*Know the conditions for congruent triangles*

**What’s the point in this activity?**

You need to know the conditions for triangles to be congruent.

**What do I need?**

Some angles. You can cut out the ones below to use, or draw your own when you need them.

Two angles of 35°, two angles of 55° and two angles of 90°

|  |  |  |
| --- | --- | --- |
| 35° | 55° | 90° |
| 35° | 55° | 90° |

Some lengths. You can use cut pieces of straw, or draw them every time you need them.

Two lengths of 5 cm, two lengths of 10 cm, and two lengths of 13 cm

*Note: If you have Geostrips, you could use these instead: use the short blue (11 cm), long white (20 cm) and long yellow (27 cm)*

**What do I need to test?**

Each of the six sets of conditions on the next page:

|  |  |
| --- | --- |
| **SSS**   * Create a triangle with all three side lengths given: 5 cm, 10 cm and 13cm * Create another triangle with the same side lengths * Measure and record the angles in the first triangle. * Measure and record the angles in the second triangle. * Are the two triangles congruent? * Is this always true? * Does the SSS condition give congruent triangles? | **SAS**   * Start with the 55° angle * Place the 10 cm and 13 cm lengths so that there is a 55° angle between them * A third side is needed to complete a triangle. Measure and record this length. Measure the angles too. * Use the 55° angle, 10 cm and 13 cm lengths to create another triangle. Measure the length of the third side and angles again. * Are the two triangles congruent? * Is this always true? * Does the SAS condition give congruent triangles? |
| **ASS**   * Start with the 13 cm length * Place the 35° angle at one end of the length * Place the 10 cm length at the other end * A third side is needed to complete a triangle. Measure and record this length. Measure the angles too. * Create another triangle using the same instructions * Are the two triangles congruent? * Is this always true? * Does the ASS condition give congruent triangles? | **ASA**   * Start with the 13 cm length * Place the 55° angle at one end of the length. Place the 35° angle at the other end. * Draw in the two sides needed to complete the triangle * Measure and record these side lengths * Use the 55° and 35° angles and 13 cm length to create another triangle. Measure the length of the other sides again. * Are the two triangles congruent? * Is this always true? * Does the ASA condition give congruent triangles?   Note: this could also be AAS. Can you see why? |
| **RHS**   * Start with a 90° angle * Place the 5 cm length on one side of this angle * Place the 13 cm length so that it is the hypotenuse of the right-angled triangle * Measure and record this length. Measure the angles too. * Create another triangle using the same instructions * Are the two triangles congruent? * Is this always true? * Does the RHS condition give congruent triangles? | **AAA**   * Create a triangle with all three angles given: 35°, 55° and 90° * Create another triangle with the same angles * Measure and record the lengths in the first triangle. * Measure and record the lengths in the second triangle. * Are the two triangles congruent? * Is this always true? * Does the AAA condition give congruent triangles? |