



Ohm's Law

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The Objective

As a group, we wanted to observe Ohm's law and try to apply the effect of the law on the magnetic field and electric current.

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The background is a dark blue gradient. In the corners, there are stylized circuit board traces. Top-left: white and yellow lines with circular terminals. Top-right: white lines with circular terminals. Bottom-left: white lines with circular terminals. Bottom-right: white and blue lines with circular terminals. In the center, there is a white square containing the number '01' in yellow. This square is surrounded by yellow horizontal and vertical lines, resembling a microchip or a data center icon.

01

What is Ohm's law?

Research

A horizontal blue line with circular terminals at both ends is positioned below the word 'Research'. The decorative circuit lines in the bottom corners are white and blue, with circular terminals.



quantities, i.e. resistance, current and voltage, as they vary. The law states that the voltage or potential difference between two points is directly proportional to the current or electricity passing through the resistance, and directly proportional to the resistance of the circuit.

$$V = IR$$

The unit of measurement in the SI is the ohm represented with the Greek

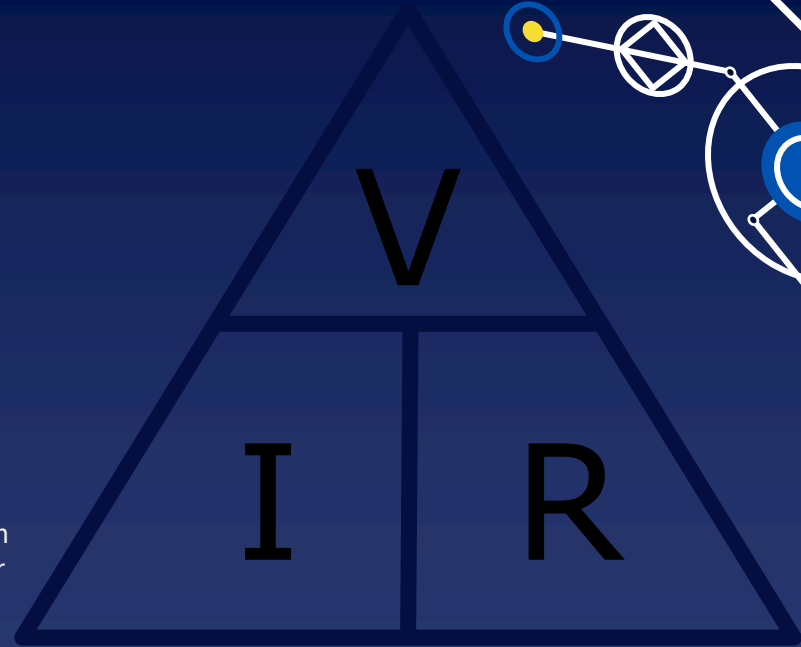


EQUATION

This is the mathematical triangle that represents Ohm's law

- V = The Voltage, the potential difference between one point with respect to another expressed in volts.
- I = The Current, expressed in amperes, we mean the intensity of electrical charges that run through a conductor.
- R = The Resistance, a measure of the opposition to current flow in an electrical circuit, the higher it is, the more difficult it will be for the current to cross it.

While the original formula is $V=IR$, it can be inverted to find the other variables ($I=V/R$, $R=V/I$)





02

Preparing the experiment

Collecting materials

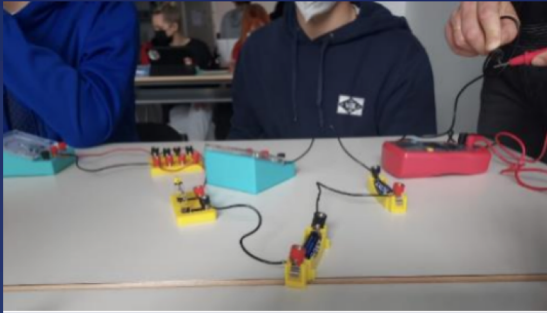


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MATERIALS

The list of materials are:

- Voltage Generator
- 6 Batteries
- Voltmeter (Voltage)
- Ammeter (Current)
- A resistor (Resistance)
- Copper Wires



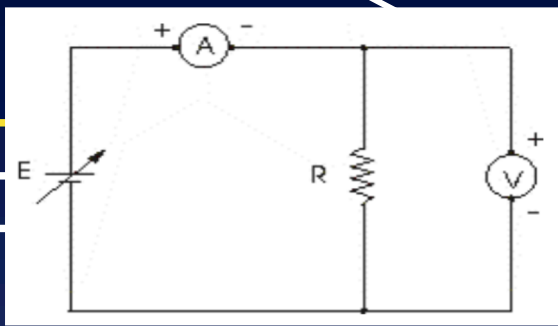


03

Starting the experiment

Procedures





EXPERIMENT



1
Connect circuit components to measure electrical resistance



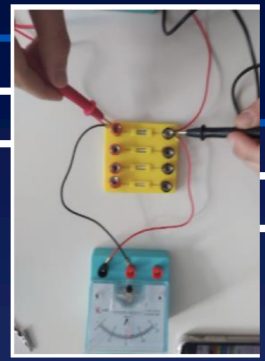
2
Create a series of potential difference and current intensity, making changes to the potential difference at the output of the generator.



3
Try to measure the value of your resistance in series or in parallel, using the test leads (so as not to alter the measurement)



EXPERIMENT



Check which of the available fuses is broken and which is healthy.

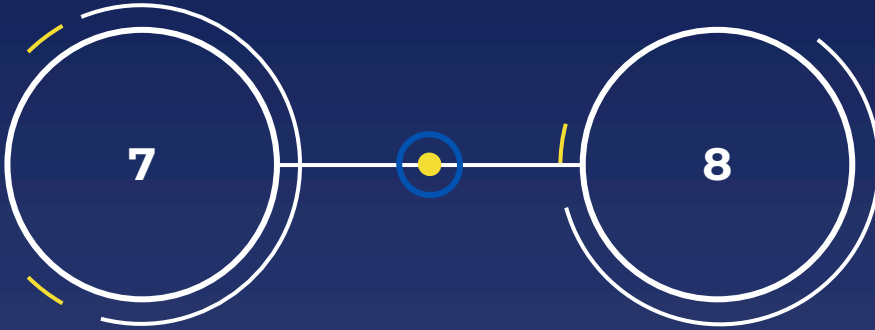


Starting from a voltage of 0 V, move up to the voltage, measuring the values on the voltmeter.



Report the electric current values measured by the ammeter in the table.

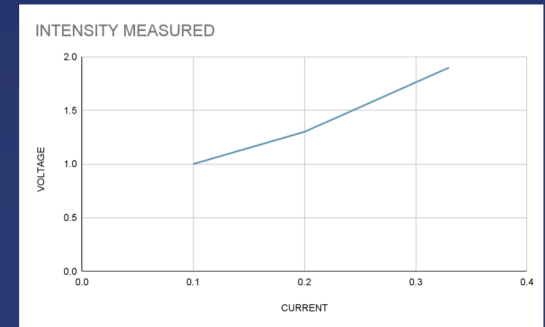
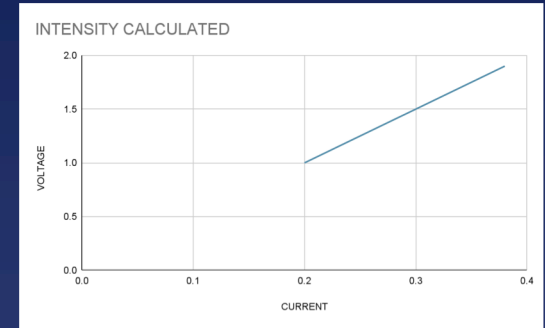
EXPERIMENT



Repeat the same procedure 2-3 more times.

Using Ohm's law calculate the resistivity value of the collected data.

V ($R = 5 \Omega$)	I calculated	I measured
1 V	0.2 A	0.1 A
1.3 V	0.26 A	0.2 A
1.9 V	0.38 A	0.33 A





04

Analyzing the Data

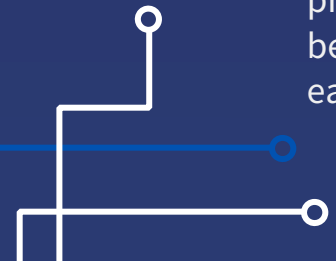
Conclusion



CONCLUSION

CONCLUSION

From the experiment conducted, we observed how the intensity of the current increases as the potential difference increases. In particular, it can be seen with the difference in potential that doubles, the intensity of the current also doubles. Given this result, it is stated that the two directly proportional quantities, that is the resistance, which should be constant. However, the resistance values, calculated for each test, are different from each other.



A decorative graphic at the top of the slide consisting of several white and yellow stepped lines, resembling a circuit board or a signal waveform, with small circles at the end of the lines.

Thanks for your attention

A decorative graphic at the bottom of the slide consisting of several white and yellow stepped lines, resembling a circuit board or a signal waveform, with small circles at the end of the lines.



BIBLIOGRAPHY

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