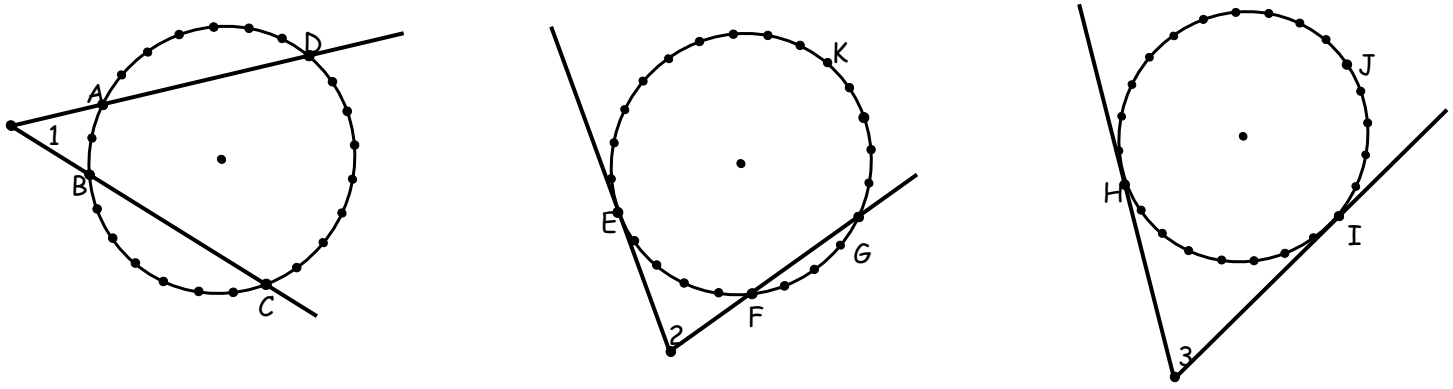
11.3 Angles Inside and Outside the Circle
PAP Geometry

Name _____
Period _____ Date _____

Part 1: Angles outside the circle

FIGURE I **FIGURE II** **FIGURE III**



1. What do the numbered angles have in common? _____
2. Use a highlighter or colored pencils to mark the intercepted arcs.
3. Complete the chart:

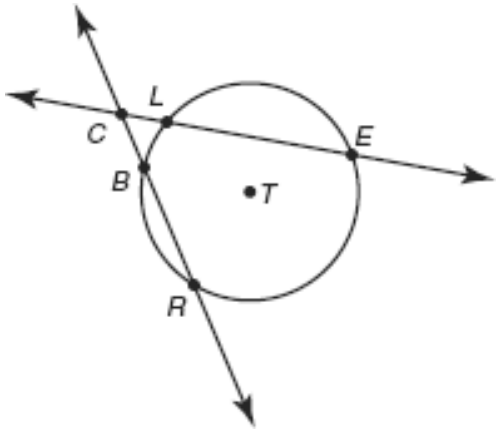
	Measure of each angle	To find the measure of the intercepted arcs, count the dots	
Figure I	m$\angle 1$ = 45°	m AB =	m CD =
Figure II	m$\angle 2$ = 75°	m EF =	m EKG =
Figure III	m$\angle 3$ = 60°	m HI =	m HJI =

4. Write a conjecture about angles formed outside the circle.

Conjecture: The measures of the angles formed by secants and tangents that intersect <u>outside</u> the circle are

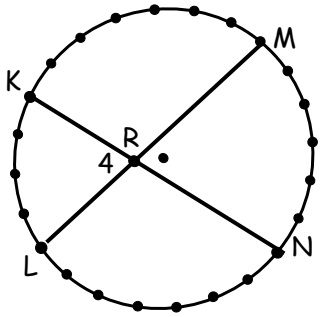
Example:

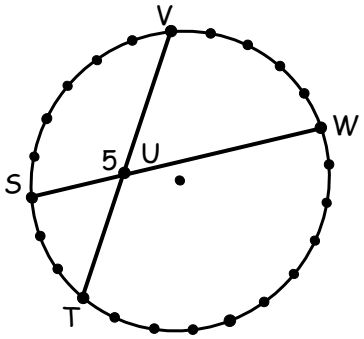
5. In circle *T* shown, $m\angle RCE = 57°$ and $m\overset{\frown}{RE} = 141°$. Determine $m\overset{\frown}{BL}$.



Part 2: Angles inside the circle.

FIGURE IV **FIGURE V**





6. What do ∠4 and ∠5 have in common?

7. Use a highlighter or colored pencils to mark the intercepted arcs.

8. Complete the chart:

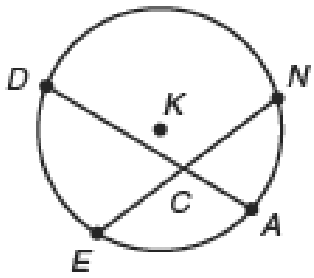
	Measure of each angle	To find the measure of the intercepted arcs, count the dots	
Figure IV	m∠4 = 75°	m KL =	m MN =
Figure V	m∠5 = 120°	m SV =	m TW =

9. Write a conjecture about angles formed inside the circle.

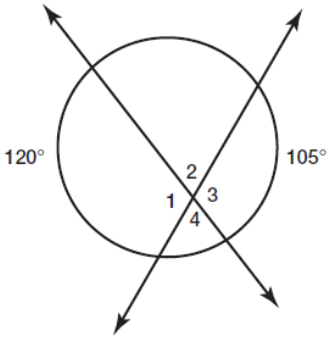
Conjecture: The measure of the angles formed by chords that intersect <u>inside</u> a circle are

Examples:

10. In circle *K* shown, $m\overset{\frown}{DN} = 144°$ and $m\angle NCA = 68°$. Determine $m\overset{\frown}{EA}$.

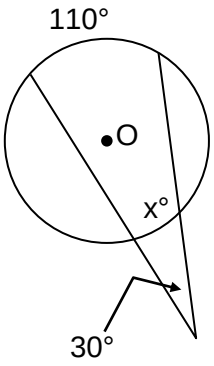


11. Determine the measures of the angles #1-4.

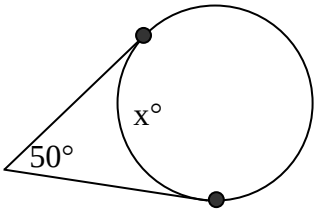


Practice:

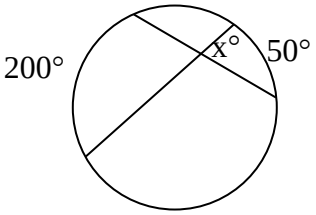
1. Find x.



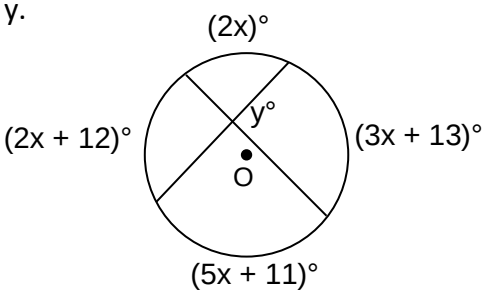
2. Find x



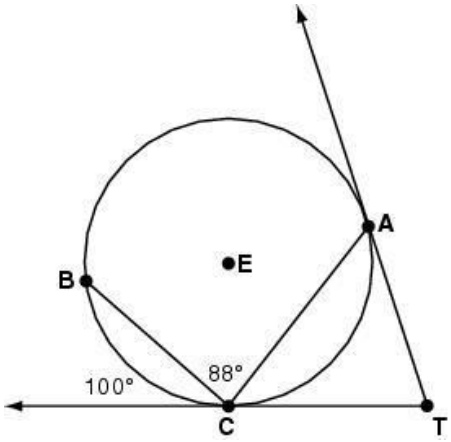
3. Find x.



4. Find x and y.



5. $\overrightarrow{AT}$ and $\overrightarrow{TC}$ are tangents to circle E below. The measure of BC is $100°$, and $m\angle \text{BCA} = 88°$. What is $m\angle \text{T}$?



6. In circle X shown, $m\text{AS} = 11^\circ$ and $mMS = 104^\circ$. Determine $m\angle DCM$