

Electric Charges

Key Concepts

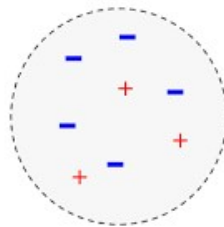
- I can describe that electrons carry a negative charge and protons carry a positive charge.
- I can describe that opposite charges attract each other and like charges repel each other.

Charges

- negative charges → the charges of electrons
- positive charges → the charges of protons
- electrons can be rubbed off because they surround the nucleus and some are not tightly bound to it

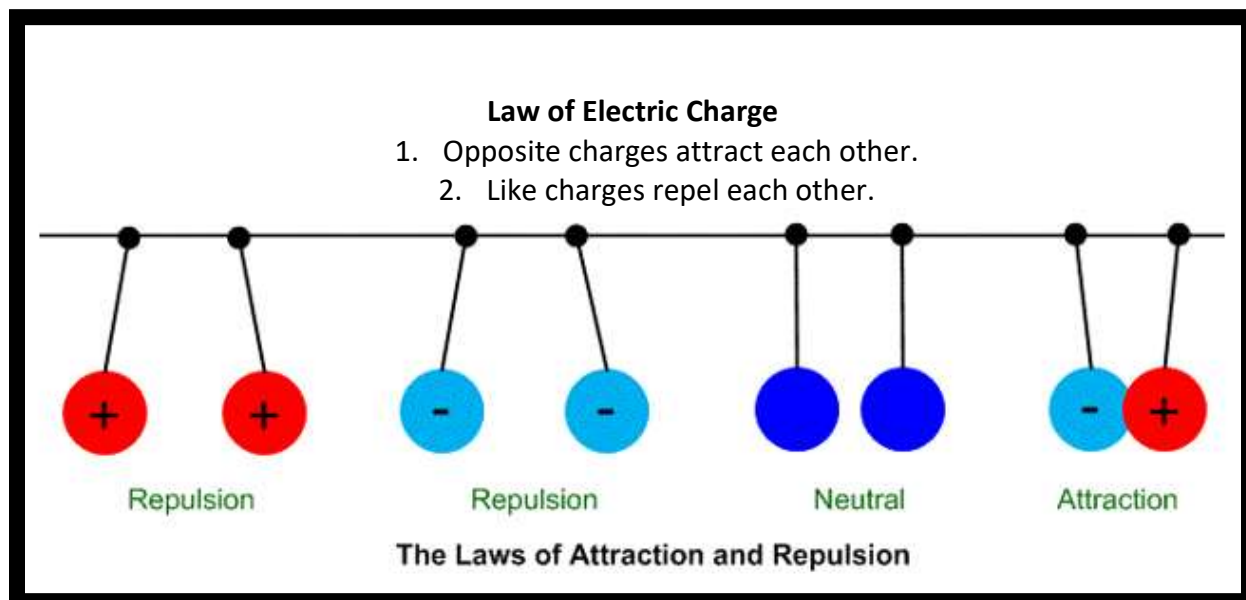
Electrically Neutral and Electrically Charged Materials

- Electrically Neutral Materials
 - uncharged materials
 - objects that have equal numbers of positively charged protons and negatively charged electrons
 - the equal numbers of positive and negative charges cancel each other out
 - the materials are electrically neutral
- Electrically Charged Materials
 - a material or object that is electrically charged has an unequal number of positive and negative charges
 - when two objects are rubbed together electrons may be rubbed off one material
 - if electrons are rubbed off a material it becomes positively charged
 - the material that gains electrons becomes negatively charged
 - charging a material by rubbing is called charging by friction



Number of negative charges (blue) is higher than the number of positive charges (red) (negative)





Attraction Between Charged Objects and Neutral Objects

- neutral objects have an equal number of protons and electrons or an equal number of positive and negative charges
- when you bring a negatively charged object near a neutral object
 - the electrons in the neutral object are pushed away leaving a positively charged surface
 - objects are attracted to each other
- when you bring a positively charged object near a neutral object
 - the electrons in the neutral object are attracted creating a negatively charged surface
 - objects are attracted to each other

Assignment:

- Pg. 209 #1-5
- Pg. 272 #5-9,13

Additional Assignment

1. Explain the relationship among negative charges, positive charges, electrons, and protons.
2. You have two objects. One is neutral and one is negatively charged. Use sentences and sketches to compare the numbers of positive and negative charges in each of these objects.
3. You have four different materials labelled A, B, X, and Y. After you rub A and B together, they attract each other. After you rub X and Y together, they attract each other. Now you bring A near to X and observe that they attract each other. What would happen if you brought B near to Y? Explain your reasoning.