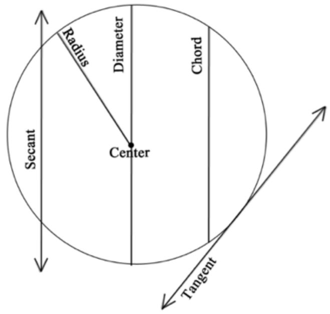
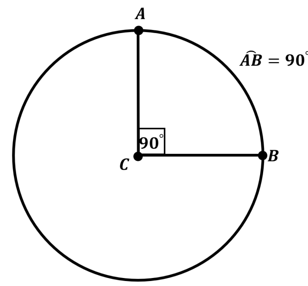
mathSUX²

Circle Theorems Cheat Sheet

Parts of a Circle:



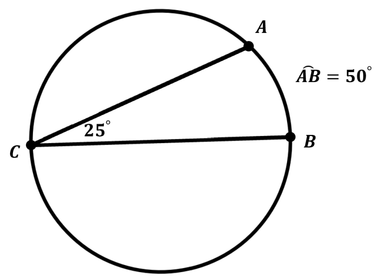
Central Angles=Measure of Arc



$$\measuredangle ACB = \widehat{AB}$$

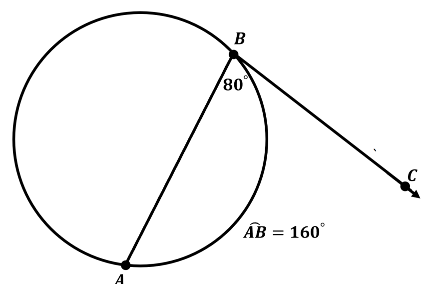
$$:ACB = 90^\circ \text{ and } \widehat{AB} = 90^\circ$$

Inscribed Angle = $\frac{1}{2}$ Arc



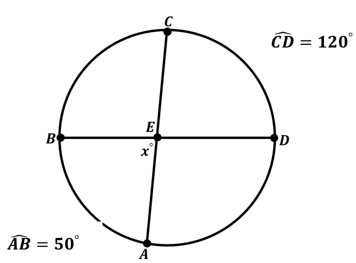
$$\measuredangle ACB = 25^\circ \text{ and } \widehat{AB} = 50^\circ$$

Tangent/Chord Angle = $\frac{1}{2}$ *Arc*



$$\measuredangle ABC = 80^\circ \text{ and } \widehat{AB} = 160^\circ$$

Angle formed by Two Intersecting Chords = $\frac{1}{2}$ *the sum of Intercepted Arcs*



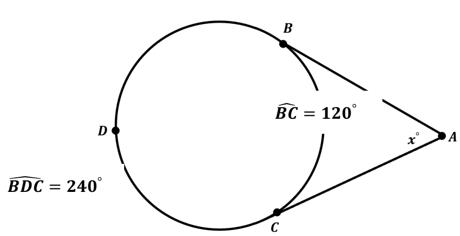
$$\measuredangle BEA = \frac{1}{2}(\ \widehat{AB} + \widehat{CD}\ )$$

$$\measuredangle BEA = \frac{1}{2}(50^\circ + 120^\circ)$$

$$\measuredangle BEA = \frac{1}{2}(170^\circ)$$

$$\measuredangle BEA = 85^\circ$$

Angle formed by Two Tangents = $\frac{1}{2}$ *the difference of Intercepted Arc*



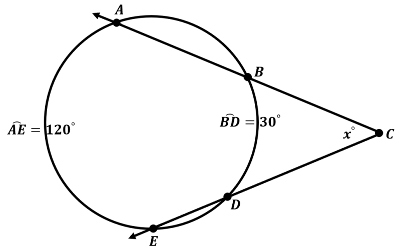
$$\measuredangle BAC = \frac{1}{2}(\ \widehat{BDC} - \widehat{BC}\ )$$

$$\measuredangle BAC = \frac{1}{2}(240^\circ - 120^\circ)$$

$$\measuredangle BAC = \frac{1}{2}(120^\circ)$$

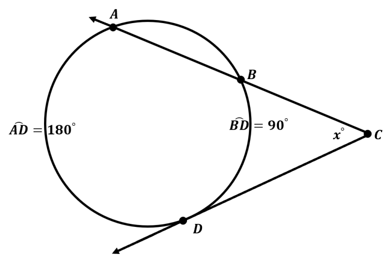
$$\measuredangle BAC = 60^\circ$$

Angle formed by Two Secants = $\frac{1}{2}$ *the difference of Intercepted Arc*



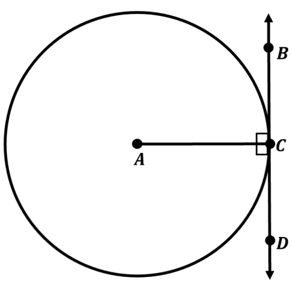
$$\measuredangle ACD = \frac{1}{2}(\widehat{AD} - \widehat{BE})$$
$$\measuredangle ACD = \frac{1}{2}(120^\circ - 30^\circ)$$
$$\measuredangle ACD = \frac{1}{2}(90^\circ)$$
$$\measuredangle ACD = 45^\circ$$

Angle formed by a Secant and Tangent = $\frac{1}{2}$ *the difference of Intercepted Arc*



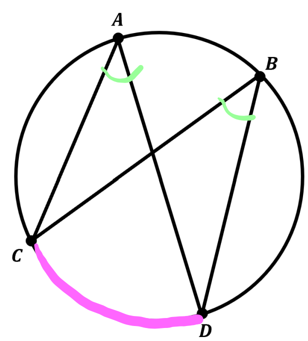
$$\measuredangle ACD = \frac{1}{2}(\ \widehat{AD} - \widehat{BD}\ )$$
$$\measuredangle ACD = \frac{1}{2}(180^\circ - 70^\circ)$$
$$\measuredangle ACD = \frac{1}{2}(110^\circ)$$
$$\measuredangle ACD = 55^\circ$$

Circle Theorems:



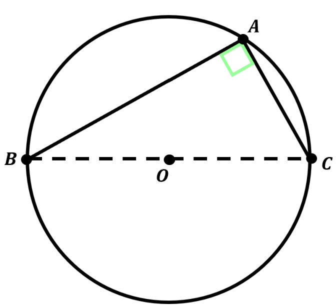
In a circle when a tangent and radius come to touch, they form a 90° angle.

$\measuredangle ACB = 90^\circ$ and $\measuredangle ACD = 90^\circ$



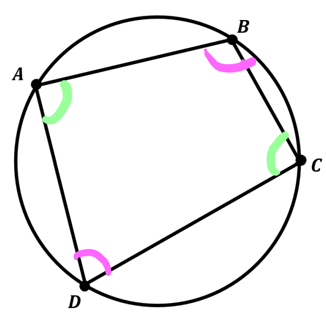
In a circle when two inscribed angles intercept the same arc, the angles are congruent.

$\measuredangle A \cong \measuredangle B$



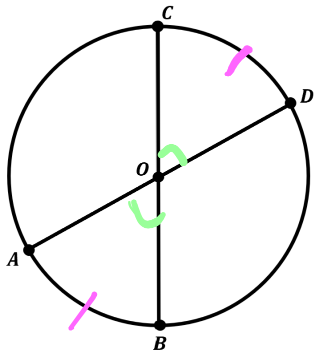
In a circle when an angle is inscribed by a semicircle, it forms a 90° angle.

$\measuredangle BAC \cong 90^\circ$



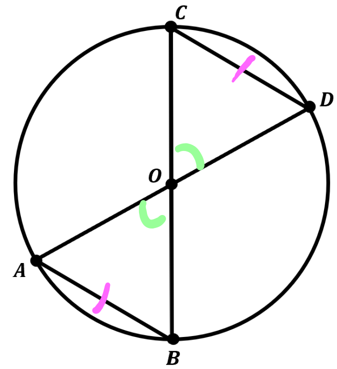
When a quadrilateral is inscribed in a circle, opposite angles are supplementary.

$\measuredangle A + \measuredangle C = 180^\circ$ and $\measuredangle B + \measuredangle D = 180^\circ$



In a circle when central angles are congruent, arcs are also congruent. (and vice versa)

$\measuredangle COD \cong \measuredangle AOB$ Therefore, $\widehat{AB} \cong \widehat{CD}$



In a circle when central angles are congruent, chords are also congruent. (and vice versa)

$\measuredangle COD \cong \measuredangle AOB$ Therefore, $\widehat{AB} \cong \widehat{CD}$