Guidance for tutors

Outcome	SA7	Student can consistently:	Determine whether two triangles are congruent.
How the topic is examined			• Examined through test paper questions. • Questions are equally likely to appear on calculator and non-calculator papers. • Students will be asked to determine whether two triangles are congruent. They will be expected to show the formal steps to show this.
Prior knowledge			• Students should be confident with: o Basic shape properties (SA2) • In addition questions involving this topic can have links to: o Similar triangles (SLAV)
Suggested tuition approaches			• Congruent shapes are identical but can have different orientations. • Two triangles are congruent if they have all three sides the same and all three angles the same. They may just be in a different orientation. • Students need to understand that to show that two triangles are congruent it isn't necessary to know all the information about the triangles. We can usually work out whether two triangles are congruent from 3 pieces of information. • There are five ways to find if two triangles are congruent:

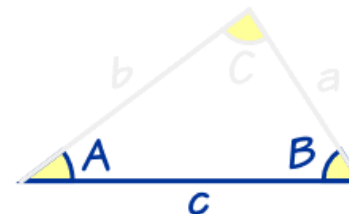| SSS (side, side, side)	SAS (side, angle, side)	ASA (angle, side, angle)

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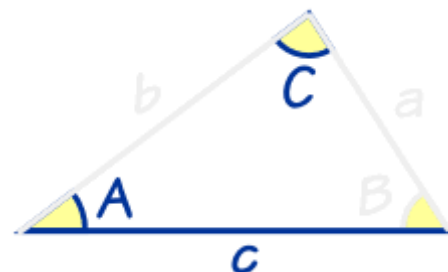|	
If all three sides are the same length then they are congruent.	If one side is known, then the angle and then the next side. (i.e.
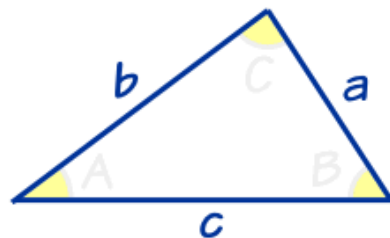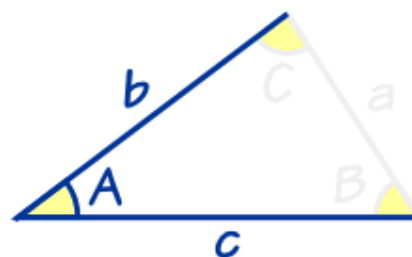
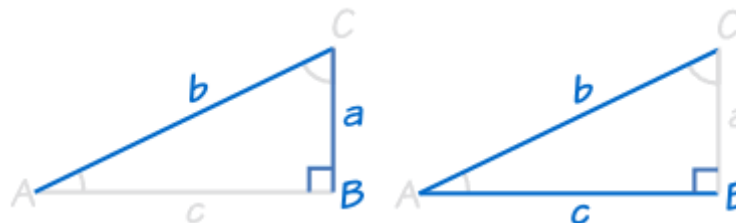If an angle is known, then a side and then an angle. (i.e.

| AAS (angle, angle, side)	RHS (right-angle, hypotenuse, side)
If one angle is known and the next one and then the side opposite the first angle. (i.e.)	If you have right angle, know the hypotenuse and know another side. Note there are two possibilities for this. See below.

- To show that two triangles are congruent, you have to show one of the above conditions apply.
- Encourage students to make their argument clear.

C 8cm **B**

A 12cm

P 12cm **Q** 8cm **R**
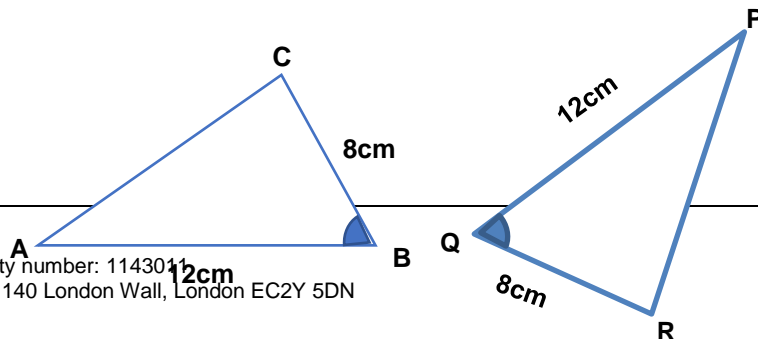
AB = PQ (side)
Angle ABC = angle PQR (angle)
BC = QR (side)

Therefore by SAS rule the two triangles are congruent.

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Guidance for tutors

Common errors and misconceptions	- Confusion between congruence and similarity. - Not recognising that two identical shapes that are just in a different orientation are congruent. - Some students think if two triangles have the same three angles then they are congruent. This is not the case, they are only similar. One triangle can be bigger than the other.

Suggested resources	- Questions
	   o http://www.cimt.org.uk/mepjamaica/unit33/StudentText.pdf
	   o https://corbettmaths.files.wordpress.com/2013/02/congruent-triangles-pdf1.pdf
	- Past GCSE Questions
	   o https://keshgcsemaths.files.wordpress.com/2013/11/16_congruent-shapes.pdf
	- Video tutorial
	   o http://corbettmaths.com/2013/04/15/congruent-triangles/
	   o http://corbettmaths.com/2012/08/10/congruent-and-similar-shapes/