

A special report is one that is written up outside the first year laboratory. The following is considered a poor special report; we have included many of the errors that are found repeatedly in poor laboratory reports. This report would get about 25% provided we were certain that the student actually attended the laboratory and undertook the work.

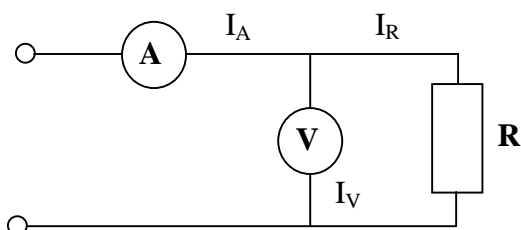
THE MEASUREMENT OF RESISTANCE USING VOLTMETER & AMMETER

INTRODUCTION

Measurement of resistance is where resistance can be measured. Resistances can be measured with a voltmeter and ammeter so it can be found. I use Ohm's law $V=IR$ to do this.

EQUIPMENT AND METHODS

We have a voltmeter, an ammeter and a resistances and some sources. This is the circuit to use.



In the above circuit there are two loops. Start with a lead one end of which will be connected to the positive terminal of the source. BUT DO NOT CONNECT IT YET, and connect the other end to the ammeter. It is important to remember that current flows into the positive terminal and to use the least sensitive range. Then take a lead from the other terminal of the ammeter and connect it to the voltmeter. Watch that you get the current flowing from the into the positive terminal and you get the least sensitive range. The first loop will be completed by connecting the other terminal of the voltmeter to the negative terminal of the source. The second loop is made by connecting the junction between the ammeter and the voltmeter to one terminal of the resistor (it doesn't matter which way around you have a resistor) and then connecting the other resistor terminal to the junction between the voltmeter and the source.

RESULTS

A $V = 1.5$ volts, $I = 87$ mA, $R = 0.01724138$ ohms.

B $V = 1.5$ volts, $I = 40$ mA, $R = 0.0375$ ohms.

C $V = 1.5$ volts, $I = 2.2$ mA, $R = 0.6818182$ k.

The uncertainties were about 10% or by calculating 9.966×10^{-5} ohms.

DISCUSSION AND CONCLUSION

The results prove Ohm's law. Uncertainties occurred because of human error and not good enough equipment. Next time we can get better results with better equipment. This was a good experiment.