

Grade 4 Math Assessment: Symmetry and Patterns

Learning objective: To identify, describe, and represent the position of a shape following a reflection or translation, and to identify lines of symmetry in 2D shapes.

Read each question carefully. Use a ruler for drawing lines of symmetry. Max the monkey needs your help to solve these geometry puzzles!

Max the monkey is organising his collection of geometric tiles. He wants to ensure his display is perfectly balanced. Max uses a mirror to check if his patterns have a line of symmetry, where one half is a perfect reflection of the other.

Word bank: Symmetry · Reflection · Line of symmetry · Translation · Vertical · Horizontal · Diagonal · Congruent

1. Define what a 'line of symmetry' is in your own words. (2 marks)

2. Max has a regular pentagon. How many lines of symmetry does a regular pentagon have? Draw the shape and mark the lines. (3 marks)

3. Look at the letter 'H'. Does it have horizontal symmetry, vertical symmetry, or both? Explain your reasoning. (3 marks)

4. A square has a side length of 4cm. If you reflect it across a vertical line of symmetry, what are the dimensions of the reflected square? Are the two shapes congruent? (4 marks)

5. Max creates a pattern using a triangle at coordinates (1, 2), (1, 4), and (3, 2). He translates the triangle 3 units to the right. Write the new coordinates of the vertices. (4 marks)

6. Explain how you can use a mirror to test if a 2D shape is symmetrical. Include what you would look for in the reflection compared to the original object. (4 marks)

7. Max is designing a symmetrical tile pattern for a floor. Write a step-by-step guide on how he can ensure the pattern is perfectly symmetrical. Use mathematical vocabulary such as 'reflection', 'axis', and 'congruent'. (5 marks)

Draw: Draw a shape that has exactly two lines of symmetry, one horizontal and one vertical, and label the lines clearly with a dashed line.



Extension challenge: Total: /25. Challenge: Can you find an object in your classroom that has rotational symmetry but no lines of reflectional symmetry? Describe it.