

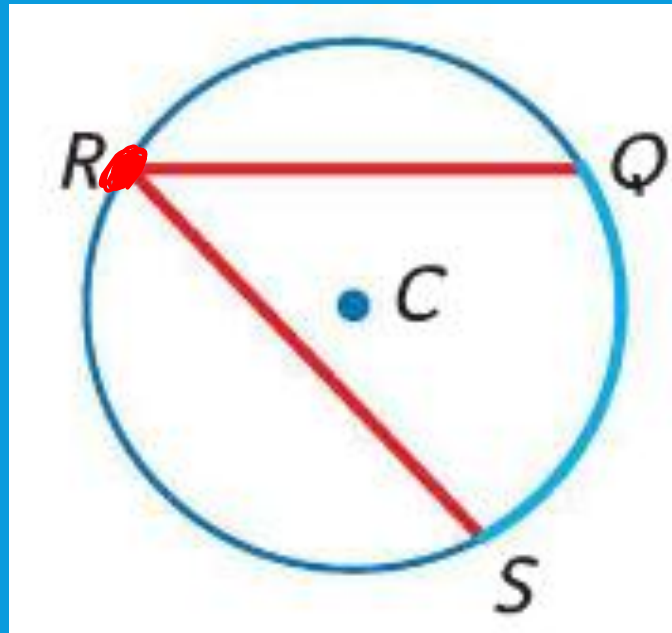


# INSCRIBED ANGLES

Write  
draw

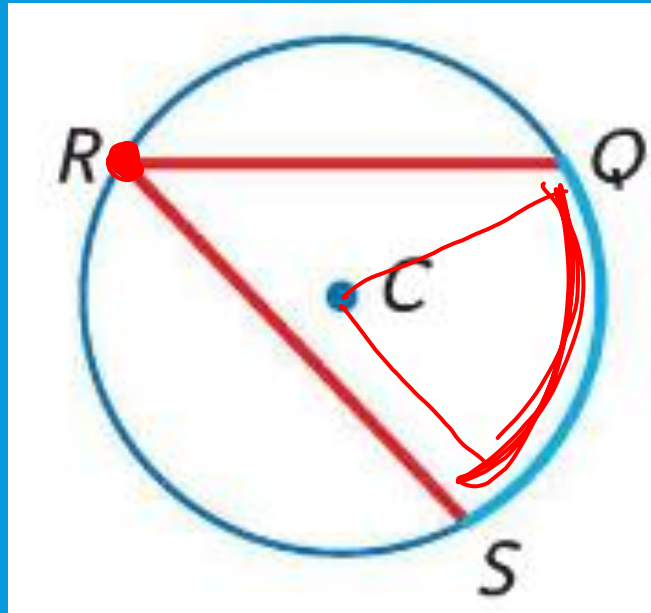
# INSCRIBED ANGLES

- An inscribed angle has a vertex on a circle and sides that contain chords of the circle.



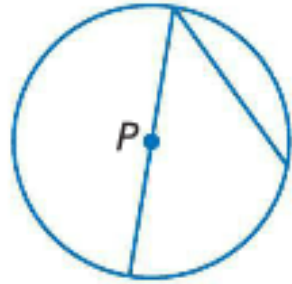
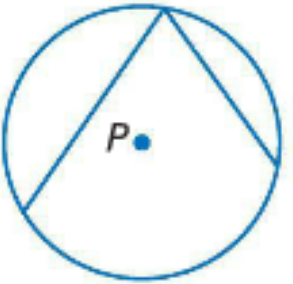
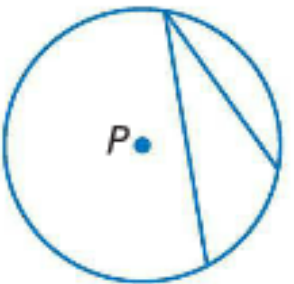
# INTERCEPTED ARC

- An intercepted arc has endpoints on the sides of an inscribed angle and lies in the interior of the inscribed angle.



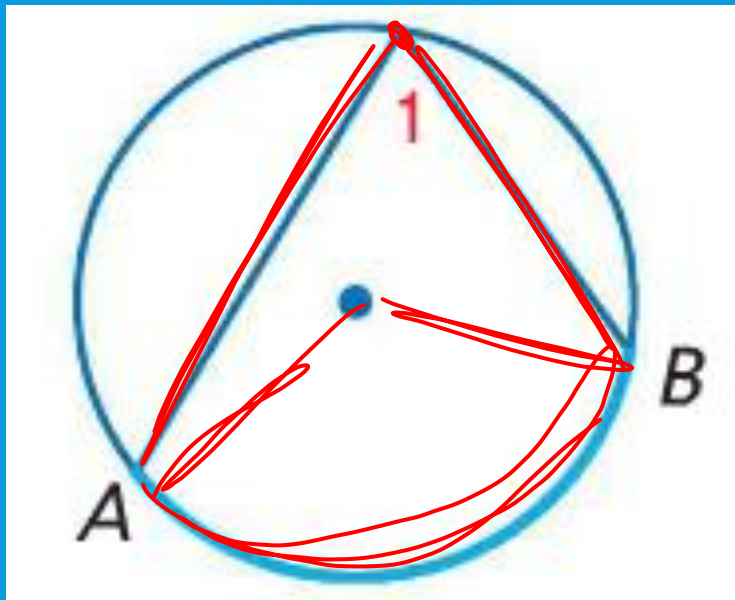
# INSCRIBED ANGLE

- There are three ways that an angle can be inscribed in a circle.

Case 1	Case 2	Case 3
 <p data-bbox="397 1072 830 1165">Center <math>P</math> is on a side of the inscribed angle.</p>	 <p data-bbox="996 1072 1498 1165">Center <math>P</math> is inside the inscribed angle.</p>	 <p data-bbox="1600 1072 2079 1165">The center <math>P</math> is in the exterior of the inscribed angle.</p>

# INSCRIBED ANGLE THEOREM

- If an angle is inscribed in a circle, then the measure of the angle equals one half the measure of its intercepted arc.



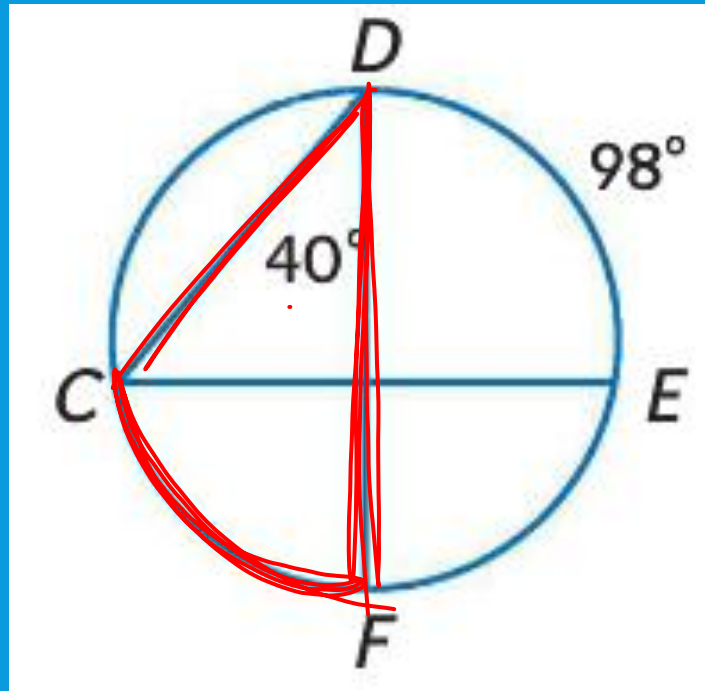
$$m\angle 1 = \frac{1}{2}m\widehat{AB}$$

$$m\widehat{AB} = 2m\angle 1$$

# EXAMPLES

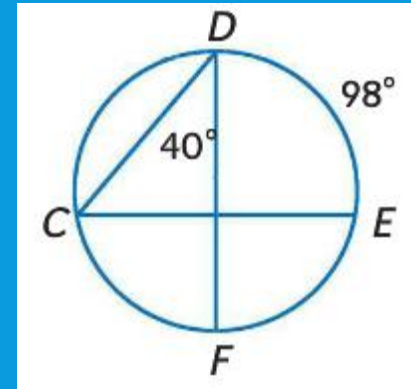
- Find each measure.
- $m\widehat{CF}$

$$2 \cdot 40 = 80$$



# EXAMPLES

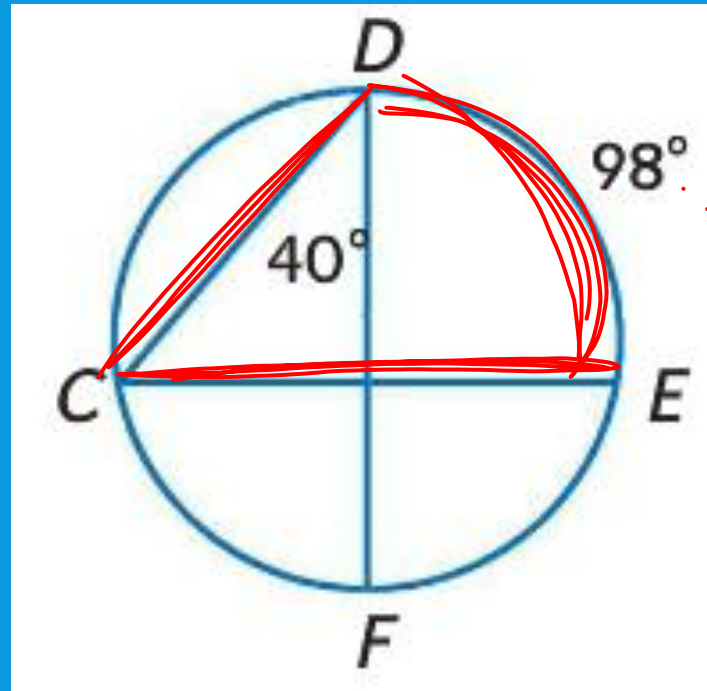
- Find each measure.
- $m\widehat{CF}$
- $m\widehat{CF}$  intercepts  $\angle CDF$
- $m\angle CDF = 40$
- $m\widehat{CF} = 2 * 40$
- $m\widehat{CF} = 80$



# EXAMPLES

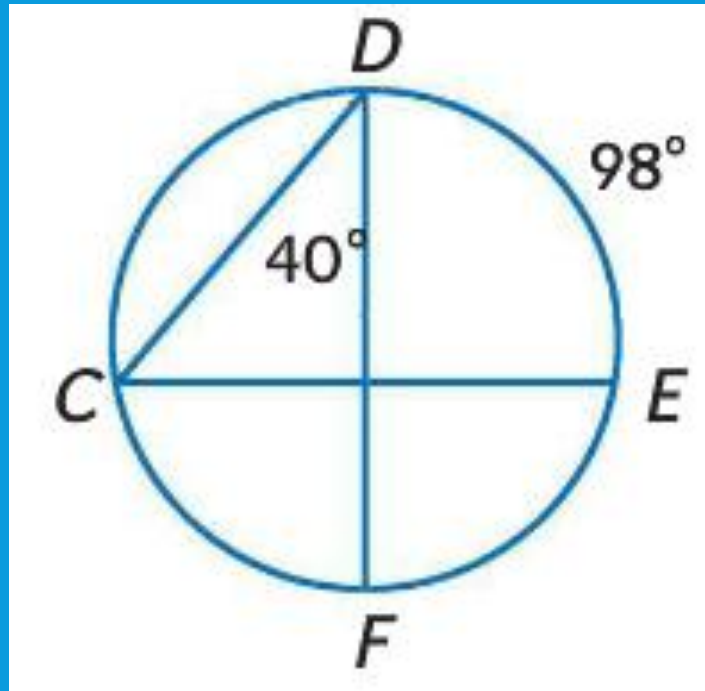
- Find each measure.
- $m\angle C$

$$\frac{98}{2} = 49$$



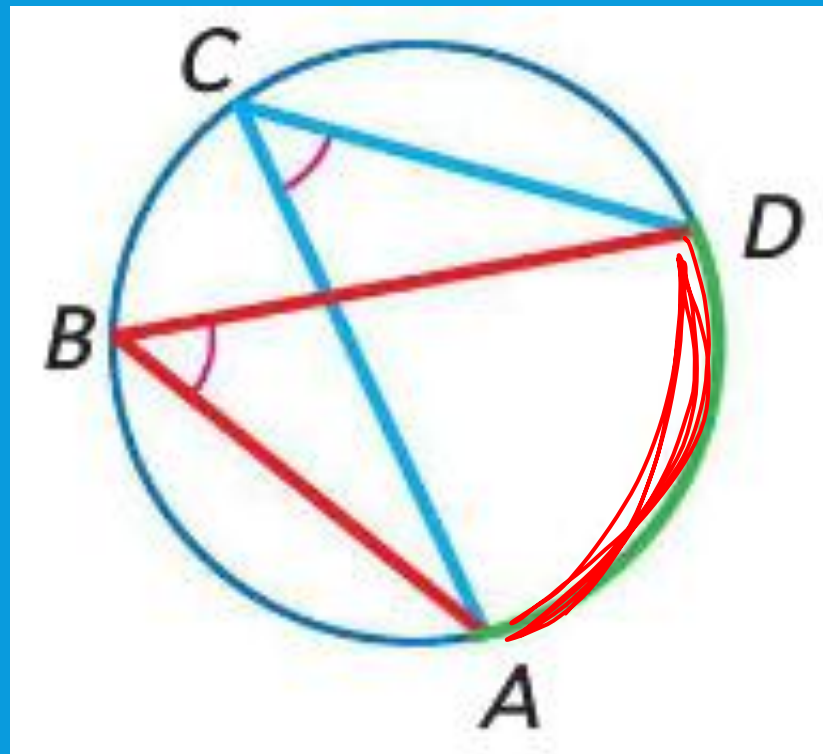
# EXAMPLES

- Find each measure.
- $m\angle C$
- $m\angle C$  intercepts  $\widehat{DE}$
- $\widehat{DE} = 98$
- $m\angle C = \frac{1}{2} * 98$
- $m\angle C = 49$



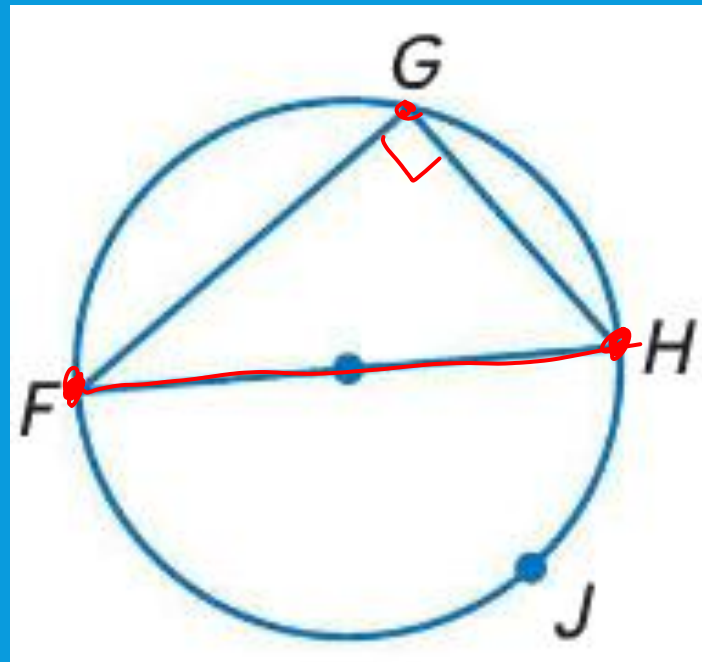
# INTERCEPTED ARC THEOREM

- If two inscribed angles of a circle intercept the same arc or congruent arcs, then the angles are congruent.



# INSCRIBED TRIANGLE THEOREM

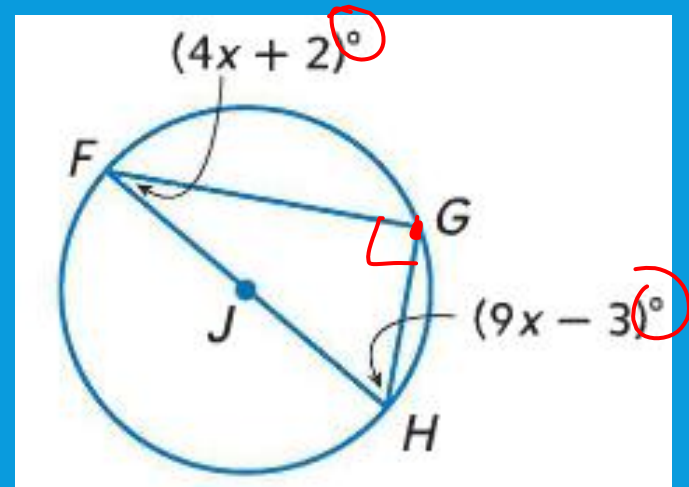
- An inscribed angle of a triangle intercepts a diameter or semicircle if and only if the angle is a right angle.



# EXAMPLES

- If  $m\angle F = 4x + 2$  and  $m\angle H = 9x - 3$ , find  $x$ .

$$4x + 2 + 9x - 3 = 90$$



# EXAMPLES

- If  $m\angle F = 4x + 2$  and  $m\angle H = 9x - 3$ , find  $x$ .

- $m\angle F + m\angle H = 90$

$m\angle G = 90$

- $4x + 2 + 9x - 3 = 90$

*Substitute the angles*

- $13x - 1 = 90$

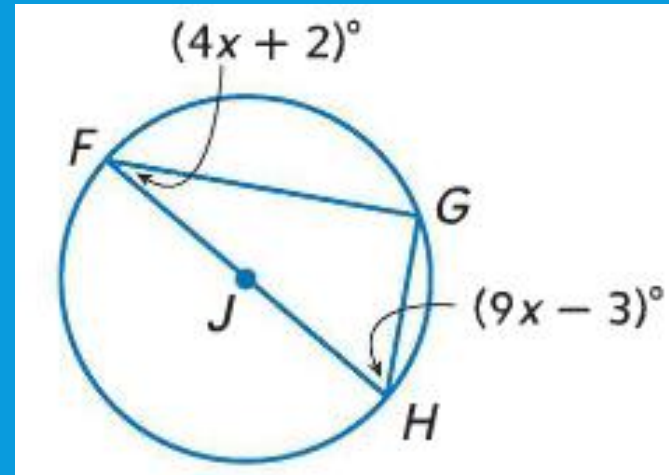
*Simplify*

- $13x = 91$

*Add 1 to both sides*

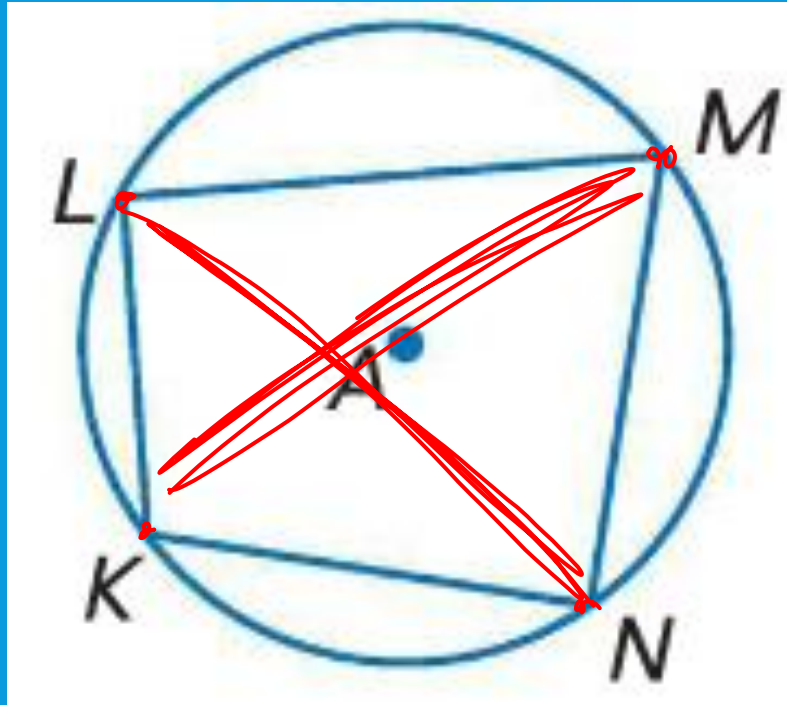
- $x = 7$

*Divide both sides by 13*



# INSCRIBED QUADRILATERAL THEOREM

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

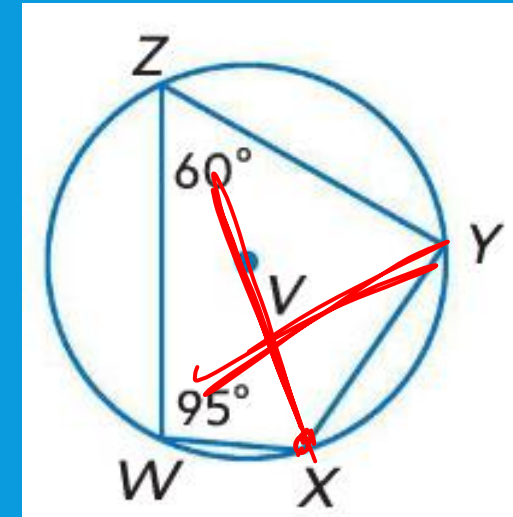


# EXAMPLES

- Quadrilateral WXYZ is inscribed in  $\odot V$ . find  $m\angle X$  and  $m\angle Y$ .

$$X = 120$$

$$Y = 85$$



# EXAMPLES

- Quadrilateral WXYZ is inscribed in  $\odot V$ . find  $m\angle X$  and  $m\angle Y$ .

- $m\angle Z + m\angle X = 180$

- $60 + m\angle X = 180$

- $m\angle X = 120$

- $m\angle W + m\angle Y = 180$

- $95 + m\angle Y = 180$

- $m\angle Y = 85$

