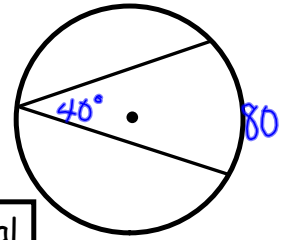
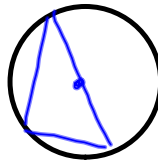
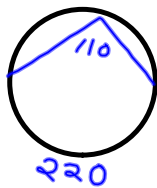
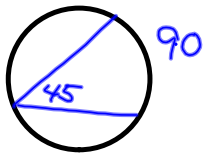


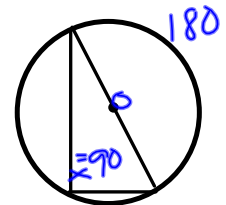
Inscribed angle: an angle whose vertex is on the circle and whose sides contain chords of the circle.



Theorem 13.9: the measure of an inscribed angle of a circle is equal to one half the measure of its intercepted arc

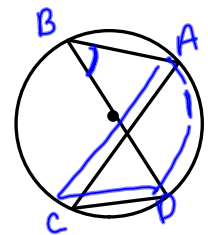


Corollary 13.9a: An angle inscribed in a semicircle is a right angle.



Corollary 13.9b: If two inscribed angles of a circle intercept the same arc, then they are congruent.

$$\angle ABD \cong \angle ACD \leftarrow \begin{aligned} \angle ABD &= \frac{1}{2} \widehat{AD} \\ \angle ACD &= \frac{1}{2} \widehat{AD} \end{aligned}$$



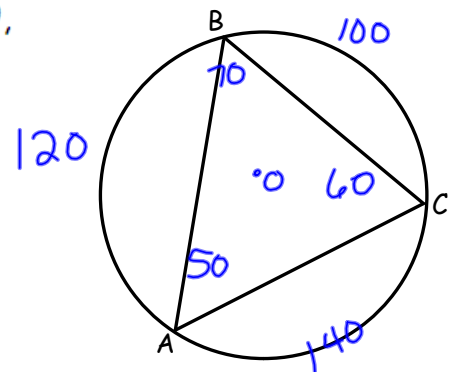
Ex 1:  $\triangle ABC$  Triangle  $ABC$  is inscribed in circle  $O$ ,  $m\angle B = 70$ , and  $m\widehat{BC} = 100$ . Find:

a.  $m\widehat{AC} = 140$

b.  $m\angle A = 50$

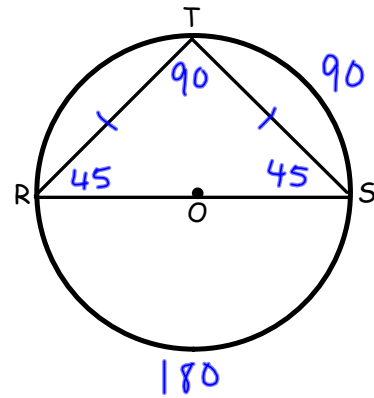
c.  $m\angle C = 60$

d.  $m\widehat{AB} = 120$



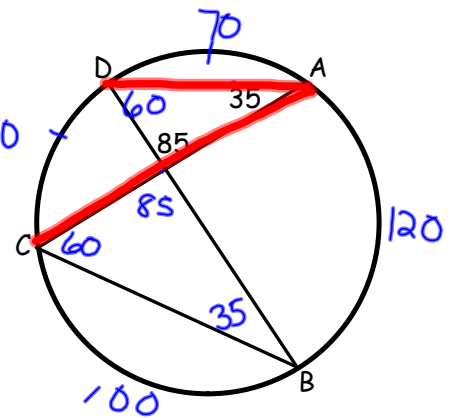
Example 2: Given:  $\overline{RS}$  is a diameter and  $RT = ST$  Find:

- a.  $m\angle T = 90$
- b.  $m\widehat{TS} = 90$
- c.  $m\angle S = 45$
- d.  $m\widehat{RTS} = 180$
- e.  $m\widehat{TSR} = 270$



Example 3: Given:  $\widehat{AD} \cong \widehat{CD}$  Find:

- a.  $m\angle B = 35$   $\frac{1}{2}(\widehat{CD})$
- b.  $m\widehat{CD} = 70$   $2(35)$  since  $\angle A = \frac{1}{2}\widehat{CD}$
- c.  $m\angle C = 60$   $\cong$  to  $\angle D$
- d.  $m\widehat{AB} = 120$   $\angle C = \frac{1}{2}\widehat{AB}$
- e.  $m\angle D = 60$   $\angle D \cong \angle C$
- f.  $m\widehat{BC} = 100$  find missing arc
- g.  $m\widehat{DAB} = 190$



$$\begin{array}{r} 70 \\ 70 \\ \hline 140 \\ 100 \\ \hline 240 \end{array} \quad \begin{array}{r} 360 \\ -260 \\ \hline 100 \end{array}$$

Example 4: Given:  $\triangle ABC$  is inscribed in a circle,  $m\widehat{AB} : m\widehat{BC} : m\widehat{AC} = 3 : 4 : 5$  Find:

- a.  $m\angle A = 60$
- b.  $m\angle B = 75$
- c.  $m\angle C = 45$

$$\begin{aligned} 3x + 4x + 5x &= 360 \\ 12x &= 360 \\ \frac{12x}{12} &= \frac{360}{12} \\ x &= 30 \end{aligned}$$

