

LESSON 4

Build your Traffic Lights

10 minutes

Building Basic Robotic Systems

WHAT THIS LESSON DOES

In this lesson, you'll assemble your own traffic lights using a Microbit Traffic Lights Kit. You'll start by gathering your materials, then open the package and construct the stand. Finally, you'll attach the Microbit to the traffic lights, ensuring the correct alignment.

WHAT STUDENTS SHOULD BE ABLE TO DO

- Identify and gather necessary components for the Microbit Traffic Lights Kit.
- Understand and execute the process of unpacking and preparing the kit.
- Develop skills in assembling the stand for the traffic lights.
- Apply knowledge of Microbit to correctly align and attach it to the traffic lights.
- Demonstrate the ability to follow step-by-step instructions to complete a technical task.

BEFORE THE BELL

- Count one Microbit Traffic Lights Kit and one Microbit per student or pair the day before. Check each kit for screws, bolts and undamaged stand parts.
- Have Phillips head screwdrivers ready (one between two is enough). Test that the bits fit the kit screws.

Build your Traffic Lights

HOW THE LESSON RUNS

What you need

Open up the package

Make the stand

Screw on the Microbit

TEACHING MOVES

- 1. What you need. Ask students to lay out the kit, Microbit and screwdriver on the desk before anyone opens a bag. Name each item once so pairs know they are not missing parts.
- 2. Open up the package. Have them tip everything onto the desk and check the bag is empty. Keep small screws and bolts in one clear pile so nothing rolls off.
- 3. Make the stand. Show the snap-off bottom once on your own kit. Tell them to snap carefully, then slot it into the matching part until the stand sits flat.
- 4. Screw on the Microbit. Read the pin map aloud before any screw goes in: P0 to red, P1 to yellow, P2 to green, 3V to 3V, 0V to GND. Check alignment, then tighten gently.

WHAT TO WATCH FOR

- Students line up the Microbit by the shape of the board rather than the pin labels, so red, yellow and green end up on the wrong pins. Stop the room and point to the labels on both boards. Have each pair say the five matches out loud before they pick up a screw.
- Students force the stand snap or over-tighten the bolts and crack the plastic or strip the threads. Demonstrate light pressure on the snap and a snug, not fierce, turn on each screw. Remind them the stand only needs to sit flat.

DIFFERENTIATION

- Emerging: Pair them with someone whose stand is already slotted and have that student talk them through the pin map while they hold the Microbit. Stay with the pair for the first screw so they feel the right tightness.
- Developing: Ask them to check the five pin matches against a neighbour's board before tightening. Have them explain which hole is GND before they finish the last bolt.
- Proficient: Once built, have them coach a slower pair through alignment without touching that pair's kit. Ask them to list the pin map from memory and point to each connection on their own board.