

Follow the route: directions on a grid

CURRICULUM ALIGNMENT

SHA.SAL.2a

use spatial knowledge for the purposes of orientation and navigation.

INTERACTIVES Pattern Blocks · challenge, display, explore

WHAT THIS LESSON TEACHES

A route is a list of moves from a start square to a finish square, one square at a time. Along means left or right; up or down means a vertical step.

→ 2 right, then 1 up is a route of three moves.

→ From the door, 2 along and 1 up lands on the star square.

MODEL THIS ON THE BOARD

TREASURE ROUTE TO THE STAR

- 1 Start at the door on the bottom-left square of the grid.
- 2 Move 2 squares right (along).
- 3 Then move 1 square up.
- 4 You land on the star finish square.

LESSON ARC

Open with the treasure-map interactive: door on the bottom-left square, star two right and one up, no path drawn yet. Show three finished routes that all end on the star so pupils see different move orders, same finish. Pupils take turns laying pattern blocks while the class chants each move aloud. On squared paper they mark only the finish square for 2 along and 1 up. Class Challenge adds a puddle hexagon to walk around before the maths-talk close.

TEACHING MOVES

1. **Getting Started.** Point at the door and the star on the treasure map — no path drawn. Read the route and along/up lines once, then take two or three hands-up ideas for how to walk. Keep the focus on the idea of a route, not a single correct answer.
2. **Watch and Notice.** Trace each finished path with your finger as you name it: 2 right then 1 up; 1 up then 2 right; right, up, right. After the second path ask 'what changed in the order?' After the third, have the class say each move they can see, one square at a time. Nothing animates — keep eyes on the finished path.
3. **Try It Together.** Call one pupil to the board per route. Say the moves one at a time and have the class chant right... right... up as each pattern block lands. If a block goes on the wrong square, freeze and re-say the full move list from the start before continuing.
4. **Mark the square in your copy.** Pupils start at the bottom-left corner of a small grid on squared paper and mark only the finish square for 2 right and 1 up — not the path. If anyone is on plain paper, sketch a quick 3-by-3 on the board with the start dotted for them to copy. Walk the room and glance: start corner correct, finish two right and one up.
5. **Class Challenge.** Keep board turns brisk. Before the puddle route, point at the hexagon and name it as water they must walk around. Listen for the move named before the block is placed; on a wrong square freeze and re-say the list from the start. Class confirms each finish before the next route.

6. What Did We Notice?. Ask how two different routes can land on the same square. Listen for pupils naming moves in a different order but the same finish. Re-voice: 'so the path can change, but the end square stays the same.' Head off the idea that only one route is allowed.

COMMON MISCONCEPTIONS

⚠ Pupils count the start square as a move, so 2 right lands them only one square from the door. Freeze the board. Put a finger on the start and say 'we begin here — the first right is the next square.' Rebuild 2 right from the door, chanting each landing square.

⚠ Pupils think only one route is allowed — if the star was reached 2 right then 1 up, any other order must be wrong.

Show the two finished paths side by side again. Same start, same star, different order. Ask: 'did both walks finish on the star?' Re-voice the same-place-different-path idea.

⚠ On the copybook page pupils draw the whole path instead of marking only the finish square. Hold up a correct copy: one clear mark on the finish only. 'The route lives in your head for this one — the paper just needs the end square.'

DIFFERENTIATION

EMERGING

- Give only single-direction routes first (2 right on its own) before combining along and up.
- Dot the start square on their squared paper so they only decide where the finish mark goes.

DEVELOPING

- After they mark 2 along and 1 up, ask them to mark a second finish that uses 1 up then 2 right — same square, different route said aloud.
- On the puddle route, pause and ask which move they will say first before any block is laid.

PROFICIENT

- Challenge them at the board: find a third route to the star that still avoids the puddle, and chant it for the class to check.
- Ask: 'if I reverse every move of 2 right then 1 up, where do I end?' — stretch without new kit.

➤ **Cross-curricular:** Link to PE: set a door cone and a star cone in the yard and have pupils walk 2 along and 1 up as a living grid.

ANSWER KEY

Scaffold: visual check on the page

Q1: 3 along, 2 up

Q2: Yes: both routes finish 3 along and 2 up

Q3: 3 right, 1 up

a) Always : The moves commute on a plain grid so both routes share the same finish.

b) Always : Each listed step is one square, so two right plus one up totals three moves.

c) Never : On an open grid the same set of moves ends on the same square no matter the order.

d) Never : Moves can turn, so the finish need not lie on a straight three-square line.

EXTENSION SHEET · STRETCH ANSWERS

S1: 3 along, 2 up

S2: 4 along, 2 up

S3: yes

S4: 4 along, 1 up

Investigation: Make a route — open-ended; scan pupils' working for valid solution paths rather than a single answer.