Year 9 Electric Circuits Worksheet

Year 9 · KS3 Physics · Current, voltage, resistance and circuits

Name: ..... **Class:** ..... **Date:** ..... **Score: / 50**

Section A: Circuit components and measuring [13 marks]

1 Match each component to its job. Choose from: cell, switch, bulb, resistor, ammeter, voltmeter, fuse, battery. **[7]**

Job	Component
Opens and closes a circuit	
Measures current	
Measures potential difference (voltage)	
Lights up when current flows	
Melts and breaks the circuit if the current is too high	
Two or more cells joined together	
Limits the current in a circuit	

2 Complete the table about measuring in circuits. **[6]**

Meter	Measures	Unit	Connected in series or parallel?
Ammeter			
Voltmeter			

Section B: Series and parallel circuits [15 marks]

3 Complete the table to compare series and parallel circuits. **[8]**

	Series circuit	Parallel circuit
Number of paths for the current		
Current		
Voltage (potential difference)		
If one bulb breaks		

4 A 9 V battery is connected to three bulbs in series. The voltage across the first bulb is 2 V and across the second is 3 V.

(a) Calculate the voltage across the third bulb. **[2]**

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(b) The current at the battery is 0.5 A. State the current through the third bulb. **[1]**

5 Two bulbs are connected in parallel. The current through one bulb is 0.3 A and through the other is 0.5 A. Calculate the current from the battery. **[2]**

6 Lights in a house are wired in parallel, not series. Give two advantages. **[2]**

Section C: Resistance and Ohm's law [12 marks]

7 What is meant by resistance? State its unit. **[2]**

8 Use V = I × R to calculate:

(a) the current when V = 12 V and R = 4 ?. **[2]**

(b) the potential difference when I = 0.5 A and R = 6 ?. **[2]**

(c) the resistance when V = 9 V and I = 0.3 A. **[2]**

9 Explain what happens to the brightness of the bulbs when more bulbs are added in series to a circuit. **[2]**

10 Give two ways to increase the resistance of a wire. **[2]**

Section D: Data and practical skills [10 marks]

11 A student measures the current through a resistor at different voltages.

Results:

Voltage (V)	0	2	4	6	8
Current (A)	0	0.4	0.8	1.2	1.6

(a) Plot a graph of current (y-axis) against voltage (x-axis) on the grid. **[3]**

Graph grid

(b) Describe the relationship shown by the graph. **[2]**

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(c) Calculate the resistance of the resistor. **[2]**

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(d) Explain why the graph for a filament bulb would be a curve. **[2]**

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12 Explain why you should never touch electrical switches with wet hands. **[1]**

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