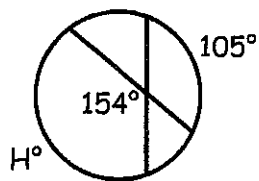
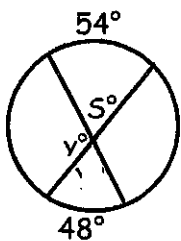
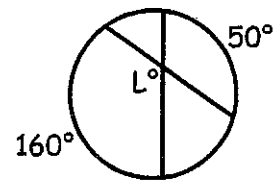
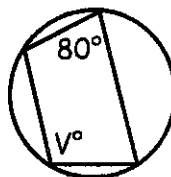
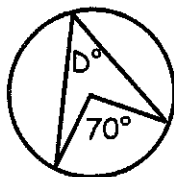
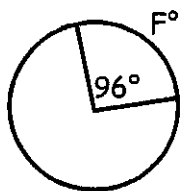
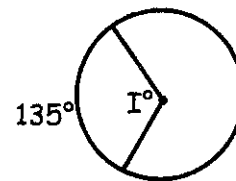
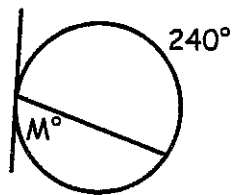
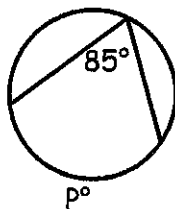
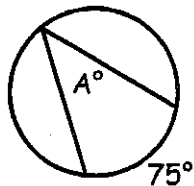
**What did the Mama Lion say when she saw her cub chasing a hunter around a tree?**

To find out, figure out the degree measure of each lettered angle and arc in the circles below. Then place the corresponding letter above each number.

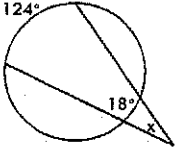
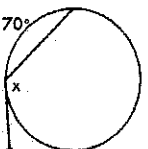
203   66   19   60   37.5   76   129   107   135   60   25   51   203   37.5   100   25

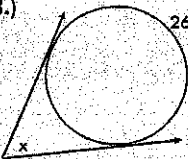
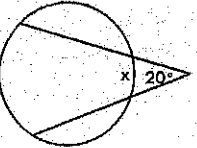
135   107   66   105   35   129   66   48   76   66   107   107   66

170   105   37.5   129   19   135   107   203   129   66   48   81   96   66   66   35



**Warm up: Solve for x**

1.)  2.) 

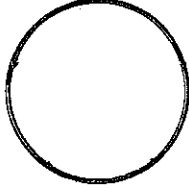
3.)  4.) 

1

# Circumference & Arc Length of Circles

2

**Circumference**  
The distance around a circle



3

**Circumference**

$$C = 2\pi r$$

or

$$C = \pi d$$

4

**2 Types of Answers**

<p><b>Rounded</b></p> <ul style="list-style-type: none"> <li>Type the Pi button on your calculator</li> <li>Toggle your answer</li> <li>Do NOT write Pi in your answer</li> </ul>	<p><b>Exact</b></p> <ul style="list-style-type: none"> <li>Pi will be in your answer</li> </ul>
---	---

5

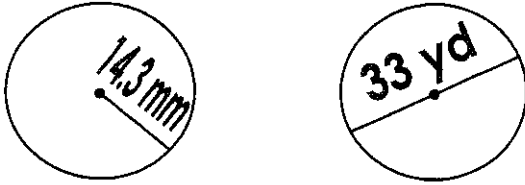
Find the EXACT circumference.

- $r = 14$  feet
- $d = 15$  miles

6



Ex 3 and 4: Find the circumference.  
Round to the nearest tenths.



7

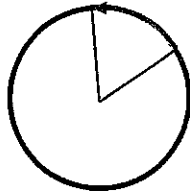
5. A circular flower garden has a radius of 3 feet. Find the circumference of the garden to the nearest hundredths.

$$C = 2\pi r$$

8

## Arc Length

The *distance* along the curved line making the arc (NOT a degree amount)



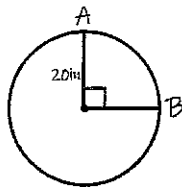
9

## Arc Length

$$\text{Arc length} = \frac{\theta}{360} (\text{Circumference})$$

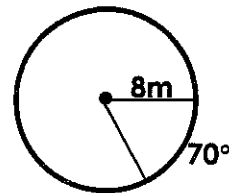
10

Let's Try this Together: Find the Exact Arc Length Of  $\widehat{AB}$ !



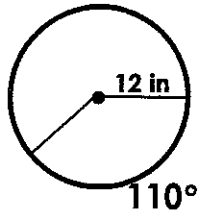
11

Ex 6. Find the Arc Length  
Round to the nearest hundredths



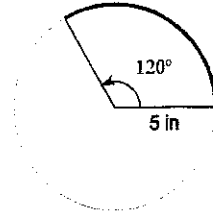
12

**Ex 7. Find the Arc Length**  
Round to the nearest hundredths



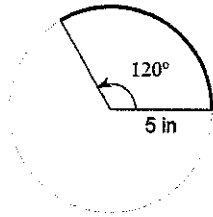
13

**Ex 8. Find the exact Arc Length.**



14

**Ex 9. What happens to the arc length if the radius were to be doubled? Halved?**



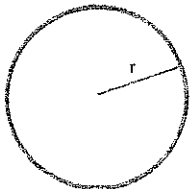
15

# Area of Circles & Sectors

16

## Area

The amount of space occupied.



$$A = \pi r^2$$

17

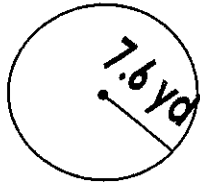
**Find the EXACT area.**

1.  $r = 29$  feet

2.  $d = 44$  miles

18

Find the area. Round to the nearest tenths.



19

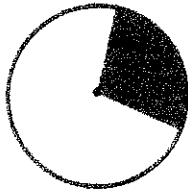
Another Example!

If  $\odot S$  has a diameter of 10 inches, find the area of the circle to the nearest hundredths.

A =

20

the region bounded by two radii of the circle and their intercepted arc.



21

## Area of a Sector

$$\text{Sector Area} = \frac{\theta}{360} (\text{Total Area})$$

22

Example

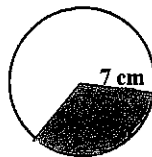
Find the area of the sector to the nearest hundredths.



23

Example

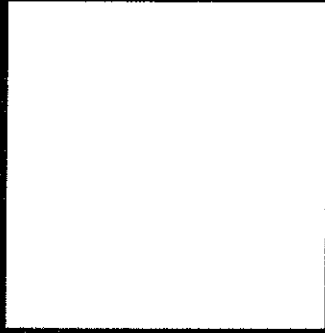
Find the exact area of the sector.



24

**Example**

Find the area of a sector with a central angle of  $45^\circ$  if the diameter of the circle is 12 inches. Round to the nearest hundredths.



25

**Example**

A spinner is divided into 12 equal sections and the radius of the spinner is 4 inches. Every other section is shaded. Find the exact total area of the shaded region on the spinner.

26

Name \_\_\_\_\_

Date \_\_\_\_\_

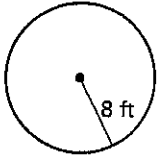
**LESSON**  
**11.1**

**Practice**

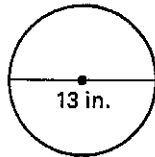
For use with the lesson "Circumference and Arc Length"

**Use the diagram to find the indicated measure.**

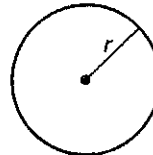
1. Find the circumference.



2. Find the circumference.



3. Find the radius.

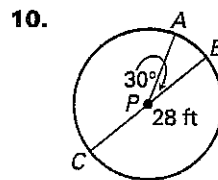
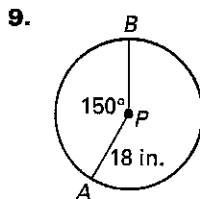
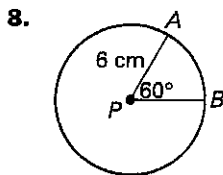


$C = 65.98$  cm

**Find the indicated measure.**

- The exact radius of a circle with circumference 42 meters
- The exact diameter of a circle with circumference 39 centimeters
- The exact circumference of a circle with diameter 15 inches
- The exact circumference of a circle with radius 27 feet

**Find the length of  $\widehat{AB}$ .**



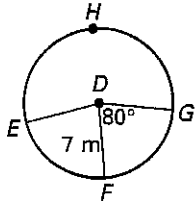
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Name \_\_\_\_\_

Date \_\_\_\_\_

**LESSON 11.1 Practice** *continued*  
 For use with the lesson "Circumference and Arc Length"

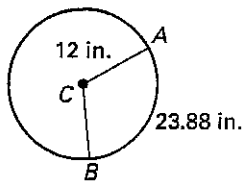
In  $\odot D$  shown below,  $\angle EDF \cong \angle FDG$ . Find the indicated measure.



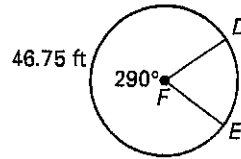
11.  $m\widehat{EFG}$                       12.  $m\widehat{EHG}$                       13. Length of  $\widehat{EFG}$
14. Length of  $\widehat{EHG}$                       15.  $m\widehat{EHF}$                       16. Length of  $\widehat{FEG}$

Find the indicated measure.

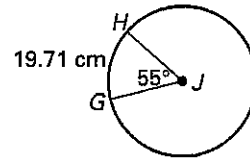
17.  $m\widehat{AB}$



18. Circumference of  $\odot F$

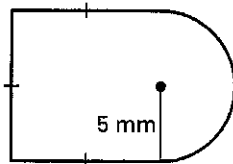


19. Radius of  $\odot J$

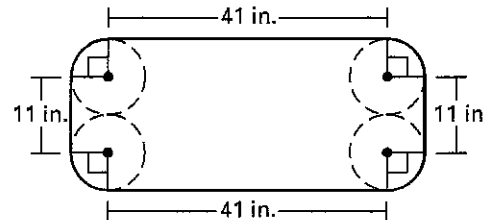


Find the perimeter of the region.

20.



21.



Name \_\_\_\_\_

Date \_\_\_\_\_

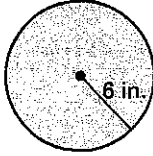
**LESSON**  
**11.2**

**Practice**

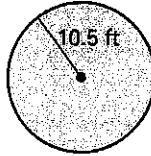
*For use with the lesson "Areas of Circles and Sectors"*

**Find the exact area of the circle. Then find the area to the nearest hundredth.**

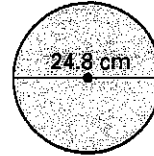
1.



2.



3.

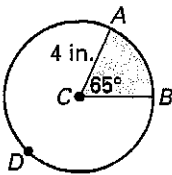


**Find the indicated measure.**

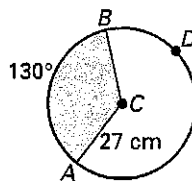
4. The area of a circle is 173 square inches. Find the radius.
5. The area of a circle is 290 square meters. Find the radius.
6. The area of a circle is 654 square centimeters. Find the diameter.
7. The area of a circle is 528 square feet. Find the diameter.

**Find the areas of the sectors formed by  $\angle ACB$ .**

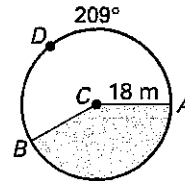
8.



9.



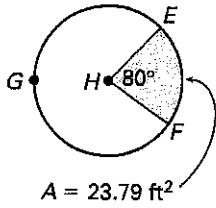
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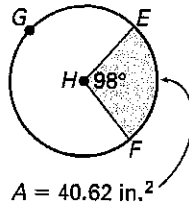
**LESSON 11.2 Practice** *continued*  
 For use with the lesson "Areas of Circles and Sectors"

Use the diagram to find the indicated measure.

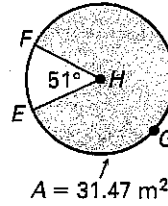
11. Find the area of  $\odot H$ .



12. Find the radius of  $\odot H$ .



13. Find the diameter of  $\odot H$ .



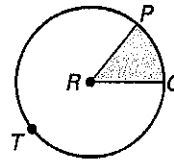
The area of  $\odot R$  is 295.52 square inches. The area of sector  $PRQ$  is 55 square inches. Find the indicated measure.

14. Radius of  $\odot R$

15. Circumference of  $\odot R$

16.  $m\widehat{PQ}$

17. Length of  $\widehat{PQ}$

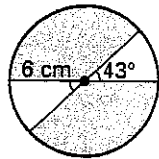


18. Perimeter of shaded region

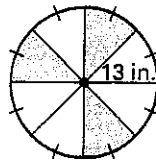
19. Perimeter of unshaded region

Find the area of the shaded region.

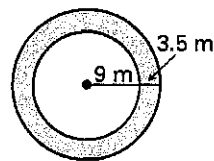
20.



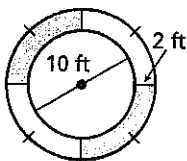
21.



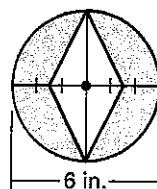
22.



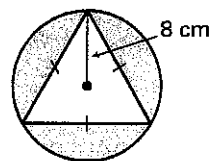
23.



24.



25.

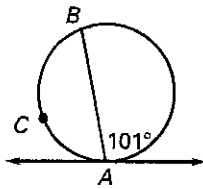




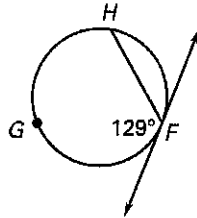
**LESSON 10.5 Practice**  
 For use with the lesson "Apply Other Angle Relationships in Circles"

Find the indicated arc measure.

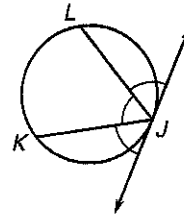
1.  $m\widehat{AB}$



2.  $m\widehat{FH}$

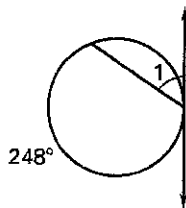


3.  $m\widehat{JKL}$

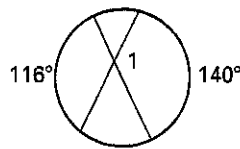


Find  $m\angle 1$ .

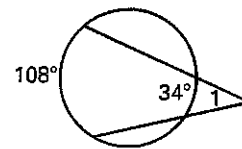
4.



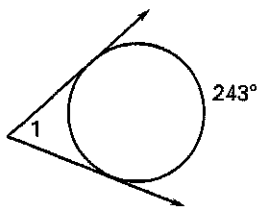
5.



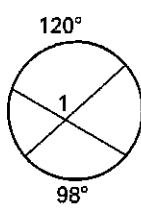
6.



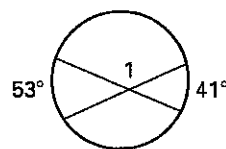
7.



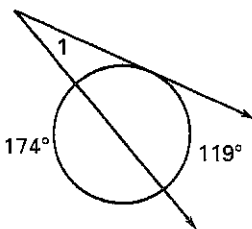
8.



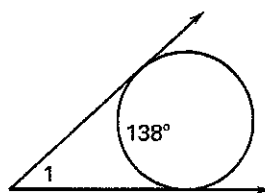
9.



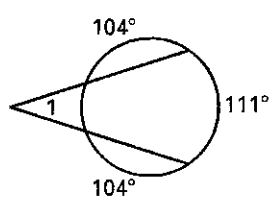
10.



11.



12.

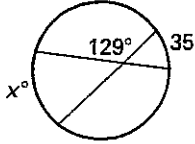


**LESSON**  
**10.5**

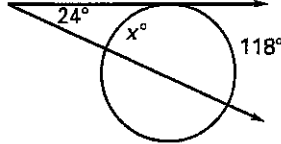
**Practice** *continued*  
For use with the lesson "Apply Other Angle Relationships in Circles"

In Exercises 13-18, find the value of  $x$ .

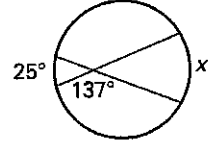
13.



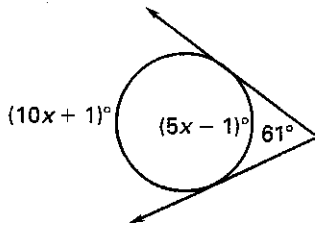
14.



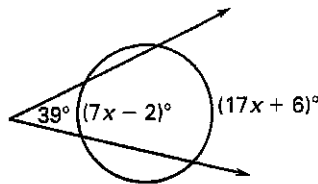
15.



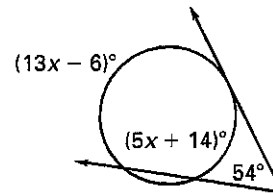
16.



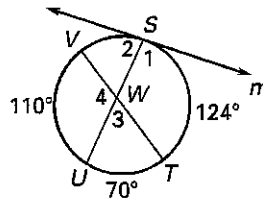
17.



18.



19. In the diagram shown,  $m$  is tangent to the circle at the point  $S$ . Find the measures of all the numbered angles.



Use the diagram shown to find the measure of the angle.

20.  $m\angle CAF$

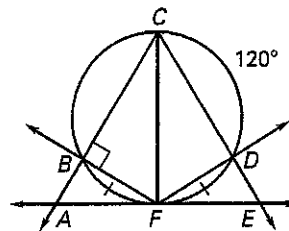
21.  $m\angle AFB$

22.  $m\angle CEF$

23.  $m\angle CFB$

24.  $m\angle DCF$

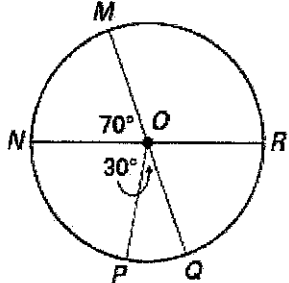
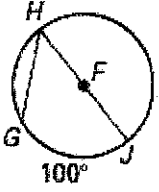
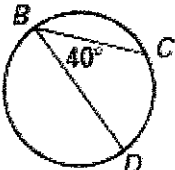
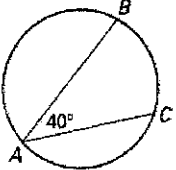
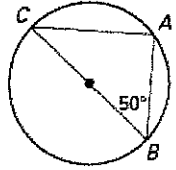
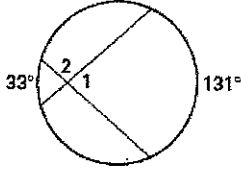
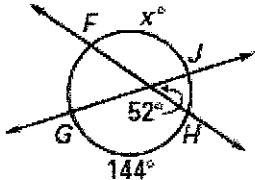
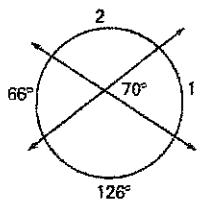
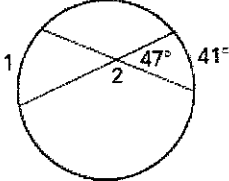
25.  $m\angle BCD$

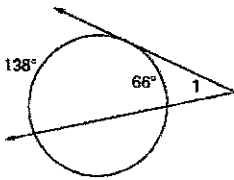
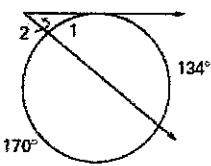
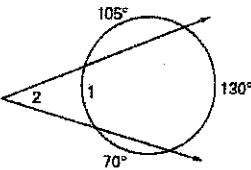
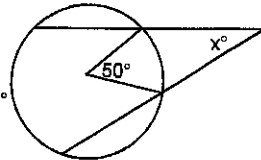
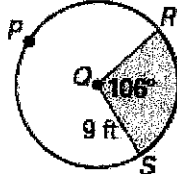
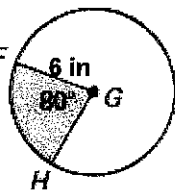
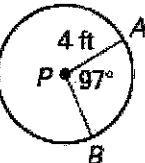
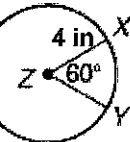




Name: \_\_\_\_\_

Date: \_\_\_\_\_

Use the following to review for you test. **Work the Practice Problems on a separate sheet of paper.**

What you need to know & be able to do	Things to remember		
Find the measure of arcs from central angles.	Angle = Arc		1. Find $m\widehat{MN}$ 2. Find $m\widehat{QNR}$ 3. Find $m\widehat{MR}$ 4. Find $m\widehat{PRN}$
Find the measure of arcs and angles with inscribed angles	Angle = $\frac{\text{Arc}}{2}$	5. Find $m\angle GHJ$ 	6. Find $m\widehat{CD}$ 
		7. Find $m\widehat{BC}$ 	8. Find $m\angle C$ 
Find the measure of arcs and angles if the angle is inside the circle	Angle = $\frac{\text{Arc} + \text{Arc}}{2}$	9. Find $m\angle 1$ and $m\angle 2$ 	10. Find the value of x. 
		11. Find 1 & 2 	12. Find 1 & 2 

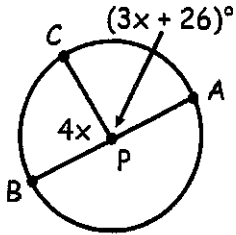
<p>Find the measure of arcs and angles if the angle is outside the circle.</p>	$\text{Angle} = \frac{\text{Large Arc} - \text{Small Arc}}{2}$	<p>13. Find 1.</p> 	<p>14. Find 1 &amp; 2.</p> 
<p>Find the area of circles</p>	$\text{Area} = \pi r^2$	<p>15. Find 1 &amp; 2.</p> 	<p>16. Find the value of x.</p> 
<p>Find the area of sectors</p>	$\text{Sector} = \frac{\text{Arc}}{360^\circ} \cdot \pi r^2$	<p>17. The area of a circle is 31.4 cm<sup>2</sup>. What is the radius?</p> <p>19. Find the area of the shaded region</p> 	<p>18. Find the area of a circle with a diameter of 22 inches.</p> <p>20. Find the area of the shaded region.</p> 
<p>Find the circumference of circles</p>	$\text{Circumference} = 2\pi r$	<p>21. Find the circumference of a circle with a radius of 8 m.</p>	<p>22. The circumference of a circle is 25.12 ft. What is the radius?</p>
<p>Find arc lengths</p>	$\text{Circumference} = \frac{\text{Arc}}{360^\circ} \cdot 2\pi r$	<p>23. Find the arc length of <math>\widehat{AB}</math></p> 	<p>24. Find the arc length of <math>\widehat{XY}</math>.</p> 
<p>Word Problems</p>	<p>25. A birthday cake is sliced into 8 equal pieces. The arc length of one piece of cake is 6.28 inches, as shown. Find the diameter of the cake.</p> 		<p>26. A wall clock has an area of 452.39 in<sup>2</sup>. Find the diameter of the clock. Then, find the area of the sector formed when the time is 3:00.</p> 

Geometry Circle Angles & Arcs Review

Name \_\_\_\_\_

In 1-2, use  $\odot P$  to find the value of  $x$ . Then, find the arc measures.

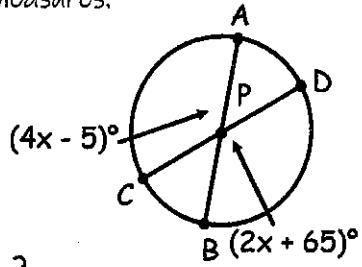
1.



$m\widehat{BC} = ?$

$m\widehat{AC} = ?$

2.

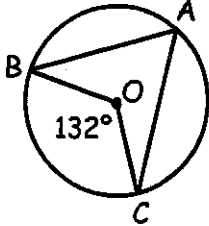


$m\widehat{AC} = ?$

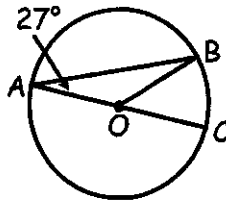
$m\widehat{BD} = ?$

Find the measure of the indicated arc or angle in Circle O.

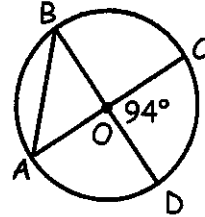
3.  $m\angle BAC = ?$



4.  $m\widehat{BC} = ?$

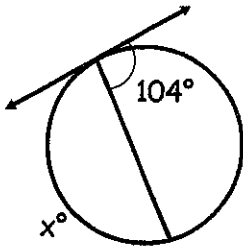


5.  $m\angle BAC = ?$

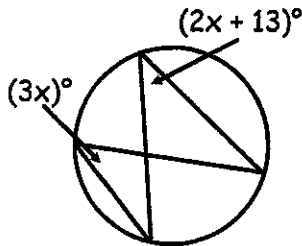


Find the value of each variable.

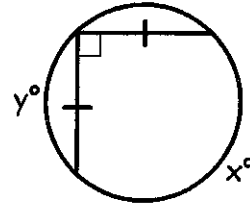
6.



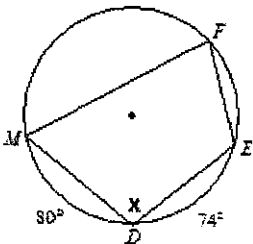
7.



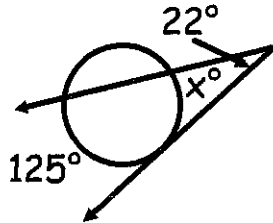
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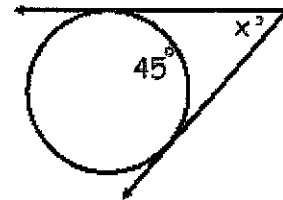
9.



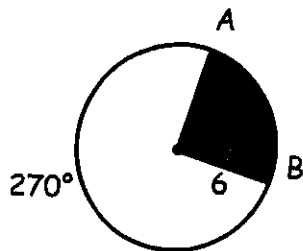
10.



11.



- 
12. a. Find the Sector Area of the shaded region.    b. Find the Arclength of  $\widehat{AB}$



- 
13. The area of one piece of pizza is  $9\pi \text{ in}^2$ . The pizza is cut into eighths. Find the radius of the pizza pie.
- 
14. Determine the radius of the circle with a circumference of  $26\pi \text{ cm}^2$ . Use the radius to then find the area.
- 
15. A sprinkler system can shoot water at a distance of 15 yards. It is set up to rotate 240 degrees. How much area of the yard is covered by the sprinkler?
- 
16. The clock in our classroom has a radius of 9 inches. If it's 4:00, find the arc length and area of the sector for this time.
-