Table of Contents
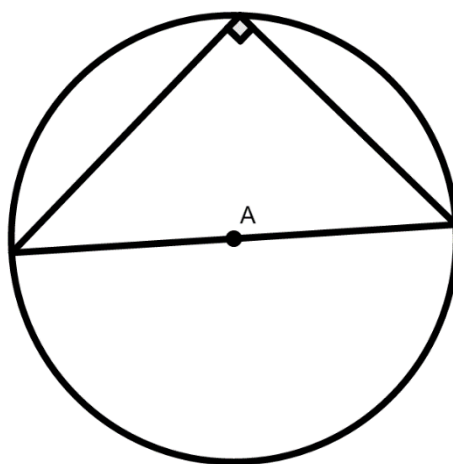
LESSON 4

Criteria for Success #2a and #2b

Chord Central Angles Conjecture:

   a) If two chords are congruent, then their central angles are equal in measure.
   b) If two chords define central angles equal in measure, then they are congruent.
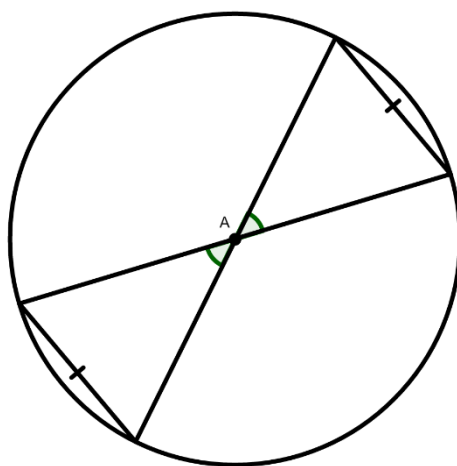
Criteria for Success #2c

Thales' Theorem: If a triangle is inscribed in a circle where one of the sides is a diameter, then the triangle is a right triangle.
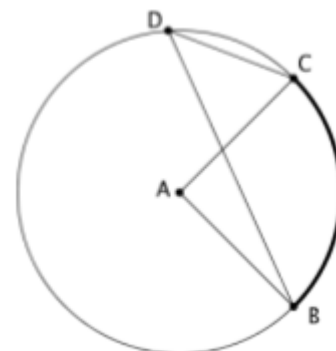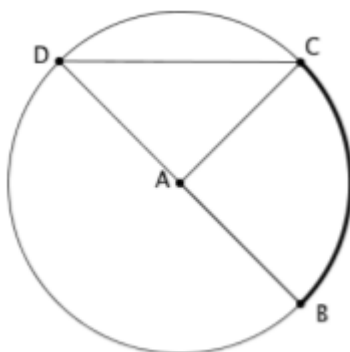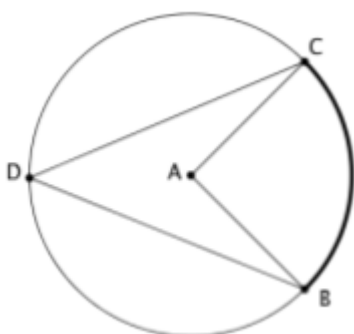
LESSON 5

Criteria for Success #2

Identify inscribed angles and their corresponding central angles in diagrams.

In all three diagrams below, the central angle is ∠CAB, the inscribed angle is ∠CDB, and the intercepted arc is $\overset{\frown}{CB}$.

Criteria for Success #4

Describe and apply the relationship between a central angle and its intercepted arc. The measure of the central angle is the same as the intercepted arc measure.

In circle A, the measure of the intercepted arc $\overset{\frown}{BC}$ is equivalent to the measure of central angle ∠BAC.
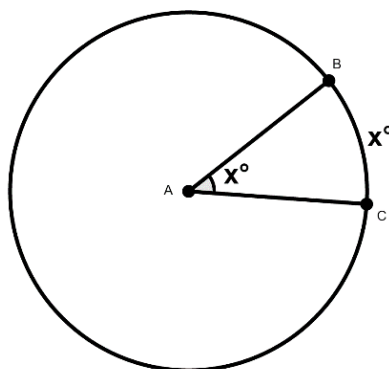
Criteria for Success #5

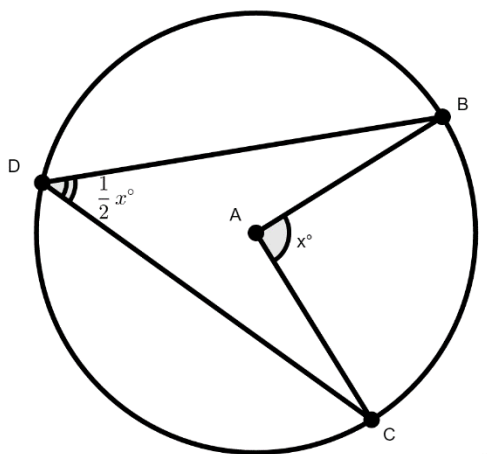Describe and apply the relationship between inscribed and central angles. The measure of the inscribed angle is always half the measure of its central angle when the vertex of the inscribed angle is in the major arc.

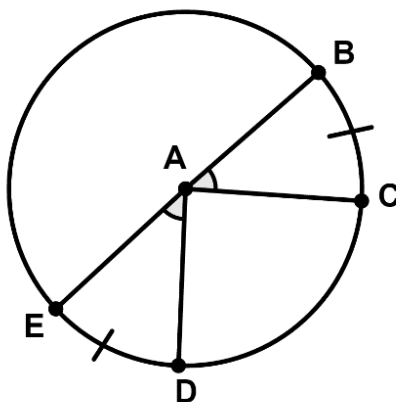*In circle A, the measure of inscribed angle ∠BDC is half the measure of central angle ∠BAC.*

Criteria for Success #6

Given congruent central angles or inscribed angles, identify the congruent intercepted arcs.

In circle A, if ∠BAC≅∠EAD, then $\stackrel{\frown}{BC}≅\stackrel{\frown}{ED}$.
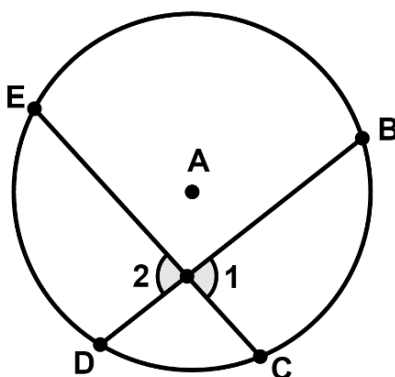*(the same idea would be true if given congruent inscribed angles)*

LESSON 6

Criteria for Success #1

Describe and apply the property that when two chords intersect each other inside the circle, the sum of the intercepted arcs equals the sum of the vertical angles formed by the intersection.

In circle A with chords $\overline{EC}$ and $\overline{BD}$ not intersecting at the center, $m\overset{\frown}{ED} + m\overset{\frown}{BC} = m\angle 1 + m\angle 2$.

Criteria for Success #2

Interesting Chords Theorem: Describe and apply the Intersecting Chords Theorem, which states that when two chords intersect each other inside the circle, the product of the segments of each intersected chord are equal.

In circle A with chords $\overline{EC}$ and $\overline{BD}$ intersecting at point F, $EF{\cdot}FC = DF{\cdot}FB$.
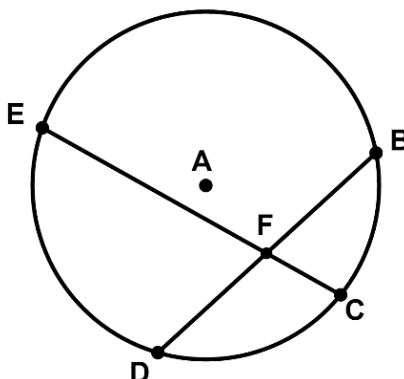
LESSON 7

Criteria for Success #1 and #2

Prove properties of angles in a quadrilateral inscribed in a circle. – Specifically students will show that the opposite angles of an inscribed quadrilateral are supplementary.
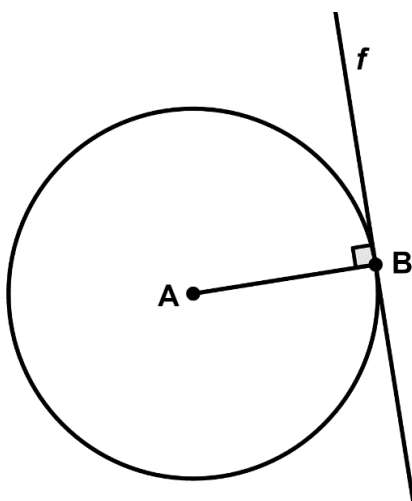
If quadrilateral $ABCD$ is inscribed in a circle, then $m\angle 1 + m\angle 2 = 180°$.

LESSON 8

Criteria for Success #2

Prove that a line is tangent to a circle if the radius drawn to the point of tangency is perpendicular to the line.

If radius $\overline{AB}$ is perpendicular to line f at endpoint B on the circle, then line f is a tangent to circle A.

Criteria for Success #3

Describe that two tangent lines that intersect at a point outside the circle have congruent line segments formed from their point of intersection to their point of tangency.

If $\overleftrightarrow{AB}$ and $\overleftrightarrow{AD}$ are tangent to circle C at point B and point D, respectively, then $\overline{AB} \cong \overline{AD}$.
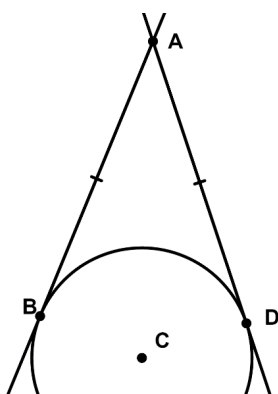
LESSON 9

Criteria for Success #3

Describe the relationship between a circumscribed angle and the central angle that meet at the two points of tangency as supplementary.

If $\overleftrightarrow{AB}$ and $\overleftrightarrow{AD}$, tangents to circle C, meet at point A to form the circumscribed angle ∠BAD, then the central angle, ∠BCD, and the circumscribed angle, ∠BAD, are supplementary.