TRIANGLE CONGRUENCE POSSIBILITIES INVESTIGATION 2

**Congruence Shortcuts**

**Investigation 2A – ASA**

Log in to your Chromebook and navigate to [www.geogebra.org.](http://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 AB 8.
2. Complete the triangle ∆ABC. Then, using the Move tool, manipulate the triangle until the measures of ∠A and ∠B are as follows:

∠A 25°, ∠B 40°

1. Create another triangle ∆DEF using the same restrictions used for ∆ABC.
2. 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.](http://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: AB 10.
2. Use the angle tool to create two angles with the following measures:

∠A 30°, ∠C 55

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

1. Create another triangle ∆DEF using the same restrictions used for ∆ABC.
2. 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.](http://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:

∠A 40°, ∠B 80°

What does this mean for ∠C?

1. Use the segment tool to construct ∆ABC.
2. Create another triangle ∆DEF using the same restrictions used for ∆ABC.
3. 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 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.