Name: _____ # _____

Geometry: Period _____
Ms. Pierre
Date: _____

Intersecting Chords (Angles)

Today's Objective

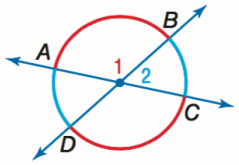
SWBAT determine the measure of angles formed by lines intersecting inside a circle.

A *secant* is a line that intersects a circle in exactly two points. Lines j and k are secants of $\odot C$.

When two secants intersect inside a circle, the angles formed are related to the arcs they intercept.

Theorem 10.12 — For Your FOLDABLE

Words If two secants or chords intersect in the interior of a circle, then the measure of an angle formed is one half the *sum* of the measure of the arcs intercepted by the angle and its vertical angle.

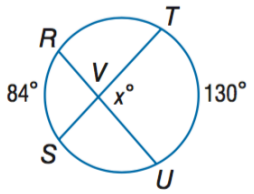


Example $m\angle 1 = \frac{1}{2}(m\overset{\frown}{AB} + m\overset{\frown}{CD})$ and $m\angle 2 = \frac{1}{2}(m\overset{\frown}{DA} + m\overset{\frown}{BC})$

Example 1

Find x.

a.

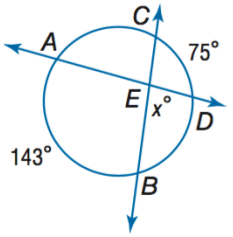


$m\angle TVU = \frac{1}{2}(m\overset{\frown}{RS} + m\overset{\frown}{TU})$ Theorem 10

$x = \frac{1}{2}(84 + 130)$ Substitution

$= \frac{1}{2}(214)$ or 107 Simplify.

b.



Step 1 Find $m\angle AEB$.

$m\angle AEB = \frac{1}{2}(m\overset{\frown}{AB} + m\overset{\frown}{CD})$ Theorem 10.

$= \frac{1}{2}(143 + 75)$ Substitution

$= \frac{1}{2}(218)$ or 109 Simplify.

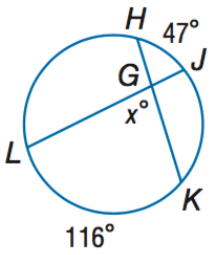
Step 2 Find x, the measure of $\angle DEB$.

$\angle AEB$ and $\angle DEB$ are supplementary angl
So, $x = 180 - 109$ or 71.

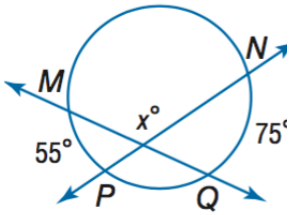
☑ Check for Understanding

Find x.

a.

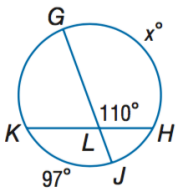


b.



Example 2

Find x.



$m\angle GLH = \frac{1}{2}(m\overset{\frown}{GH} + m\overset{\frown}{KJ})$ **Theorem 10.12**

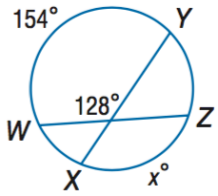
$110 = \frac{1}{2}(x + 97)$ **Substitution**

$220 = (x + 97)$ **Multiply each side by 2.**

$123 = x$ **Subtract 97 from each side.**

☑ Check for Understanding

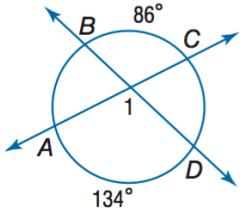
Find x.



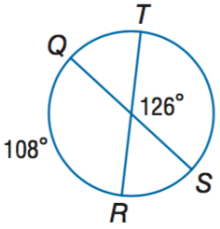
Guided Practice

Find each measure.

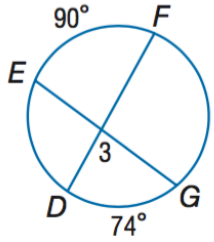
1. $m\angle 1$



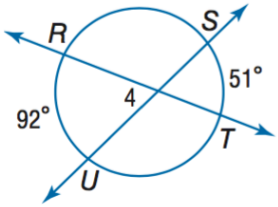
2. $m\overset{\frown}{TS}$



3. $m\angle 3$



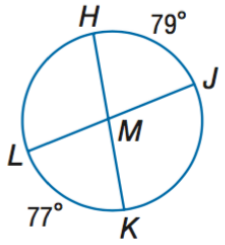
4. $m\angle 4$



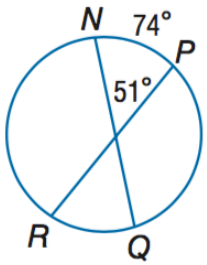
Independent Practice

Find each measure.

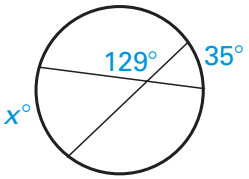
1. $m\angle JMK$



2. $m\widehat{RQ}$



3.



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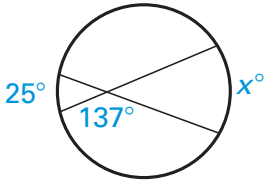
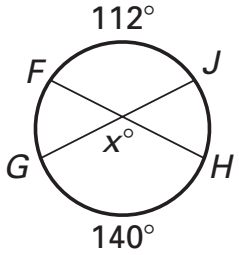


Home Work

Find the given measure.

1.



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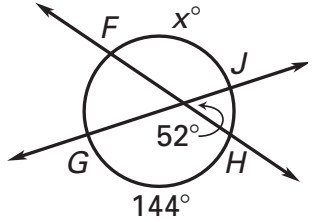

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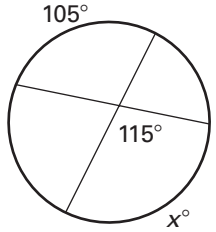

4.