

ELECTRICAL CIRCUITS - BULBS IN SERIES

Apparatus required

Comboplate.

6 springs

3 bulb-holders and 3 bulbs

2 connecting leads with bare ends

6 leads with jack plugs

1 9V battery

1 variable resistor

1 digital voltmeter and 1 digital ammeter

Method

1. Place the 6 springs in wells A1, D1, D3, D6, D8 and D11.
2. Connect the springs in between D1 and D3 and between D6 and D8 using the 2 leads with the bare ends.
3. Connect the three bulb-holders so that they span A1- D1: D3-D6 and D8-D11.
4. Connect the voltmeter so that it is connected to springs A1 and D1.
5. Connect the ammeter, the battery and the variable resistor so that there is a complete circuit as shown in lead from the variable resistor (dashed line in diagram) goes to the spring in D1. Screw one of the bulbs into the bulb-holder in A1-01.
6. Record your readings on the ammeter and voltmeter and note the brightness of the bulb. You can adjust this using the variable resistor.
7. Break the circuit by unplugging one of the connections to the ammeter. This stops the draining of the battery.
8. Screw in the second bulb in the bulb-holder between D3 and D6.
9. Take the lead from the voltmeter (dashed line) and connect to spring D6. Reconnect the lead from the variable resistor that was in spring D1 to D6.
10. Complete the circuit again and record your readings
11. Repeat using the third bulb with the voltmeter and variable resistor both connected to D11.

Results

Record your results in the table below:-

Number of bulbs	Ammeter reading/A	Voltmeter reading
1		
2		
3		

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Write a short description of what you see happen when the number of bulbs in the circuit increases.

Conclusion

Explain your observations on the brightness of the bulbs as the number of bulbs is increased

In the space below draw the circuit diagram using the symbols shown below:—

