

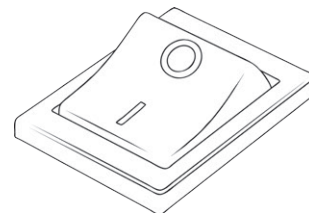
Ideal Electricals Investigation

Ideal Electricals has asked you to carry out an investigation to find out the following:

- ☒ What happens to the brightness of the bulbs in a circuit as you increase the number of bulbs?
- ☒ What happens to the current as you increase the number of bulbs in a circuit?

What are the variables in this investigation?

| | |
|----------------------|--|
| independent variable | |
| dependent variable | |
| control variable | |



Construct a table to record your results.

Build the circuits below.

- ☒ A series circuit with 1 battery, 1 bulb, 1 ammeter.
- ☒ A series circuit with 1 battery, 2 bulbs, 1 ammeter.
- ☒ A series circuit with 1 battery, 3 bulbs, 1 ammeter.

Q1. In which circuit were the bulbs the brightest?



Q2. Why do you think this is?

Q3. Explain what happens to the current as you increase the number of bulbs in a circuit.

Q4. Did you find any anomalous results?

Q5. How do you know the result(s) were anomalous?

Q6. How could we improve the investigation for next time?



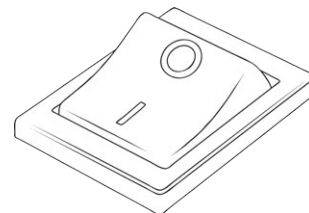
Ideal Electricals Investigation Answers

Ideal Electricals has asked you to carry out an investigation to find out the following:

- ☒ What happens to the brightness of the bulbs in a circuit as you increase the number of bulbs?
- ☒ What happens to the current as you increase the number of bulbs in a circuit?

What are the variables in this investigation?

| | |
|----------------------|----------------------------|
| independent variable | number of bulbs |
| dependent variable | current |
| control variable | number of batteries |



Construct a table to record your results.

| Number of Bulbs | Try 1 - Current (A) | Try 2 - Current (A) | Try 3 - Current (A) | Average - Current (A) |
|------------------------|------------------------------|------------------------------|------------------------------|--------------------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |

Build the circuits below.

- ☒ A series circuit with 1 battery, 1 bulb, 1 ammeter.
- ☒ A series circuit with 1 battery, 2 bulbs, 1 ammeter.
- ☒ A series circuit with 1 battery, 3 bulbs, 1 ammeter.

Q1. In which circuit were the bulbs the brightest?

circuit 1



Q2. Why do you think this is?

The bulb was the brightest in circuit 1 because if more lamps are added to the circuit, the lamps will become dimmer than before. This is because less current is flowing through them.

Q3. Explain what happens to the current as you increase the number of bulbs in a circuit.

The battery pushes the current through the bulb. The more bulbs there are, the harder it is for the current to flow. There is more resistance in the circuit.

Q4. Did you find any anomalous results?

Pupils will have their own results.

Q5. How do you know the result(s) were anomalous?

The current readings were not the same.

Q6. How could we improve the investigation for next time?

Repeat the investigation a further two times.

Calculate an average and compare results with other groups in the class.

Use more accurate equipment for example a data logger to measure the current over a fixed period of time.

