

Grade 9 Natural Sciences Worksheet

Current electricity investigation 1

Investigative question

Does the brightness of a light bulb depend on where it is connected in a circuit? In other words, when charges flow around a circuit, do they flow through all parts of a series circuit?

Aim

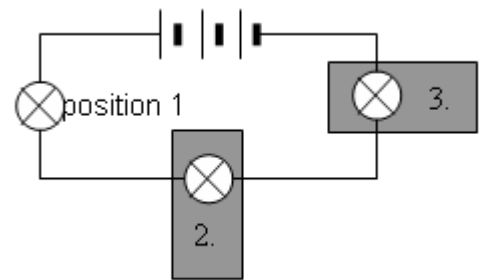
To investigate the strength of electric current at various points in a series circuit.

Apparatus

Circuit board, components and 3 torch cells.

Method

1. Set up a circuit containing three cells and one light bulb (position 1) connected in series.
2. Observe the brightness of the light bulb.
3. Move the light bulb to position 2 and observe the brightness of the light bulb.
4. Move the light bulb to position 3 and observe the brightness of the light bulb.
5. Complete the table below.



Results

Position of light bulb	Brightness of light bulb (brightest, bright, least bright)
Position 1	
Position 2	
Position 3	

[2]

Discussion

Select the most appropriate word or term to make each statement correct. [4]

1. The brightness of a light bulb is an indication of (current strength/resistance) in a circuit.
2. The brightness of the light bulb (increases/stays the same/decreases) when you change its position.

Grade 9 Natural Sciences Worksheet

Conclusion

3. The current strength (differs/is the same) at any point in a series circuit. [2]

Rubric to assess investigation

Category	Levels of Achievement			
	4	3	2	1
Handling apparatus	Learner can manipulate apparatus and helps others in the group/sets up apparatus entirely unassisted. [4 marks]	Learner is confident and can set up the circuit with minimal assistance. [3 marks]	Learner is unsure of what to do but attempts to set up the circuit with prompting. [2 marks]	Clumsy, not confident, little basic understanding of circuits. [1 mark]
Analysis of results	Add mark out of 6 to the above mark and the mark out of 2 for table of results.			
Total	12			

Grade 9 Natural Sciences Worksheet

Suggested Solutions

Question number	Possible marks	Solution		
Results	2		Position of light bulb	Brightness of light bulb (brightest, bright, least bright)
			Position 1	bright
			Position 2	bright
			Position 3	bright
1	2	The brightness of a light bulb is an indication of current strength in a circuit.		
2	2	The brightness of the light bulb stays the same when you change its position.		
3	2	The current strength is the same at any point in a series circuit.		
Practical work	4	See rubric.		

Rubric to assess investigation

Category	Levels of Achievement			
	4	3	2	1
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Total	12			