**Static Electricity Notes**

I. Charge is a property of matter’s atomic structure. (tape demo)

 A. Nucleus - contains neutrons that are neutral and protons that have a (positive) charge

 B. Energy Levels - circling around the nucleus are electrons that have an opposite (or negative) charge

 C. The charge of electrons and protons are equal but opposite to each other.

 (electron + proton = neutron)

 D. Electric charges exert a force much like gravity.

 1)Force of gravity is stronger, the greater the mass of the 2 objects and is exponentially weaker the further the distance between them.



 2)Force of electricity is stronger the greater the charge of the 2 objects and is exponentially weaker the further the distance between them.



 3) Gravity is a very weak force that is only felt when 1 or both objects are very massive. G=6.6 x 10-11

 4) Electricity is strong enough that very tiny objects such as electrons and protons are strongly attracted to or repelled by each other. K=9.0 x 109

 5) Opposite charges attract, like charges repel each other (similar to the poles of a magnet).

 6) Electric charges are measured in coulombs (C).

 Electrons and protons have a charge of less than a micro-coulomb (µC).

II. Net Charge - your body has 1029 electrons and protons, but is electronically neutral or has a net charge of zero, because the charges cancel each other out.

III. Static electricity - is when electric charges build up but do not flow (electrostatics).

 -Usually caused by the friction of moving objects (air masses/lightning, socks on the carpet, etc.)

 -When electric charges flow continually it forms an electric current.

IV. Electrostatic induction - if a charged object (+) is brought near a neutral object, it will repel positive charges and attract negative charges in the neutral object causing it to become a dipole. (sticking a balloon to the wall)