

Max's Coordinate Treasure Map

Learning objective: To identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed size.

Max the monkey has hidden some mathematical treasures! Follow the instructions below to help Max map out his coordinates. Use your knowledge of the four-quadrant grid to plot, translate, and reflect points accurately. Remember to write your coordinates as (x, y).

Word bank: x-axis · y-axis · origin · coordinate · translate · reflect · quadrant · horizontal · vertical

1. Max's Starting Point: Write the coordinate for the 'Golden Banana' which is currently sitting at 3 units across on the x-axis and 5 units up on the y-axis. Explain how you found it. (2 marks)

2. Translation Task: Max moves his banana 4 units to the left and 2 units down. What are the new coordinates of the banana? Show your working out. (3 marks)

3. Reflection Challenge: Max draws a shape with vertices at (1, 1), (1, 3), and (3, 1). If he reflects this triangle across the y-axis, what will the new coordinates of the vertices be? (3 marks)

4. Describing Movement: If a point moves from (2, 4) to (6, 4), describe the translation Max has performed using mathematical vocabulary. (2 marks)

5. Max's Logic: Max says that if he reflects a square, the side lengths will change because the shape has moved. Is Max correct? Explain your reasoning. (2 marks)

Extension challenge: Design your own 10x10 coordinate grid on a piece of squared paper. Draw a complex shape and ask a partner to write down the coordinates of the vertices, then ask them to translate your shape 3 units right and 1 unit up.