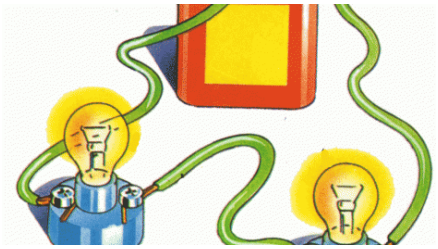
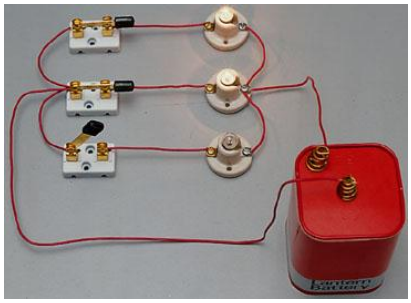
WHAT IS AN ELECTRIC CIRCUIT?



An electrical circuit is an arrangement that allows a full flow of electric current under the influence of a voltage.

Typically en electric circuit is composed of wires and cables connected to circuit elements and devices that leverage the flow and resistances.

The analogy would be the flow of a water circuit which is under the pressure of the flow.

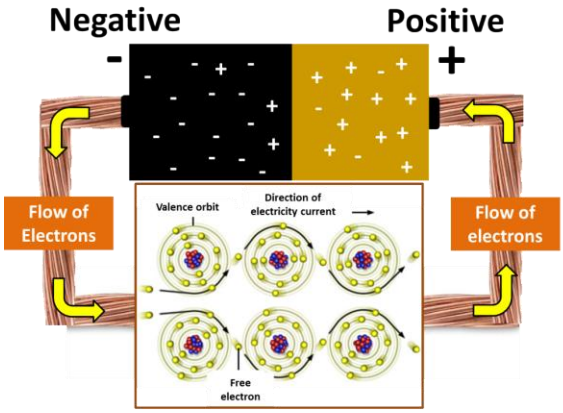


For the occurrence of an electric circuit, the power source must have two terminals: one terminal positively charged and one terminal negatively charged.

If the positive terminal of a power source is connected to the negative terminal, a circuit is then created, allowing continuous flow of kinetic energy.

Electrons always move through kinetic energy from negative charged bodies to positive charged bodies with an established voltage across a link or bridge between the two terminals we usually call “circuit”.

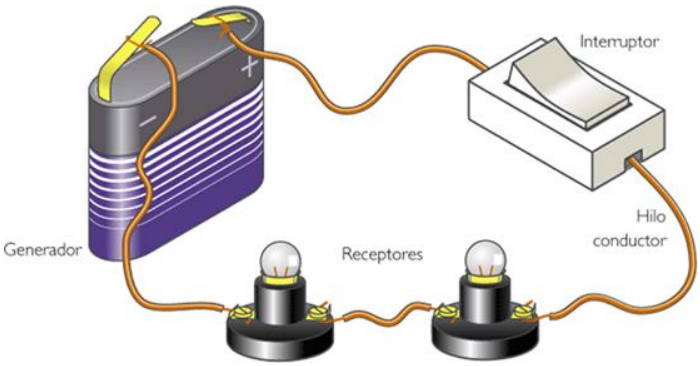
The name “positive” or “negative” only serves to indicate the direction of the charge.



By creating a bridge, the speed of the electrons will flow from the spot with excess of electrons (negative ions) to the spot with a lack of electrons (positive ions) depending on the resistance properties of the particle that compose the bridge.

If too many electrons cross the bridge simultaneously, they can destroy it in the process, so that the number of electrons exchanged in the circuit at a given time may be limited by the resistance, which will result in loss of energy as heat.

Within the circuit an engine can be connected, leveraging the kinetic energy of the electrons to make it work by creating a magnetic field that interacts with other magnets, creating movement.



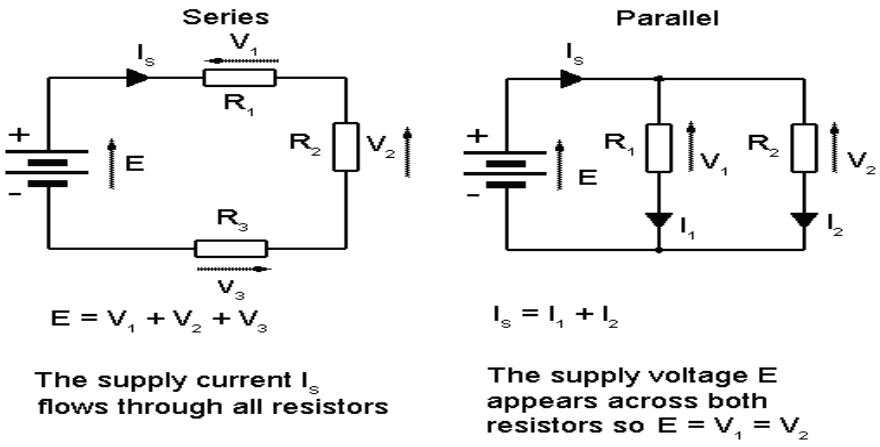
You can also install a switch on an electric circuit. When you press the switch connecting the tips, the circuit is “closed” and the current flows, otherwise the circuit is “open” and the current can not flow.

The number of electron interactions that occur within a circuit at the same time is called“current” and is measured in “Amperes”. One ampere equals 6.25 x 10-18 electrons moving by a current per second, the so-called coulomb.

The difference of charge between the two terminals of a circuit is called “voltage” and is measured in volts, which in other words is the amount of electric charge required for 1 coulomb to make a specific amount of work.

A large voltage or a small resistance may break the circuit, a small amount of voltage or a large resistance will not produce enough work to make it useful.

When we have only a circuit through which electrons can travel to get to the other side, we have a “series circuit”.



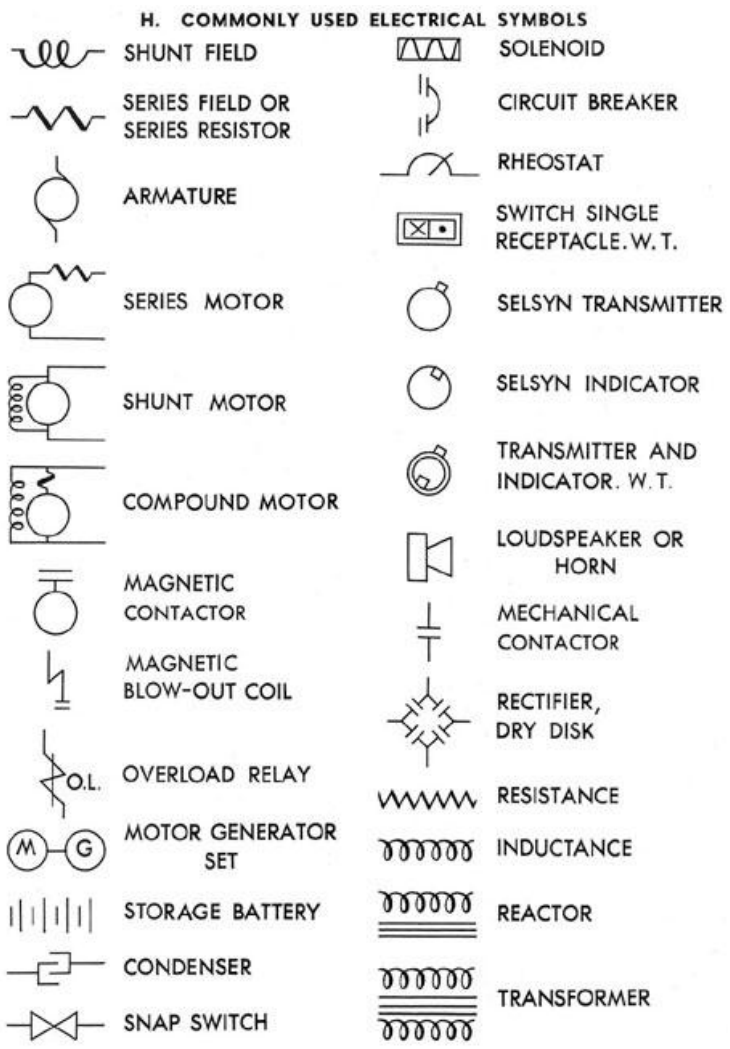
If we put another circuit alongside the first, we will have two circuits between charges, calling it a “parallel circuit” that run parallel to each other, sharing the same voltage but allowing more roads for travel of electricity.

The circuits can become quite complicated with multiple parallel circuits, and their behavior can be analyzed mathematically to determine their current behavior.

The parts of a circuit are the recipients or consumers (devices connected to the circuit in which charge can flow internally), a generator or battery (energy transformed into electrical energy) and the driver (the means by which electrons are transported).

Also on circuits usually include switching devices or voltage overload protection as fuses, nodes (when more than two conductors concur), branches (the set of all elements between two nodes), or a mesh (any closed path in a circuit).

To design any electrical circuit is necessary to predict the voltages and currents around the circuit and know the terminology and symbols of each element used conventionally.



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