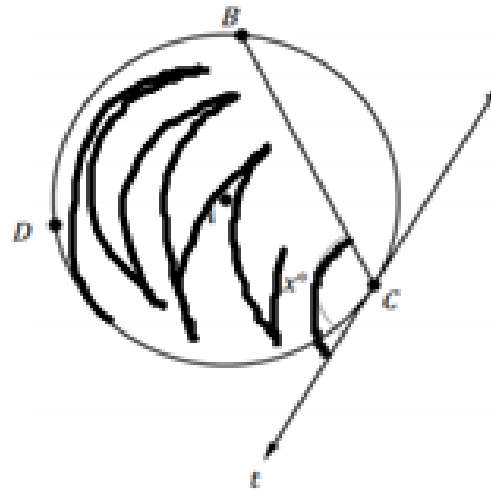


Consider the diagram below.



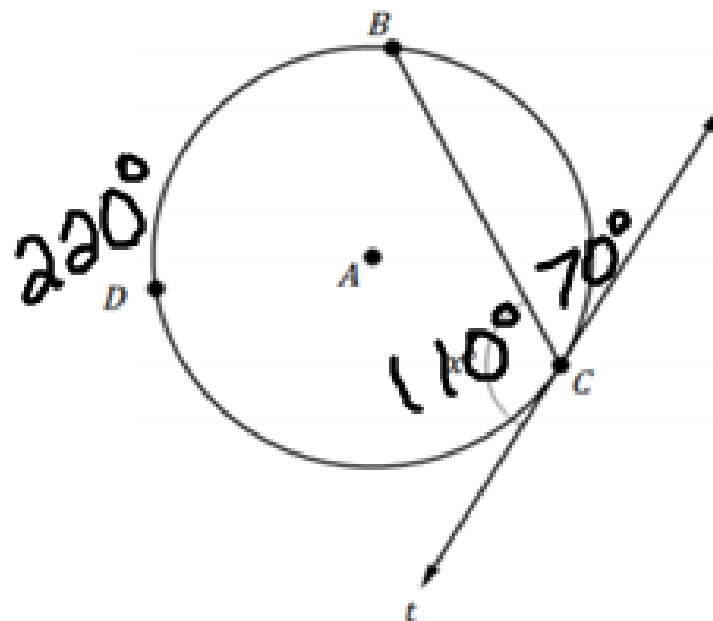
Circle A has chord \overline{BC} and tangent line t through C . The chord and the tangent line form an angle measuring x° . What do you think is the value of x in the above figure?

$$x = \frac{1}{2} (m \widehat{BDC})$$

Chord tangent Angle Theorem

The measure of an angle formed by a chord and a tangent line is $\frac{1}{2}$ the measure of the intercepted arc.

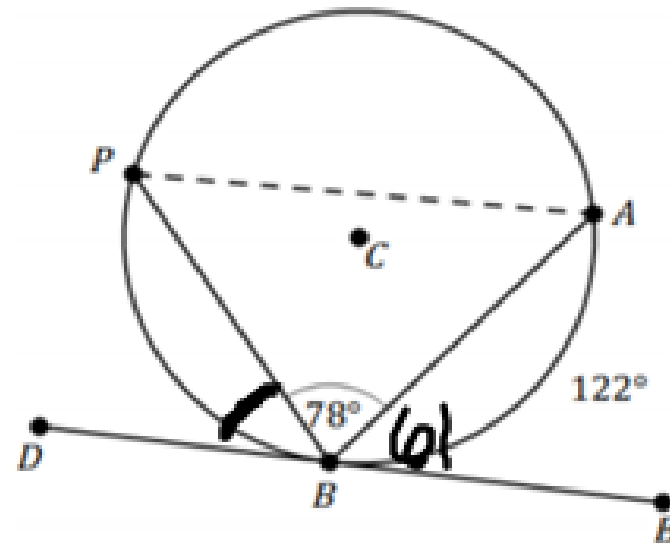
1. Consider the diagram below.



If $m\widehat{CDB}$ is 220° , then what is the supplement of the angle measuring x° ? Justify your answer.

$$\frac{220}{2} = 110^\circ$$
$$\begin{array}{r} 180 \\ - 110 \\ \hline 70^\circ \end{array}$$

Consider the diagram below.

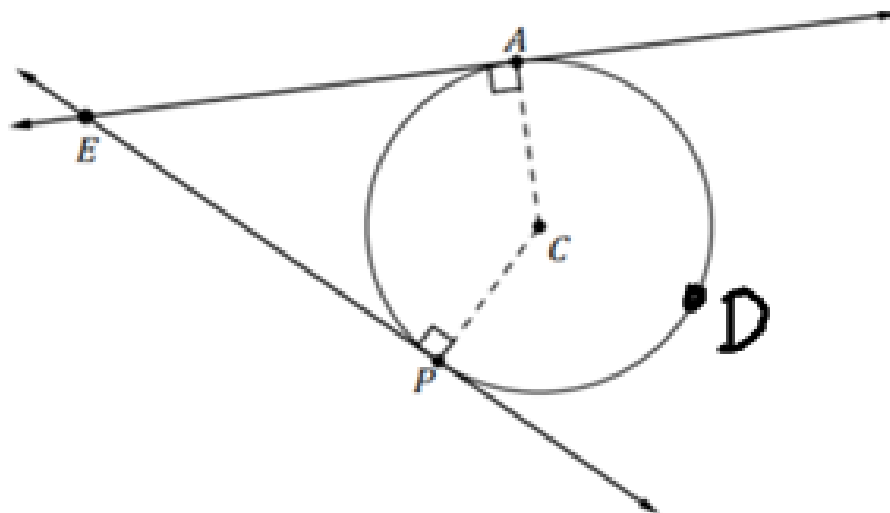


a. Determine the $m\angle PBD$.

$$\frac{122}{2} = 61$$

$$\begin{array}{r} 78 \\ 61 \\ \hline 139 \end{array}$$

$$\begin{array}{r} 180 \\ -139 \\ \hline 41 \end{array}$$



$\angle AEP$ is a Circumscribed angle.

$$m\angle E = \frac{1}{2}(m\widehat{ADP} - m\widehat{AP})$$

A Circumscribed angle is an angle with rays tangent to the circle. It is equal to $\frac{1}{2}$ of the difference between the intercepted arcs.

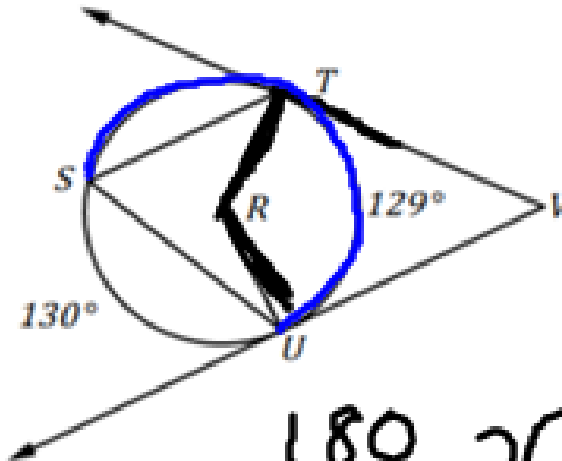
The circumscribed angle and the central angle formed by the same arcs are supplementary angles.

$$m\angle E + m\angle ACP = 180$$

Let's Practice!

3. Find each of the following angles and arcs formed in circle R .

- a. $m\angle RTV = 90$
- b. $m\angle TRU = 129$
- c. $m\angle TVU = 51$
- d. $m\angle TSU = 64.5$
- e. $m\widehat{ST} = 101$
- f. $m\widehat{STU} = 230$



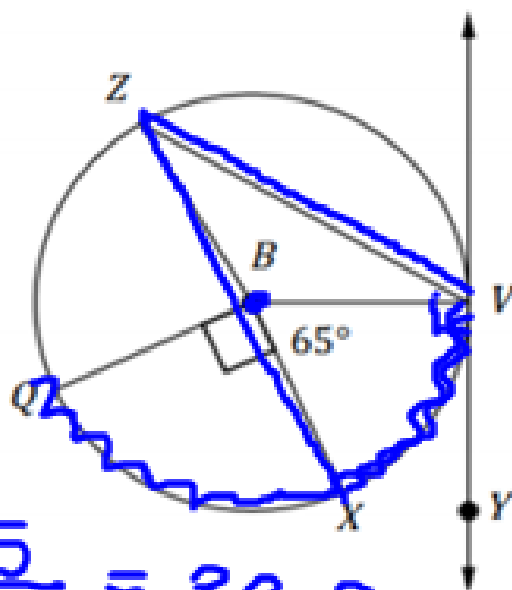
$$\begin{array}{r} 129 \\ + 130 \\ \hline 259 \end{array} \quad \begin{array}{r} 360 \\ - 259 \\ \hline 101 \end{array}$$

$$\begin{array}{r} 180 \\ - 129 \\ \hline 51 \end{array} \quad \sqrt[2]{129} \quad 64.5$$

$$\begin{array}{r} 129 \\ 101 \\ \hline 230 \end{array}$$

4. Find each of the following angles and arcs formed in circle B .

- a. $m\angle YVB = 90$
 b. $m\widehat{VX} = 65$
 c. $m\angle VZX = 32.5$
 d. $m\widehat{VQ} = 155$



$$\begin{array}{r} 90 \\ 65 \\ \hline 155 \end{array}$$

$$\frac{65}{2} = 32.5$$