

# ***Chapter 10 § 3***

## ***Arcs and Chords***

### **Definitions:**

**Inscribed Polygon – all of its vertices lie on the circle**

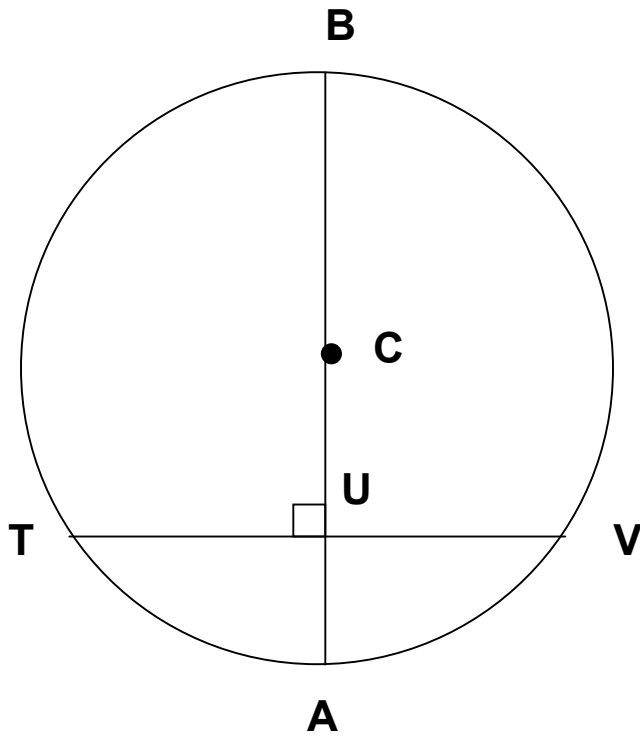
**Circumscribed – it contains all the vertices of the polygon**

### **Theorems:**

**10-2 – In a circle or in congruent circles, two minor arcs are congruent if and only if their corresponding chords are congruent.**

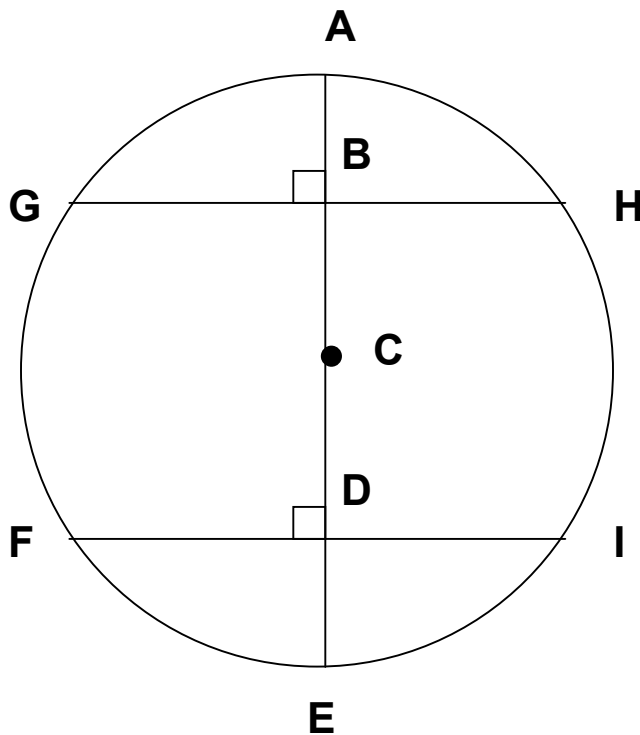
**10-3 – In a circle, if a diameter (or radius) is perpendicular to a chord, then it bisects the chord and its arc.**

**10-4 – In a circle or in congruent circles, two chords are congruent if and only if they are equidistant from the center.**



**Note:**

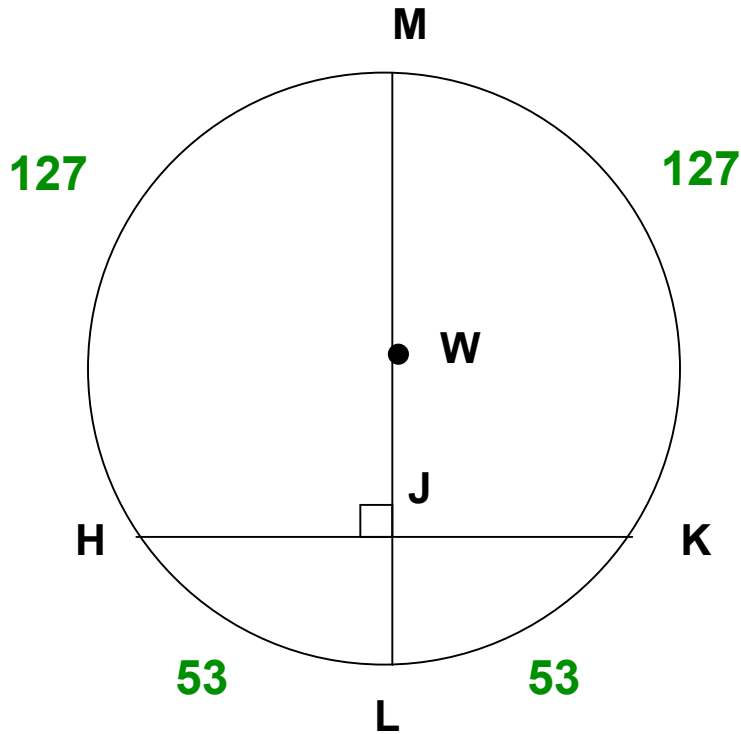
If  $BA \perp TV$ , then  $\overline{UT} \cong \overline{UV}$  and  $\widehat{AT} \cong \widehat{AV}$ .



**Note:**

If  $CB \cong CD$ , then  
 $GH \cong FI$ .

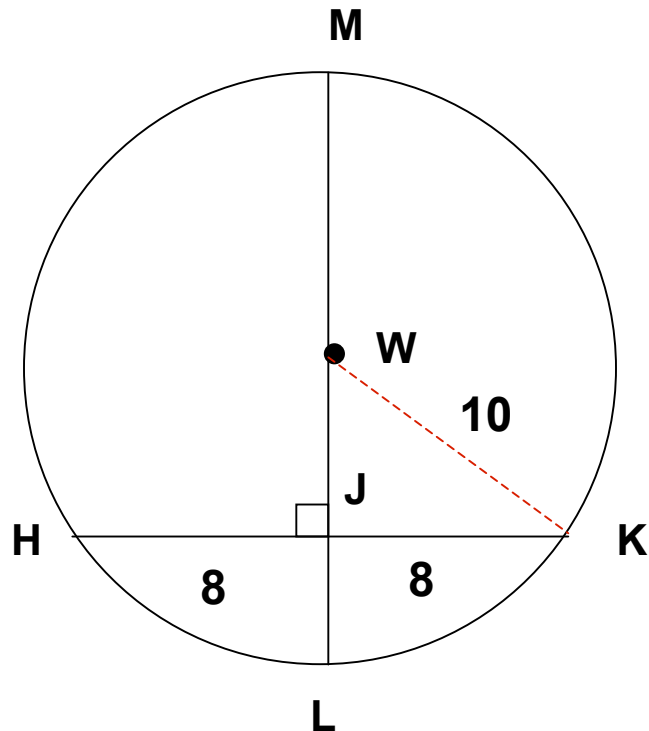
Circle W has a radius of 10 and chord HK is 16 cm long.



If  $m\widehat{HL} \approx 53$ , find  $m\widehat{MK}$ .

$$\begin{array}{r} 360 \\ - 106 \\ \hline 254 \end{array}$$

$$254 / 2 = 127$$



Find JL

$$x^2 + 8^2 = 10^2$$

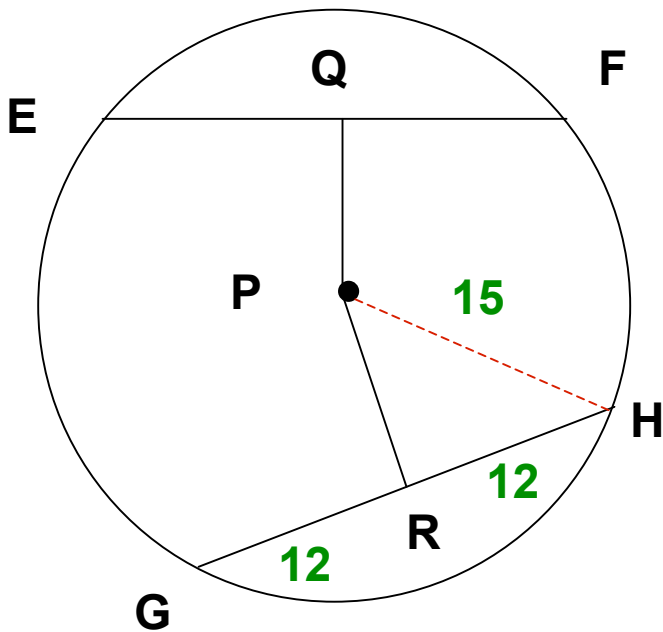
$$x^2 + 64 = 100$$

$$x^2 = 36$$

$$x = 6$$

Therefore JL = 4

Chords EF and GH are equidistant from the center. If the radius of circle P is 15 and EF = 24, find PR and RH.



Since PQ and PR are the same, then the chords EF and GH are congruent

Since GH = 24, then RH = 12.

$$x^2 + 12^2 = 15^2$$

$$x^2 + 144 = 225$$

$$x^2 = 81$$

$$x = 9$$

Therefore PR = 9