Winter Wonders: Designing Festive Patterns with Zara

1. A snowflake design with 6-fold rotational symmetry using straight lines. (2 marks)

Working: The design must rotate 60 degrees to map onto itself, creating 6 identical segments around a central point.

1 mark for using only straight lines; 1 mark for achieving 6-fold rotational symmetry.

2. A border pattern using two geometric shapes (e.g., triangles and squares) repeating in a sequence. (2 marks)

Working: The pattern must show a clear, repeating sequence (e.g., triangle, square, triangle, square).

1 mark for using two distinct geometric shapes; 1 mark for clear, consistent repetition.

3. A design featuring a wing shape reflected across both a vertical and horizontal axis. (3 marks)

Working: The image must be identical on both sides of the vertical line and both sides of the horizontal line.

1 mark for vertical symmetry; 1 mark for horizontal symmetry; 1 mark for artistic relevance to a robin's wing.

4. A pattern using a tessellating shape (e.g., hexagons, squares, or triangles) that covers the space with no gaps. (3 marks)

Working: The shapes must fit together perfectly without overlapping or leaving empty white space.

1 mark for choosing a shape that tessellates; 1 mark for filling the square; 1 mark for no gaps.

5. Repetition creates rhythm and consistency, which makes a pattern look intentional and visually pleasing. (2 marks)

Look for: The student should mention that repetition creates a sense of order, rhythm, or a cohesive design.

Good: Repetition is important because it makes the pattern look better and more complete.

Better: Repetition is important because it creates a rhythm that makes the festive design look organised and professional.

Best: Repetition is essential in festive patterns because it creates visual rhythm and consistency, ensuring the design looks balanced and intentional rather than just a collection of random shapes.

What moves an answer up: Moving from 'good' to 'best' requires moving from a vague opinion to explaining the specific visual effect (rhythm/balance) on the viewer.

What a secure answer looks like

A secure answer demonstrates mathematical precision in symmetry and tessellation while applying these concepts to an artistic context. Students should use rulers to ensure lines are straight and angles are consistent.

If your child is stuck

If stuck, suggest the child draws a simple shape first and traces it to ensure the repetition is identical. For tessellation, remind them that squares or hexagons are the easiest shapes to fit together without gaps.

Common mistakes to watch for

Students often confuse rotational symmetry with reflectional symmetry, or they may leave small gaps between shapes when attempting to tessellate.