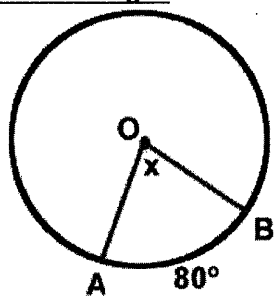
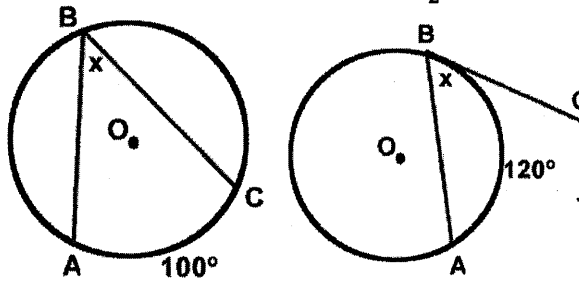


# Ch. 10 Circles Concept Review

**Central Angle:**  $m\angle AOB = m\widehat{AB}$

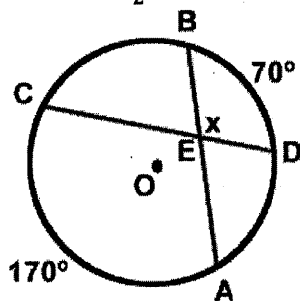


**Inscribed Angles:**  $m\angle ABC = \frac{1}{2} m\widehat{AC}$



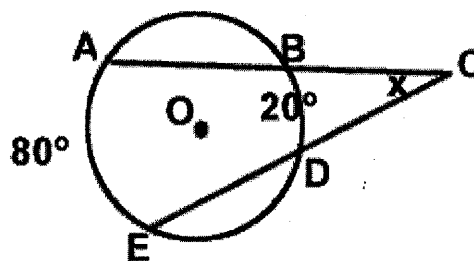
**Intersecting Chords inside circle:**

$$m\angle BED = \frac{1}{2} (m\widehat{BD} + m\widehat{AC})$$



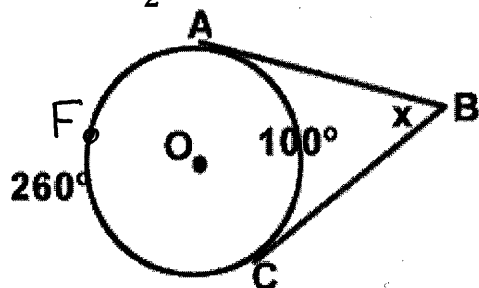
**Angle outside circle formed by secants/tangents:**

$$m\angle ACE = \frac{1}{2} (m\widehat{AE} - m\widehat{BD})$$



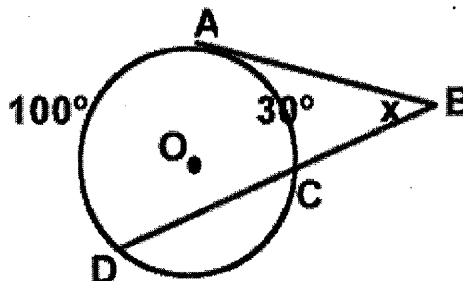
**Angle outside circle formed by secants/tangents:**

$$m\angle ABC = \frac{1}{2} (m\widehat{AFC} - m\widehat{AC})$$

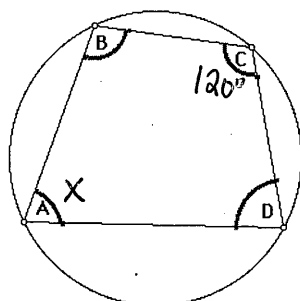


**Angle outside circle formed by secants/tangents:**

$$m\angle ABD = \frac{1}{2} (m\widehat{AD} - m\widehat{AC})$$

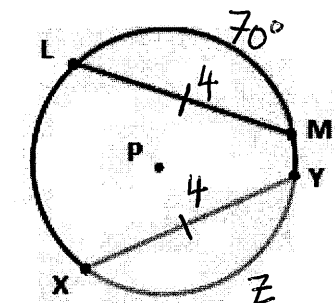


**Inscribed Quadrilateral Property:**



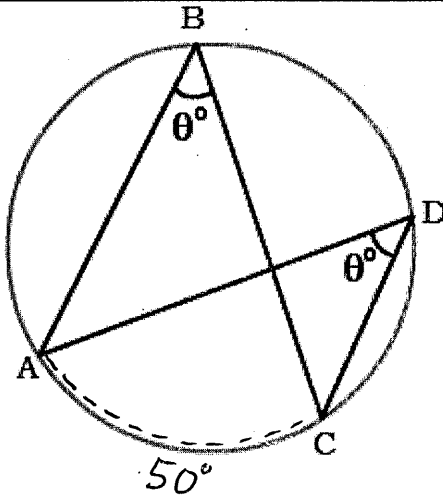
$$\begin{aligned} A + C &= 180 \\ B + D &= 180 \end{aligned}$$

**Congruent chords in circle:**

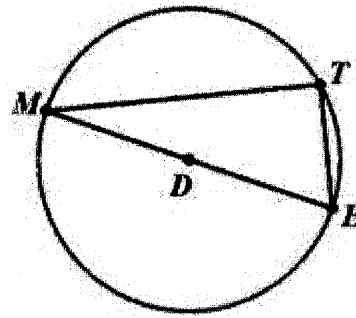


$$\overline{LM} \cong \overline{XY} \text{ and } \widehat{LM} \cong \widehat{XY}$$

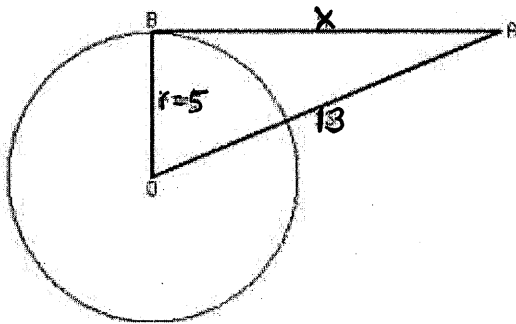
Inscribed Angles intercepting same arc:



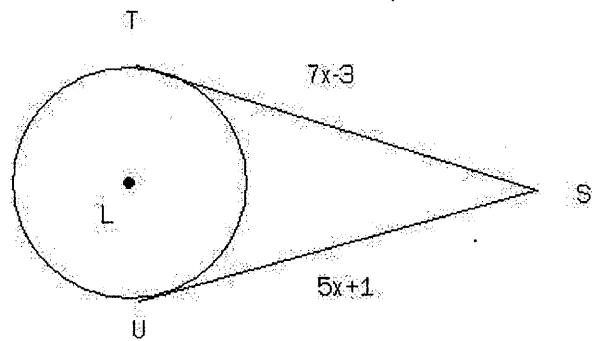
Inscribed Angle Intercepting diameter:



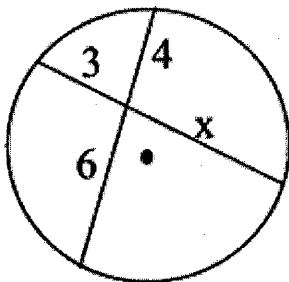
Line tangent to circle is perpendicular to radius:



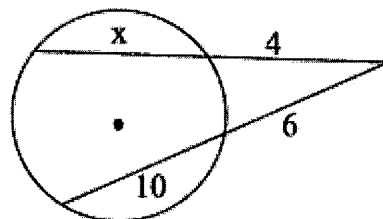
Tangents to circles are congruent: (party hat problems):



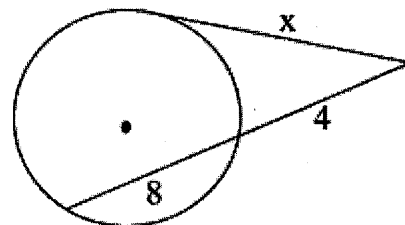
Chord segment lengths:  
part \* part = part \* part



Secant segment lengths:  
outside \* whole = outside \* whole



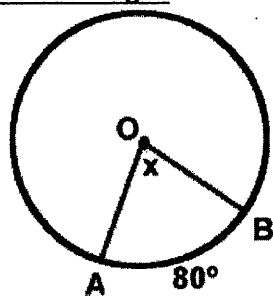
Secant/tangent segment lengths:  
outside \* whole = outside \* whole



# Ch. 10 Circles Concept Review

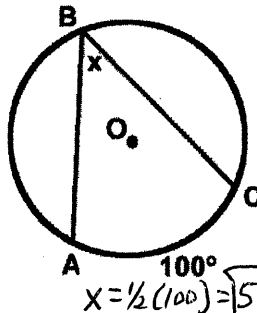
Key

**Central Angle:**  $m\angle AOB = m\widehat{AB}$

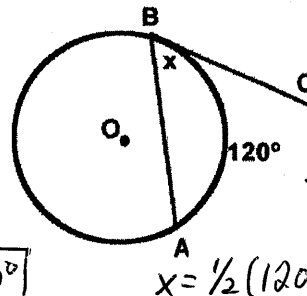


$$x = 80^\circ$$

**Inscribed Angles:**  $m\angle ABC = \frac{1}{2}m\widehat{AC}$



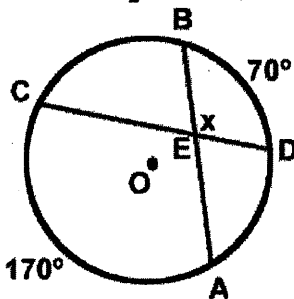
$$x = \frac{1}{2}(100) = 50^\circ$$



$$x = \frac{1}{2}(120) = 60^\circ$$

**Intersecting Chords inside circle:**

$$m\angle BED = \frac{1}{2}(m\widehat{BD} + m\widehat{AC})$$



$$x = \frac{1}{2}(70 + 170)$$

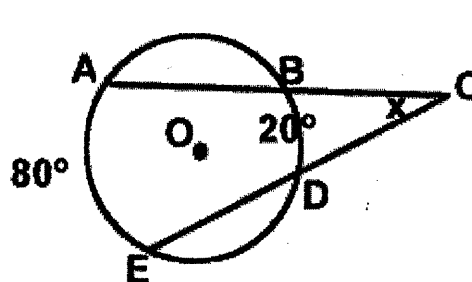
$$x = \frac{1}{2}(240)$$

$$x = 120^\circ$$

**Angle outside circle formed by secants/tangents:**

$$m\angle ACE = \frac{1}{2}(m\widehat{AE} - m\widehat{BD})$$

$$x = \frac{1}{2}(80 - 20)$$

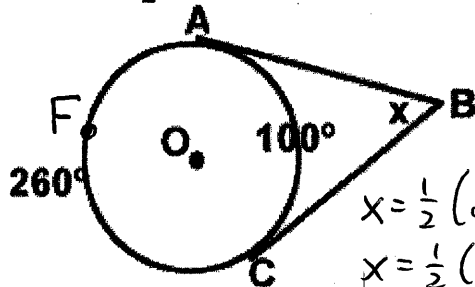


$$x = \frac{1}{2}(60)$$

$$x = 30^\circ$$

**Angle outside circle formed by secants/tangents:**

$$m\angle ABC = \frac{1}{2}(m\widehat{AFC} - m\widehat{AC})$$



$$x = \frac{1}{2}(260 - 100)$$

$$x = \frac{1}{2}(160)$$

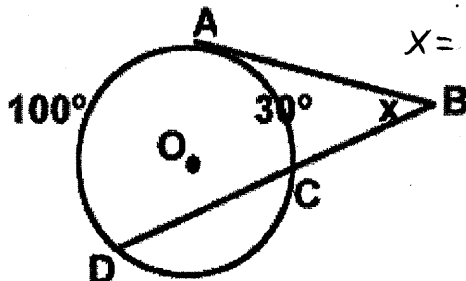
$$x = 80^\circ$$

**Angle outside circle formed by secants/tangents:**

$$m\angle ABD = \frac{1}{2}(m\widehat{AD} - m\widehat{AC})$$

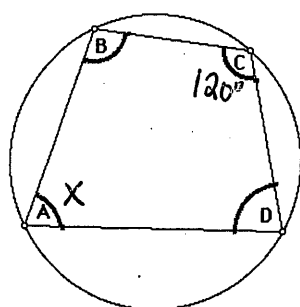
$$x = \frac{1}{2}(100 - 30)$$

$$x = \frac{1}{2}(70)$$



$$x = 35^\circ$$

**Inscribed Quadrilateral Property:**



$$\angle A + \angle C = 180^\circ$$

$$\angle A + 120 = 180$$

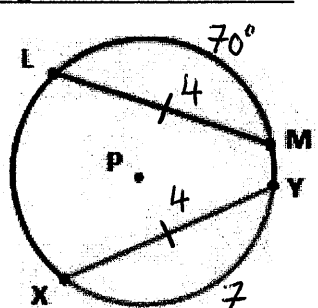
$$\angle A = 60^\circ$$

$$x = 60^\circ$$

$$A + C = 180$$

$$B + D = 180$$

**Congruent chords in circle:**



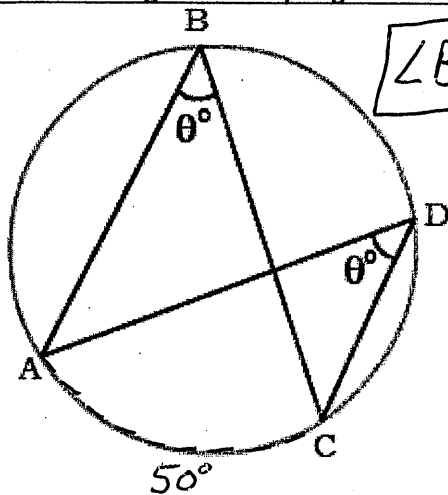
$$\widehat{LM} = \widehat{XY}$$

$$70 = z$$

$$z = 70^\circ$$

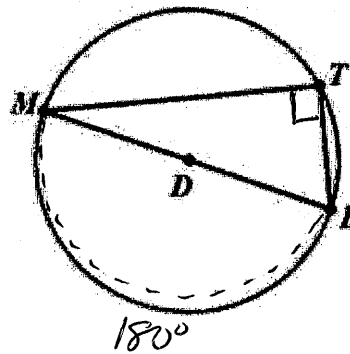
$$\overline{LM} \cong \overline{XY} \text{ and } \widehat{LM} \cong \widehat{XY}$$

Inscribed Angles intercepting same arc:



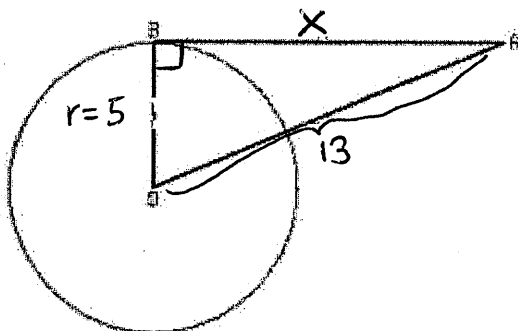
$$\angle B = \angle D = 50^\circ$$

Inscribed Angle Intercepting diameter:



$$m\angle MTE = 90^\circ$$

Line tangent to circle is perpendicular to radius:

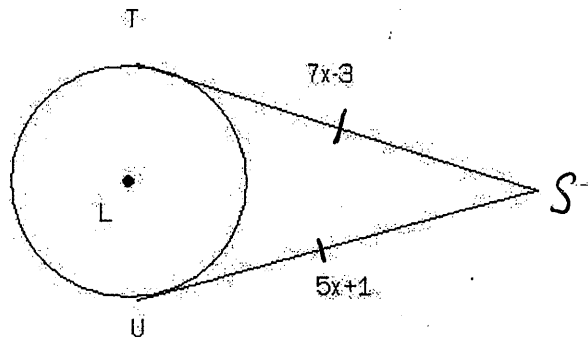


$$5^2 + x^2 = 13^2$$

$$x^2 = 13^2 - 5^2$$

$$x^2 = 144 \quad \boxed{x=12}$$

Tangents to circles are congruent: (party hat problems):



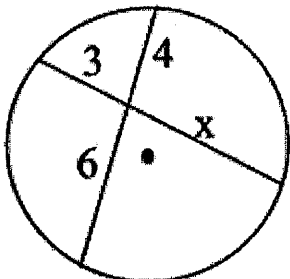
$$7x-3 = 5x+1$$

$$2x = 4$$

$$\boxed{x=2}$$

Chord segment lengths:

part \* part = part \* part



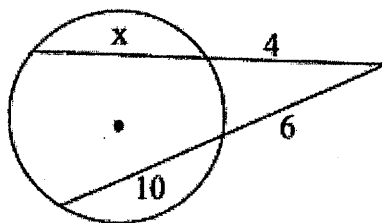
$$3x = 6(4)$$

$$3x = 24$$

$$\boxed{x=8}$$

Secant segment lengths:

outside \* whole = outside \* whole



$$4(x+4) = 6(10+6)$$

$$4x+16 = 6(16)$$

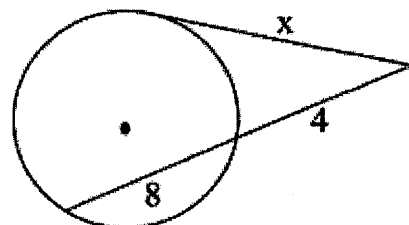
$$4x+16 = 96$$

$$4x = 80$$

$$\boxed{x=20}$$

Secant/tangent segment lengths:

outside \* whole = outside \* whole



$$x \cdot x = 4(4+8)$$

$$x^2 = 4(12)$$

$$x^2 = 48$$

$$\boxed{x = \sqrt{48} = 4\sqrt{3} \approx 6.928}$$