

Geometry
Inscribed Angles

Name: Key
Date: _____

More Arc Measures

An inscribed angle is an angle with its vertex "on" the circle, formed by two intersecting chords.

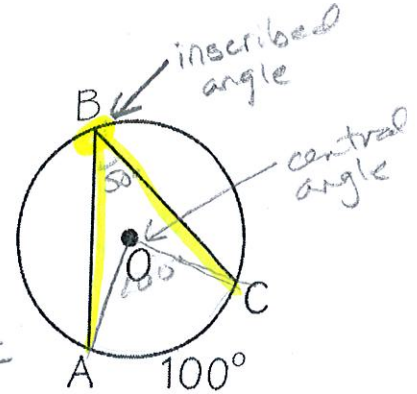
angle name: $\angle ABC$

The measure of an inscribed angle is equal to

half the measure of the corresponding minor arc

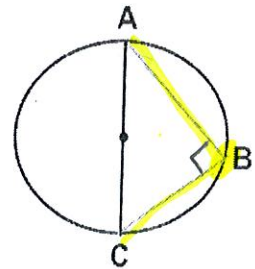
Formula: $\frac{1}{2} m\widehat{AC}$

$m\angle ABC = \frac{1}{2} (100^\circ) = 50^\circ$



Special Situation #1

An angle inscribed in a semicircle is a right angle.
 $m\angle ABC = \underline{90^\circ}$

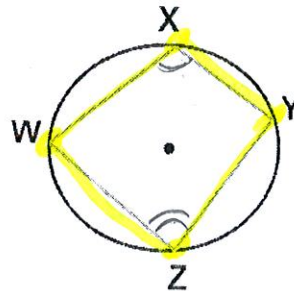


Special Situation #2

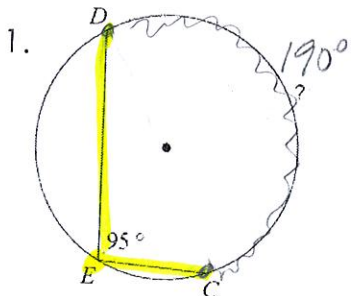
If a quadrilateral is inscribed in a circle, then its opposite angles are supplementary.

$m\angle X + m\angle Z = \underline{180^\circ}$

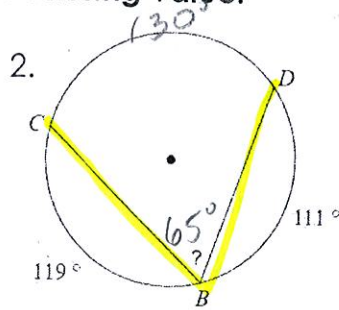
$m\angle W + m\angle Y = \underline{180^\circ}$



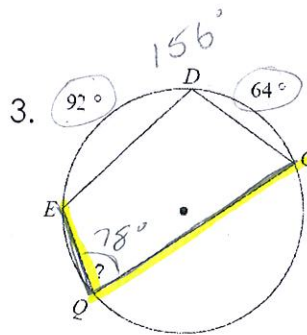
Quick Problems: Find the missing value.



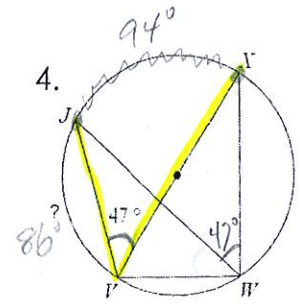
$2(95^\circ) = 190^\circ$



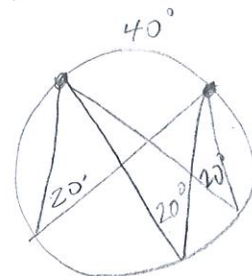
$$\begin{array}{r} 119 \\ + 111 \\ \hline 230 \end{array} \quad \begin{array}{r} 360 \\ - 230 \\ \hline 130 \end{array}$$



$\frac{156}{2} = 78^\circ$



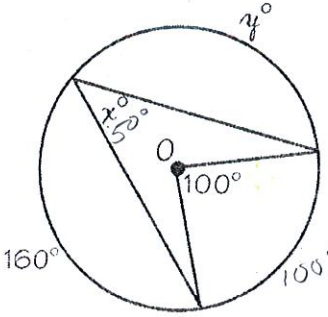
$\frac{180}{2} = 90$
 $90 - 47 = 43$

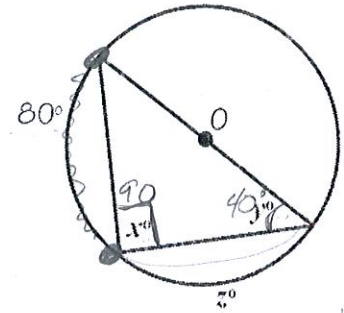


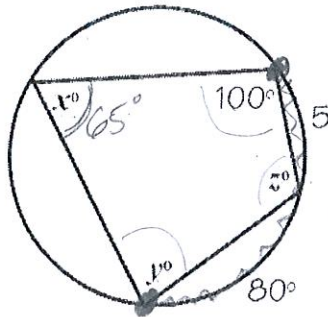
Let's Practice!

Using the diagrams below, find the following values.

You may assume that O stands for the center of the circle.

1.  $x = \underline{50^\circ}$
 $y = \underline{100^\circ}$

2.  $x = \underline{90^\circ}$
 $y = \underline{40^\circ}$
 $z = \underline{100^\circ}$

3.  $x = \underline{65^\circ}$
 $y = \underline{80^\circ}$
 $z = \underline{115^\circ}$

$$\begin{array}{r} 180 \\ - 80 \\ \hline 100 \end{array}$$

 $x = \underline{\frac{130}{2} = 65^\circ}$
 $y = \underline{80^\circ}$
 $z = \underline{115^\circ}$

4. $m\angle MNP = 50^\circ$

5. $m\angle MQP = 50^\circ$

6. $m\angle MNQ = 105^\circ$

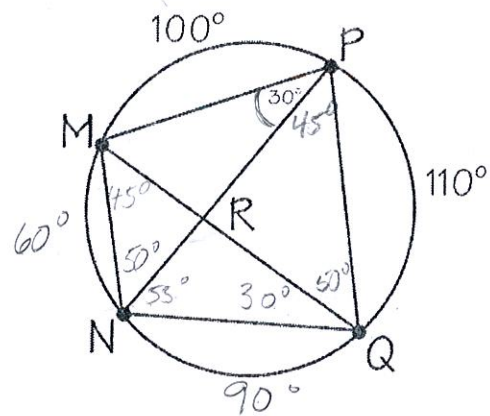
7. $m\angle PNQ = 55^\circ$

8. $m\widehat{MN} = 60^\circ$

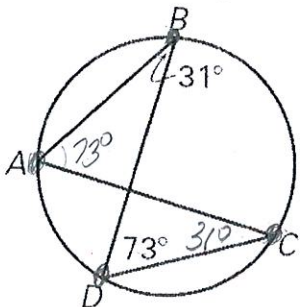
9. $m\widehat{NQ} = 90^\circ$

10. $m\angle MPQ = 75^\circ$

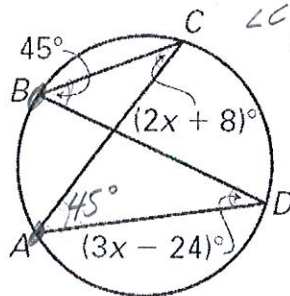
11. $m\angle NRQ = 95^\circ$



12. Find the measure of angle A and angle C.



13. Solve for x. Then find the measure of angles A and C.

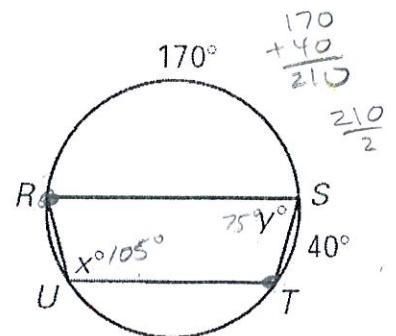


$2x + 8 = 3x - 24$

$8 = x - 24$

$x = 32$

14. Solve for x and y.



$$\begin{array}{r} 170 \\ + 40 \\ \hline 210 \\ \hline \frac{210}{2} \end{array}$$