GEOMETRY LESSON 10.1 NOTES

Define each key term:

circle –

radius –(1)

(2)

diameter – (1)

(2)

congruent circles –

chord –

secant –

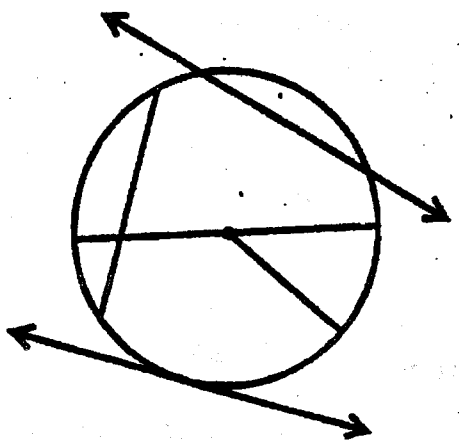
tangent – (not to be confused with the trigonometric ratio *tangent*)

interior of a circle –

exterior of a circle –

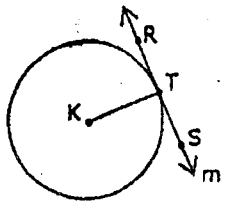
point of tangency –

In the figure below, find and label a radius, diameter, chord, secant and tangent.

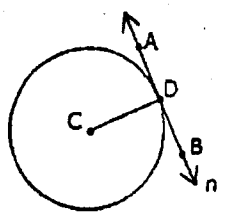


Read the three theorems about tangents to circles (pages 597 – 598, Theorems 10.1, 10.2 and 10.3). Answer the following questions:

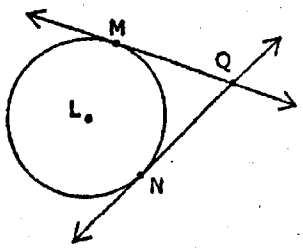
In the figure on the right, line m is tangent to circle K at point T. What can we conclude about the measure of angle KTR and angle KTS?



In the figure on the right, radius $\overline{CD}$ is perpendicular to line n. What can we conclude about the relationship between line n and circle C?



In the figure on the right, lines $\overleftrightarrow{QM}$ and $\overleftrightarrow{QN}$ are tangent to circle L at points M and N respectively. What can we conclude about the relationship between segments $\overline{QM}$ and $\overline{QN}$?



Copy and work out completely example 4:

Copy and work out completely example 5:

Copy and work out completely example 7:

LESSON 10.1

NAME _____ DATE _____

Practice A

For use with pages 595–602

The diameter of a circle is given. Find the radius.

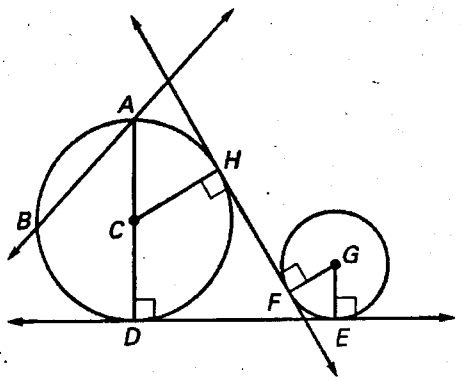
1. $d = 6$ in.
2. $d = 24$ cm
3. $d = 15$ ft
4. $d = 9$ in.

The radius of a circle is given. Find the diameter.

5. $r = 11$ cm
6. $r = 8$ ft
7. $r = 10$ in.
8. $r = 4.6$ cm

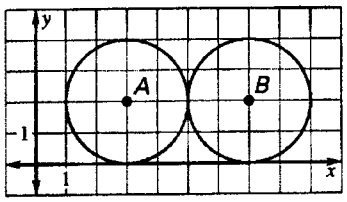
Match the notation with the term that best describes it.

9. D — A. Center
10. $\overleftrightarrow{FH}$ — B. Chord
11. $\overline{CD}$ — C. Diameter
12. $\overline{AB}$ — D. Radius
13. C — E. Point of tangency
14. $\overline{AD}$ — F. Common external tangent
15. $\overleftrightarrow{AB}$ — G. Common internal tangent
16. $\overleftrightarrow{DE}$ — H. Secant



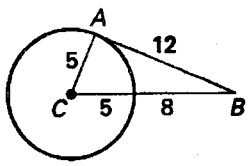
Use the diagram at the right.

17. What are the center and radius of $\odot A$?
18. What are the center and radius of $\odot B$?
19. Describe the intersection of the two circles.
20. Describe all the common tangents of the two circles.
21. Are the two circles congruent? Explain.

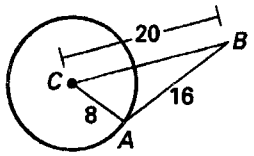


Tell whether $\overleftrightarrow{AB}$ is tangent to $\odot C$. Explain your reasoning.

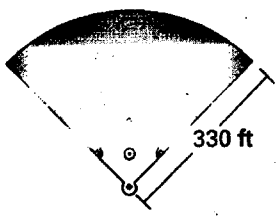
22.



23.



24. *Baseball Stadium* The shape of the outfield fence in a baseball stadium is that of a quarter circle. If the distance from home plate to the wall is 330 feet, what is the radius of the entire circle? What is the diameter of the circle?



10-3

LESSON 10.2

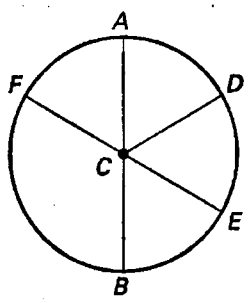
NAME _____ DATE _____

Practice A

For use with pages 603–611

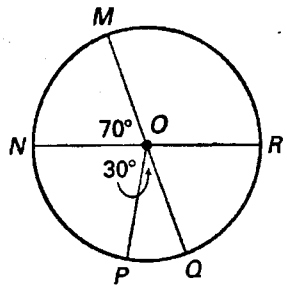
Determine whether the arc is a *minor arc*, a *major arc*, or a *semicircle* of ⊙C.

1. $\overset{\frown}{AE}$
2. $\overset{\frown}{AEB}$
3. $\overset{\frown}{FDE}$
4. $\overset{\frown}{DFB}$
5. $\overset{\frown}{FA}$
6. $\overset{\frown}{BE}$
7. $\overset{\frown}{BDA}$
8. $\overset{\frown}{FB}$



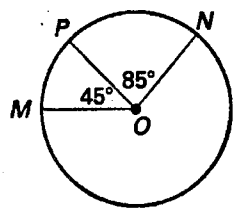
$\overline{MQ}$ and $\overline{NR}$ are diameters. Find the indicated measure.

9. $m\overset{\frown}{MN}$
10. $m\overset{\frown}{NQ}$
11. $m\overset{\frown}{NQR}$
12. $m\overset{\frown}{MRP}$
13. $m\overset{\frown}{QR}$
14. $m\overset{\frown}{MR}$
15. $m\overset{\frown}{QMR}$
16. $m\overset{\frown}{PQ}$
17. $m\overset{\frown}{PRN}$
18. $m\overset{\frown}{MQN}$

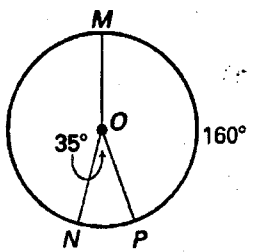


Find the measure of $\overset{\frown}{MN}$.

19.



20.



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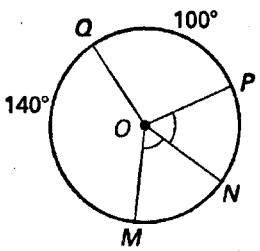
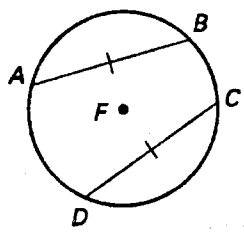


What can you conclude about the diagram? State a postulate or theorem that justifies your answer.

22.



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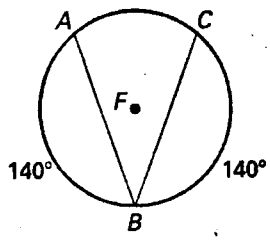

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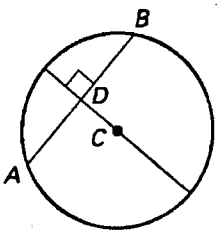
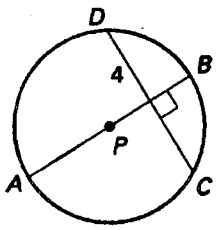
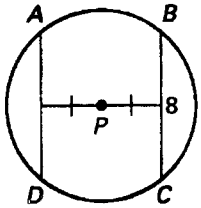


Find the indicated measure for ⊙P.

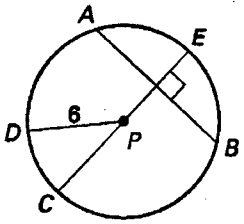
25. DC = ?



26. AD = ?



27. EC = ?



10-4

SOLVING SYSTEMS OF EQUATIONS
SUBSTITUTION METHOD

Use the **substitution method** to solve the following systems of equations. Follow the example given here. Show your work NEATLY and BOX your final answer.

Example:

$y = x + 3$
$3x + y = 3$

$y = \underline{x + 3}$
$\downarrow$

$3x + y = 3 \rightarrow 3x + (x + 3) = 3$
$4x + 3 = 3$
$-3 \quad -3$
$\frac{4x}{4} = \frac{0}{4}$
$x = 0$

$y = (0) + 3$
$y = 3$

Solution : $\boxed{(0,3)}$

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1) $y = 2x - 3$
$3x - 4y = -3$

2) $x = -4y + 3$
$4x - y = -5$

3) $x = y - 3$
$2x + y = 0$

4) $x - 4y = 4$
$y = -3x - 1$

5) $y = 2x - 5$
$4x - y = 7$

6) $2x - 3y = 12$
$x = 4y + 1$

7) $x = 3y - 1$
$x + 2y = 9$

8) $-2x + 3y = 14$
$x = -2y + 7$

LESSON 10.3

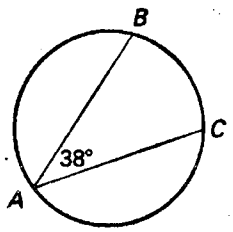
NAME _____ DATE _____

Practice A

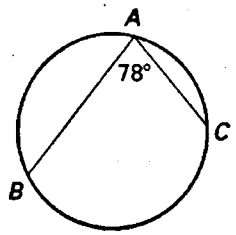
For use with pages 613–620

Find the measure of the indicated arc or angle.

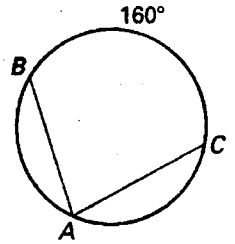
1. $m\widehat{BC}$ = ?



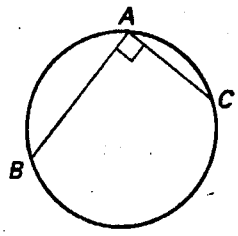
2. $m\widehat{BC}$ = ?



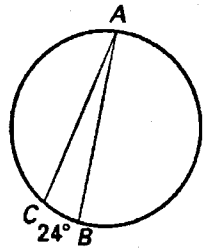
3. $m\angle BAC$ = ?



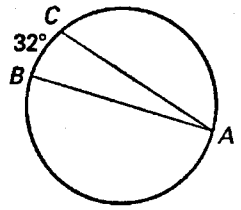
4. $m\widehat{BC}$ = ?



5. $m\angle BAC$ = ?

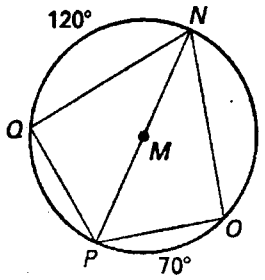


6. $m\angle BAC$ = ?



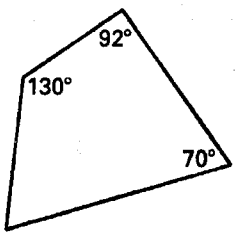
Find the measure of the arc or angle in $\odot M$.

7. $m\angle QMP$
8. $m\angle NMO$
9. $m\angle PNO$
10. $m\angle QNP$
11. $m\widehat{QO}$
12. $m\widehat{NOP}$
13. $m\widehat{PQ}$
14. $m\widehat{OQN}$

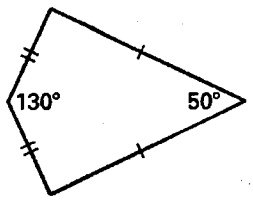


Decide whether a circle can be circumscribed about the quadrilateral.

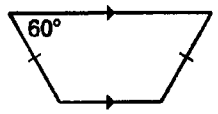
15.



16.

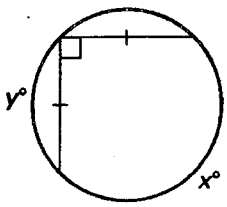


17.

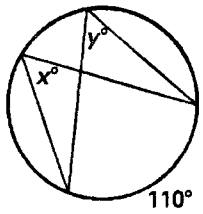


Find the value of each variable.

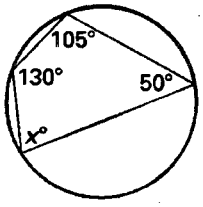
18.



19.



20.



10-6

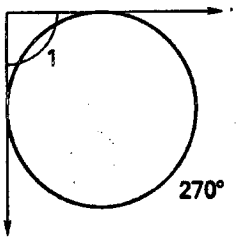
LESSON 10.4

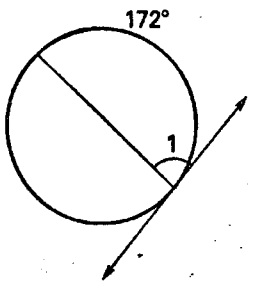
NAME _____ DATE _____

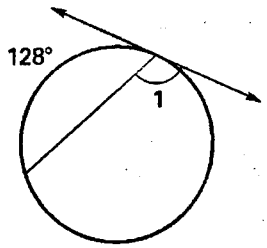
Practice A

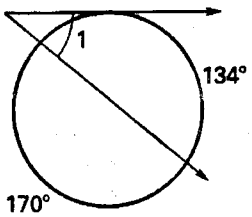
For use with pages 621–627

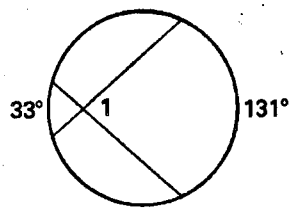
Find the measure of $\angle 1$.

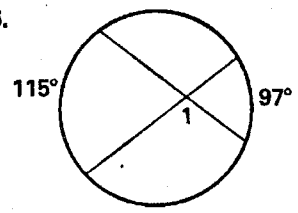
1. 

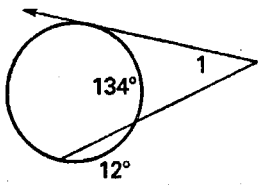
2. 

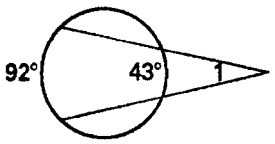
3. 

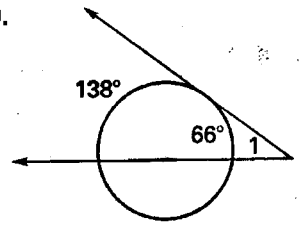
4. 

5. 

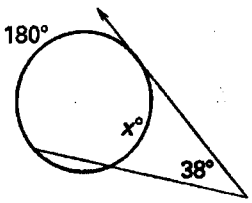
6. 

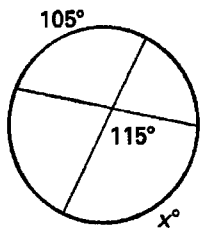
7. 

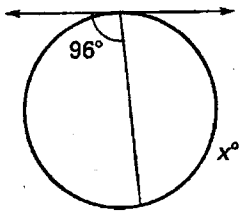
8. 

9. 

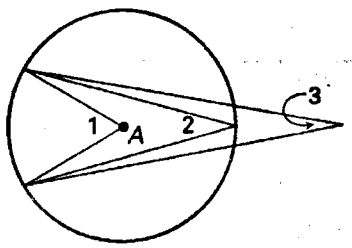
Write an equation that can be used to solve for x. Then solve the equation for x.

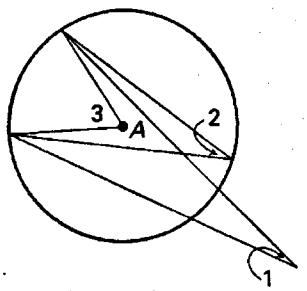
10. 

11. 

12. 

Use the diagram of $\odot A$ to write the $m\angle 1$, $m\angle 2$, and $m\angle 3$ in order of increasing measure.

13. 

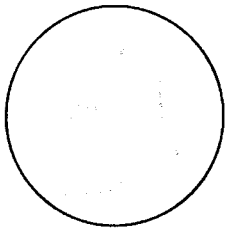
14. 

Lesson 10.4

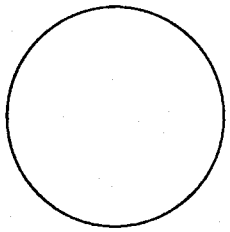
10-7

Chapter 10 Concept and Theorem Review Sheet
Circles, Chords, Tangents, Arcs, Inscribed Angles. Etc.

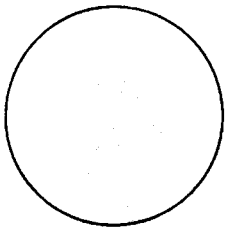
Theorem 10.1/2:
A radius is perpendicular to a tangent line at the point of tangency.



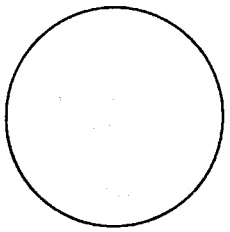
Theorem 10.3:
If two segments from the same exterior point are tangent to a circle, then the segments are congruent.



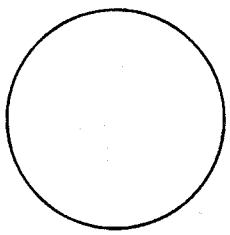
Theorem 10.4/5:
If a diameter is perpendicular to a chord, then the diameter bisects the chord.



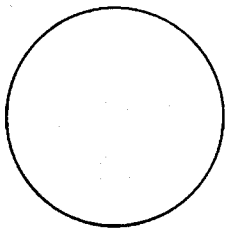
Theorem 10.11:
If a quadrilateral is inscribed in a circle, then its opposite angles are supplementary.



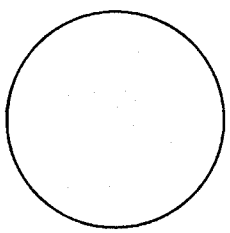
Theorem "X": (Arc Measure)
The measure of an arc is the measure of its central angle.



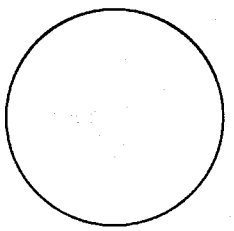
Theorem 10.8: (Inscribed Angle Measure)
The measure of an inscribed angle is half the measure of its intercepted arc.



Theorem 10.9:
If two inscribed angles intercept the same arc, then the angles are congruent.

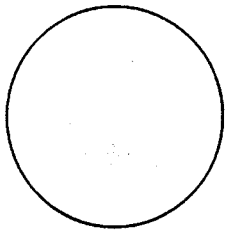


Theorem 10.10:
If a triangle is inscribed in a circle so that a side of the triangle is the diameter of the circle, then the triangle is a right triangle.



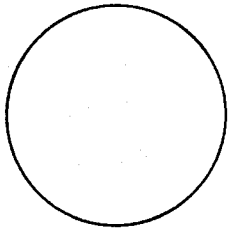
Theorem 10.13:

$$m\angle 1 = \frac{1}{2}\left(m\overset{\frown}{CD} + m\overset{\frown}{AB}\right)$$



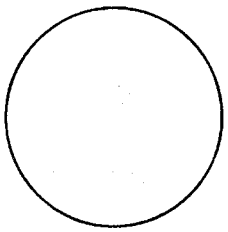
Theorem 10.14:

$$m\angle 1 = \frac{1}{2}\left(m\overset{\frown}{BC} - m\overset{\frown}{AC}\right)$$



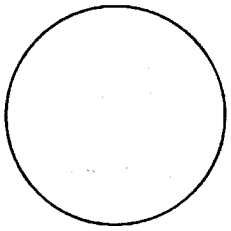
Theorem 10.14:

$$m\angle 1 = \frac{1}{2}\left(m\overset{\frown}{PQR} - m\overset{\frown}{PR}\right)$$



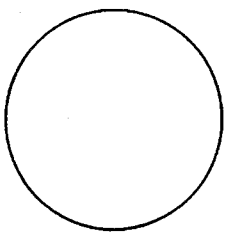
Theorem 10.14:

$$m\angle 1 = \frac{1}{2}\left(m\overset{\frown}{XY} - m\overset{\frown}{WZ}\right)$$



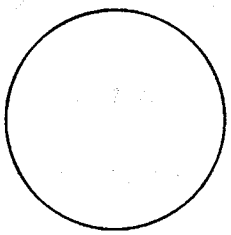
Theorem 10.15:

$$EA \cdot EB = EC \cdot ED$$



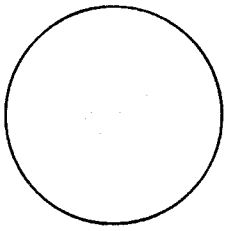
Theorem 10.16:

$$EA \cdot EB = EC \cdot ED$$



Theorem 10.17:

$$(EA)^2 = EC \cdot ED$$



Geometry Ch.10 Review Sheet

10.1 *Know how to identify the following: secant, tangent, chord, diameter, radius, etc. Pg. 599 #s 18-25.
*Know and be able to apply Thm 10.1 and 10.2 Pg. 600 #s 36-39.
*Know and be able to apply Thm 10.3 Pg. 599 #s 6-8, Pg. 601 #s 46-48.

10.2 *Know how to identify and find minor and major arcs as well as adding and subtracting them. Pg. 607 #s 12-31. *Pg. 617 #21*
*Know and be able to apply Thm 10.5 Pg. 607 #s 11 and Pg. 608 46.

10.3 *Know how to find inscribed angles Pg. 616 #s 3-14.
*Know how to apply Thm 10.9 Pg. 616-617 #s 7,15, 17.
*Know how to apply Thm 10.10 Pg. 617 #s 16, 18.
*Know how to apply Thm 10.11 Pg. 616-617 #s 8, 19, 22, 23.
Review: how to solve a system of equations Pg. 796 #s 1-6, 9.

10.4 *Know how to apply Thms 10.12, 10.13, 10.14 (other angle relationships) Pg. 624 #s 2-27.

10.5 *Know how to apply Thms 10.15, 10.16 and 10.17 (segment lengths) Pg. 632 #s 3-22.

***Warning*: Review special right triangles (30,60,90 and 45,45,90) as well as solving right triangles**

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

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