

Series Circuit Lab

Name _____

Materials: 6-V battery, conducting wires with alligator clips, 3 light bulbs, ammeter, voltmeter.

Meters

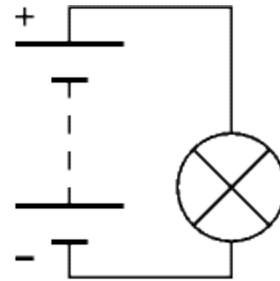
It is important to connect meters the correct way round.



- The positive terminal of the meter, marked + or red should be connected nearest to + on the battery or power supply.
- The negative terminal of the meter, marked – or black should be connected nearest to - on the battery or power supply.
- To take an accurate reading from an analogue scale you must have your eye in line with the pointer. Avoid looking at an angle from the left or right because you will see a reading which is a little too high or too low.

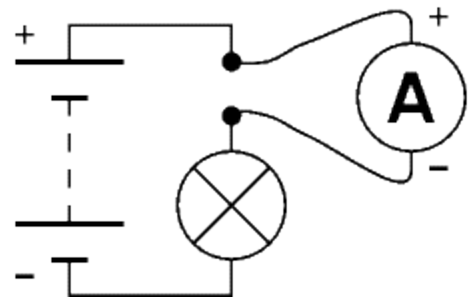
Voltmeters

- Voltmeters measure voltage.
- Voltage is measured in volts, V.
- Voltmeters are connected in parallel across components.
- Voltmeters have a very high resistance.



Ammeters

- Ammeters measure current.
- Current is measured in amps (amperes), A.
- Ammeters have a very low resistance.



Simple Series Circuit-One Resistor

1. Use the voltmeter to confirm that the voltage of the battery is, in fact, 6 volts. If it is not 6 volts, record the voltage here _____
2. Construct a simple circuit that contains the following components: Light bulb, 6-V battery, and an ammeter.
 - a. Determine the current flowing through the circuit by recording the ammeter reading here: _____
 - b. Use Ohm's Law to calculate the resistance of the light bulb, and record the answer here: _____

Simple Series Circuit-Two Resistor

3. Add another light bulb in series to the simple circuit above.
 - c. Determine the current flowing through the circuit by recording the ammeter reading here: _____
 - d. Using Ohm's Law, calculate the total resistance of the circuit, and record this value.

Simple Series Circuit-Multiple Resistors

4. Add a third light bulb to the circuit by connecting it in series to the others.
 - e. Determine the current flowing through the circuit by recording the ammeter reading here: _____
 - f. Using Ohm's Law, calculate the total resistance of the circuit, and record this value. This is called the equivalent resistance of the circuit.
5. You should notice a trend developing for resistors that are connected in series. Based on this trend, predict the equivalent resistance of a series of 4 light bulbs.