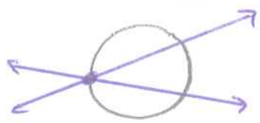
TOPIC: **10.5 Apply Other Angle Relationships in Circles**	NAME: KEY DATE:

ESSENTIAL QUESTION: **How do you find the measure of an angle formed by two chords that intersect inside a circle?**

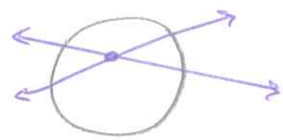
QUESTIONS:

Intersecting Lines with a Circle…what does this look like?

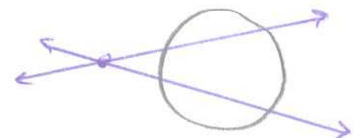
On the circle



Inside the circle

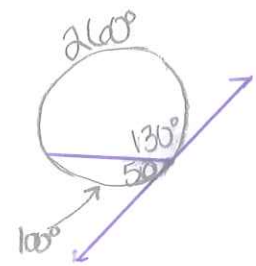


Outside the circle



Theorem 10.11:

If a tangent and a chord intersect at a point on a circle, then the measure of each angle formed is half of its intercepted arc.

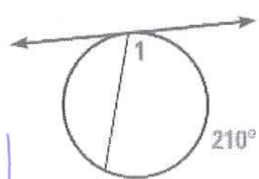


A1. Find the indicated measure.

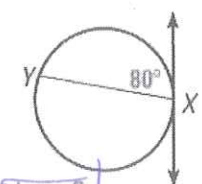
a. $m\angle 1$

$\frac{1}{2}(210)$

$= \boxed{105^\circ}$



b. $m\widehat{XY}$



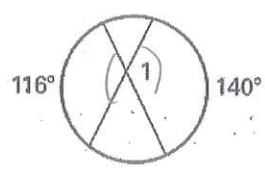
$80(2) = \boxed{160^\circ}$

Theorem 10.12: Angles Inside the Circle Theorem

$m\angle 1 = \frac{x+y}{2}$

If **two chords** intersect *inside* a circle, then the measure of each angle is the average (½ sum) of the measures of the arcs intercepted by the angle and its vertical angle.

A2. Find $m\angle 1$.



$m\angle 1 = \frac{116+140}{2} = \frac{256}{2} = 128$

$m\angle 1 = 128^\circ$

SUMMARY:

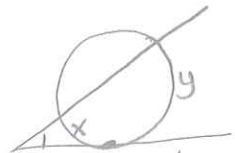
Measure of an ∠ formed by 2 chords is half the sum of the arc measures created by the 2 chords

$m\angle 1 = \frac{x^\circ + y^\circ}{2}$

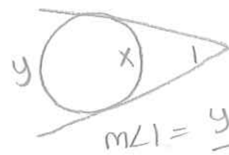
QUESTIONS:

Theorem 10.13: Angles Outside the Circle Theorem

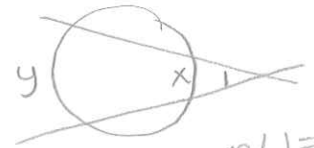
If **a tangent and a secant** intersect *outside* a circle, or **two tangents** intersect *outside* a circle, or **two secants** intersect *outside* a circle, then the measure of each angle is half the difference of the measures of the intercepted arcs.



$m\angle 1 = \frac{y-x}{2}$



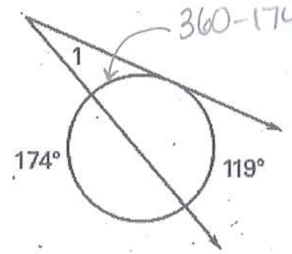
$m\angle 1 = \frac{y-x}{2}$



$m\angle 1 = \frac{y-x}{2}$

A3. Find $m\angle 1$ or the value of x.

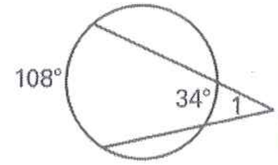
a.



$360-174-119=67$

$m\angle 1 = \frac{119-67}{2} = \frac{52}{2} = \boxed{26°}$

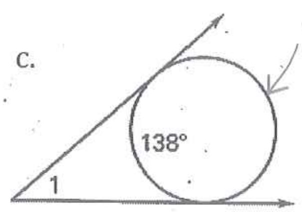
b.



$\boxed{m\angle 1 = 37°}$

$\frac{108-34}{2} = \frac{74}{2} = 37$

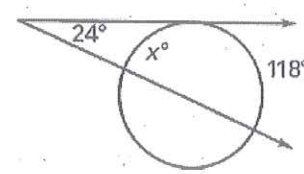
c.



$360 - 138 = 222°$

$\frac{222-138}{2} = \frac{84}{2} = \boxed{42°}$

d.



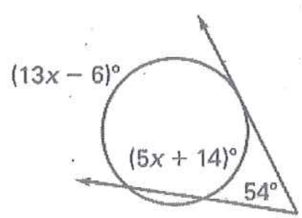
$\frac{118-x}{2} = 24$

$118 - x = 48$

$-48 \quad +x$

$\boxed{x = 70°}$

e.



$54 = \frac{(13x-6)-(5x+14)}{2}$

$108 = 13x - 6 - 5x - 14$

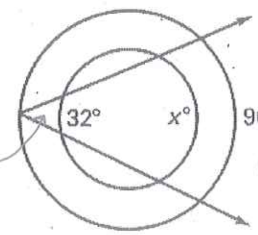
$108 = 8x - 20$

$+20$

$128 = 8x$

$x = \frac{128}{8} = \boxed{16}$

f.



inscribed ∠ = 1/2 arc mea

$m\angle 1 = \frac{1}{2}(96) = 48$

$48 = \frac{x-32}{2}$

$96 = x - 32$

$+32$

$\boxed{x = 128}$