**Electrostatic Notes – Charging Objects**

**Read this first!**A few reminders before you watch the videos:

1. In an atom, there are protons (positively charged), neutrons, (neutral charge), and electrons (negatively charged). Electrons can and will jump around from object to object.
2. A positively charged object possesses more protons than electrons. A negatively charged object possesses more electrons than protons. An uncharged object has equal amounts of protons and electrons.
3. Opposite’s attract! This means that when one object has a positive charge and the other object has a negative charge, they will be attracted to each other and want to be near each other.

Like charges repel! This means that when both objects are negatively charged, they do not want to be near each other. Likewise, when both objects are positively charged, they also do not want to be near one another and will “run away” from the other.

1. Conductor- an object that will allow electrons to freely run through it (like metals).

Insulator- an object that will NOT allow electrons to feely fun though it (like rubber).

Semiconductor- somewhere between a conductor and an insulator. Commonly found in electronic devices (like silicon).

In the first video, there is a simple demonstration of static electricity.

<https://www.youtube.com/watch?v=-w-GoSJpvdw>

In the second video, please take notes on how to charge objects by using Friction, Conduction, and Induction.

<https://www.youtube.com/watch?v=zWQTdr-XsS4>

1. Friction:
   1. Friction is charging by rubbing.
   2. Fur does not hold electrons well.
   3. When glass rod is rubbed on cat, electrons from cat jumped over to glass rod.
   4. The glass rod now has a negative charge.
2. Conduction:
   1. Charging by contact
   2. When the glass rod is rubbed on the electroscope, it gives the electroscope it’s negative electrons.
   3. Electrons spread out throughout electroscope and because like charges repel, the needle in the electroscope will turn.
3. Induction:
   1. Charging without contact
   2. Step 1: Bring charged object nearby (polarizes electroscope)
   3. Step 2: Provide a conducting path to ground (electrons either leave or enter electroscope)
   4. Step 3: Remove ground by cutting the wire
   5. Step 4: Remove charged object

In this next video, you can simply watch the process of students charging objects by using Friction, Conduction, and Induction.

<https://www.youtube.com/watch?v=JG1Lktvg1G0>