# Explaining geometric reasoning

6 questions | 17 marks

Equivalent correct methods earn the corresponding marks.

**1.** An isosceles triangle has vertex angle $50^\circ$. Find both base angles with reasons. [3 marks]

Equal sides give equal base angles.

The remaining sum is $180^\circ - 50^\circ = 130^\circ$.

$130^\circ \div 2 = 65^\circ$.

**Answer:** $65^\circ$ each.

**2.** Find the angle adjacent to $124^\circ$ on a straight line and name the fact used. [2 marks]

$180^\circ - 124^\circ = 56^\circ$.

**Answer:** $56^\circ$; adjacent angles on a line total $180^\circ$.

**3.** Equilateral triangles have side lengths 2 cm and 5 cm. Are they similar, congruent or neither? Explain. [3 marks]

All angles are $60^\circ$, so they are similar.

Their corresponding lengths differ.

**Answer:** Similar, not congruent.

**4.** Why is a crossing $U$ in the equal-radius bisector construction equally far from $A$ and $B$? [2 marks]

The unchanged compass radius makes both distances equal.

**Answer:** $UA$ and $UB$ are radii drawn with the same compass width.

**5.** $AB$ has midpoint $M$. Explain why a positive enlargement maps $M$ to the midpoint of the image segment. [3 marks]

Enlargement preserves collinearity.

Equal lengths multiplied by the same factor remain equal.

**Answer:** The equal lengths $AM$ and $MB$ scale by the same factor and the three image points remain collinear.

**6.** A student says “two corresponding angles are equal, so the triangles are congruent”. Correct this and give sufficient extra information. [4 marks]

The third angles match by the triangle sum.

Matching angles allow different sizes.

One equal corresponding side fixes the similar triangles at the same size.

**Answer:** They are similar. An equal corresponding side would then fix the scale at 1 and establish congruence.