

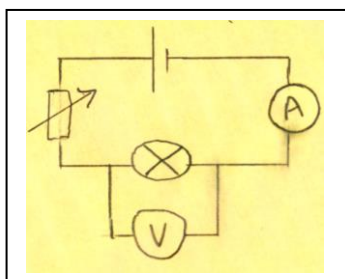
The aim of this investigation is to see what happens to the resistance of a lamp when the voltage connected across it increases.

I measured the voltage and current in a lamp and changed the voltage and worked out the resistance for each voltage using Ohm's law $V = IR$.

Ohm was a German physicist and he began by looking at the cell invented by Alessandro Volta. He found that there is a direct proportionality between the voltage and the current and called this Ohm's law.

An electric current flows when electrons move through a conductor like a metal wire. The electrons collide with atoms in the metal and this makes it more difficult for the current to flow and causes resistance.

I set up this circuit



and took voltmeter and ammeter readings then changed the variable resistance and took readings again.

After every change I switched the circuit off and back on again three times to repeat readings, but they were the roughly the same as the first readings.

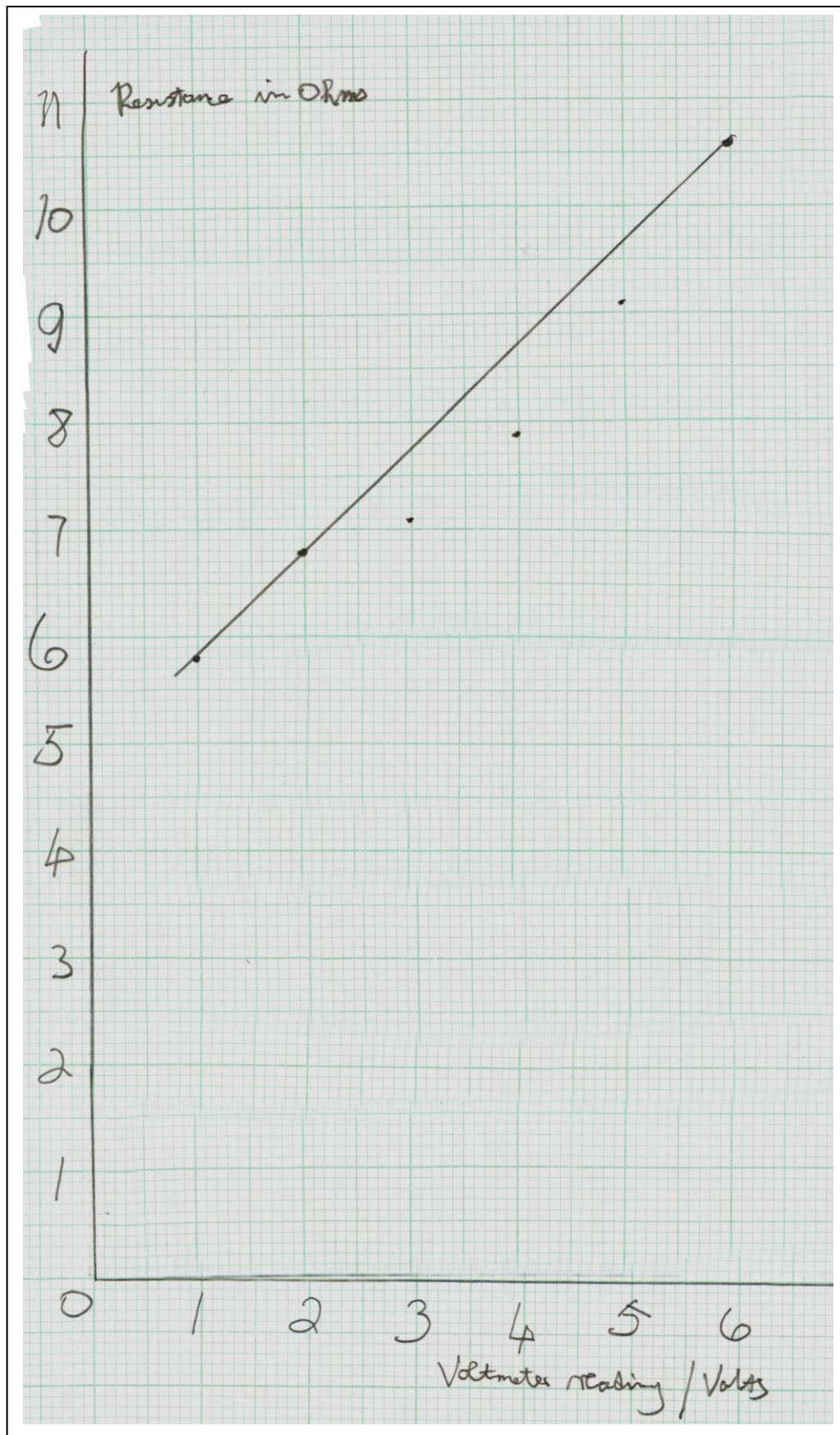
I put the readings in a table.

Voltmeter reading in volts	Ammeter reading in milliamps	Resistance in ohms
1	172	5.8
2	310	6.5
3	422	7.1
4	506	7.9
5	551	9.1
6	565	10.6

$$R = \frac{V}{I}$$

$$R = \frac{1}{0.172} = 5.8 \Omega$$

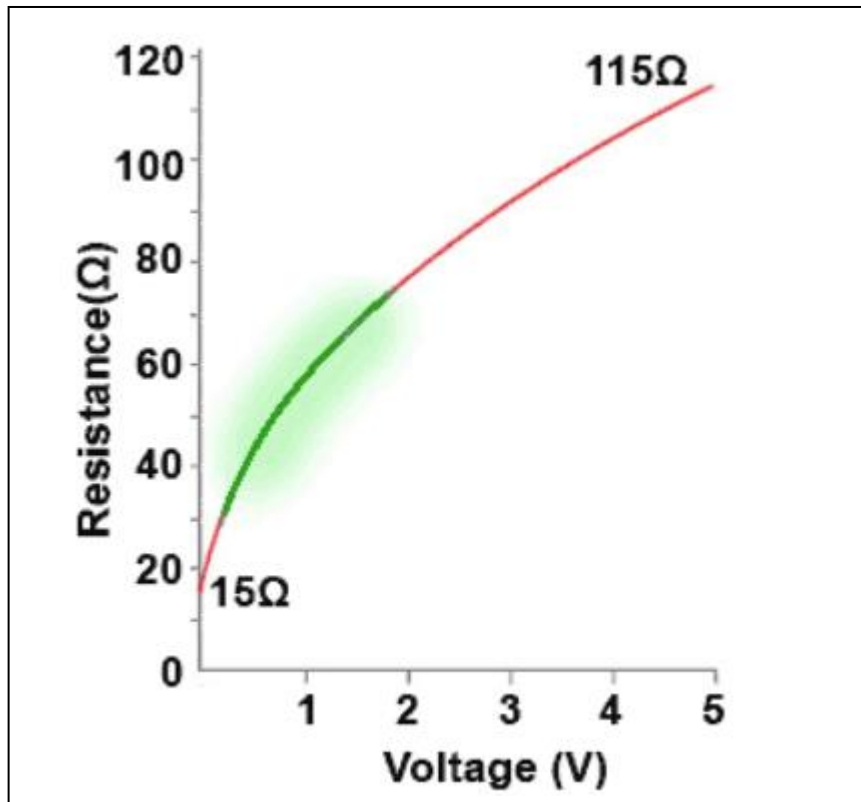
I drew a graph of my results.



I looked at the following website

<http://www.learnabout-electronics.org>

and saw this graph



Its not the same bulb as I used, but it is the same kind of bulb, and it has a curve and not a straight line like mine, but its resistance goes up when the voltage goes up and that's what I found.

So as you increase the voltage across a filament bulb, it's resistance gets bigger, which isn't like a resistor.

I could have made my experiment better by using a more accurate voltmeter, like the ammeter read in milliamps because then I would have the voltage to the nearest 1/1000th of a volt and it would be more accurate.