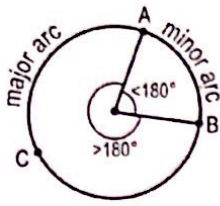


Unit 6 Inscribed Angles

SWBAT apply the rules and theorems of inscribed angles to solve for unknowns.



Major Arc:	Minor Arc:	Semicircle:
An arc of a circle measuring more than or equal to 180°	An arc of a circle measuring less than 180°	An arc of a circle measuring 180°

Central Angle:	A central angle is an angle formed by two intersecting radii such that its vertex is at the center of the circle.	
Central Angle Theorem:	In a circle, or congruent circles, congruent central angles have congruent arcs.	

$\theta = \text{arc}$
"theta" = arc

Example 1: Identify the following in $\odot P$ at the right. For parts d-f, find the measure of each arc in $\odot P$.

a) A semicircle

$\widehat{SQ}, \widehat{STQ}, \widehat{SRQ}$

b) A minor arc

$\widehat{ST}, \widehat{SR}, \widehat{TQ}, \widehat{RQ}, \widehat{RST}$

c) A major arc

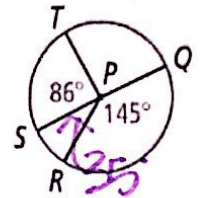
$\widehat{STQ}, \widehat{SRQ}, \widehat{TQR}, \widehat{RSQ}, \widehat{SQR}, \widehat{TQS}$
f) RT
 $35 + 86 = 121$

d) \widehat{ST}

86°

e) \widehat{STQ}

180°

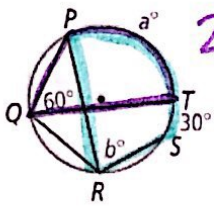


Inscribed Angle:	An inscribed angle is an angle with its vertex "on" the circle, formed by two intersecting chords.	
Inscribed Angle Theorem:	The measure of an inscribed angle is half the measure of its intercepted arc.	

$\theta = \frac{1}{2} S$
 $2\theta = S$

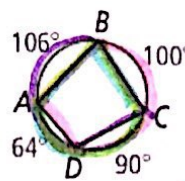
$m\angle DEF = \frac{1}{2} m\widehat{DF}$

Example 2: What are the values of a and b?



$2(60) = a$
 $a = 120^\circ$
 $b = \frac{1}{2}(150)$
 $b = 75^\circ$

You Try! What are the $m\angle A$, $m\angle B$, $m\angle C$, and $m\angle D$?

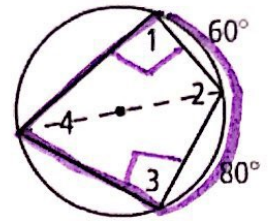
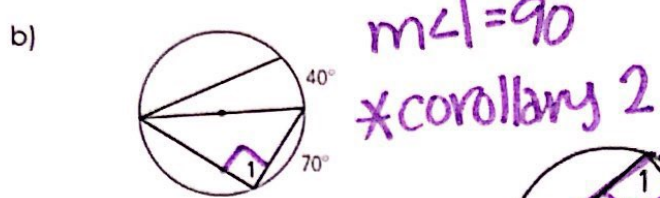


$m\angle A = \frac{1}{2}(190) = 95^\circ$
 $m\angle B = \frac{1}{2}(64 + 90) = 77^\circ$
 $m\angle C = \frac{1}{2}(170) = 85^\circ$
 $m\angle D = \frac{1}{2}(206) = 103^\circ$

Corollary 1:	Corollary 2:	Corollary 3:
Two inscribed angles that intercept the same arc are congruent.	An angle inscribed in a semicircle is a right angle.	The opposite angles of a quadrilateral inscribed in a circle are supplementary.

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

Example 3: What is the measure of each numbered angle?



You Try! Find the measure of each numbered angle in the diagram to the right.

a) $m\angle 1 = 90^\circ$

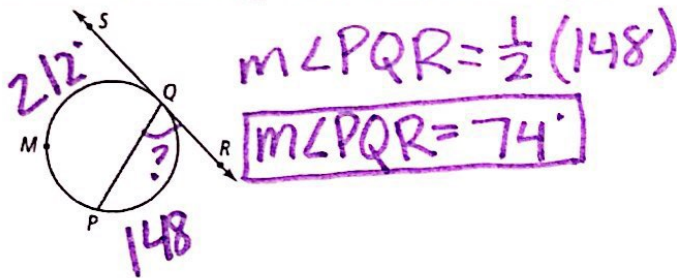
b) $m\angle 2 = 180 - 70 = 110^\circ$

c) $m\angle 3 = 90^\circ$

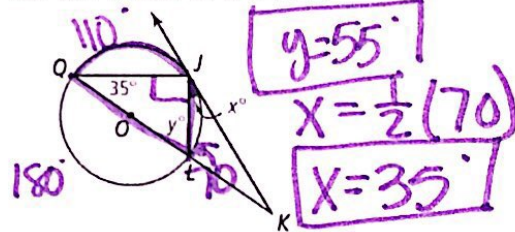
d) $m\angle 4 = \frac{1}{2}(60 + 80) = 70^\circ$

Tangent Chord Angle:	An angle formed by an intersecting tangent and chord has its vertex "on" the circle.	 $m\angle C = \frac{1}{2} m\widehat{BDC}$
Tangent Chord Angle Theorem:	The tangent chord angle is half the measure of the intercepted arc. Tangent Chord Angle = $\frac{1}{2}$ (Intercepted Arc) $\theta = \frac{1}{2} s$	

Example 4: In the diagram, SR is tangent to the circle at Q . If $m\widehat{PMQ} = 212$, what is the $m\angle PQR$?



You Try! In the diagram, KJ is tangent to $\odot O$. What are the values of x and y ?



Practice: Find the value of each variable. For each circle, the dot represents the center.

