

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 (what we change)	number of b_____
dependent variable (what we measure)	c_____
control variable (what we keep the same)	

Add your results to the table.

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. Circuit 1 - A series circuit with 1 battery, 1 bulb, 1 ammeter.
- b. Circuit 2 - A series circuit with 1 battery, 2 bulbs, 1 ammeter.
- c. Circuit 3 - A series circuit with 1 battery, 3 bulbs, 1 ammeter.

Q1. In which circuit were the bulbs the brightest? Circle the correct answer.

- circuit 1
- circuit 2
- circuit 3

Q2. Why do you think this is?

The bulb was the brightest in circuit _____ because _____



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

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

Q4. Did you find any anomalous (odd) results?

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

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

- Compare our results with another group in our class to see if they got similar results to us.
- Carry it out with different equipment.
- Never repeat the investigation as this may show errors.



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 (what we change)	number of bulbs
dependent variable (what we measure)	current
control variable (what we keep the same)	number of batteries

Add your results to the table.

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. Circuit 1 - A series circuit with 1 battery, 1 bulb, 1 ammeter.
- b. Circuit 2 - A series circuit with 1 battery, 2 bulbs, 1 ammeter.
- c. Circuit 3 - A series circuit with 1 battery, 3 bulbs, 1 ammeter.

Q1. In which circuit were the bulbs the brightest? Circle the correct answer.

- **circuit 1**
- circuit 2
- circuit 3

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

harder	battery	current	bulb
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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 (odd) results?

Pupils will have their own results.

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

The current readings were not the same.

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

- **Compare our results with another group in our class to see if they got similar results to us.**
- Carry it out with different equipment.
- Never repeat the investigation as this may show errors.

