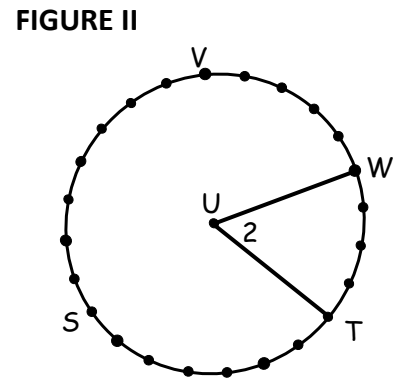
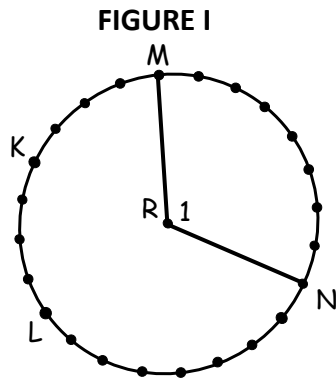


11.2 Central Angles  
Pre-AP Geometry

Part 1 – Central Angles



1. What do  $\angle 1$  and  $\angle 2$  have in common?
2. Use a highlighter or colored pencils to mark the intercepted arcs.

Complete the chart:

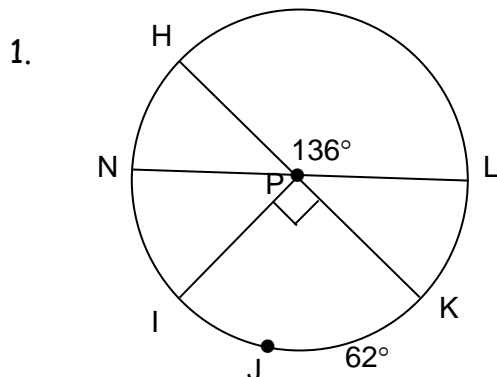
	Measure of each angle	Find the measure of the intercepted arcs
Figure I	$m\angle 1 = 120^\circ$	$mMN =$
Figure II	$m\angle 2 = 60^\circ$	$mTW =$

3. Write a conjecture about the angles and the intercepted arc.

**Conjecture:** The measure of a central angle \_\_\_\_\_

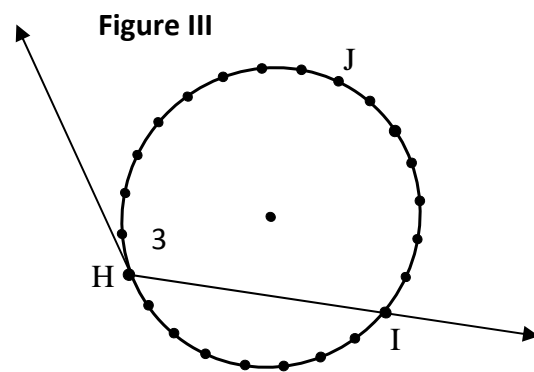
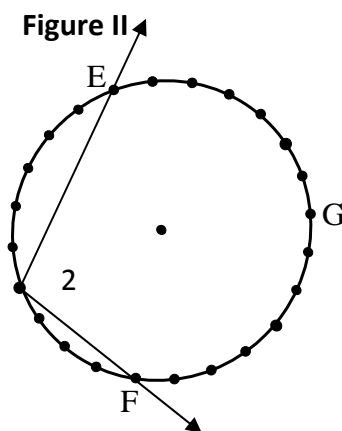
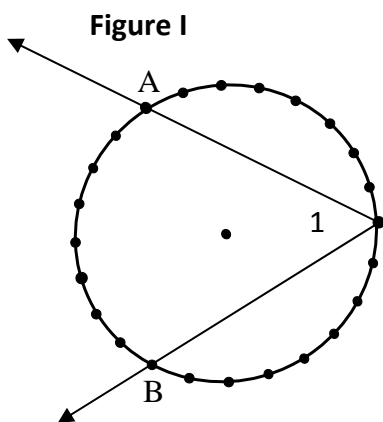
\_\_\_\_\_

Find the measures of the following in each circle P.



- a)  $mKL =$  \_\_\_\_\_
- b)  $m\angle LPK =$  \_\_\_\_\_
- c)  $mJL =$  \_\_\_\_\_
- d)  $m\angle HPI =$  \_\_\_\_\_
- e)  $m\angle NPK =$  \_\_\_\_\_
- f)  $mLHJ =$  \_\_\_\_\_
- g)  $mHJ =$  \_\_\_\_\_

## Part 2 – Inscribed Angles



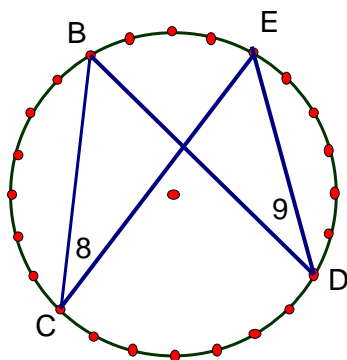
1. What do the numbered angles have in common? \_\_\_\_\_  
\_\_\_\_\_
2. Use a highlighter or colored pencils to mark the intercepted arcs.
3. Complete the chart:

	Measure of each angle	To find the measure of the intercepted arcs, count the dots
Figure I	$m\angle 1 = 60^\circ$	$m\widehat{AB} =$
Figure II	$m\angle 2 = 105^\circ$	$m\widehat{EGF} =$
Figure III	$m\angle 3 = 120^\circ$	$m\widehat{HJI} =$

4. Write a conjecture about the angles and the intercepted arc.

**Conjecture:** The measure of an inscribed angle \_\_\_\_\_  
\_\_\_\_\_

## Part 2



$\angle 8$  intercepts what arc?

$\angle 9$  intercepts what arc?

From your observation make a conjecture about  $\angle 8$  and  $\angle 9$ .

**Conjecture:** If two inscribed angles intercept the same arc, then \_\_\_\_\_  
\_\_\_\_\_

Practice:

$C$  is the center of the circle. Find the measure of each arc or angle.

1.

a)  $m\widehat{VW} = \underline{\hspace{2cm}}$

b)  $m\widehat{WS} = \underline{\hspace{2cm}}$

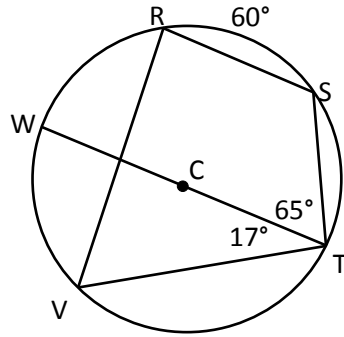
c)  $m\widehat{WR} = \underline{\hspace{2cm}}$

d)  $m\widehat{ST} = \underline{\hspace{2cm}}$

e)  $m\widehat{VT} = \underline{\hspace{2cm}}$

f)  $m\angle V = \underline{\hspace{2cm}}$

g)  $m\angle VRS = \underline{\hspace{2cm}}$



2.

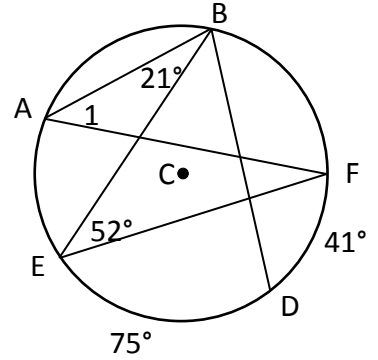
a)  $m\widehat{AE} = \underline{\hspace{2cm}}$

b)  $m\widehat{BF} = \underline{\hspace{2cm}}$

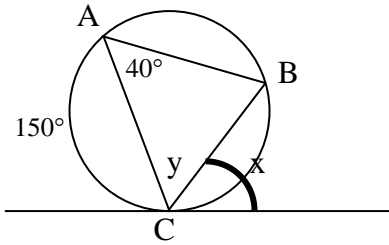
c)  $m\widehat{AB} = \underline{\hspace{2cm}}$

d)  $m\angle 1 = \underline{\hspace{2cm}}$

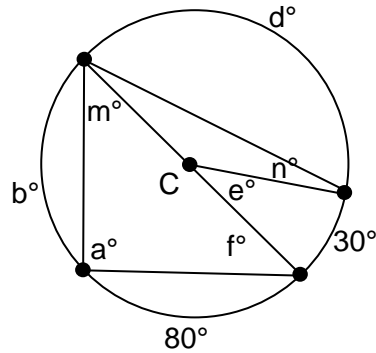
e)  $m\angle EBD = \underline{\hspace{2cm}}$



3. Find  $x$  and  $y$



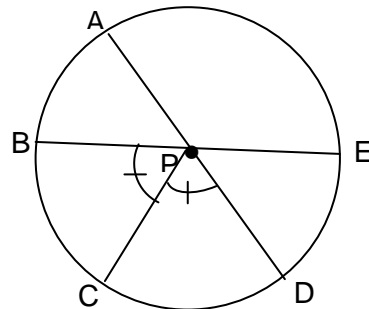
4. Find the values of all the variables



5. In circle  $P$ ,  $m\widehat{AE} = (5x + 6)^\circ$ ,  $m\widehat{ED} = (4x - 24)^\circ$ ,  $m\widehat{DC} = (3x - 8)^\circ$ , and  $m\widehat{BA} = (2x + 20)^\circ$ , find the value of  $x$  and  $m\widehat{CE}$ .

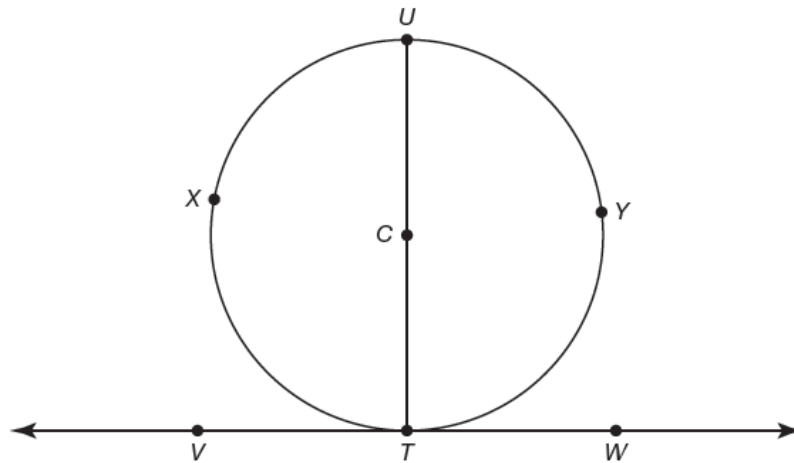
$x = \underline{\hspace{2cm}}$

$m\widehat{CE} = \underline{\hspace{2cm}}$



**Part 3: Tangent to a Circle Theorem.**

1. Consider  $\angle UTV$  with vertex located on circle C. Line VW is drawn tangent to circle C at the point T.



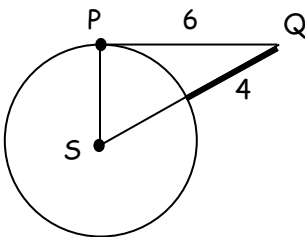
2. Determine  $m\angle UXT$  and  $m\angle UYT$
3. Determine  $m\angle UTV$  and  $m\angle UTW$
4. Write a conjecture about the angle made by a diameter and tangent line.

**Conjecture:** If a diameter (or radius) is drawn to the point of tangency, then \_\_\_\_\_

\_\_\_\_\_

Examples:

5.  $\overline{PQ}$  is tangent to circle S at P.  
Find the length of a radius of circle S.



6. Two circles have radii 5 and 17 and a common external tangent of length 16. What is the distance between the centers of the two circles?

