

Number Tracer: Bee-Bot's Digital Path

30 minutes

Journey into Robotic Movements

WHAT THIS LESSON DOES

In this lesson, you'll learn to programme Bee-Bots to trace digital numbers. You'll start by understanding the shapes of digital numbers, then practise tracing them using an interactive game. Afterwards, you'll plan and execute commands for your Bee-Bot to trace numbers on a mat, enhancing your number recognition, sequencing skills, and programming abilities.

WHAT STUDENTS SHOULD BE ABLE TO DO

- Understand and identify the unique shapes of digital numbers.
- Develop critical thinking and planning skills through sequencing Bee-Bot commands.
- Apply understanding of digital numbers to program Bee-Bot's path accurately.
- Enhance collaborative skills through interactive whiteboard activities and group work.
- Reflect on the importance of careful preparation and execution in coding.

BEFORE THE LESSON

- Open and test the digital-tracing interactive on the whiteboard, and cue the 0 to 5 digital number slideshow.
- Charge one Bee-Bot per group and lay out the mats.
- Print enough digital number cards for each group, and hand out whiteboards and markers for planning.

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HOW THE LESSON RUNS

Introduction

Digital Numbers

Whiteboard Planning

Digital Tracing Practice

Tracing Numbers with Bee-Bots

Wrap Up

TEACHING MOVES

- 2. Digital Numbers. Show each digital number and ask pupils to trace it in the air, then say what is different from how they write it. Draw out the straight segments and corners.
- 3. Whiteboard Planning. Have pupils pick a number and draw arrows for each Bee-Bot move before touching a device. Insist the plan is finished before programming begins.
- 4. Digital Tracing Practice. Model one number slowly on the interactive so pupils see each command build the shape, then invite a pupil to enter the commands for the next number.
- 5. Tracing Numbers with Bee-Bots. Give each group a Bee-Bot, mat and cards. Make them write the command sequence on the whiteboard first, then run it and check against the plan.
- 6. Wrap Up. Ask a group to talk through the plan they wrote and where the Bee-Bot went off course. Name planning-before-doing as the coding skill they practised.

WHAT TO WATCH FOR

- Pupils confuse turning the Bee-Bot with moving it, so a turn command uses up a step they expected to be a move forward. Have them physically walk the path first, calling out 'turn' and 'step' aloud, then match each spoken word to one command.
- Pupils think the Bee-Bot remembers where it is between attempts and skip resetting its start position and direction. Make placing the Bee-Bot on the starting square facing the agreed direction the first line of every plan.

DIFFERENTIATION

- Emerging: Give a straight-line number such as 1 or a simple corner so the sequence is short, and let them place arrow cards rather than draw them.
- Developing: Ask them to run their plan, then find and fix the one command that sent the Bee-Bot wrong rather than starting over.
- Proficient: Set the partner challenge: program a number without saying which one, and have the partner name it from the traced path.