Congruent/similar triangles in proofs

6 questions | 15 marks

Equivalent correct methods earn the corresponding marks.

1. Two triangles have corresponding sides 5, 7, 8 and 5, 7, 8. Name the congruence test. [2 marks]

All three pairs of corresponding sides match.

Answer: SSS

2. Two triangles share side AC. $AB = AD$ and $BC = DC$. Prove triangles ABC and ADC congruent. [3 marks]

$AB = AD$ and $BC = DC$ are given.

$AC = AC$ is shared.

Answer: SSS congruence.

3. Explain why sides 5 and 7 with a non-included 30° angle do not automatically prove congruence. [3 marks]

The angle is not included between the known sides.

An ambiguous second triangle may exist.

Answer: This is SSA, not a general congruence test.

4. Triangles ABC and DEF have $A \leftrightarrow D, B \leftrightarrow E, C \leftrightarrow F$ and are congruent. $\angle B = 52^\circ$ and $AC = 9$ cm. State $\angle E$ and DF. [2 marks]

Use corresponding angles and sides after congruence.

Answer: 52° and 9 cm

5. Two triangles have proportional sides $2:3, 4:6, 6:9$. Can they be non-degenerate triangles? Explain before applying a similarity test. [3 marks]

$2 + 4 = 6$ violates the strict triangle inequality.

The listed points would be collinear.

Answer: No.

6. Two triangles have corresponding angles 70° and 45°, and the included corresponding side is 6 cm in each. Are they congruent? [2 marks]

Two angles and their included side match.

Answer: Yes, by ASA.