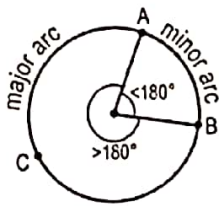


April 1

Central and Inscribed Angles



Major Arc:	Minor Arc:	Semicircle:
An arc of a circle measuring more than or equal to 180° 3 letters	An arc of a circle measuring less than 180° 2 letters	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 <u>center</u> of the circle.	
Central Angle Theorem:	$central\ angle = its\ arc$ "same" (degrees)	

EX1: Identify the following in $\odot P$ at the right. For parts d-f, find the measure of each arc in $\odot P$.

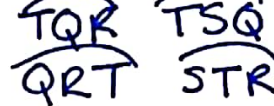
a) A semicircle



b) A minor arc



c) A major arc



d) \widehat{ST}

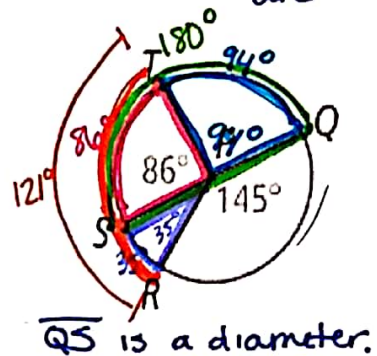
86°

e) \widehat{STQ}

180°

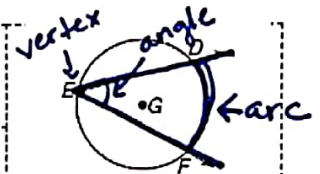
f) \widehat{RT}

121°



Inscribed Angle:

An inscribed angle is an angle with its vertex "on" the circle, formed by two intersecting chords.

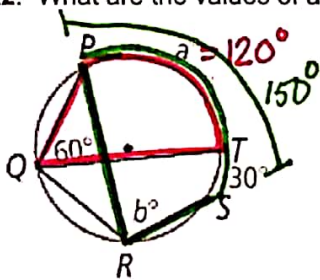


Inscribed Angle Theorem:

$inscribed\ angle = half\ of\ its\ arc$
arc is always bigger!

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

EX2: What are the values of a and b?



$60 \cdot 2 = 120^\circ$

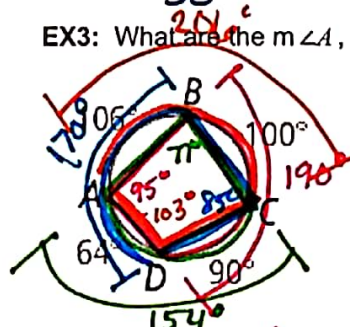
$120 + 30 = 150^\circ$

$150 \div 2 = 75^\circ$

$a = 120^\circ$

$b = 75^\circ$

EX3: What are the $m\angle A$, $m\angle B$, $m\angle C$, and $m\angle D$?



$\angle A = 95^\circ$

$\angle B = 77^\circ$

$\angle C = 85^\circ$

$\angle D = 103^\circ$

$100 + 90 = 190^\circ$

$190 \div 2 = 95^\circ$

$64 + 90 = 154^\circ$

$154 \div 2 = 77^\circ$

$106 + 64 = 170^\circ$

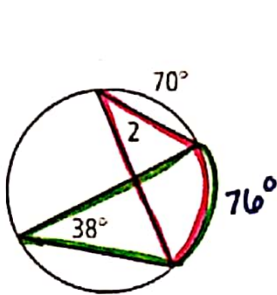
$170 \div 2 = 85^\circ$

$100 + 106 = 206^\circ$

$206 \div 2 = 103^\circ$

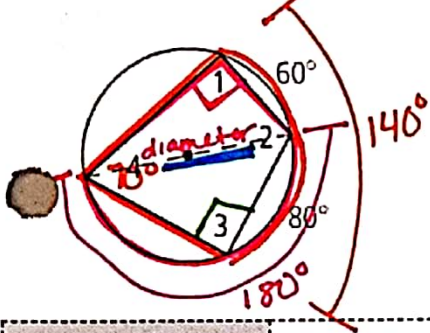
Corollary 1:	Corollary 2:	Corollary 3:
Two inscribed angles that intercept the same arc are congruent.	An angle inscribed in a semicircle is a right angle.	The opposite angles of a quadrilateral inscribed in a circle are supplementary.
		$\angle A + \angle C = 180^\circ$ $\angle B + \angle D = 180^\circ$

EX4: What is the measure of each numbered angle?



$$\angle 2 = 38^\circ$$

EX5: Find the measure of each numbered angle.

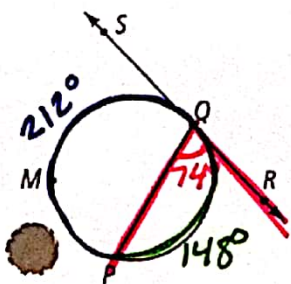


$$\begin{aligned} \angle 1 &= 90^\circ \\ \angle 2 &= 110^\circ \\ \angle 3 &= 90^\circ \\ \angle 4 &= 70^\circ \end{aligned}$$

$$\begin{aligned} 60 + 80 &= 140 \\ 140 \div 2 &= 70 \\ 180 - 70 &= 110 \end{aligned}$$

Tangent Chord Angle:	An angle formed by an intersecting tangent and chord has its vertex "on" the circle.	
Tangent Chord Angle Theorem:	$\text{inscribed angle} = \text{half of its arc}$	$m\angle C = \frac{1}{2} m\widehat{BDC}$

EX6: In the diagram, SR is tangent to the circle at Q . If $m\widehat{PMQ} = 212$, what is the $m\angle PQR$?

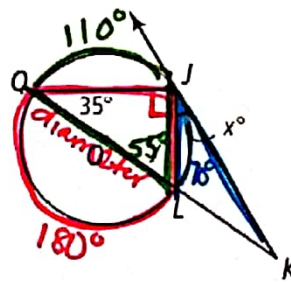


$$\angle PQR = 74^\circ$$

$$360 - 212 = 148$$

$$148 \div 2 = 74^\circ$$

EX7: In the diagram, KJ is tangent to $\odot O$. What are the values of x and y ?



$$x = 35^\circ$$

$$y = 55^\circ$$

$$180 - 90 - 35 = 55^\circ$$

$$55 \cdot 2 = 110^\circ$$

$$360 - 110 - 180 = 70^\circ$$

$$70 \div 2 = 35^\circ$$