

Charged Up! Activity Worksheet

Station 1: What is Electric Charge?

Atoms are made of a nucleus (positively charged protons and uncharged neutrons) surrounded by electrons with a negative charge. Protons and electrons have equal but opposite charges, so if an atom has equal numbers of each it will be electrically *neutral*. However, if there are an unequal number of protons and electrons, then there will be either a *positive* or *negative* charge (also called an *ion*).

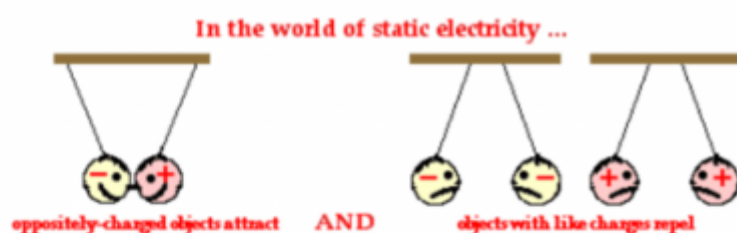
Neutral: equal numbers of protons and electrons

Positively charged (+): more protons than electrons

Negatively charged (-): more electrons than protons

Electrons can move around to different atoms, especially when energy is added, so objects (which are made up of atoms!) can and do lose and gain electrons every day!

An important characteristic of electrical charges is that **opposite charges** exert forces that attract each other and **like charges** exert forces that repel each other. So if one object is positively charged and another is negatively charged, then they will come together and if *both* are positively or negatively charged, they will go in opposite directions. A charged object (whether + or -) will have an *attractive* interaction with a neutral object.



Questions:

- 1) If an object is made of atoms that have 7 protons and 6 electrons be **attracted** or **repelled** to a 2nd object made of atoms with 5 protons and 3 electrons?
- 2) If an object is rubbed against a material that causes it to gain electrons, will it be **attracted** or **repelled** to a neutral object?