E4.1

UNIT E4 · CIRCUITCLASS TASK CARD

Build a fixed divider

UNIT PROGRESS

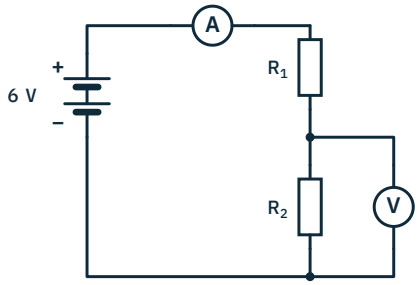
TASK

Build a fixed divider in CircuitClass. Check that your calculations match the simulation.

YOU NEED

- ☐ CircuitClass · circuits mode
- ☐ Your E4.1 notes and the Data Booklet
- ☐ About 15 minutes

1 · Build



Build this circuit

1. Add a 6 V battery. Put the long plate (+) at the top.
2. Add R_1 = 4.7 kΩ and R_2 = 3.3 kΩ in series.
3. Add an ammeter in series with the resistors.
4. Add a voltmeter across R_2. This reads V_{out}.

SHORT CIRCUIT

× WHAT EXAMINERS SAW

The battery symbol was the wrong way round in many simulations. The meter readings then came out negative.

✓ THE FIX

Long thin plate = positive. Check every symbol is the right way round before you run the simulation.

Course reports 2024–25: battery and symbol orientation in simulations.

2 · Predict, then measure

Keep R_1 = 4.7 kΩ. Calculate I and V_{out} for each R_2 **before** you change it. Then run the simulation and record the readings.

R_2	Predicted I (mA)	Predicted V_{out} (V)	Measured I (mA)	Measured V_{out} (V)	Match? ✓ / ×
3.3 kΩ					
4.7 kΩ					
10 kΩ					

3 · What did you find?

When R_2 increased, V_{out} _____ because _____

When R_2 increased, the current _____ because _____

Build a fixed divider



EXTENSION · NEEDS CIRCUITCLASS VOLTAGE DIVIDER MODE

Replace R_2 with a slider from 1 kΩ to 22 kΩ. Watch V_{out} as you move it. Sketch a graph of V_{out} against R_2. Does V_{out} ever reach 6 V?