# 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]

$\frac{8}{4} = \frac{10}{5} = \frac{12}{6} = 2$.

**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 $\frac{11}{5} = 2.2$.

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]

$\frac{10}{6} = \frac{15}{9} = \frac{5}{3}$, 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 $\frac{15}{5} = 3$.

$EF = 7(3) = 21$ 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.