TRIANGLE CONGRUENCE POSSIBILITIES INVESTIGATION 2

Congruence Shortcuts

Investigation 2A – ASA

Log in to your Chromebook and navigate to www.geogebra.org. Click on "Start Creating" in the middle of the page; this should open a new window that says, "Create your own," with options underneath it. Click on "Geometry."

1. Use the tools to create a segment with the length $\overline{AB}$ 8.

2. Complete the triangle ΔABC. Then, using the Move tool, manipulate the triangle until the measures of ∠A and ∠B are as follows:

   <div align="center">∠A   25°,   ∠B   40°</div>

3. Create another triangle ΔDEF using the same restrictions used for ΔABC.

4. Compare the triangles (remember: what do you need to compare to be *certain* of congruence?). Is it possible to construct different triangles from the same three parts, or will all of the triangles be congruent? Write your observations and conclusion in the space below.

Now, complete the conjecture below for the ASA case:

ASA Congruence Conjecture

If two angles and the included side of one triangle are congruent to two angles and the included side of another triangle, then_____.

Congruence Shortcuts

Investigation 2B – SAA

Log in to your Chromebook and navigate to www.geogebra.org. Click on "Start Creating" in the middle of the page; this should open a new window that says, "Create your own," with options underneath it. Click on "Geometry."

1. Use the tools to create a segments with the following length: $\overline{AB}$ 10.

2. Use the angle tool to create two angles with the following measures:

$$\angle A \quad 30°, \quad \angle C \quad 55$$

   Use the segment tool to complete ΔABC; the points may have to be manipulated around the page to make this possible.

3. Create another triangle ΔDEF using the same restrictions used for ΔABC.

4. Compare the triangles (remember: what do you need to compare to be *certain* of congruence?). Is it possible to construct different triangles from the same three parts, or will all of the triangles be congruent? Write your observations and conclusion in the space below.

Now, complete the conjecture below for the SAA case:

SAA Congruence Conjecture

If two angles and a non-included side of one triangle are congruent to the corresponding angles and side of another triangle, then _____.

Congruence Shortcuts

Investigation 2C – AAA

Log in to your Chromebook and navigate to www.geogebra.org. Click on "Start Creating" in the middle of the page; this should open a new window that says, "Create your own," with options underneath it. Click on "Geometry."

1. Use the tools to create two angles with the following measures:

$$\angle A \quad 40°, \quad \angle B \quad 80°$$

   What does this mean for $\angle C$?

2. Use the segment tool to construct ΔABC.

3. Create another triangle ΔDEF using the same restrictions used for ΔABC.

4. Compare the triangles (remember: what do you need to compare to be *certain* of congruence?). Is it possible to construct different triangles from the same three parts, or will all of the triangles be congruent? Write your observations and conclusion in the space below.

Now, complete the conjecture below for the AAA case:

AAA Congruence Conjecture

If the three angles of one triangle are congruent to the corresponding angles of another triangle, then＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿.