Triangle similarity

6 questions | 15 marks

Equivalent correct methods earn the corresponding marks.

1. A triangle has angles 45° and 75°. Another has angles 45° and 60°. Are they similar? Explain. [3 marks]

The first triangle’s third angle is 60°.

Both have angle set 45°, 60°, 75°.

Answer: Yes, by AA.

2. Are triangles with sides 4, 5, 6 cm and 8, 10, 12 cm similar? State a reason. [2 marks]

$8/4 = 10/5 = 12/6 = 2$.

Answer: Yes, proportional SSS with factor 2.

3. Are triangles with sides 3, 4, 5 cm and 6, 8, 11 cm similar? [2 marks]

Two ratios are 2, but $11/5 = 2.2$.

All corresponding side ratios must match.

Answer: No.

4. Two triangles have included angle 50°. The sides enclosing it are 6 cm and 9 cm in one, 10 cm and 15 cm in the other. Are they similar? [3 marks]

$10/6 = 15/9 = 5/3$, and the included angles match.

Answer: Yes, by proportional SAS.

5. Given $\triangle ABC \sim \triangle DEF$, AB = 5 cm, DE = 15 cm and BC = 7 cm. Find EF. [3 marks]

Scale factor is $15/5 = 3$.

$EF = 7(3) = 21$ cm.

Answer: 21 cm.

6. Two similar triangles have scale factor 1. Explain what stronger conclusion follows. [2 marks]

Corresponding angles match by similarity, and factor 1 means all corresponding lengths are equal.

Answer: They are congruent.