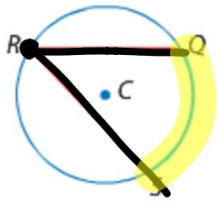
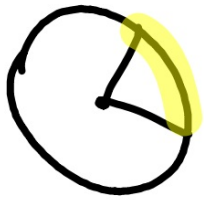
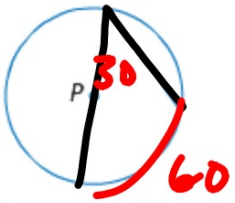
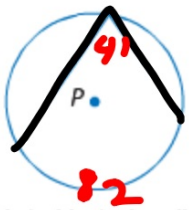
Quiz 10.1-10.2



Geometry 10.4
Find measures of inscribed angles
Find measures of the angles contained in inscribed polygons

central angle vertex @ C
inscribed vertex on circle
inscribed angle
arc
intercepted arc



Case 1	Case 2	Case 3
 Center P is on a side of the inscribed angle.	 Center P is inside the inscribed angle.	The center P is in the exterior of the inscribed angle.

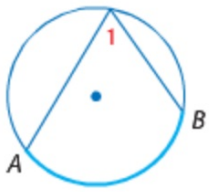
m incr. ∠ = $\frac{1}{2}$ m arc

p. 723

Theorem 10.6 Inscribed Angle Theorem

Words If an angle is inscribed in a circle, then the measure of the angle equals one half the measure of its intercepted arc.

Example $m\angle 1 = \frac{1}{2}m\overset{\frown}{AB}$ and $m\overset{\frown}{AB} = 2m\angle 1$

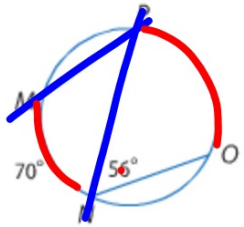


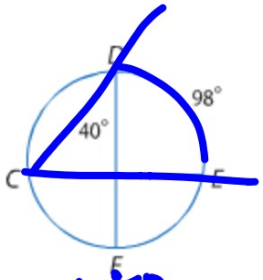
Example 1 Use Inscribed Angles to Find Measures

Find each measure.

a. $m\angle P$ 35°

b. $m\widehat{PO}$ 112°





Guided Practice

1A. $m\widehat{CF}$ = 80°

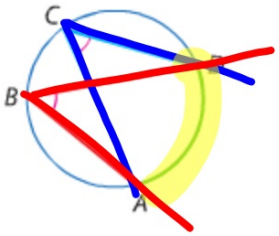
1B. $m\angle C$ 49°

angle 1/2.....arc 2x
stupid Kroon trick

Theorem 10.7

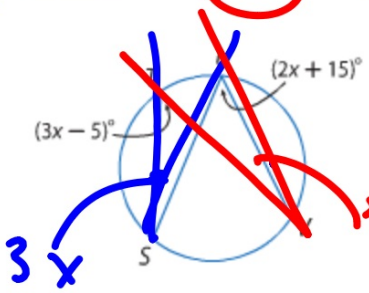
Words If two inscribed angles of a circle intercept the same arc or congruent arcs, then the angles are congruent.

Example $\angle B$ and $\angle C$ both intercept $\overset{\frown}{AD}$. So, $\angle B \cong \angle C$.



Example 2 Use Inscribed Angles to Find Measures

ALGEBRA Find $m\angle T$.



$=55°$

$3x-5 = 2x+15$

$-2x+5 \quad -2x+5$

$x = 20$

$x+16$

$3x$

$3\cdot 20-5$

$60-5$

55

GuidedPractice

2. If $m\angle S = 3x$ and $m\angle V = (x + 16)$, find $m\angle S$.

$3x = x+16$

$-x \quad -x$

$2x = 16$

$\frac{2x}{2} = \frac{16}{2}$

$x = 8$

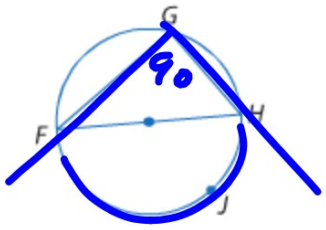
$24°$

Angle = 1/2 arc

Theorem 10.8

Words An inscribed angle of a triangle intercepts a diameter or semicircle if and only if the angle is a right angle.

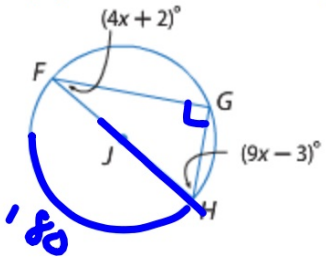
Example If $\overset{\frown}{FJH}$ is a semicircle, then $m\angle G = 90$. If $m\angle G = 90$, then $\overset{\frown}{FJH}$ is a semicircle and $\overline{FH}$ is a diameter.

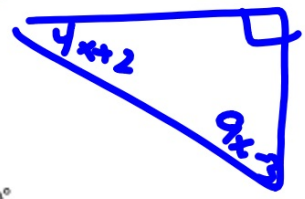


180

Example 4 Find Angle Measures in Inscribed Triangles

ALGEBRA Find $m\angle F$.





$4x+2+9x-3+90=180$

$13x+89=180$

$-89 \quad -89$

$13x = 91$

$x = 7$

GuidedPractice

4. If $m\angle F = 7x + 2$ and $m\angle H = 17x - 8$, find x.

90 Complementary

180 Supplementary

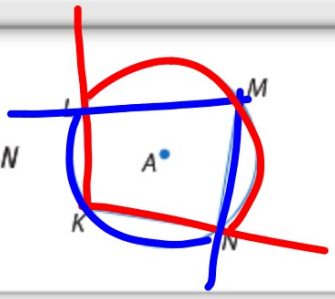
$2\angle s \rightarrow 90$

$2\angle s \rightarrow 180$

Theorem 10.9

Words If a quadrilateral is inscribed in a circle, then its opposite angles are supplementary.

Example If quadrilateral $KLMN$ is inscribed in $\odot A$, then $\angle L$ and $\angle N$ are supplementary and $\angle K$ and $\angle M$ are supplementary.



$K + M = 180$ $L + N = 180$

Both arcs (sum) = 360°
(why?)

Real-World Example 5 Find Angle Measures

JEWELRY The necklace charm shown uses a quadrilateral inscribed in a circle. Find $m\angle A$ and $m\angle B$. = 110°

= 70°

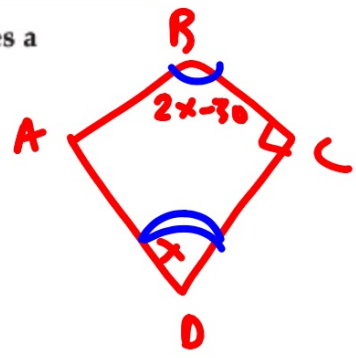
$2x - 30 + x = 180$

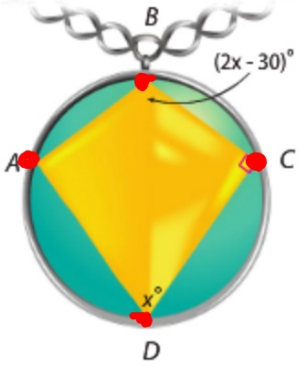
$3x - 30 = 180$

$+30 \quad +30$

$3x = 210$

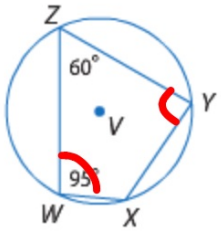
$x = 70$





GuidedPractice

5. Quadrilateral $WXYZ$ is inscribed in $\odot V$. Find $m\angle X$ and $m\angle Y$.



120.

85.