

Square Dance: Drawing Shapes with Bee-Bot

30 minutes

Journey into Robotic Movements

WHAT THIS LESSON DOES

In this lesson, you'll learn to programme your Bee-Bot to move in square shapes, enhancing your understanding of sequencing and spatial awareness. You'll start with a fun game, then move onto digital practice, and finally, you'll programme your Bee-Bot on a grid. This will deepen your coding skills and prepare you for more complex challenges.

WHAT STUDENTS SHOULD BE ABLE TO DO

- Develop understanding of sequencing and spatial awareness through programming Bee-Bots.
- Enhance precision and planning skills in programming by creating different square shapes.
- Improve problem-solving abilities by adjusting commands to create squares of varying sizes.
- Strengthen collaborative skills through group work in programming Bee-Bots.
- Build a strong foundation in logical thinking and programming for advanced coding concepts.

BEFORE THE LESSON

- One Bee-Bot per group, charged, plus a grid mat for each group.
- Whiteboards and markers per group for pupils to write out their command sequence before testing.
- Open and test the tracing-a-square interactive on your board so you can demonstrate the square in step 4.
- Clear a floor space and pick a target spot (sink, chair, corner) all pupils can see for the human Bee-Bot game.

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HOW THE LESSON RUNS

Introduction

Students as Beebots

Drawing a Square

Tracing a Square Digital Practice

Moving Beebots in Squares

Wrapping Up

TEACHING MOVES

- 2. Students as Beebots. Pick one pupil as the Bee-Bot and one as the leader. Make the leader give one command at a time, out loud, and have the Bee-Bot only do exactly what is said, nothing more.
- 3. Drawing a Square. Draw a square on the board and count aloud with the class: four equal sides, a right-angle turn at each corner. Stress that the Bee-Bot needs a turn after every forward move.
- 4. Tracing a Square Digital Practice. Programme the full square on the interactive slowly, saying each command as you add it. Then ask how they would make a bigger square, and let them see that only the forward steps change, not the turns.
- 5. Moving Beebots in Squares. Insist each group writes the whole sequence on their whiteboard before touching the Bee-Bot. When it goes wrong, point them back to their written list rather than fixing it for them.

WHAT TO WATCH FOR

- Pupils programme four forward moves but forget the turn, so the Bee-Bot travels in a straight line instead of a square. Have them read their whiteboard sequence back aloud and check there is a turn between every forward move, four turns in all.
- Pupils make the sides unequal, giving more forward steps on one side than another. Ask them to count the steps for each side out loud; all four must match. Point back to the four equal sides drawn on the board.
- Pupils think making a bigger square means adding more turns. Remind them a square always has four corners. To make it bigger they only add forward steps between turns, the turns stay the same.

DIFFERENTIATION

- Emerging: Let them stay on the small square only, and program one side at a time, testing after each side before adding the next.
- Developing: Have them write the sequence fully before testing and predict where the Bee-Bot will stop before they press go.
- Proficient: Once both squares work, challenge them to explain to you why the turns never change when the square gets bigger, or to plan a square that starts and ends facing a chosen wall.