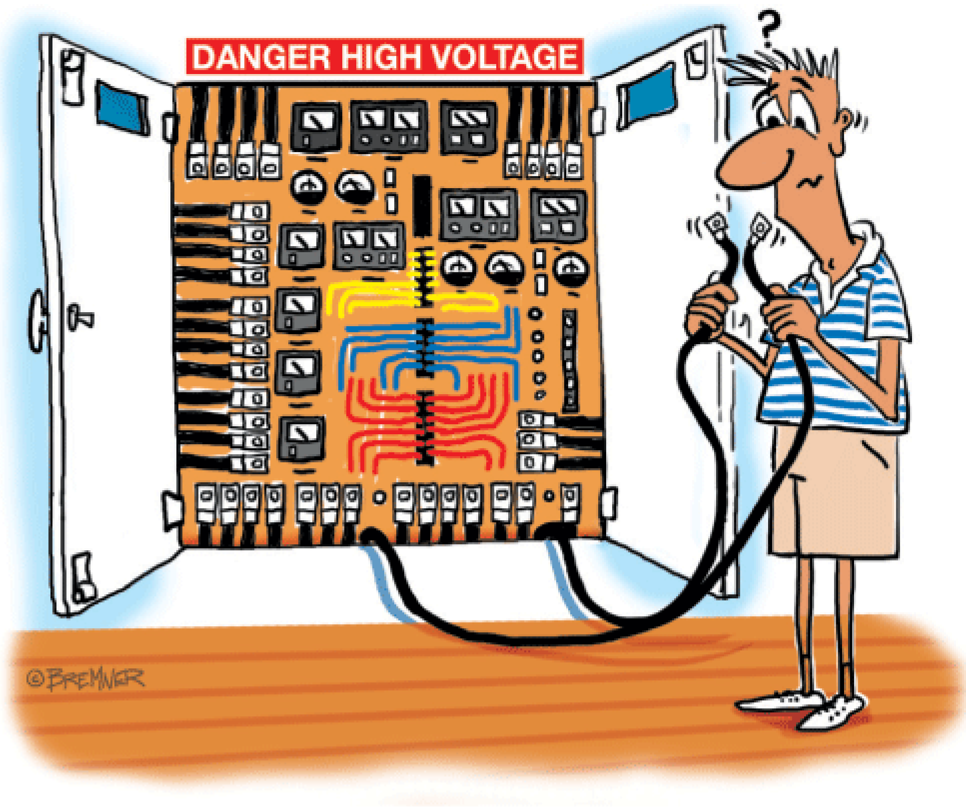
20.4 Resistance and Ohm's Law

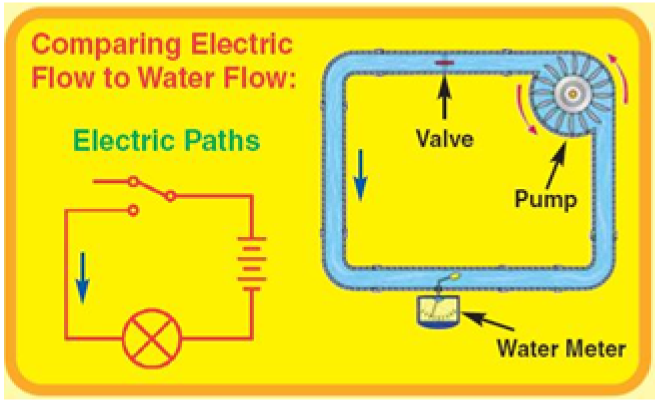
Lab 20B



Review

Water analogy

- Current = how much water you have
- Voltage = how fast the water flows
- Battery = pump



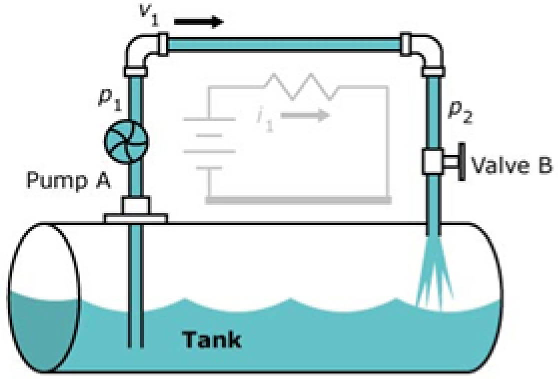
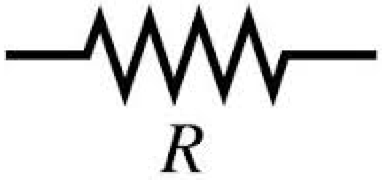
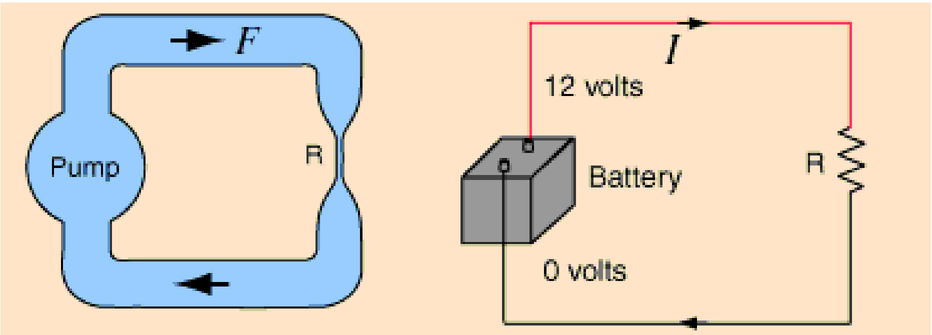


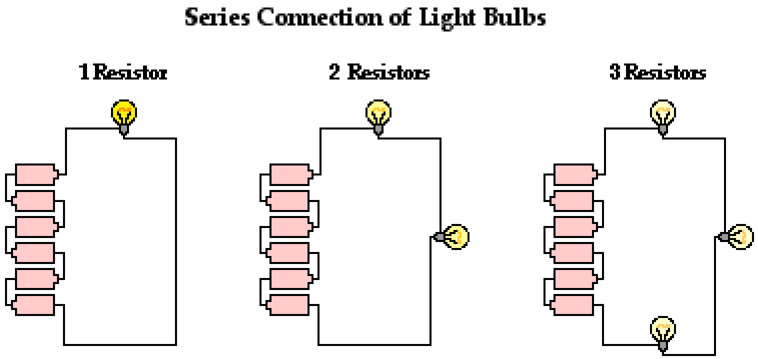
Figure 1—Water circulates endlessly around this closed loop much like elecrical current.

Electrical Resistance



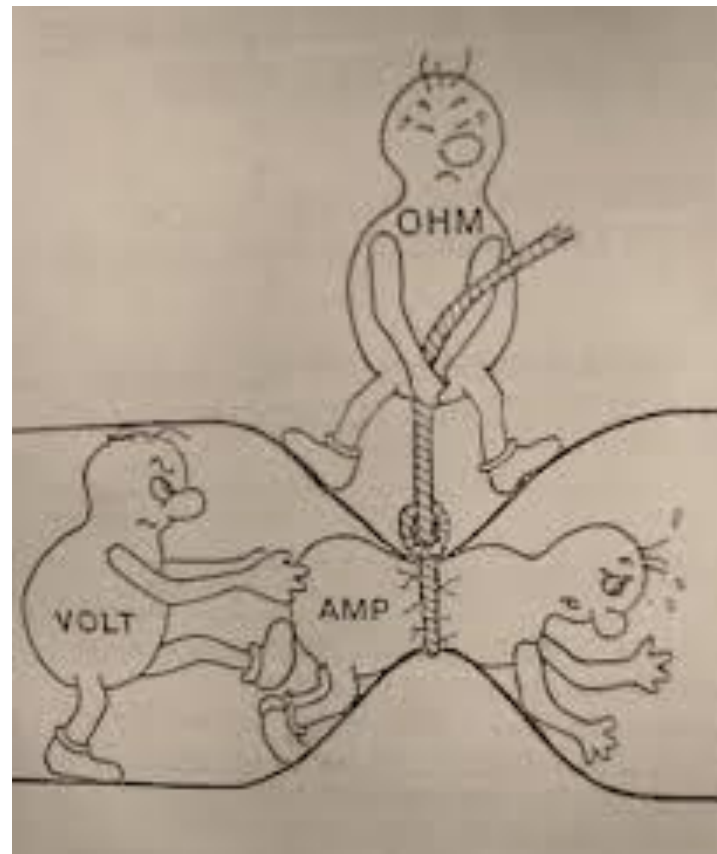
- Resistance: determines how much current flows for a given voltage.
- High resistance = Low current
- Any device that uses electrical energy increases resistance = decreased current





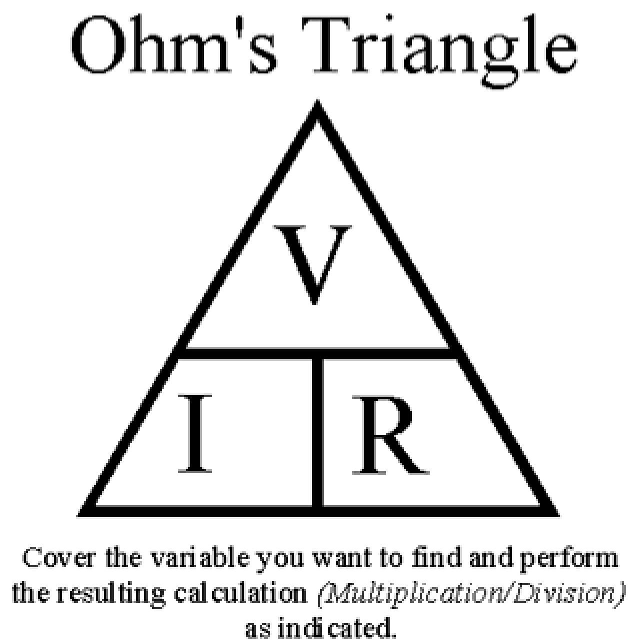
Measuring Resistance

- <u>Ohm (Ω)</u>: measurement of resistance
- Done with a multimeter



Ohm’s Law

- <u>Ohm’s Law</u>: the current is directly proportional to the voltage and inversely related to resistance



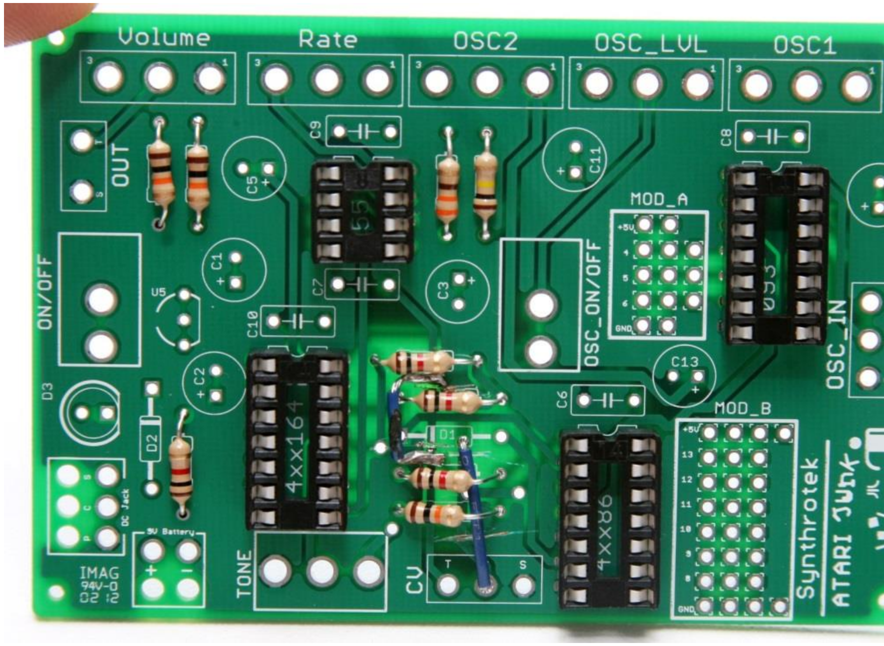
- I = V/R
- V = IR
- R+ V/I

Resistance of Common Objects

- Metals/conductors = low resistance b/c they allow the flow of electricity
- Insulators = high resistance b/c they do not allow electricity to flow
- Semi-conductors: like silicon is somewhere in between

Resistors

- Resistor: helps control current in circuits
- Two types:
  - Fixed: cannot be changed
  - Variable: can be changed
- Potentiometer: a type of variable resistor that can be adjusted to give resistance within a certain range



Investigation 20B

- Go to page 112 in your lab manual
- You need to follow the directions on the sheet as well as follow along in the lab book