

LESSON 3

Mastering the Maze: Navigating the 4x4

30 minutes

Pattern Play Without Devices

WHAT THIS LESSON DOES

Embark on a journey to understand the importance of sequence and direction in coding. You'll guide a character to its fruit on a 4x4 grid, take turns giving directions, and work independently on a worksheet. Remember, careful planning of your sequence is key to success. Let's get started!

WHAT STUDENTS SHOULD BE ABLE TO DO

- Develop an understanding of sequence and direction in the context of coding.
- Apply navigational skills in a practical, hands-on activity.
- Enhance problem-solving abilities through grid navigation tasks.
- Work independently to plan and execute a sequence of directions.
- Reflect on learning experiences and share strategies for planning and problem-solving.

BEFORE THE LESSON

- Unplugged lesson: no pupil devices or logins needed.
- Clear floor space so pairs can move safely as Navigator and Robot.
- Interactive whiteboard ready to show the 4x4 frog-and-fruit grid.
- Print one 4x4 grid worksheet per pupil plus blank grids for the extension; scissors and glue if using the cut-and-stick arrow option.

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HOW THE LESSON RUNS

Introduction

Classroom Navigator

The 4x4 Challenge

4x4 Worksheet

Extension Challenge: Design Your Own Grid Game

Wrap Up

TEACHING MOVES

- 1. Introduction. Frame the mission: guide a character to its fruit using clear direction and sequence. Stress that every step counts. They will practise together first, then work alone.
- 2. Classroom Navigator. Pair pupils as Navigator and Robot. Navigator secretly picks a classroom destination and gives only the agreed commands. Swap roles so both programme and follow.
- 3. The 4x4 Challenge. Display the frog-and-fruit grid on the IWB. Take class turns giving commands. Pause so everyone plans the full sequence before the next move is spoken.
- 4. 4x4 Worksheet. Hand out the 4x4 worksheets. Pupils programme the bird to the fruit by drawing arrows on the grid or cutting and sticking directional arrows.
- 5. Extension Challenge: Design Your Own Grid Game. Give early finishers a blank grid. They draw start, goal and obstacles, write a solution, then swap with a neighbour to solve and debug each other's challenge.
- 6. Wrap Up. Lead a short spoken discussion: what they learned, which parts were tricky, and which planning strategies helped. Do not ask them to write or hand up answers.

WHAT TO WATCH FOR

- Pupils treat a turn as a step forward, or move without turning to face the new direction first. Have them point the way the character is facing before each command, and say turn and move as two separate instructions.
- Pupils give one command at a time without planning the full path, so the route stalls or loops back. Ask them to whisper or trace the whole sequence on the grid before any command is carried out.
- In the classroom game, the Robot hears commands from the Navigator's point of view instead of its own facing direction. Freeze, check which way the Robot is facing, and restate the next command from the Robot's view before moving.

DIFFERENTIATION

- Emerging: Stay with them for the first few classroom or board commands, modelling one clear instruction at a time. Allow them to work with a partner on the worksheet and agree each arrow before it is drawn or stuck.
- Developing: Prompt them to say or point through the full sequence before the Robot or board character moves. If a path fails, ask them to find the first wrong step rather than starting the whole route again.
- Proficient: Move them to the blank-grid extension: design start, goal and obstacles, then swap to debug a neighbour's challenge. Ask them to explain why their sequence works and where a shorter path might still reach the goal.