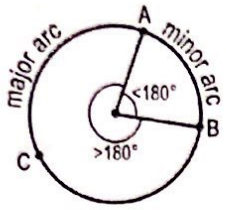
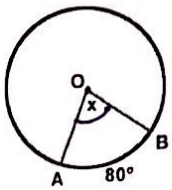
GUIDED NOTES: Inscribed Angles



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:	*central angle = its arc* $\theta = s$	

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

a) A semicircle
$\overset{\frown}{STQ}$, $\overset{\frown}{SRQ}$

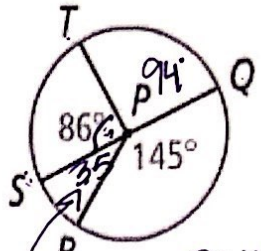
b) A minor arc
$\overset{\frown}{SR}$, $\overset{\frown}{ST}$, $\overset{\frown}{QT}$, $\overset{\frown}{TSR}$, $\overset{\frown}{QR}$

c) A major arc
$\overset{\frown}{STQ}$, $\overset{\frown}{SRQ}$, $\overset{\frown}{TQR}$, $\overset{\frown}{QRT}$, $\overset{\frown}{SQT}$

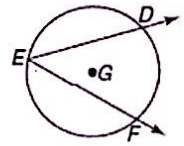
d) $\overset{\frown}{ST}$
86°

e) $\overset{\frown}{STQ}$
180°

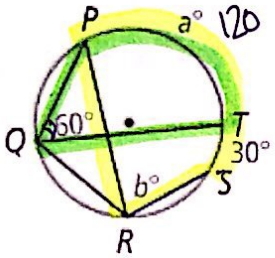
f) $\overset{\frown}{RT}$
35+86
121°



360 − 86 − 94 − 145

Inscribed Angle:	An inscribed angle is an angle with its vertex "on" the circle, formed by two intersecting chords.	 $m\angle DEF = \frac{1}{2}m\overset{\frown}{DF}$
Inscribed Angle Theorem:	*inscribed angle = half of its arc* $\theta = \frac{1}{2}s$ $2\theta = s$	

EX2: What are the values of a and b?



150

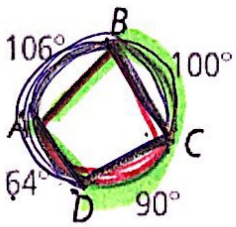
$60(2) = a$

$a = 120°$

$b = \frac{1}{2}(120 + 30)$

$b = 75°$

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



$m\angle A = \frac{1}{2}(90 + 100)$

$m\angle A = 95°$

$m\angle B = \frac{1}{2}(64 + 90)$

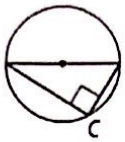
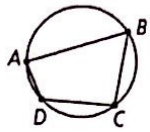
$m\angle B = 77°$

$m\angle C = \frac{1}{2}(106 + 64)$

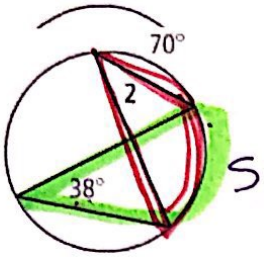
$m\angle C = 85°$

$m\angle D = \frac{1}{2}(106 + 100)$

$m\angle D = 103°$

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.  $\angle A+\angle C=180°$ $\angle B+\angle D=180°$

EX4: What is the measure of each numbered angle?



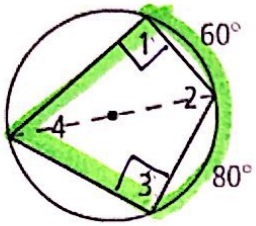
$38(2)=S$

$S=76$

$m\angle 2=38°$

*corollary 1

EX5: Find the measure of each numbered angle.



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

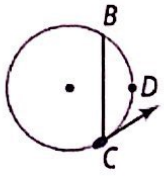
$m\angle 4=70°$

$180-70=m\angle 2$

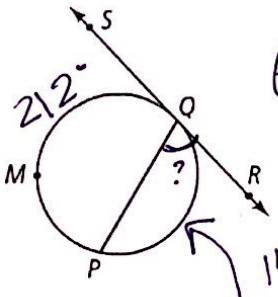
$m\angle 2=110°$

$m\angle 1 \& \angle 3=90°$

*corollary 2 & 3

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:	*inscribed angle = half of its arc* $\theta=\frac{1}{2}s$	

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



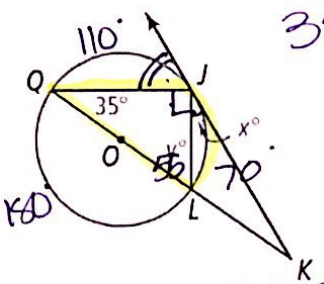
$360-212$

148

$\theta=\frac{1}{2}(148)$

$\theta=74°$

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



$35(2)=S$

$S=70°$

$\theta=\frac{1}{2}(110)$

$\theta=55$

$180-90-35=55$

$x=180-90-55$

$x=35°$