Explaining geometric reasoning

6 questions | 17 marks

Equivalent correct methods earn the corresponding marks.

1. An isosceles triangle has vertex angle 50°. Find both base angles with reasons. [3 marks]

Equal sides give equal base angles.

The remaining sum is $180°-50°=130°$.

$130°\div 2=65°$.

Answer: 65° each.

2. Find the angle adjacent to 124° on a straight line and name the fact used. [2 marks]

$180°-124°=56°$.

Answer: 56°; adjacent angles on a line total 180°.

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

All angles are 60°, 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.