Plotting points to make polygons (2)

National Curriculum attainment target

- Plot specified points and draw sides to complete a given polygon

Lesson objective

- Plot specified points and draw sides to complete a given polygon (2), make use of ICT tools

Previous related lessons

Unit 11, Week 3, Lesson 2; Unit 11, Week 3, Lesson 3

Prerequisites for learning

Pupils need to:

- plot specific points on a coordinate grid in the first quadrant
- apply their knowledge of 2-D shapes to locate the position of a missing vertex and complete the polygon

Vocabulary

coordinates, intersection, origin, *x*-axis, *y*-axis, *x*-coordinate, *y*-coordinate

Future related lesson

None

Success criteria

Pupils can:

- plot specified points and join them to make a 2-D shape

Getting Started

- Choose an activity from Geometry – Position and direction.

Collins Connect
Year 4, Unit 11, Week 3

Teach

Resources

the Coordinates tool

- Display: the Coordinates tool. Set the x and y axes to start at 0 and end at 6.
- Plot these points: A (2, 2) B (2, 6) C (6, 6) D (6, 2) E (4, 5) F (4, 1).
- Ask: **Which pairs of points can we join with straight lines to make 2 / 3 parallel lines?** Display the lines AB, CD and EF.

- Say: **Tell your partner a set of three points that can be joined to make a right angle.**
- Say: **We have found four right angles with vertices at A, B, C and D.** Ask: **If we join these points with straight lines what shape will we make?** (square)

- Ask: **How do we know that the shape ABCD is a square and not a rectangle?** (equal sides)
- Ask: **Who can name the shape ABEF?** (parallelogram) **Which pairs of sides are parallel?** (AB//FE and BE//AF)
- Clear the grid and plot the points: A (4, 1) B (1, 1) C (1, 5) D (4, 5)
- Join the points AB, BC and CD to draw three sides of a 2-D shape.
- Say: **The shape I am drawing is a pentagon. You can see three of its sides.**
- Ask: **What might the coordinates of vertex E be?**

- Ask: **Who can give me a different pair of coordinates for vertex E?** Elicit the six possible answers: (5, 2) (5, 3) (5, 4) (6, 2), (6, 3) and (6, 4).
- Say: **The pentagon ABCDE will have a horizontal line of symmetry.** Ask: **What might the coordinates of vertex E be?** ((5, 3) or (6, 3))
- Using the two possible coordinates for E draw each shape in turn.

- Ask: **Who can see pentagon ABCDE as a concave shape that still has a horizontal line of symmetry? What might the coordinates of vertex E be?** ((2, 3) or (3, 3))

Individualised Learning

Refer to Activity 4 from the Learning activities on page 429.

Pupil Book 4C:
– Page 39: Plotting points and making shapes
– Resources: Resource 14: 6 × 6 coordinate grids (per child), ruler (per child), or the Coordinates tool (per child)

Progress Guide 4:
– Support: Year 4, Unit 11, Week 3, Lesson 4: Making shapes
– Resources: ruler (per child) or the Coordinates tool

Plenary

Resources

the Coordinates tool

- Display: the Coordinates tool showing Display a 6 × 6 coordinate grid.
- Plot these as used in the Teach section: A (2, 2) B (2, 6) C (6, 6) D (6, 2) E (4, 5) F (4, 1).
- Ask: **Which pairs of points can we join with straight lines to make:**
  - **two horizontal parallel lines?** (B to C and A to D)
  - **two vertical parallel lines?** (A to B and D to C)
- Ask: **Which lines can we join to make a right angle?** (any combination that gives the right angle at points A, B C or D)
- Point to the grid and say: **In your head join A to E and A to F. The points F, A and E are three vertices of a kite.**
- Ask: **What are the coordinates of the fourth vertex?** (at the point D (6, 2))
- Ask: **Which points could I join to make a square / parallelogram / pentagon / hexagon?**
- Say: **Tell your partner three points that can be joined to make a right-angled triangle.** (A, B, C or B, C, D or C, D, A or D, A, C)

Homework Guide 4

Year 4, Unit 11, Week 3, Lesson 4: Change the shape

Resources: ruler (per child)