*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?
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| **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?
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