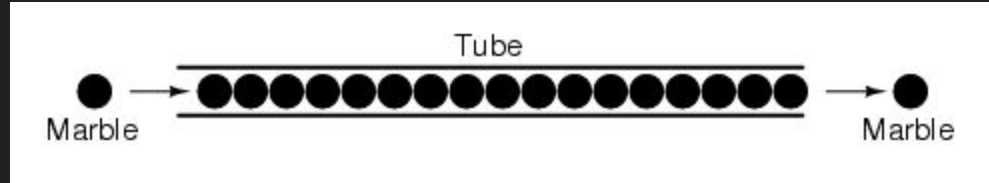


Mighty Micro Controllers

The Basics

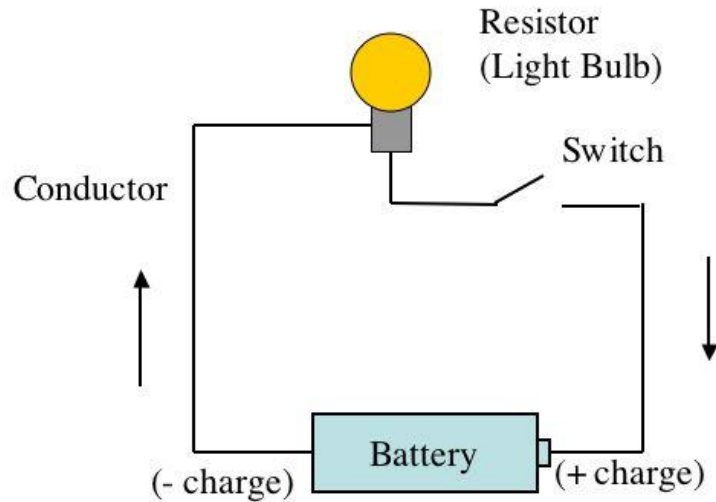
- What makes up an atom?
- What is electricity?
 - The flow of electrons!
- Conductivity
 - How freely can electrons move
- Conductors let electrons move easily
- Electrons don't move well through insulators!

Flow of electrons



What is an electrical circuit?

Basic Electrical Circuit (Drawing)



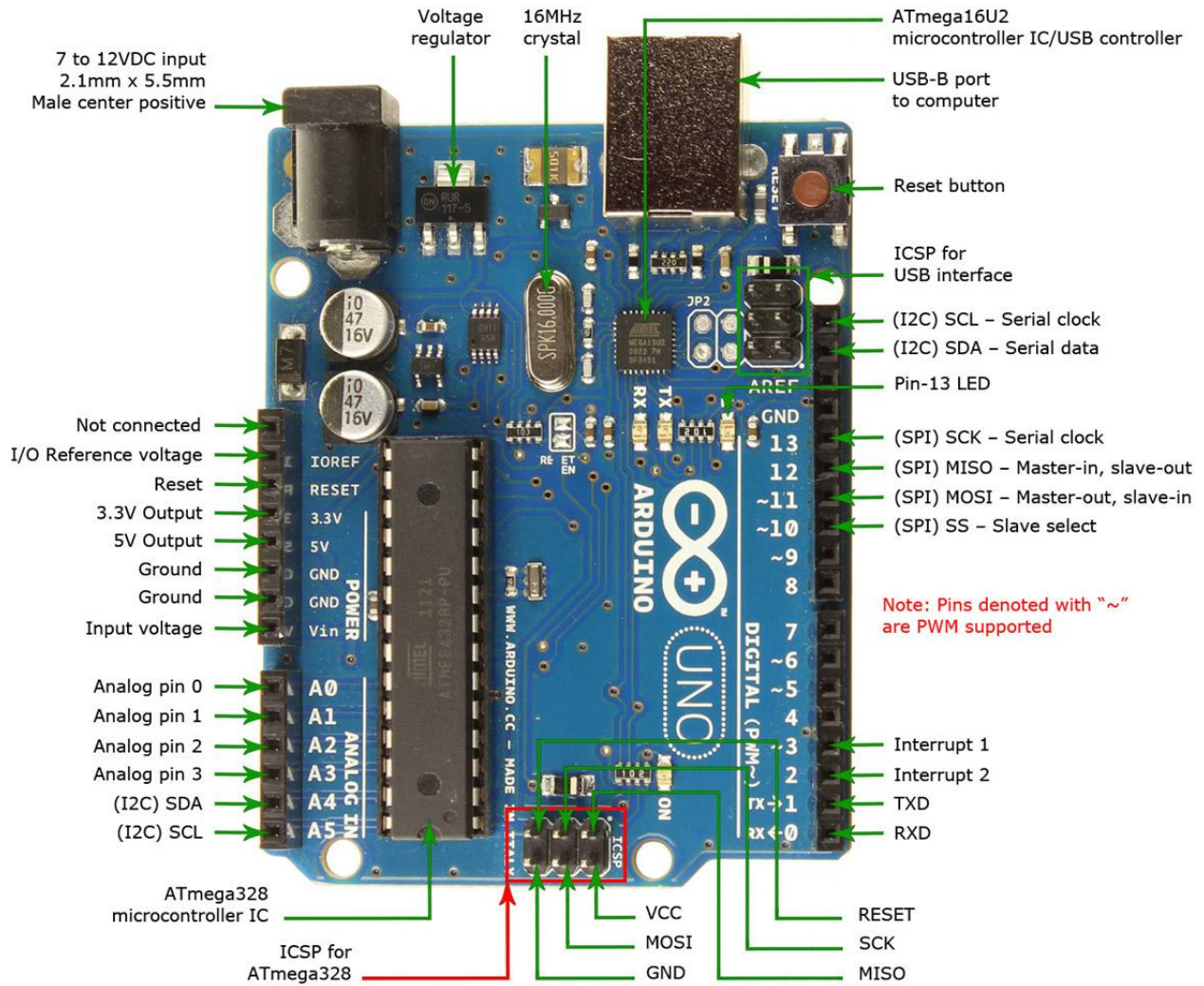
Resistance is futile!

- Resistors impede the flow of electrons
- Measured using Ohm's Law

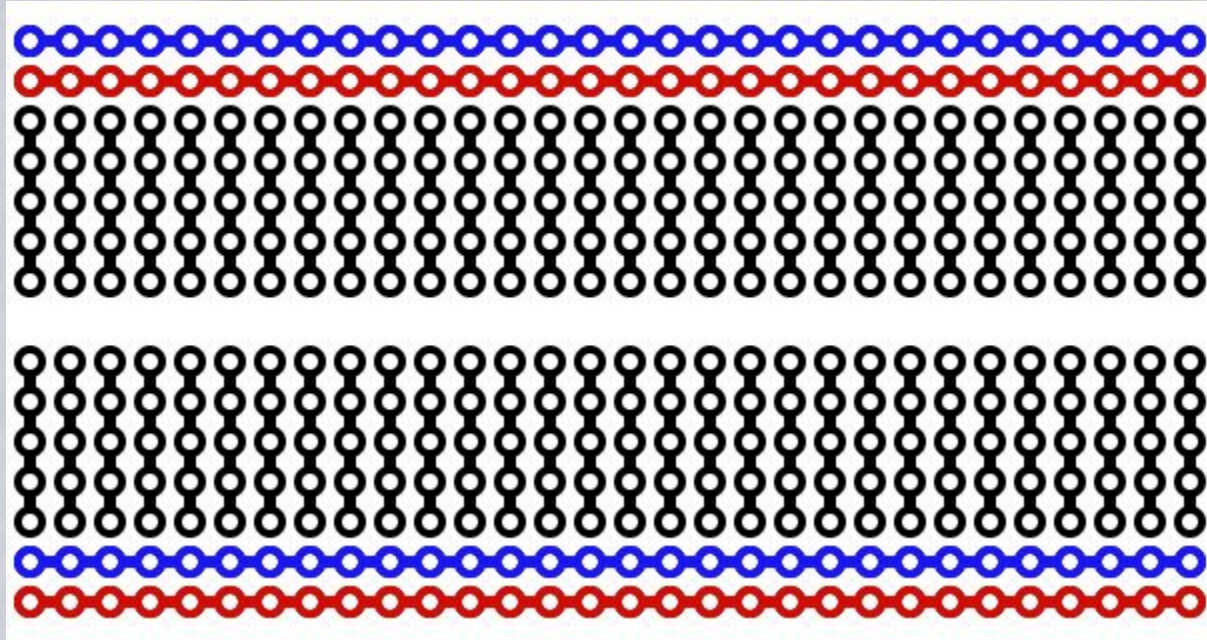
$$\text{Resistance } (\Omega) = \text{Voltage (V)} / \text{Current (I)}$$

Micro Controllers

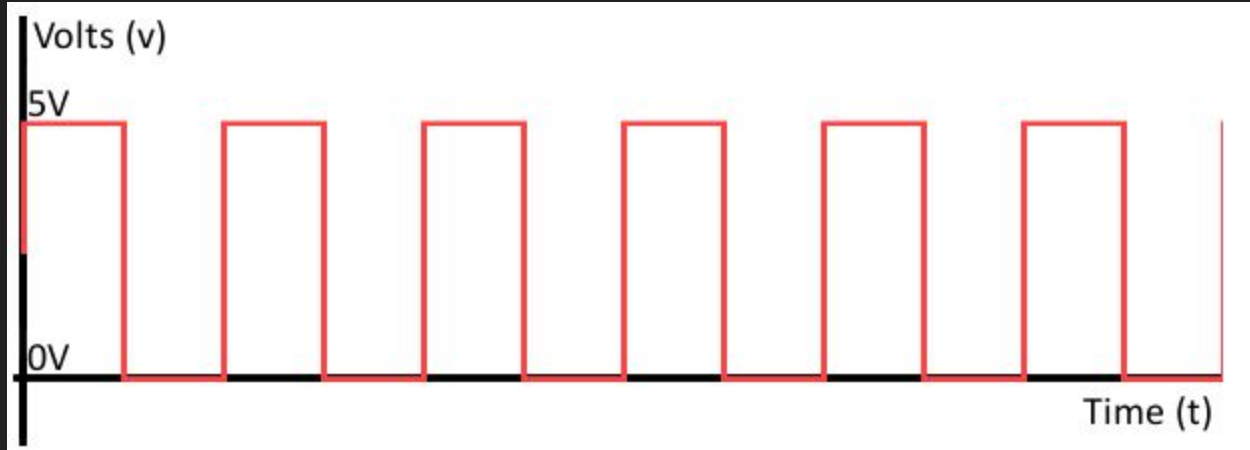
- Arduino Uno
- Many uses from lights to sensors
- Most electrical devices will have some sort of controller!



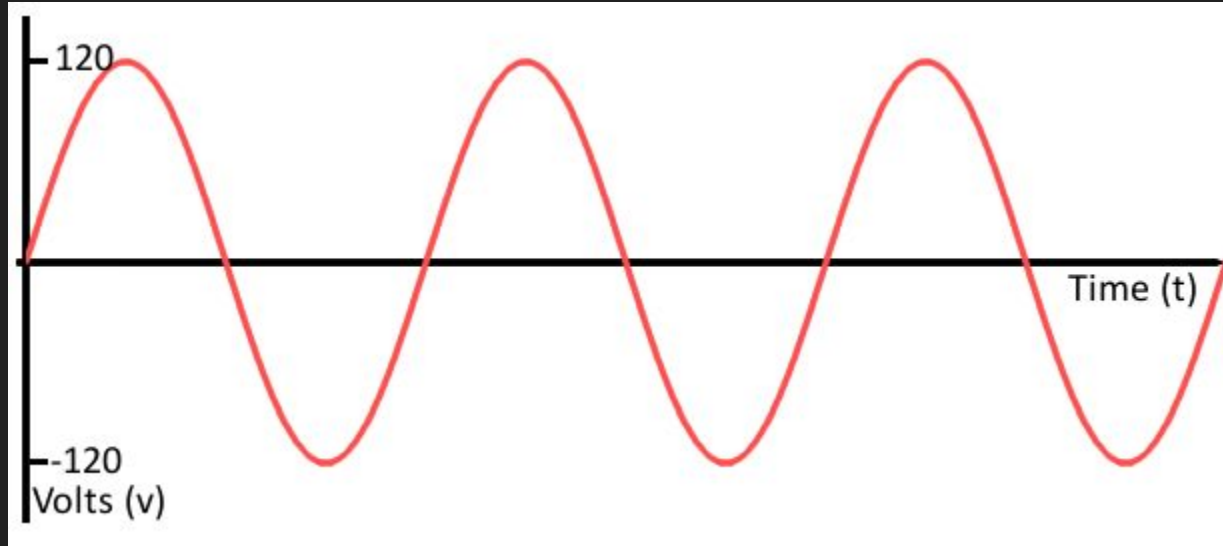
Breadboard



Types of signals - Digital



Types of signals - Analog



Types of signals - PWM

50% duty cycle



75% duty cycle



25% duty cycle

