Reflection/rotational symmetry

6 questions | 8 marks

Equivalent correct methods earn the corresponding marks.

1. How many reflection lines does a plain square have? [1 mark]

Two pass through side midpoints and two join opposite corners.

Answer: Four.

2. How many reflection lines does a plain non-square rectangle have? [1 mark]

Only the vertical and horizontal middle lines match the halves.

Answer: Two.

3. What is the smallest matching turn for a plain non-square rectangle? [1 mark]

Opposite sides and corners swap into matching positions.

Answer: A half turn.

4. What is the smallest matching turn for a plain square? [1 mark]

The square outline fits after each quarter turn.

Answer: A quarter turn.

5. A square has a single dot near one corner. Must the decorated design keep every symmetry of the plain square? [2 marks]

For example, a quarter turn moves the dot to a different corner.

Answer: No. The dot must match too.

6. Explain one difference between reflection symmetry and rotational symmetry. [2 marks]

Both require the entire design to match, but the movement is different.

Answer: Reflection uses a matching fold or mirror line; rotation turns the design about a centre.