Do Now

- Write an example of how an object can gain a charge from induction and friction.
- Induction:
- Friction:

Today

- Finish Statics
- Sticky Tape Lab
- Electroscope Activity
- Begin Coulomb's Law

Stick Tape

- You will need one set of directions per lab table.
- You will each need your own data sheet and follow up questions.

Demo: Part 1

- Two lines of tape.
- Each line has two layers.
- Each piece has a handle.

Demo: Part 2

- 2 columns of tape.
- 3 pieces: Top (T), Bottom (B) and Base
- Figure in 11: F is foil and P is paper.
- Look for specific demonstration.

Summary Page

- Sketch and label your observations for procedure numbers 5, 8, 9, and 13 as directed.
- Make sure to label the forces that are acting on each material.
- Remember Newton's 3rd: action and reaction. Forces in pairs.

Thoughts Page

- Answer all questions in full sentences.
- Label all diagrams.
- Finish for homework if we move on before you finish.

Electric Potential

- The more charges are separated, the more electrical energy will be **discharged** when the system returns to equilibrium.

Ohm's Law Ω

- V=IR
- V is voltage
- I is current
- R is resistance

Units of V=IR

- Voltage (V): volts
- Current (I): amps
- Resistance (R): ohms

Pipe Pressure Metaphor

- Voltage: supply of water put into a pipe.
- Resistance: radius of the pipe.
- Current: flow rate of pipe.

Focus on the Positive

- When we talk about circuits, we imagine that the charge is moving from the positive to the negative terminals of a battery.
- The positive end of a battery has a high potential energy.
- The negative end, a low one.

Volts

- Change in electrical potential.
- A charge gives off energy when if goes through a resister (ex: lightbulb).
- The difference in electrical potential energy is referred to as a voltage drop.

Volts and Work

- As the voltage drops, energy transferred.
- The electrical potential energy is transformed.
- Work is performed on the system.

V=IR

- Problem solving:
  - Knowns:
  - Unknown:
  - Equation:V=IR

A 9 volt battery is attached to a circuit with a light bulb with a 30 Ω bulb. Find the current in the circuit.

A curling iron has a resistance of 18 Ω. If the wall socket provides 120 volts, what is the current in the wire?

Electrical Power [watts]

- $P = V\ I$
- $P = R\ I^2$
- $P = V^2 / R$

A microwave requires 1200 watts of power. If the plug supplies 120 volts, what is the current in the wire?

A microwave requires 1200 watts of power. If the plug supplies 120 volts, what is the resistance of the appliance?

An iron has a power rating of 1000 watts. What is the voltage from the power supply if the resistance is 140 Ω?

Homework

- You will have to convert kWhour into joules.
- Use dimensional analysis.
- Ask questions about problems that you have.
- Finish it overnight.