

WJEC England Physics GCSE

Specified Practical Circuits



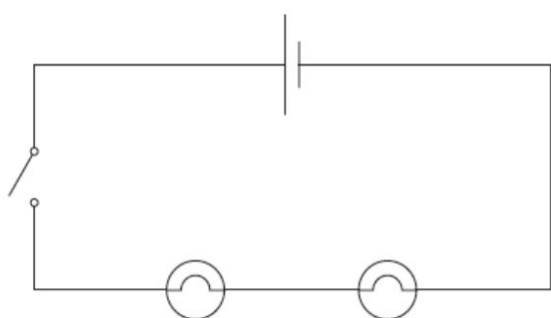
SP7.2 Investigation of the characteristics of series and parallel circuits

Equipment

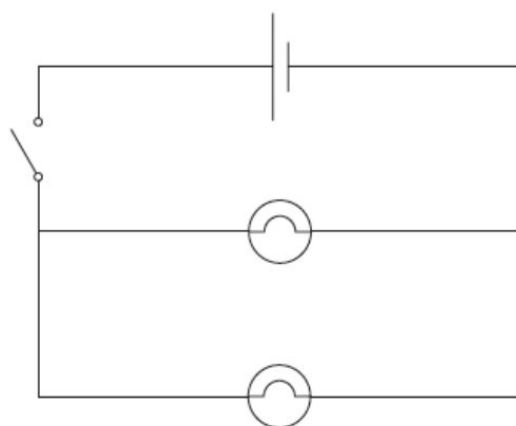
- Connecting wires
- Voltmeter
- Ammeter
- 12V D.C. power supply
- Switch
- 2x bulbs

Diagrams

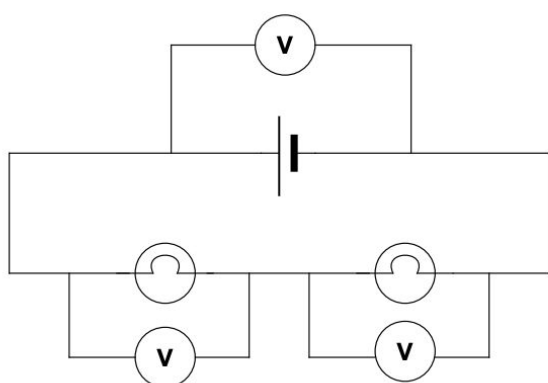
Circuit 1



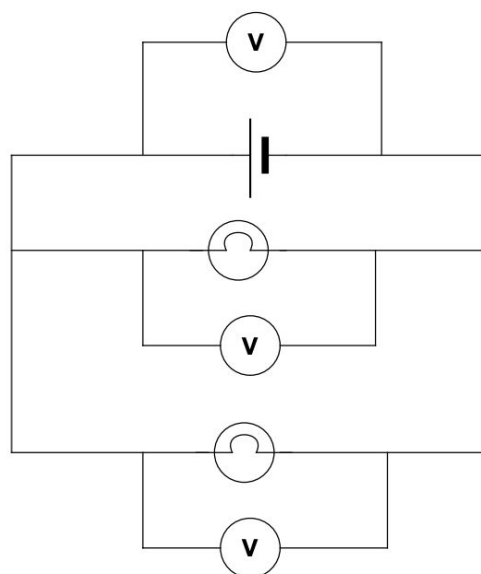
Circuit 2

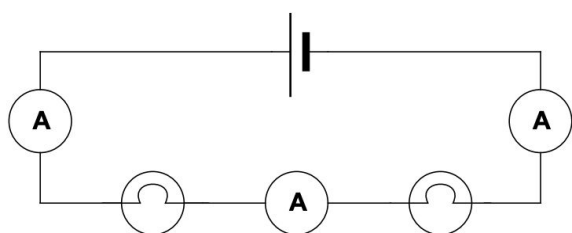


Circuit 3

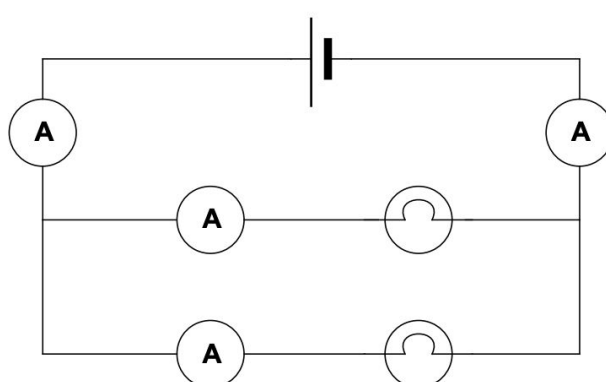


Circuit 4



Circuit 5


Images: Eduqas

Circuit 6


Method Part 1 – Basic Measurements

1. Set up a circuit with two bulbs in series as shown in the Circuit 1 diagram above.
2. Take note of the brightness of the bulbs (qualitatively).
3. Remove one of the bulbs and observe the effect this has on the brightness of the remaining bulb (i.e. “increased” or “decreased” or “no change”).
4. Set up another circuit with the two bulbs in parallel as shown in the Circuit 2 diagram above.
5. Repeat the same process with the bulbs as with the series circuit.

Method Part 2 – Voltage Measurements

1. Set up a circuit with two bulbs in series.
2. Connect a voltmeter across one of the bulbs and record the reading.
3. Repeat this process for the other bulb and the power supply.
4. Set up another circuit with the two bulbs in parallel and repeat the voltmeter process until you have readings for the voltages of both of the bulbs and the power supply.

Method Part 3 – Current Measurements

1. Set up the circuit with two bulbs in series.
2. Connect an ammeter between two components and record the reading, and repeat this between all components as shown in Circuit 5 above.
3. Set up another circuit with two bulbs in parallel and connect an ammeter in each of the positions in turn shown in Circuit 6 above.
4. Record all of the current measurements.

Tips

- Use your data to draw conclusions about the behaviour of current and voltage in series and parallel circuits.

Safety Precautions

- Ensure the power is switched off before making any changes to the circuit to avoid the risk of electric shock.

