Invariant and changing properties

6 questions | 13 marks

Equivalent correct methods earn the corresponding marks.

1. Name two properties preserved by translation. [2 marks]

Every point moves by the same displacement, without changing shape or size.

Answer: For example, side lengths and angles.

2. A side is 2.5 cm. Find its image length under factor 4. [2 marks]

$4 \times 2.5 = 10$.

Answer: 10 cm

3. A perimeter is 22 cm. Find the image perimeter under factor 1.5. [2 marks]

Perimeter scales by 1.5.

$22 \times 1.5 = 33$.

Answer: 33 cm

4. An area is 18 cm². Find the image area under factor 3. [2 marks]

Area factor is $3^2 = 9$.

$18 \times 9 = 162$.

Answer: 162 cm²

5. Similar figures have areas 25 cm² and 100 cm². Find the positive length factor from small to large. [2 marks]

Area factor is $100 \div 25 = 4$.

Length factor is $\sqrt{4} = 2$.

Answer: 2

6. A triangle is reflected. What happens to its clockwise vertex order and area? Explain. [3 marks]

Reflection reverses orientation.

It preserves shape and size, so the triangles are congruent.

Answer: The order reverses; area stays the same.