Lesson 82 MIXED

Plotting points in the first quadrant

CURRICULUM ALIGNMENT

SHA.SAL.4a describe location on the full co-ordinate plane.

INTERACTIVES Coordinate Grid · challenge, display, explore

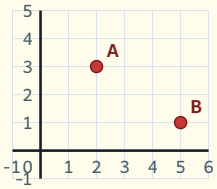
WHAT THIS LESSON TEACHES

Co-ordinates fix a point with an ordered pair **(x, y)** — across first, then up. The first quadrant uses positive numbers only.

→ (3, 2) is 3 right and 2 up from the origin (0, 0).

MODEL THIS ON THE BOARD

PLOT A (2, 3) AND B (5, 1)



1. For A (2, 3): start at the origin, go **2 right then 3 up**.
2. For B (5, 1): **5 right then 1 up**.
3. Across before up — (x, y).

LESSON ARC

Open with the 'where's my house?' puzzle to surface that one number isn't enough — you need across and up. On the coordinate-grid interactive, plot (3,4) tracing 3 along before 4 up, then walk the two zero cases and (7,7). Pupils rule grid paper 0–8 and plot the same four points, labelling each. The Class Challenge climbs from a single point to building a square; the maths-talk pins down why (3,4) and (4,3) differ.

TEACHING MOVES

1. **Getting Started.** Take two or three hands-up suggestions, not call-outs. The moment a pupil offers a number for 'across' and a number for 'up', revoice it as 'so you need two numbers — one along, one up' and leave it there; don't build the grid yet.
2. **Watch and Notice.** On the coordinate-grid interactive, trace the 3 across with your finger before going up — say 'along the corridor, then up the stairs' every single time. On (5,0) stop and stress the zero means the point sits on the across line, not above it; mirror that thinking on (0,6).
3. **Try It Together.** Call four points, rotate four pupils to the board. Before confirming each, ask the watching class 'did they go along first, then up?' If a pupil counts up before across, revoice the slip — 'you went up the stairs before the corridor' — rather than just fixing it. Slow right down on the two zero-coordinate points.

4. **Rule the Grid in Your Copy.** Hand out the pre-ruled grid paper so time goes on plotting, not ruling. Walk the room glancing at whether across happened before up — no marking. Watch especially how pupils handle (5,0) and (0,6): a point that should sit on an axis is the tell.
5. **Class Challenge.** Brisk turns at the board — pupils plot, the class checks, you confirm and move on. On the complete-the-square challenge, ask the class to predict where the fourth corner goes before the pupil places it. Don't re-explain the rule each time; this is consolidation.
6. **What Did We Notice?.** Push for the idea that swapping the numbers gives a different point, not the same one. Revoice a strong answer: 'so the order is part of the address, like the order of digits in a house number'. Head off 'they're the same because they use the same numbers'.

COMMON MISCONCEPTIONS

⚠ A pupil plots (3, 4) by counting 3 up first and then 4 across — they read the pair as 'up then along'.
Catch it live at the board. Re-trace it yourself on the coordinate-grid interactive saying 'corridor before stairs', then have the same pupil redo it. Anchor the phrase so it's the words, not just the dot, that get corrected.

⚠ Pupils insist (3, 4) and (4, 3) are 'the same point because they use the same numbers'.
Plot both on the grid side by side so the two dots sit in visibly different places. Ask 'same digits — same house?' Let the class see the gap before you name that order is part of the address.

⚠ On (5, 0) a pupil lifts the point up off the across line, treating the zero as 'a little bit up'.
Pause and ask 'how many up does the zero tell us?' Trace 5 along, then a deliberate zero move up — your finger stays put. The point lives right on the across line.

DIFFERENTIATION

EMERGING

- On the copybook grid, pre-mark the two zero-coordinate points (5,0) and (0,6) so the pupil only plots the two ordinary points and reads the marked ones back to you.
- Stay with the 'corridor, then stairs' words as the pupil's running commentary — they say it aloud each time before the finger moves.

DEVELOPING

- After the copybook four, give a fifth point where both coordinates match a partner's, e.g. (6,2) and (2,6), and ask which two lie on the same diagonal.
- Pose a missing-corner task on grid paper: 'three corners of a rectangle are at (1,1), (5,1) and (1,3) — where's the fourth?'

PROFICIENT

- On the complete-the-square Class Challenge, ask the fast finisher to narrate a harder variant aloud to the class: 'give me four points that make a square tilted on the grid, not flat' — then defend that it's still a square.

⚬ **Cross-curricular:** Tie to Geography — pupils use a simple grid-reference map of their town or estate and give the 'along then up' address of the school.

ANSWER KEY

W1: (8, 4) → Q1
W2: 5 units
W3: (10, 4) → Q1
W4: 2 units
Q1: (-6, 9) → Q2
Q2: 11 units
Q3: 3 units
Q4: (-6, 4) → Q2

EXTENSION SHEET · STRETCH ANSWERS

S1: (-6, 9) → Q2
S2: 9 units
S3: (8, -4) → Q4
S4: 6 units
S5: 9 units