Coordinates

Prior learning

- Can identify vertical and horizontal lines.
- Can recognise and name common 2D shapes.

Learn

- Review children's understanding of number lines. Draw simple horizontal and vertical number lines. Start each one at zero, and practise counting forwards and backwards along them in steps of 1, 2 and 5.
- Display a squared grid, and draw vertical and horizontal axes. Label each axis from 0 to 10 and point out how the axes cross at zero. Model good practice for plotting points and writing their coordinates. Always say *along, then up* so that children remember that the first number in a pair of coordinates is the horizontal distance from zero and the second is the vertical distance. Once the children are familiar with this, work together to draw different shapes on the coordinate grid, with the vertex of each labelled with a letter and its coordinates.
- *100 Maths Lessons Year 4, Autumn 2, Week 5, Lesson 3* focuses on this topic and uses the interactive coordinates resource on the accompanying CD-ROM.

Talk maths

- The treasure map activity can be used in various ways, such as giving directions, identifying landmarks and burying treasure. Children would also enjoy playing a version of battleships: define different insects as different length lines and ask children to try to find each others' insects by identifying the coordinates on the points that the insects lie across.

Activities

- The activities in the textbook involve plotting points and drawing shapes. Ideally, children will practise these skills on several occasions. Note that the activities in the *Year 4 Practice Book* provide extended support for children who need additional practice.

Problems

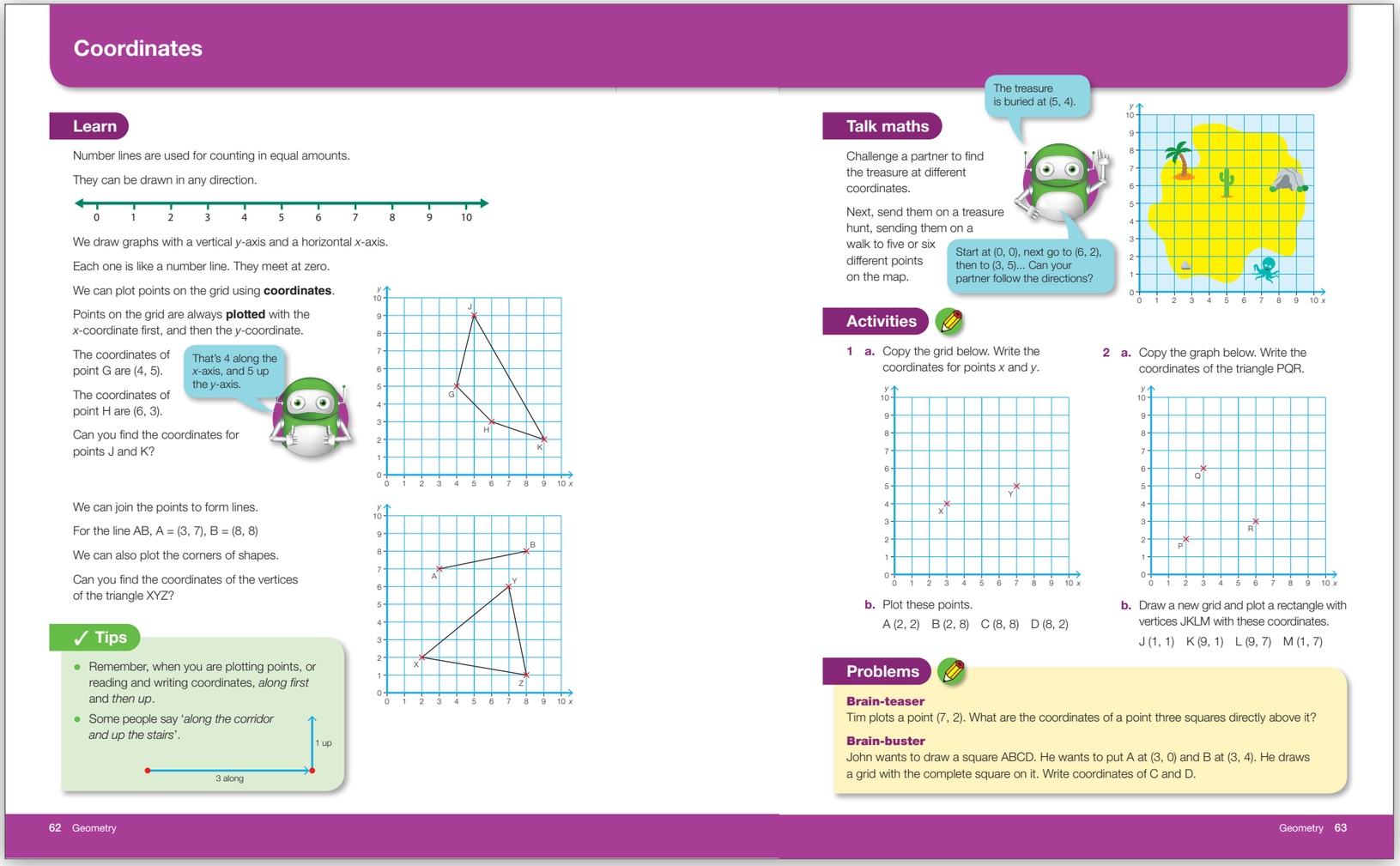
- Challenge the children to plot other points that are given distances and directions from the original at (7, 2).
- *100 Maths Lessons Year 4, Spring 2, Week 5* has lessons that link coordinates with previous shape work.

Curriculum objectives

- To describe positions on a 2D grid as coordinates in the first quadrant.
- To plot specified points and draw sides to complete a given polygon.

Success criteria

- I can plot points and read coordinates on a coordinate grid.



Coordinates

Learn

Number lines are used for counting in equal amounts.

They can be drawn in any direction.

0 1 2 3 4 5 6 7 8 9 10

We draw graphs with a vertical *y*-axis and a horizontal *x*-axis.

Each one is like a number line. They meet at zero.

We can plot points on the grid using **coordinates**.

Points on the grid are always **plotted** with the *x*-coordinate first, and then the *y*-coordinate.

The coordinates of point G are (4, 5).

The coordinates of point H are (6, 3).

That's 4 along the *x*-axis, and 5 up the *y*-axis.

Can you find the coordinates for points J and K?

J G H K

We can join the points to form lines.

For the line AB, A = (3, 7), B = (8, 8)

We can also plot the corners of shapes.

Can you find the coordinates of the vertices of the triangle XYZ?

A B X Y Z

✓ Tips

- Remember, when you are plotting points, or reading and writing coordinates, *along first* and *then up*.
- Some people say '*along the corridor and up the stairs*'.

1 up

3 along

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Talk maths

Challenge a partner to find the treasure at different coordinates.

Next, send them on a treasure hunt, sending them on a walk to five or six different points on the map.

The treasure is buried at (5, 4).

Start at (0, 0), next go to (6, 2), then to (3, 5)... Can your partner follow the directions?

Activities

1 a. Copy the grid below. Write the coordinates for points *x* and *y*.

X Y

b. Plot these points.

A (2, 2) B (2, 8) C (8, 8) D (8, 2)

2 a. Copy the graph below. Write the coordinates of the triangle PQR.

P Q R

b. Draw a new grid and plot a rectangle with vertices JKLM with these coordinates.

J (1, 1) K (9, 1) L (9, 7) M (1, 7)

Problems

Brain-teaser

Tim plots a point (7, 2). What are the coordinates of a point three squares directly above it?

Brain-buster

John wants to draw a square ABCD. He wants to put A at (3, 0) and B at (3, 4). He draws a grid with the complete square on it. Write coordinates of C and D.

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100 Maths Lessons Year 4 links:

- Autumn 2, Week 5 (pages 71–76): describe positions and plot points on a coordinate grid
- Spring 2, Week 5 (pages 153–158): describe positions and plot points on a coordinate grid
- Summer 2, Week 5 (pages 236–241): draw shapes on a coordinate grid

Year 4 Practice Book links:

- (page 114): Mystery picture coordinates
- (page 115): Mystery picture coordinates
- (page 116): Plotting shapes
- (page 117): Shapes and coordinates