SCHOOL OF THE WEST

Electronics

Chapter 2: Basic Circuit

Concepts

Voltage

- Difference of electric potential between two points
- Represented by V
- Unit: Volt (V)
- Named after Alessandro Volta

Current

- Flow of electric charge
- Also known as Current Intensity
- Represented by I
- Unit: Ampere (A)
- Named after André-Marie Ampère

Conductor and Insulator

- Different materials react differently to electricity.
- If a material allows electricity to pass through it, we call it a conductor. Some examples are copper, iron, water...
- If the material opposes the passage of electricity, we call it an insulator. Some examples are air, plastic, glass...
- However, if the voltage is high enough, every material can become a conductor. For example, lightning passing through air, an insulative material.

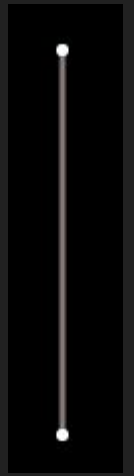
Components

Battery

- It is the source of voltage and power for our circuit.
- It has two terminals, called positive and negative.
- Its voltage will be written on it.
- We assume the positive terminal to have the full voltage and the negative to have 0 volts.

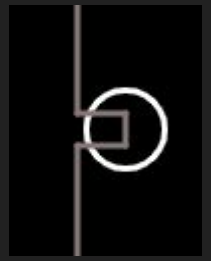
Wire

- Connects all elements of our circuit
- Also called cable or conductor
- Consists of a conductive material (usually copper) surrounded by an insulative material (usually plastic)



Lamp

- Converts energy into light (and heat)
- Has two terminals, but no positive/negative. This means both directions work.
- Has a nominal power and voltage. If we connect it to a source greater than its power, it will break or burn.



Relation between concepts

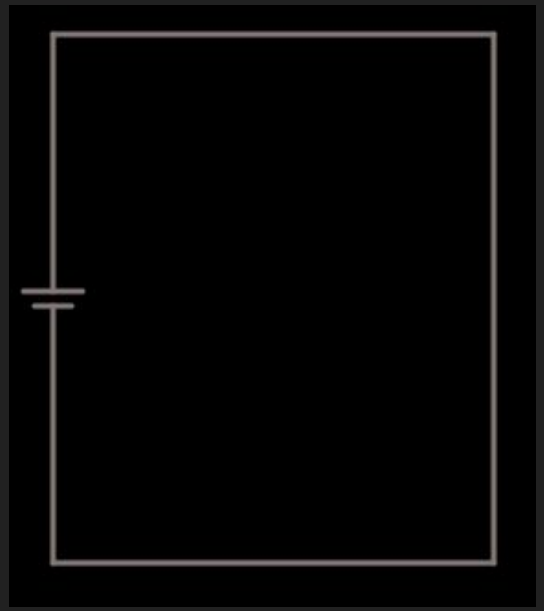
Basic circuit

- If we connect the two terminals of the battery to a lightbulb, we will create our first circuit, and transform the power of the battery into light

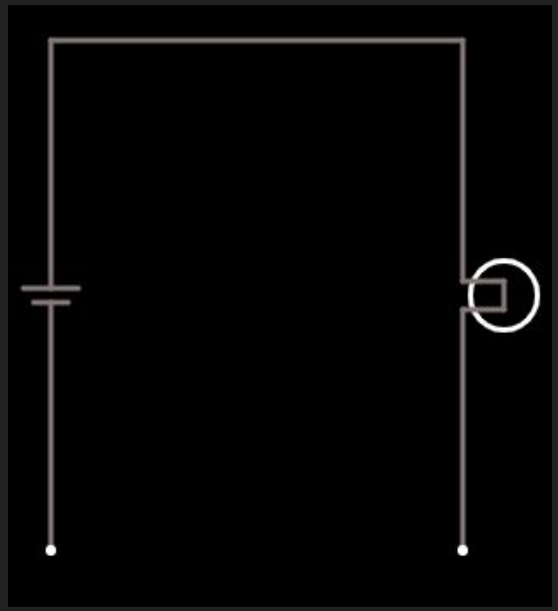
- If we connect only one terminal, we have an open circuit that does nothing

- If we connect the two terminals directly, we create a shortcircuit and we could burn our battery.

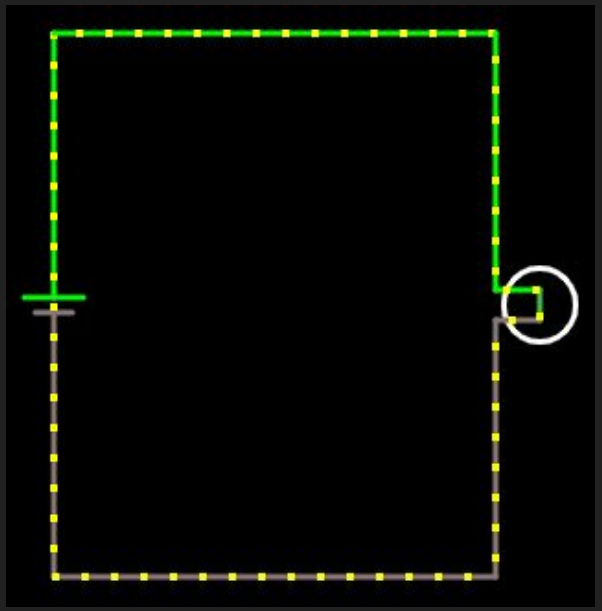
Shortcircuit



Open circuit



Correct circuit



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Next lesson:

Chapter 3: Basic Circuit Practise