Max’s Map of the Magical Garden

Learning objective: To describe positions on the full coordinate grid (all four quadrants) and plot coordinates accurately.

Max the monkey is helping to map out a new garden layout. Use the coordinate grid provided to help him identify where each plant and feature should be placed. Remember: always go along the corridor (x-axis) before you go up or down the stairs (y-axis).

Max has designed a symmetrical garden. The centre point, where the path crosses, is the origin (0,0). He has placed a fountain at (-3, 2). To the right of the fountain, he has planted a row of sunflowers starting at (2, 2). A small pond is located at (-4, -3), and a rose bush is perfectly reflected across the y-axis from the pond. Max needs to make sure he records these positions correctly to keep the garden neat and tidy.

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

1. Write the coordinates for the fountain and the pond. Which axis do you move along first? (2 marks)

2. If the rose bush is a reflection of the pond (-4, -3) across the y-axis, what are the coordinates of the rose bush? (2 marks)

3. Max wants to add a bench at (0, -4). Is this point on the x-axis, the y-axis, or in a quadrant? Explain your reasoning. (2 marks)

4. Plot a new point for a birdbath at (1, -2). If you move this point 3 units to the left, what will its new coordinates be? (2 marks)

5. Max draws a square with vertices at (1, 1), (1, 3), (3, 3), and (3, 1). Calculate the area of this square in square units. (2 marks)

Draw: Draw a 10x10 coordinate grid with the origin (0,0) in the centre. Label the x-axis from -5 to 5 and the y-axis from -5 to 5. Plot the following: Fountain (-3, 2), Sunflowers (2, 2), Pond (-4, -3), Rose Bush (4, -3), and Bench (0, -4).

Extension challenge: Max decides to move the rose bush from (4, -3) to (4, 4). Describe the translation he performed using 'units up' or 'units down'.