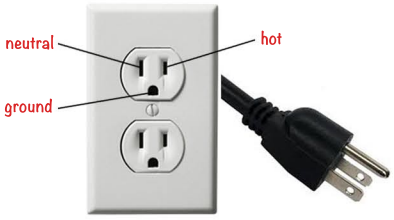
ENERGY!

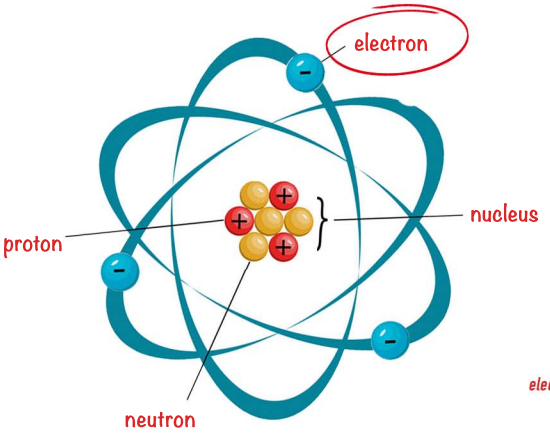
**Energy cannot be created or destroyed—
it can only be changed from one form to another.**

KINETIC ENERGY is the energy of motion.
Heat, light, and electricity are examples.
POTENTIAL ENERGY is stored for future use.
Chemical and nuclear energy are examples.



ELECTRICITY!

ELECTRICITY is the flow of tiny particles called ELECTRONS. This flow is called a CURRENT.

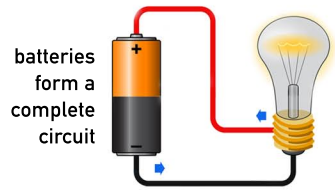


ALTERNATING CURRENT (AC) - an electric current that reverses its direction many times a second at regular intervals.

GROUNDED PLUG - added for safety to deliver excess electricity (that may have escaped the circuit) straight to the ground

The most common American wall outlets provide 110 volts of potential energy.

VOLTAGE - the 'push' that makes electrons move along a wire or conductor.



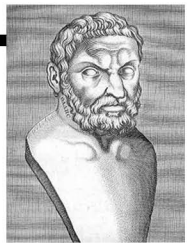
DIRECT CURRENT (DC) - batteries, fuel cells,and solar cells all store and produce direct current electricity.

Current always flows in the same direction between positive and negative terminals.

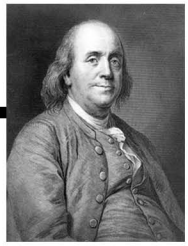
Batteries are an example of potential chemical energy which is converted into electricity.

CONDUCTOR • a material through which electricity flows easily
INSULATOR • a material through which electricity does not flow easily
RESISTOR • a device which resists the flow of electricity
ELECTRON • the part of an atom with a negative electrical charge (–)
PROTON • the part of an atom with a positive electrical charge (+)
NEUTRON • the part of an atom without any electrical charge
CIRCUIT • a complete path which electricity can move through
SWITCH • a device which can open or close a circuit
VOLT • a unit for measuring the force that makes electrons flow
WATT • a unit of power equal to one joule per second
JOULE • amount of energy transferred when a force acts upon an object

Thales • 600BCE
the earliest known researcher of static electricity

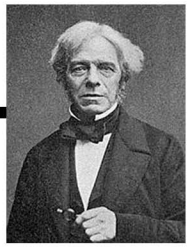


William Gilbert • 1600
studied static electricity by rubbing lodestone with amber
electricus: from the Greek word *elektron* (amber)



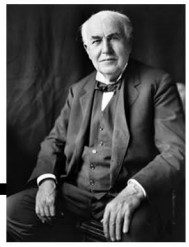
Benjamin Franklin • 1752
proved lighting is electric in nature and tinvented a workable lightning rod

Alessandro Volta • 1800
alternated layers of zinc and copper to make the first reliable battery



Michael Faraday • 1821
established the concept of the electromagnetic field and invented the electric motor

Georg Ohm • 1827
found a direct connection between the voltage applied across a conductor and the resultant electric current



Thomas Edison • 1879
invented the world's first long-lasting lightbulb and a direct current (DC) lighting system

Nikola Tesla • 1888
developed the world's modern alternating current (AC) system