WJEC England Physics GCSE

SP7.2: Circuits

Practical Flashcards

Part 1: Observations of bulbs in parallel and series.

Outline the basic steps of the practical.

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1. Set up a circuit with two bulbs in series.
2. Observe the brightnesses of the bulbs.
3. Remove one of the bulbs (and connect up the circuit) and observe any changes to the brightness of the other bulb.
4. Set up a circuit with two bulbs in parallel and repeat the previous two steps.

Draw a circuit diagram for two lamps in series.

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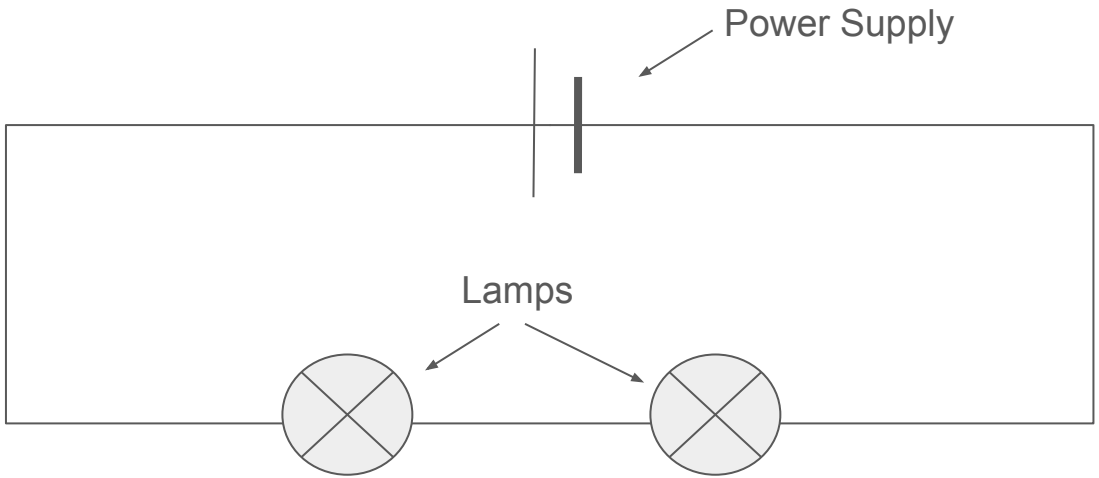

Draw a circuit diagram for two lamps in parallel.

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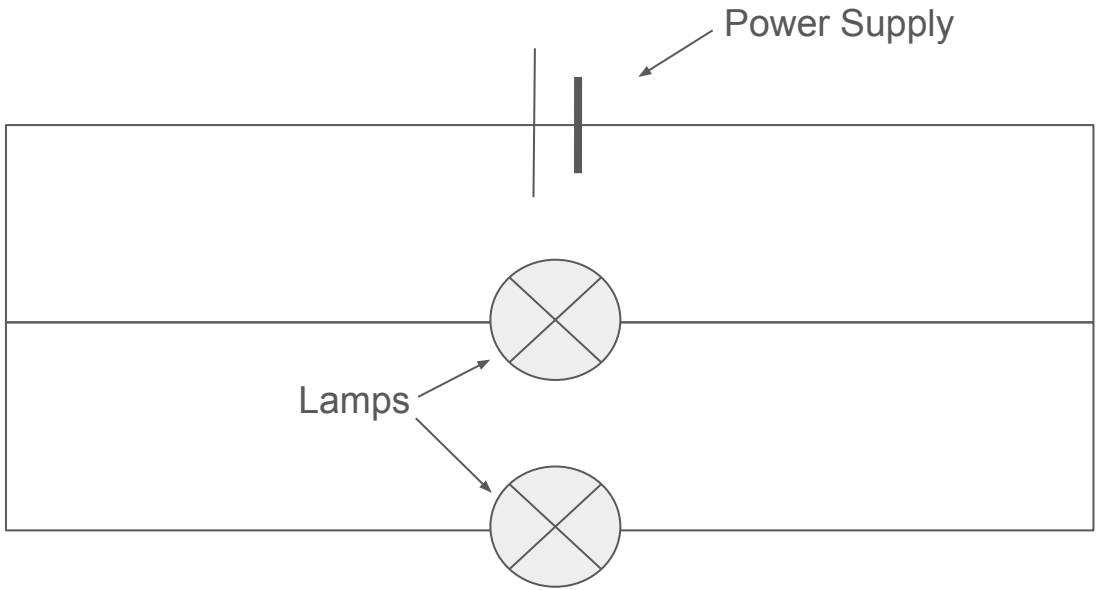

Explain what should happen when you remove a bulb from the series arrangement and why.

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The remaining bulb will become brighter because it will have the full supply voltage, rather than half when it is split between two lamps.

Explain what should happen when you remove a bulb from the parallel arrangement and why.

Explain what should happen when you remove a bulb from the parallel arrangement and why.

The remaining bulb will remain the same brightness because it is in a different branch to the other bulb and each branch receives the full supply voltage.

Part 2: Voltages of bulbs in parallel and series.

Outline the basic steps of the practical.

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1. Set up a circuit with two bulbs in series.
2. Add voltmeters in parallel with each bulb and with the cell.
3. Record the voltage values from each meter.
4. Set up a circuit with two bulbs in parallel and repeat the previous two steps.

How should the voltages measured across the bulbs in series compare to the voltage across the cell?

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The sum of the voltages across the bulbs should equal the total voltage across the cell.

How should the voltages measured across the bulbs in parallel compare to the voltage across the cell?

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All three voltmeters should read the same value. Each bulb should have the same voltage as the cell.

Part 3: Currents of bulbs in parallel and series.

Outline the basic steps of the practical.

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1. Set up a circuit with two bulbs in series.
2. Add ammeters in different positions throughout the circuit and record the current values.
3. Set up a circuit with two bulbs in parallel and repeat.

How should the current readings in different places in the series circuit compare?

How should the current readings in different places in the series circuit compare?

The current readings should be the same at all positions in the circuit.

How should the current readings in different places in the parallel circuit compare?

How should the current readings in different places in the parallel circuit compare?

The current should split at each branch, meaning the current in both branches should add up to the current immediately before and after the cell.

What safety precautions should be taken when using filament bulbs?

What safety precautions should be taken when using filament bulbs?

1. Avoid touching them when switched on since they can get very hot.
2. Be careful not to use too high a voltage to avoid melting the filament.