

Coordinates in the first quadrant

National Curriculum attainment target

- Describe positions on a 2-D grid as coordinates in the first quadrant

Lesson objective

- Describe the position of a point on a grid as coordinates in the first quadrant

Previous related lesson

Unit 2, Week 3, Lesson 2

Prerequisites for learning

Pupils need to:

- understand that the term 'coordinates' is applied to a pair of numbers which denote the exact position of the intersection of two lines in a grid of squares

Vocabulary

intersection, vertical, horizontal, diagonal, x-coordinate, y-coordinate

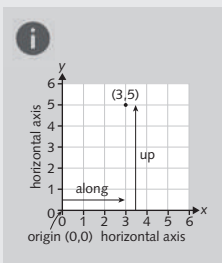
Future related lesson

Unit 11, Week 3, Lesson 3

Success criteria

Pupils can:

- use coordinates to describe the position of a point on a grid in the first quadrant



Getting Started

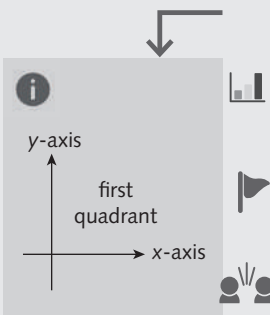
- Choose an activity from Geometry – Position and direction.

Collins
Connect

Year 4, Unit 11,
Week 3

Teach

- Display: Slide 1.
- Go over the coordinate reference system: an ordered pair of numbers specifies a point at the intersection of two grid lines. Discuss these key facts:
 - lines are numbered (for both horizontal and vertical axes) from the origin (0, 0);
 - the point at which two lines intersect is given by a pair of numbers called 'coordinates'. We move along (the corridor) then up (the stairs): so the horizontal coordinate is before the vertical one;
 - the point (3, 5) is marked and labelled.
- Show that the lines go in both horizontal and vertical directions. Explain the terms: 'first quadrant', 'x-axis' and 'y-axis'.
- Display: the Coordinates tool. Set the x and y axes to start at 0 and end at 6.
- Plot and label the points (3, 0) (3, 6). Draw a line connecting both points. Ask children to state the coordinates of the intermediate points: (3, 1) (3, 2) (3, 3) (3, 4) and (3, 5).
- Ask: **What do you notice about the coordinates of all these points on the vertical line?** (the x-coordinate is 3 each time)
- Plot and label the points (0, 5) (6, 5). Draw a line connecting both points.
- Say: **Tell your partner what you notice about the coordinates of all these points on the horizontal line.** (the y-coordinate is 5 each time)





- Clear the grid. Ask: **Who can come to the board to show the position for the point with the coordinates (1, 1) / (2, 2) / (3, 3)?**
- Join the three points with a line and ask: **What are the coordinates of the next point in this pattern? (4, 4)**
- Ask: **If the line goes on in the same direction, can you tell me a point it will pass through? Will the line ever end? (no) How do you know this?**
- If appropriate, give the children further practice in using coordinates to describe a point.

Individualised Learning

Refer to Activity 1 from the Learning activities on page 428.

Pupil Book 4C: – Page 35: Take off coordinates

Resources: Resource 15: 9 × 9 coordinate grid (per child), ruler (per child), ICT tools (option for Challenge 3)

Progress Guide 4: – Support: Year 4, Unit 11, Week 3, Lesson 1: Moon shot coordinates

Resources: 1–6 dice (per pair), 10 counters each in 2 colours (per pair)

– Extension: Year 4, Unit 11, Week 3, Lesson 1: Flight coordinates



Plenary



- Display: the Coordinates tool showing a 6 × 6 coordinate grid.
- Plot the points A (3, 2) and B (3, 6) and join them with a straight line.
- Say: **A line CD is parallel to the line AB.**
- Ask: **What might the coordinates of C and D be?** (open)
- Say: **A line AF is perpendicular to AB.**
- Ask: **What might the coordinates of F be?** Take feedback show the class that the perpendicular line can be drawn on either side of AB. Since the coordinates of A are (3, 2) then the y-coordinate of the perpendicular line must be 2 and the x-coordinate can range from 0 to 6.
- Say: **Tell your partner how you found the mid-point on the line AB and what its coordinates are.** (3, 4)

Overcoming Barriers

- Writing down the coordinates in the wrong order is a common error. Check that the children use the mnemonic ‘along the corridor and up the stairs’ when identifying the x and y coordinates of a point.