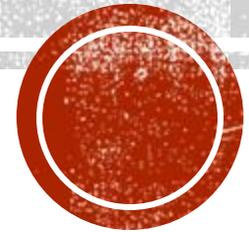


ELECTRIC CURRENT AND OHM'S LAW



ELECTRIC CURRENT



- Electric current is the continuous flow of electric charge
- Two types of current are direct and alternating
- Direct current (DC) is when the charge flows in one direction
- Alternating current (AC) is when the flow of electric charge regularly reverses direction



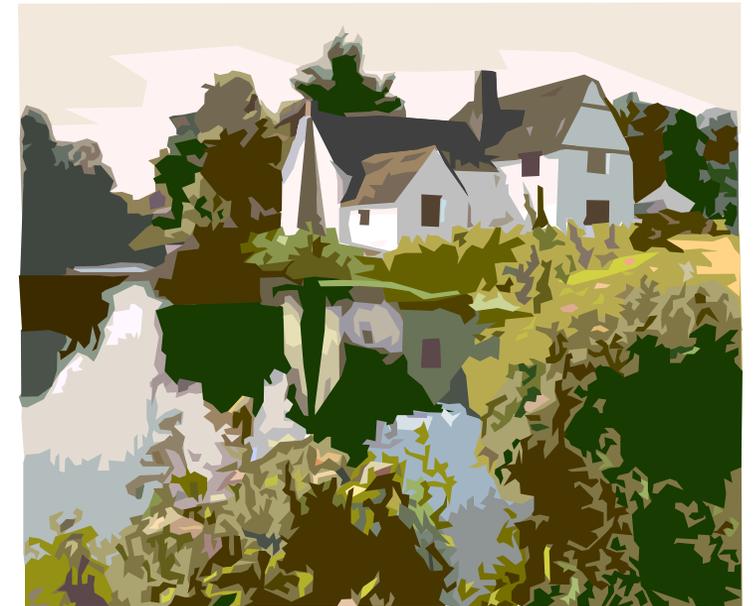
ELECTRIC CURRENT

- An example of a direct current is a flashlight and most battery-operated devices



AC/DC

- Alternating current is in your home and school
- Current is defined as the direction in which the positive charges would flow



CONDUCTORS AND INSULATORS



- An electrical conductor is a material through which charge can flow easily
- Metals such as copper, and silver are good electrical conductors
- An electrical insulator is a material through which charge cannot flow easily
- Wood, plastic, rubber and air are good electrical insulators



RESISTANCE



- Resistance is the opposition to the flow of charges in a material
- The SI unit of resistance is the ohm
- A material's thickness, length and temperature affect its resistance
- Resistance is more in a longer wire
- As temperature increases the resistance increases since the electrons collide more often



VOLTAGE

- In order for a charge to flow in a conducting wire, the wire must be connected in a complete loop that includes a source of electrical energy
- A flashlight will not work if there is no battery



OHM'S LAW

- Named after German scientist Georg Ohm
- Ohm is the unit of resistance
- Ohm's Law $V = I \times R$ or $I = V/R$
- Voltage (V) = current(I) x resistance (R)
- When the current is in amperes and the resistance is in ohms the voltage is in volts



OHM'S LAW

- What is the voltage if the resistance is 3 ohms and the current is 3 amps?
- $V = I \times R =$
3 amps \times 3 ohms = 9 volts
- Increasing the voltage increases the current
- Having the same voltage and increasing the resistance will decrease the current
- Multimeters measure current, voltage and resistance

