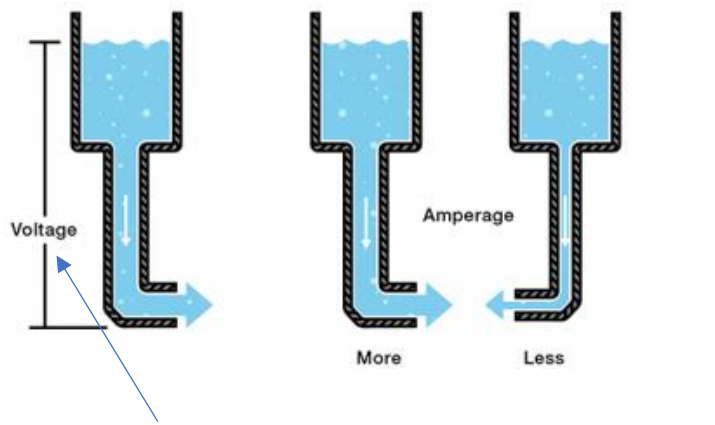
RELATIONSHIP OF VOLTAGE, CURRENT AND RESISTANCE

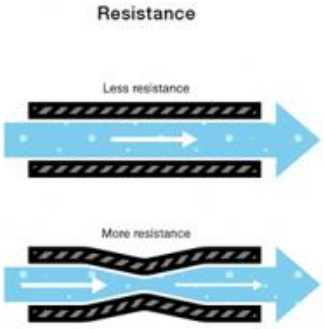
If we are going to study the meaning of electricity deeper, there are three essential elements involved.

These are voltage, current and resistance. George Simon Ohm, a German scientist, discovered in 1826 the relations among them. The discovery led to one of the major laws in electricity called Ohm's Law. Each of the elements has its own unit of measurement.

1. **Voltage** - Volt is the unit of measurement which named after Alessandro Volta, a physicist whose invention made volt as an electrical pressure needed in electrons to flow in a conductor material. Pressure is also measure thru its electromotive force which represented by E as unit of measurement.

WATER REPRESENTATION OF VOLTAGE, CURRENT AND RESISTANCE





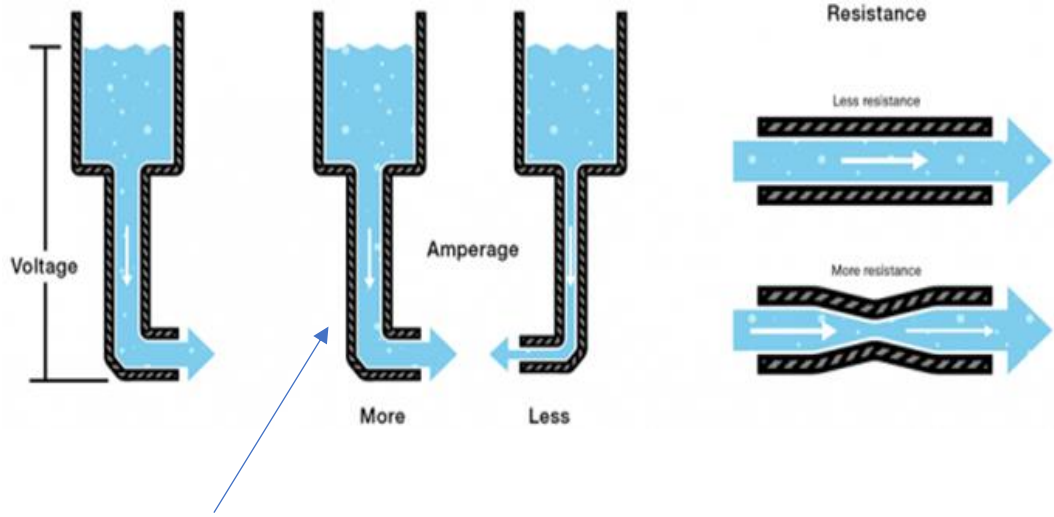
VOLTAGE is pressure which pushes the water to flow.

Conductor Materials - these are materials which allow electrons to flow.

Insulator Materials - there are materials which do not allow the electrons to flow.

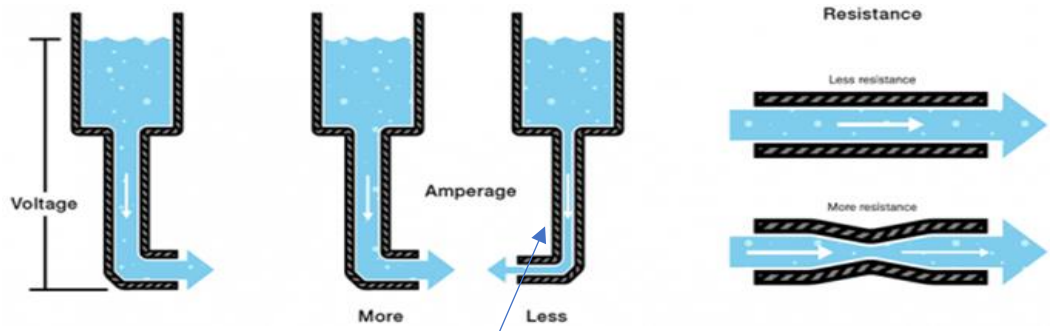
Conductor	Insulator
Silver	Amber
Copper	rubber
Gold	Nylon
Aluminum	Porcelain
Brass	Beeswax
Iron	Glass
Lead	wood
Mercury	shellac
Graphite	Air
Water containing dissolved materials	Very pure water

2. **Current** – is the movement of electrons in a material, Andre Marie Ampere, a physicist, and Mathematician, whose one ampere of current is the rate of flow of charge passing in a wire conductor that is equal to one coulomb per second. Current unit of measurement is Ampere stands for the last name of the proponent. (I) for Intensity of the flow of electrons.



CURRENT is the continues flow of water.

3. **Resistance** - this opposes the flow of electrons in material. George Simon Ohm, scientist is the one who discover the concept of resistance and the relationship of the three (3) essentials of electricity which called as Ohm's Law.



Resistance is opposing the flow of water; small path represents resistance it limits the flow water.

4. **Electric power** - is measured in watts, abbreviated W as unit. This unit is named after Jamesteri Watt, a Scotch inventor. It is equal to the product of the voltage multiplied by the current. The total power of a circuit is obtained by multiplying the total current by the voltage.

The Statement of Ohms law

The amount of current through the material varies directly to the applied voltage and varies inversely to the resistance.

Summary of the Ohm's Law and Power Law

	Unit of measure	Symbol	Formula
VOLTAGE	Volt	E or V	E = I x R
CURRENT	Ampere	I	I = E / R
RESISTANCE	Ohms	R or Ω	R = E / R
POWER	Watt	W	P = E x I