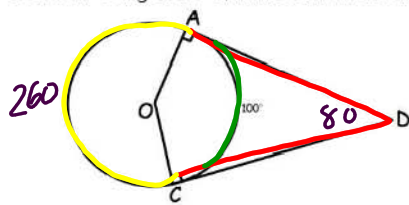


Geometry CC – Mr. Valentino
 Unit 12 Day 6: Tangent-Secant Angles

Name: _____
 Date: _____ Per: _____

Aim: What are tangent-tangent, tangent-secant, secant-secant angles and angles of an inscribed quadrilateral?

Do Now: Using circle O, what is the measure of $\angle ADC$?



Quadrilateral
 (4 sides)
 360°

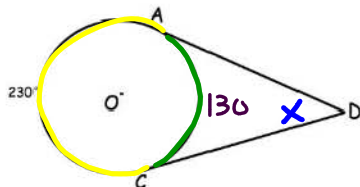
$$100 + AD + 90 + x = 360$$

$$x = 80$$

Angle formed outside = $\frac{\text{outer arc} - \text{inner arc}}{2}$

Two Tangents:

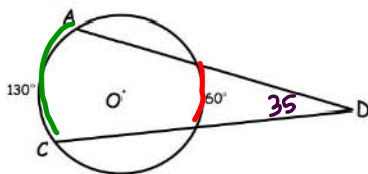
1. Line segments AD and CD lie tangent to circle O. What is the measure of $\angle ADC$?



$$\frac{230 - 130}{2} = \frac{100}{2} = 50^\circ$$

Two Secants:

2. Line segments AD and CD are secants in circle O. What is the measure of $\angle ADC$?

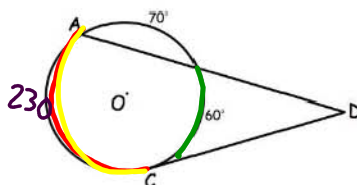


$$\frac{130 - 60}{2} = \frac{70}{2} = 35^\circ$$

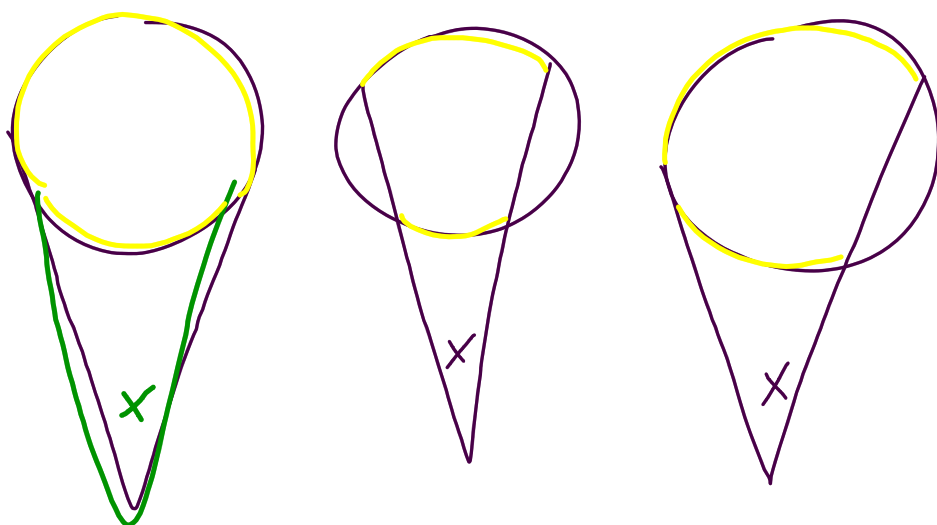
Tangent and a Secant:

3. CD lies tangent to circle O and AD is a secant. What is the measure of $\angle ADC$?

$$\begin{array}{r} 360 \\ -130 \\ \hline 230 \end{array}$$

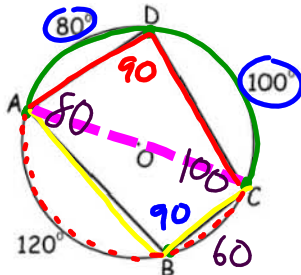


$$\frac{230 - 60}{2} = \frac{170}{2} = 85^\circ$$



In the diagram below, quadrilateral ABCD is inscribed in circle O. What are the measures of each angle of quadrilateral ABCD?

$$\begin{array}{r} 100 \\ 80 \\ \hline +120 \\ \hline 300 \end{array}$$

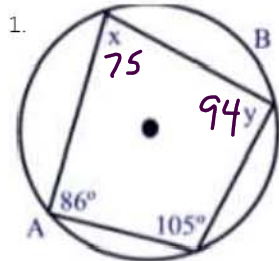


$$\begin{aligned} \angle A &= 80^\circ \\ \angle B &= 90^\circ \\ \angle C &= 100^\circ \\ \angle D &= 90^\circ \end{aligned}$$

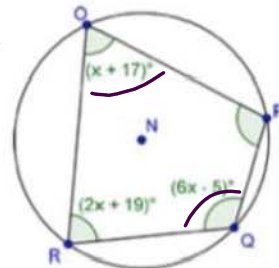
$$\begin{aligned} \angle A + \angle C &= 180^\circ \\ \angle B + \angle D &= 180^\circ \end{aligned}$$

If a quadrilateral is inscribed in a circle, opposite \angle 's are supplementary.

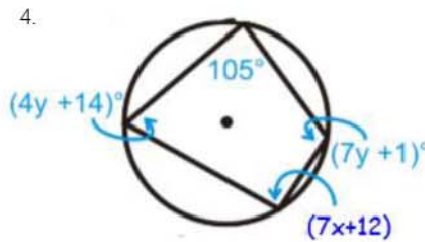
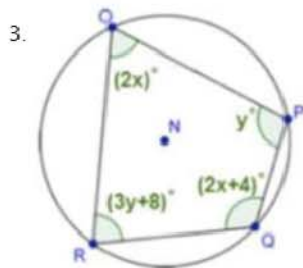
Find the values of x and y in the diagrams below:



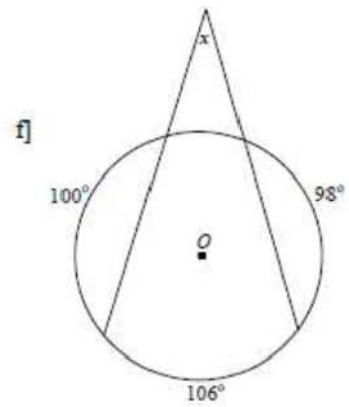
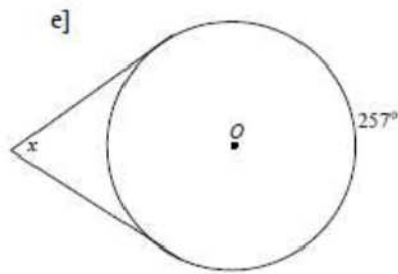
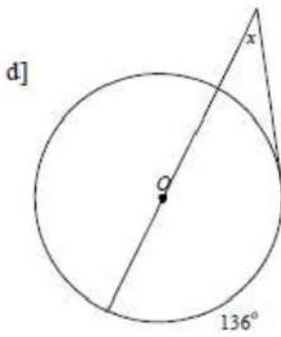
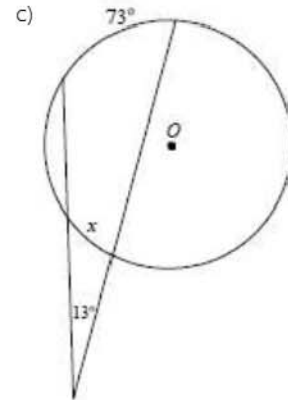
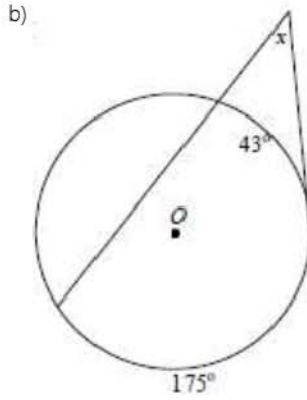
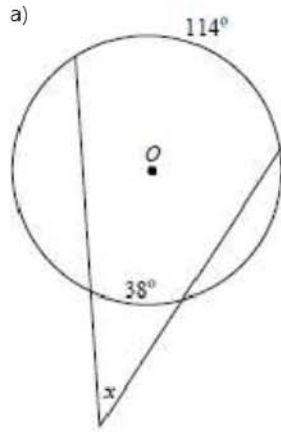
$$\begin{aligned} y &= 180 - 86 \\ &= 94 \\ x &= 180 - 105 \\ &= 75 \end{aligned}$$



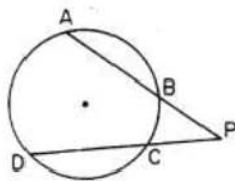
$$\begin{aligned} x + 17 + 6x - 5 &= 180 \\ 7x + 12 &= 180 \\ \underline{-12} \quad \underline{-12} & \\ 7x &= 168 \\ \underline{\quad} \quad \underline{\quad} & \\ x &= 24 \end{aligned}$$



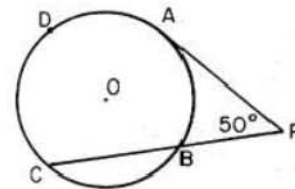
1. Find the value of x in each of the diagrams below:



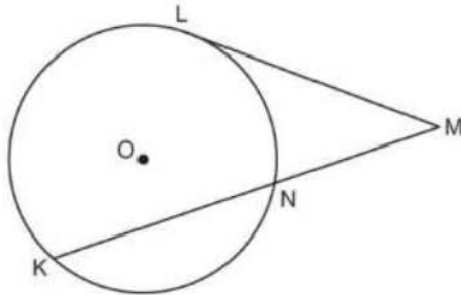
2. In the accompanying diagram, \overline{PBA} and \overline{PCD} are secants to the circle. If $m\angle P = 40$ and $m\widehat{AD} = 120$, find $m\widehat{BC}$.



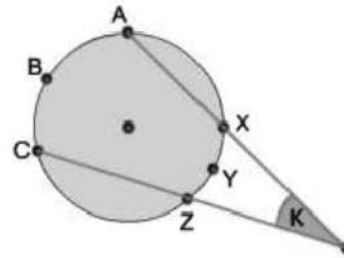
3. In the accompanying diagram, tangent \overline{PA} and secant \overline{PBC} are drawn to circle O . If $m\widehat{ADC}$ is twice $m\widehat{AB}$ and $m\angle P$ is 50, what is $m\widehat{AB}$?



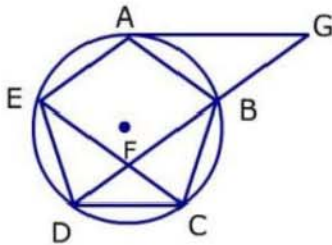
4. In the diagram below, tangent \overline{ML} and secant \overline{MNK} are drawn to circle O . The ratio $m\widehat{LN} : m\widehat{NK} : m\widehat{KL}$ is $3:4:5$. Find $m\angle LMK$.



5. The diagram on the right is not to scale. $\widehat{ABC} : \widehat{XYZ} = 3:2$, arc $\widehat{AX} = 80^\circ$ and arc $\widehat{CZ} = 170^\circ$. What is $m\angle K$?



6. In the diagram, regular pentagon $ABCDE$ is inscribed in circle O . Chords EC and DB intersect at F , chord DB is extended to G and tangent GA is drawn. What is $m\angle AGD$?



7. Find the value of x in each diagram below:

