Ohm’s and Kirchhoff’s laws

AIM

Show that V = IR for a resistor, and test Kirchhoff's 1st and 2nd laws in series and parallel circuits.

YOU NEED

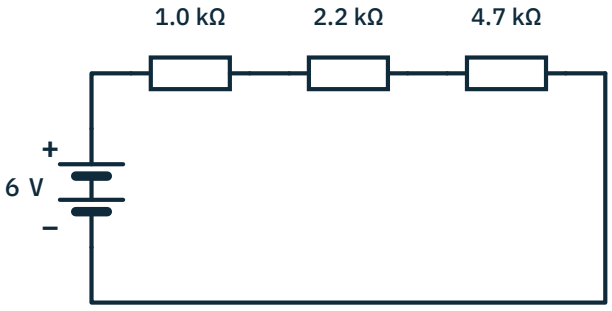
- ☐ 6 V battery pack or variable supply
- ☐ Resistors 1.0 kΩ, 2.2 kΩ, 4.7 kΩ
- ☐ Two multimeters
- ☐ Breadboard and leads

Part A · Ohm’s law

Connect the 1.0 kΩ resistor to the supply with an ammeter in series and a voltmeter across it. Set 2, 4, 6, 8 and 10 V (or as many as your supply allows).

Supply (V)	Predicted I (mA)	Measured V (V)	Measured I (mA)	V ÷ I (kΩ)
2				
4				
6				
8				
10				

Part B · Series and Kirchhoff’s 2nd law

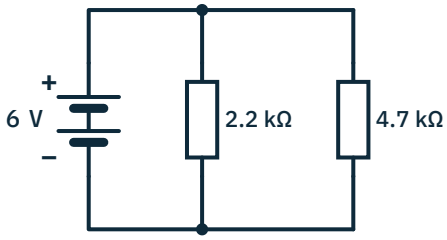


Series circuit

Resistor	Predicted V (V)	Measured V (V)	Measured I (mA)
1.0 kΩ			
2.2 kΩ			
4.7 kΩ			
Total			

Ohm’s and Kirchhoff’s laws

Part C · Parallel and Kirchhoff’s 1st law



Parallel circuit

Branch	Predicted I (mA)	Measured I (mA)	Measured V (V)
2.2 kΩ			
4.7 kΩ			
Supply			

Conclusions

Does V ÷ I stay the same in Part A? Do the voltages in Part B add to the supply? Do the branch currents in Part C add to the supply current?

Evaluate

EVALUATION FRAME

Specification point: The circuit should _____.

Result: When I _____, the _____ _____.

Cause and effect: This happened because _____, so _____.

Improvement: To fix the issue named in the task I would _____, so that _____.

Not for use during the assignment