

Congruence Similarity

GCSE Maths · Written to the shared content for AQA, Edexcel and OCR

Name _____ Class _____ Date _____

1. Worked example

Triangle PQR has $PQ = 5$ cm, angle $P = 40^\circ$, $PR = 7$ cm. Triangle XYZ has $XY = 5$ cm, angle $X = 40^\circ$, $XZ = 7$ cm. Are they congruent?

Step 1 · Two sides and the included angle match

SAS

Answer: Yes, congruent (SAS)

Check: The 40° angle is between the two given sides in both ✓

2. Now try one with the steps

Two similar rectangles: the smaller is 4 cm by 6 cm. The larger has short side 10 cm. Find its long side.

Step 1 · Scale factor

Step 2 · Long side

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. What is the difference between congruent and similar shapes? [1]

2. Name the congruence condition: two right-angled triangles with equal hypotenuses and one other equal side. [1]

3. Does AAA prove two triangles are congruent? Explain. [1]

4. A shape is enlarged from a side of 3 cm to 12 cm. What is the scale factor? [1]

5. Two similar triangles have scale factor 2.5. A side of 6 cm on the small one corresponds to what length on the big one, in cm? [1]

6. A large shape has a side of 18 cm. It is similar to a small shape with scale factor 3. Find the corresponding side on the small shape, in cm. [1]

7. Two similar rectangles: 5 cm by 8 cm and 7.5 cm by w cm. Find w . [2]

8. Triangles are similar with sides 6, 8, 10 and 9, 12, x . Find x . [2]

9. Two triangles both have angles 50° and 60° . Are they definitely similar? Why? [2]

10. Triangle ABC has $AB = 7$, $BC = 9$, angle $B = 55^\circ$. Triangle PQR has $PQ = 7$, angle $Q = 55^\circ$, $QR = 9$. Which condition shows they are congruent? [2]

11. In a triangle, DE is parallel to BC with D on AB. $AD = 4$, $AB = 10$, $DE = 6$. Find BC. [3]

12. Same idea: $AD = 5$, $DB = 10$, $DE = 7$ (DE parallel to BC). Find BC. [3]

13. A model car is 12 cm long. The real car is 4.2 m long. What is the scale factor from model to car? [2]

14. A tree casts a 9 m shadow when a 1.5 m post casts a 2 m shadow. How tall is the tree, in m? [3]

15. Two similar triangles have corresponding sides 4 cm and 10 cm. The larger triangle has a side of 25 cm. Find the corresponding side on the smaller, in cm. [2]

4. Before you hand it in

SSA proves congruence

The angle must be BETWEEN the two sides (SAS). With the angle elsewhere, two different triangles are possible.

Adding instead of multiplying: $4 \rightarrow 10$ is '+6', so $6 \rightarrow 12$

Similar shapes scale by MULTIPLYING. $10 \div 4 = 2.5$, so $6 \rightarrow 15$.

Using the wrong pairs of sides

Match sides opposite equal angles. Redraw the triangles the same way round if needed.

In a parallel-line diagram, using DB instead of AB

The big triangle's side is the WHOLE length $AB = AD + DB$.