

Subject: Geometry
Grade: 9-12

Lesson Name: Inscribed Angles

CC Standards: CCSS.MATH.CONTENT.HSG.CA.1

NCTM Standards: Geometry - Analyze characteristics and properties of geometric shapes and develop mathematical arguments about geometric relationships.

Engage: The students will work in groups on a review test which covers the previous material.

Questions: 1) Where can we start? Are all of the sides congruent? What do the vertices do to the circle?

2) Can we construct a known triangle? What kind of triangle? What are the properties of the triangle? How have we divided the circle?

Explore: Using GeoGebra, students should discover the relationship between the measure of the central angle and an inscribed angle.

Questions: What is the measure of the angle we created? Does the angle change if we move the vertex?

Explain: The students will propose a valid definition of an inscribed angle.

Definition: An **inscribed angle** is an **angle** formed by two chords in a circle which have a common endpoint. This common endpoint forms the vertex of the **inscribed angle**. The other two endpoints **define** what we call an intercepted arc on the circle.

Questions: does any other figure fit our definition? Is there an alternate definition we could use? What are the segments called when dealing with a circle?

The students will use their explorations to propose a relationship between the angles.

The students will work as a class to prove the first case of an inscribed angle, as small groups to prove their proposal for the second case and share their results.

Questions: What is our hypothesis? What do we want to show?

Elaborate: The students will start with a loose definition of an inscribed angle and refine it until it is precise. Further the students will be asked for an alternate definition.

Using their GeoGebra, students will make a conjecture as to what happens to the measure of the angle if the vertex is moved between the intersection points.

Evaluate: The students previous knowledge will be evaluated with the pretest.

Their understanding of the topic will be evaluated via an 'Exit Ticket' by completing the 3rd case of the proof.

Questions: How is the 3rd case similar to the 1st and 2nd? How is it different? How can we make it similar to something we have proven?

Materials:

Pretest – printed and handed out at beginning of class

GeoGebra file 'Inscribed_Angle_Activity.ggb' – to be emailed during pretest

Exit Ticket – printed and handed out at end of lesson