Symmetry and transformations

6 questions | 9 marks

Equivalent correct methods earn the corresponding marks.

1. How many lines of symmetry does a non-square rectangle have? [1 mark]

The two lines join midpoints of opposite sides and pass through the centre. Diagonals are not symmetry lines.

Answer: 2

2. Does a square match itself after a quarter turn about its centre? [1 mark]

The four equal sides and four right angles align after each quarter turn.

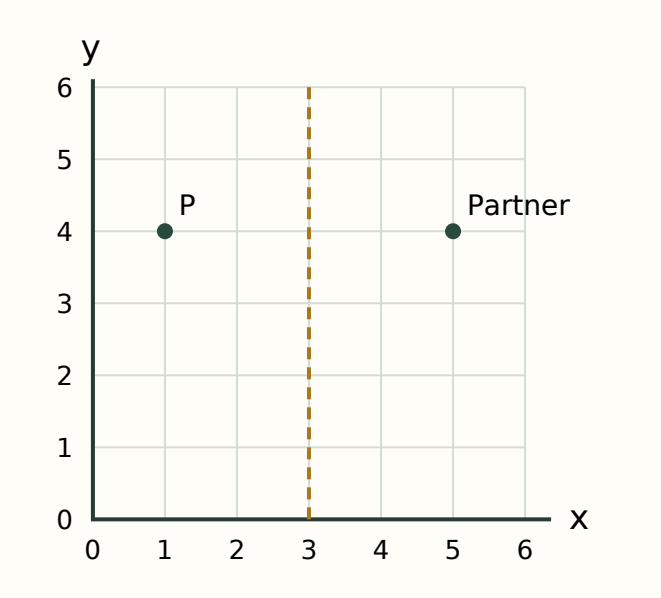
Answer: Yes.

3. Does a non-square rectangle match itself after a half turn about its centre? [1 mark]

Opposite corners and equal opposite sides exchange places.

Answer: Yes.

4. A shape is symmetric across x = 3. One vertex is at (1, 4). Where is its matching vertex? [2 marks]



The first vertex is 2 left of the mirror; its partner is 2 right at the same height.

Answer: (5, 4)

5. An isosceles triangle has two equal sloping sides and a different-length base. Describe its one line of symmetry. [2 marks]

This line exchanges the equal sides and matches the two base corners.

Answer: From the vertex where the equal sides meet to the midpoint of the base, perpendicular to the base.

6. Leah calls the diagonal of a non-square rectangle a mirror line because it cuts the area in half. Explain the mistake. [2 marks]

Symmetry requires a matching reflected outline, not merely equal areas.

Answer: It gives equal-area triangles, but reflection across it does not match the long and short sides.