

Electricity Worksheet - Simple Circuits



Compare the current as you add more resistor boxes -
Simples!!

Equipment needed:

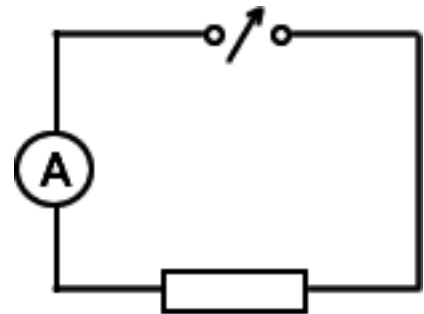
- lab pack
- multimeter (set up as an ammeter - use the notes from the back of your physics book!)
- 6 connecting wires
- 3 resistor boxes

Instructions

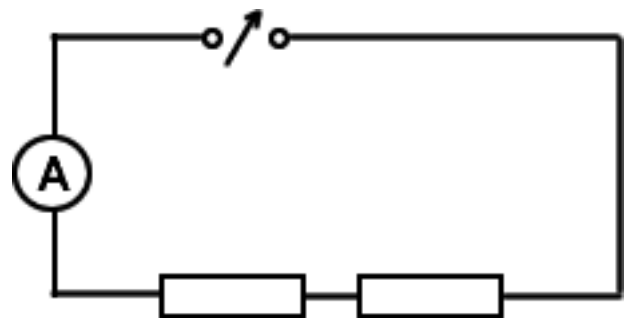
- **In your rough book** make a blank table of results to record how the current varies as the number of resistor boxes you use changes - think carefully about the headings of the table!
- Set the lab pack on zero volts - ALWAYS start like that...
- Wire up circuit 1.
- Turn the dial on the lab pack until the current reading on your ammeter is 0.6A. **YOU MUST NOW LEAVE THE LAB PACK DIAL AT THAT SETTING FOR THE REST OF THE EXPERIMENT.**
- Note down your results.

- **Without adjusting the dial** switch off the lab pack.
- Wire up circuit 2.
- Switch the lab pack back on.
- Note down your results.

- **Without adjusting the dial** switch off the lab pack.
- Wire up circuit 3.
- Switch the lab pack back on.
- Note down your results.

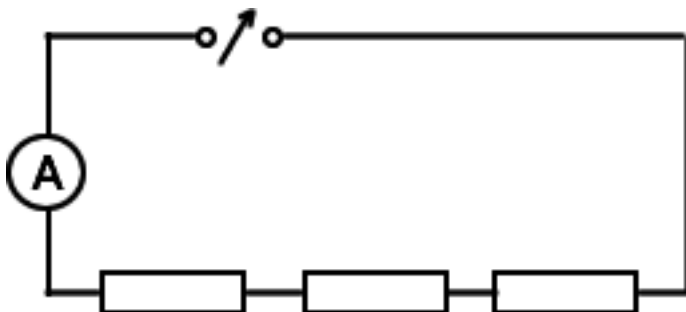


circuit 1



circuit 2

Discuss the results - can you see a pattern?



circuit 3

Can you see a pattern in your results?

Simples??



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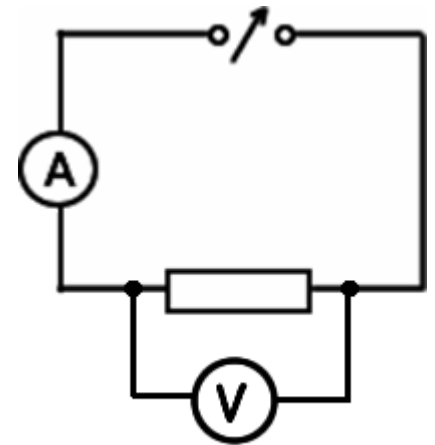
Now we are going to look at voltage division.

- Leave the voltage dial in the same position as last experiment but switch the power pack off.
- Disconnect the circuit from the power supply and connect the voltmeter across the terminals.
- Switch the power pack on.
- Measure the voltage across the terminals when it is supplying no current to a circuit.
- Note down your result.

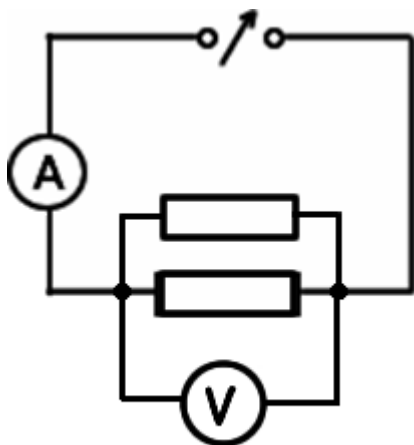
- Wire up circuit 1 again and add a voltmeter in parallel with the resistor (as shown in circuit 4).
- Note down the reading and compare it with the result for the power supply alone.
- Now move the voltmeter so that it is in parallel with the ammeter.
- Note down the reading.
- What does this tell you about the resistance of the ammeter compared to the resistance of the resistor?

- Now **wire up circuit 2** and measure the potential difference (voltage) across each of the resistors.
- Switch off the lab pack - but do not turn the dial.
- Compare your results to the voltage of the supply.

- Now **wire up circuit 3** and measure the potential difference (voltage) across each of the resistors.
- Switch off the lab pack - but do not turn the dial.
- Compare your results to the voltage of the supply.
- Switch off the lab pack and turn the dial on the multimeter to zero



circuit 4



circuit 5

We are now going to look at resistors in parallel.

- Wire up circuit 1 again and this time adjust the voltage until you get a current of **0.3A** flowing through the single resistor.
- Now **wire up circuit 5** and measure the potential difference (voltage) across each of the resistors.
- Look at the ammeter reading. Can you explain why it has changed?

- Add a further resistor in parallel (making 3 in parallel) and repeat as above.

- Switch off the lab pack and turn the dial on the multimeter to zero
- Put the equipment away neatly.