

Zara's Symmetry Studio: Pattern Explorer

Learning objective: To identify, describe, and draw lines of symmetry in 2D shapes and patterns.

Join Zara the zebra in her art studio! Use your knowledge of symmetry to explore how patterns mirror each other. Follow the instructions for each section to complete your symmetry investigation. Remember, a line of symmetry must divide a shape exactly in half so that both sides are identical reflections.

Word bank: Symmetry · Line of symmetry · Reflection · Mirror image · Identical · Horizontal · Vertical · Diagonal

1. Shape Detective: Choose a 2D shape (like a square, rectangle, or triangle). Draw the shape here and use a ruler to mark all the lines of symmetry you can find. Explain why they are lines of symmetry. (3 marks)

2. Zara's Pattern Challenge: Create a symmetrical pattern using a repeating shape. Describe how you made sure the pattern is perfectly symmetrical. (2 marks)

3. Real-World Symmetry: Look around your classroom or home. Find an object that has at least one line of symmetry. Write down the name of the object and explain where the line of symmetry would be. (2 marks)

4. The Mirror Test: If you place a mirror along a line of symmetry, what happens to the shape? Describe what you see in the reflection. (2 marks)

5. Problem Solving: Max the monkey says that all rectangles have four lines of symmetry. Is Max correct? Explain your answer using what you know about rectangles. (3 marks)

Extension challenge: Try to draw a shape that has no lines of symmetry at all. How can you prove it has no symmetry? Share your findings with a partner.