

Ohm's law investigation essay sample



**ASSIGN
BUSTER**

Introduction: In the following experiment, I predict that the filament bulb in which we are testing, on will not obey ohm's law. Their are many factors which make me believe this, such as the temperature of the bulb. If the filament bulb DID obey Ohm's Law, then the temperature would remain constant, meaning there would be resistance. When I think of a light shining, the temperature does not stay the same. Therefore I believe that the light bulb will not obey Ohm's law. The formula for Ohm's law is: RESISTANCE = $\frac{V}{I}$ or $R = \frac{V}{I}$ The current through a wire is proportional to potential difference (voltage across the wire) providing the temperature does not change - (which I predict it shall).

CHANGE IN TEMPERATURE = CHANGE IN RESISTANCE To make this a fair test, I must keep a close watch of the readings. I will include a trial run to make sure everything goes to plan. I will record the results 3 times - so I can be certain that we are exact in the experiment. SAFETY: To prevent any electric shocks, it is important that we wash our hands thoughly, so no water reaches the wires. We must also check our readings on the Voltmeter - incase any explosion occurs, and we must check that the wires are carefully fixed in to place. It is also important, for long hair to be tied up and to wear lab coats.

APPARATUS: Power Supply (p. s. u) --- This is the main source of power used in the experiment. Voltmeter --- this measures the potential difference ACROSS a component (in volts) p. d Ammeter --- The measures the current through a component (in amps) Filament Bulb --- This is what we are testing for Ohm's law with. Wires --- The experiment is not possible without the use of the wires - in which the current will flow. We set up the circuit shown in

the diagram above. We used an Ammeter to measure the current (in amps) and we used a Voltmeter in which we measured the Voltage. When we first set up the circuit above, we included a trial run - to see how the experiment went. we recorded the results which came out as follows We did the experiment, measuring the Amps and the P. d The results were as follows. We repeated the experiment to be accurate. This time we added an Observer - so we could notice if there was a change in light. We now plotted a graph.

While I was plotting the graph, I realised there was no p. d that was below 1, so we moved the resistor to find the p. d reading below one. The results were When we put the p. d onto the graph as above, it did not form a straight line. CONCLUSION: There are two factors which prove whether my prediction was correct or not. Firstly, I noticed from the Observation that the brightness of the light was not constant - which means the temperature was rising as the ligh got brighter. We now know that the filament lamp does not obey Ohm's law, meaning that my prediction was correct. The second factor which tells me that I was correct, was that on the graph, the line was not straight, meaning again that it did not obey Ohm's law.

I know about Ohm's law from the theory: A CURRENT THROUGH I WIRE IS PROPORTIONAL TO POTENTIAL DIFFERENCE ACROSS THE WIRE, PROVIDING THE TEMPERATURE REMAINS CONSTANT.

EVALUATION: I think the results were overall accurate. We did repeat them twice aswell as including the trail run; but we still could have been more accurate. We only recorded the Observations once. We could have been

more accurate if we did it at least twice. We had no anomalous results. I think the safety was good and it overall went well - maybe a lack of detail. I think the conclusion is reliable. To help us on Ohm's law, we could have included more tests on other things for Ohm's law as a similar investigation - but I was overall pleased.