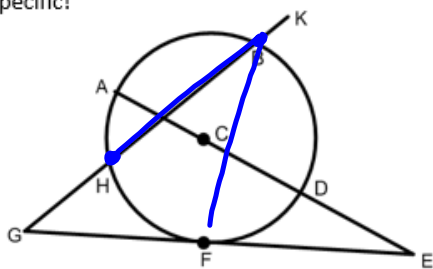


1: Tell whether the line or segment is best described as a chord, a secant, a tangent, a diameter, or a radius—be specific!



a. \overline{AD} Diam b. \overline{CD} Radic

c. \overleftrightarrow{EG} tangent

d. \overline{HB} Chord

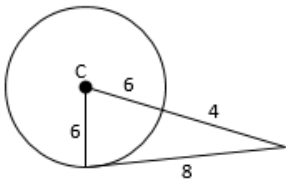
\overleftrightarrow{HB}
Secant

e. \overline{FB}
Chord

g. \overline{FE}
tangent

2: Verifying a Tangent to a Circle. (Use the Pythagorean Theorem Converse!)

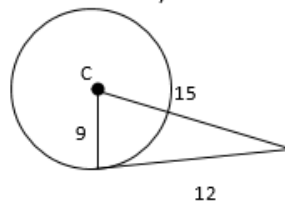
a.



$$6^2 + 8^2 = 10^2$$

$$100 = 100 \checkmark$$

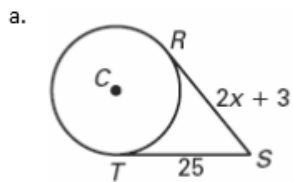
b.



$$9^2 + 12^2 = 15^2$$

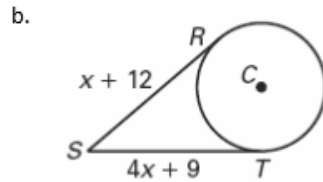
$$225 = 225 \checkmark$$

3: Using Properties of Tangents \overline{SR} and \overline{ST} are tangent to $\odot C$. Find the value of x .

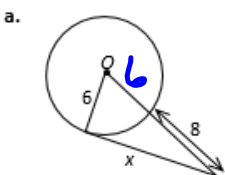


$$\begin{aligned} 2x + 3 &= 25 \\ \frac{2x + 3}{2} &= \frac{25}{2} \\ \frac{2x}{2} &= \frac{22}{2} \end{aligned} \rightarrow x = 11$$

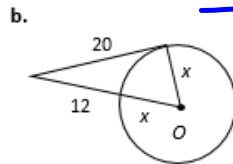
Find the missing length:



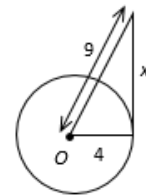
$$\begin{aligned} 4x + 9 &= x + 12 \\ -1x & \quad -x \\ \hline 3x + 9 &= 12 \\ -9 & \quad -9 \\ \hline 3x &= 3 \\ x &= 1 \end{aligned}$$



$$\begin{aligned} x^2 + 6^2 &= 14^2 \\ x^2 + 36 &= 196 \\ x^2 &= 160 \\ x &= 12.6 \end{aligned}$$



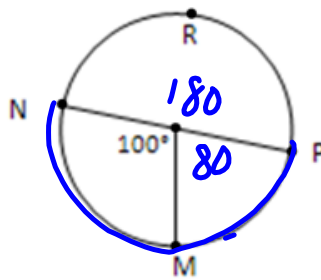
$$\begin{aligned} x^2 + 20^2 &= (x + 12)^2 \\ x^2 + 400 &= (x + 12)(x + 12) \\ x^2 + 400 &= x^2 + 12x + 12x + 144 \\ 400 &= 24x + 144 \\ 256 &= 24x \\ 10.67 &= x \end{aligned}$$



$$x = 8.06$$

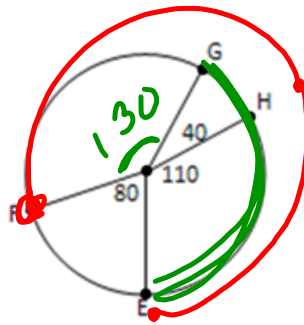
5: Finding measures of each arc of circle R. (NP is a diameter)

- a. \widehat{MN} 100
- b. \widehat{MPN} 260
- c. \widehat{PMN} 180
- d. \widehat{PM} 80



6: Finding the measures of Arcs

- a. \widehat{GE} 150
- b. \widehat{GEF} 230
- c. \widehat{GF} 130
- d. \widehat{FHE} 280



Quiz

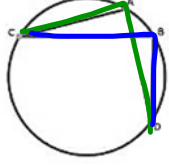
Arcs & Central Angles

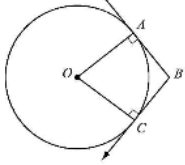
An **arc** is an unbroken part of a circle consisting of two points called the endpoints and all the points on the circle between them.

Arc or Angle	Definition	Measure	Picture
Minor Arc	An arc whose points are on or in the interior of a central angle. Minor arcs are less than 180° and only use two letters to name them.	The measure of a minor arc is equal to the measure of the central angle.	
Major Arc	An arc whose endpoints are on or in the exterior of a central angle. Major arcs are between 180° and 360° . Three letters are used to name a major arc.	The measure of a major arc is equal to 360° minus the measure of its central angle or minor arc.	
Semicircle	An arc whose endpoints lie on a diameter. Semicircles are named using three letters.	The measure of a semicircle is 180° .	
Central Angle	An angle whose vertex is the center of the circle.	The measure of a central angle is equal to the measure of its minor arc.	
Name	Theorem	Hypothesis	Conclusion
Arc Addition Postulate	The measure of an arc formed by two adjacent arcs is the sum of the measures of the two arcs.		

Inscribed & Circumscribed Angles and Intercepted Arcs

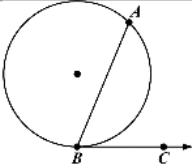
Name	Definition	Measure	Picture
Inscribed Angle	An angle whose vertex is on a circle and whose sides contain chords of the circle	The measure of an inscribed angle is half the measure of its intercepted arc.	
Intercepted Arc	An arc whose endpoints lie on the sides of an inscribed angle and all the points of the circle between them.	The measure of an intercepted arc is double the measure of the inscribed angle.	

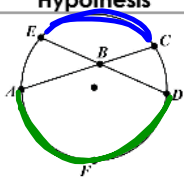
Name	Theorem	Hypothesis	Conclusion
<p>Intercepted Arcs Corollary</p>	<p>If inscribed angles of a circle intercept the same arc, then the angles are congruent</p>		<p>$\angle CAD \cong \angle CBD$</p>

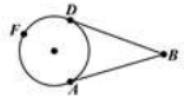
Name	Theorem	Hypothesis	Conclusion
<p>Circumscribed Angle</p>	<p>Angle formed by two rays that are each tangent to a circle.</p>	<p>The measure of a circumscribed angle is equal to 180 degrees minus the measure of the central angle that forms the intercepted arc. The rays are perpendicular to the radii of the circle.</p>	

Central
 $m\angle AOC + m\angle ABC = 180$

Angle Relationships (Vertex On, Inside & Outside)

Name	Theorem	Hypothesis	Conclusion
Tangent Chord Theorem (Vertex On)	If a tangent and a chord intersect at a point on the circle, then the measure of each angle formed is one half the measure of its intercepted arc.		$angle = \frac{1}{2} Arc$

Name	Theorem	Hypothesis	Conclusion
Interior Angles of a Circle Theorem (Vertex Inside)	If two chords intersect inside the circle, then the measure of each angle is half the sum of the measures of the arcs intercepted by the angle and its vertical angle.		$\frac{arc_1 + arc_2}{2} = angle$

Name	Theorem	Hypothesis	Conclusion
Exterior Angles of a Circle Theorem (Vertex Outside)	If a tangent and a secant, two tangents, or two secants intersect outside the circle, then the measure of the angle formed is half the difference of the measures of the intercepted arcs.		$\frac{Big - small arc}{2} = angle$

Answers to Homework (ID: 1)

1) 122°
5) 2

2) 35°
6) 12

3) 142°
7) 238°

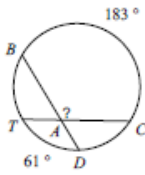
4) 4

Homework

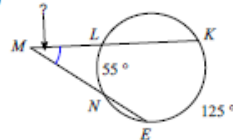
Date _____ Period _____

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

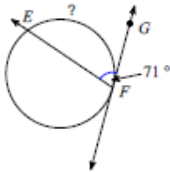
1)



2)

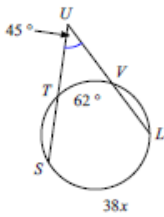


3)

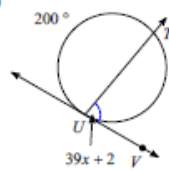


Solve for x . Assume that lines which appear tangent are tangent.

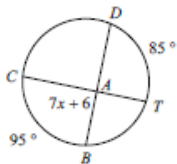
4)



5)



6)



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

7) $m\widehat{ADC} = 238x$
Find $m\widehat{ADC}$

