Name _____ Bench _____ Date _____

LESSON 1 · OHM'S LAW

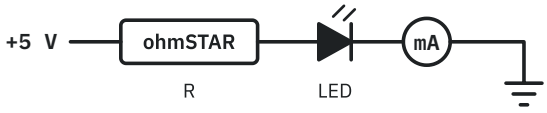
Choose the resistor for an LED

Use the box as the series resistor, watch the LED change, and work out the right value.

YOU NEED A 5 V supply, an LED, a meter for the current, and a box.

STEPS

1. **SET UP**
   Set I set to 5 V, at the box or on the Device page keypad. Wire the supply, the box, the LED and the meter in series.
2. **IN CLASS**
   Start at 1000 Ω and step down. Record the current and how bright the LED looks.
3. **HAND IN**
   Work out the resistor for 20 mA, then set it on the box to check.



Worked example: 5 V supply, 2.0 V LED

Ω	mA	You measure
1000	3.0	
470	6.4	
330	9.1	
220	13.6	
150	20.0	

Calculated: I = (5 V – 2.0 V) ÷ R. Your LED's voltage may differ: check its data sheet.

GOOD TO KNOW

- I set limits the current through the box to protect its 1 W rating. Set it to your supply voltage before you connect.
- Python, the command-line tool, the HTTP API and AI control have no I set command: set it at the box or on the Device page keypad.
- Power in the box is $I^2 \times R$: about 0.06 W at 150 Ω and 20 mA.
- Open disconnects the circuit mechanically, and pressing it again reconnects: use it to switch the LED off and on.

YOUR NOTES AND PLOT

For the teacher. With a 2.0 V LED on 5 V, 150 Ω gives 20 mA. From the readings, students can work out their own LED's voltage.