

Number Tracer: Bee-Bot's Digital Path

30 minutes

Exploring Robotics and Commands

WHAT THIS LESSON DOES

In this lesson, you'll guide students through programming Bee-Bots to trace digital numbers. Starting with a slideshow of digital numbers, students will then plan Bee-Bot paths on whiteboards before practising with an interactive game. Finally, they'll use Bee-Bots to trace numbers on a mat, reinforcing number recognition, sequencing skills, and programming.

WHAT STUDENTS SHOULD BE ABLE TO DO

- Develop understanding and recognition of digital number shapes.
- Enhance critical thinking through planning and sequencing of Bee-Bot commands.
- Improve ability to execute planned commands using Bee-Bots.
- Engage in interactive learning through digital tracing practice.
- Apply knowledge of digital numbers and programming in a challenging extension activity.

BEFORE THE LESSON

- Charge Bee-Bots and set out one Bee-Bot, mat and mini whiteboards per group.
- Download and print enough digital number cards for the class.
- Open the digital-numbers slideshow and the Bee-Bot tracing game on the interactive whiteboard; check both display clearly.

Number Tracer: Bee-Bot's Digital Path

HOW THE LESSON RUNS

Introduction

Digital Numbers

Whiteboard Planning

Digital Tracing Practice

Tracing Numbers with our Beebots

Wrap Up

TEACHING MOVES

- 1. Introduction. Tell pupils they will program Bee-Bots to trace digital number shapes, starting with looking at those shapes, then planning, then driving a real Bee-Bot.
- 2. Digital Numbers. Show each digital numeral 0 to 5. Pause and ask what looks different from how they normally write that number; collect a few observations before moving on.
- 3. Whiteboard Planning. Have pupils pick a few numbers and draw arrow sequences on whiteboards before any Bee-Bot work. Stress planning the full path, not one step at a time.
- 4. Digital Tracing Practice. Demonstrate one full command sequence on the board game so pupils see the Bee-Bot trace the shape. Then invite pupils to enter commands for a second number.
- 5. Tracing Numbers with our Beebots. Give each group a Bee-Bot, mat, number cards and whiteboards. Insist they plan on the whiteboard first, then program. For extension, pairs take turns tracing a number with no spoken instructions.
- 6. Wrap Up. Ask briefly how planning on whiteboards helped the Bee-Bot follow the number shape, and what was hard about turning a digital numeral into forward and turn commands.

WHAT TO WATCH FOR

- Pupils treat digital numerals like handwritten ones and miss straight segments or sharp corners the Bee-Bot must follow. Hold up the card beside their plan and trace each segment with a finger before they press buttons.
- Pupils enter moves one at a time on the Bee-Bot without a full sequence, so the path falls apart mid-number. Send them back to the whiteboard arrows; only clear and program once the whole path is written.
- Pupils forget that a turn changes facing, so later forwards go the wrong way. Have them point the Bee-Bot the way it faces after each planned turn before they add the next forward.

DIFFERENTIATION

- Emerging: Stay with the group to plan one simple numeral together on the whiteboard before they touch the Bee-Bot. Limit the first attempt to a number with fewer segments, such as 1 or 7 if available on the cards.
- Developing: Prompt them to tick off each arrow on the whiteboard as the Bee-Bot runs it, so they can spot where the path went wrong. Allow a second clear-and-retry after they adjust only the step that failed.
- Proficient: Use the extension: pairs program a number for a partner to run with no talking, then swap. Challenge them to trace a second number on the same mat without wiping the first plan until after the run.