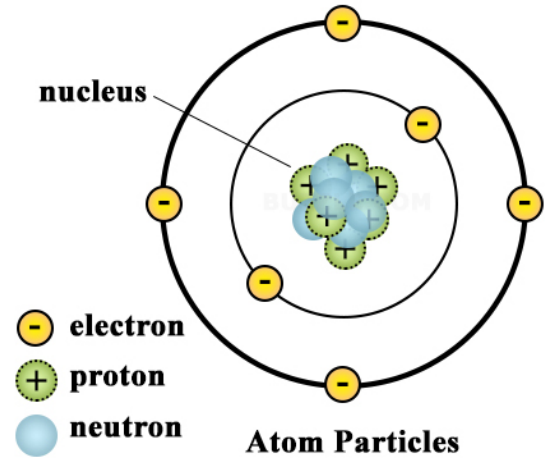
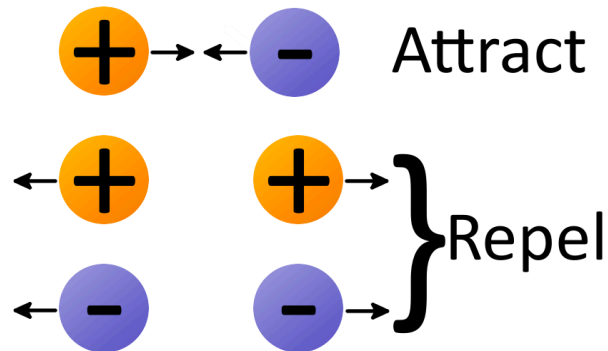


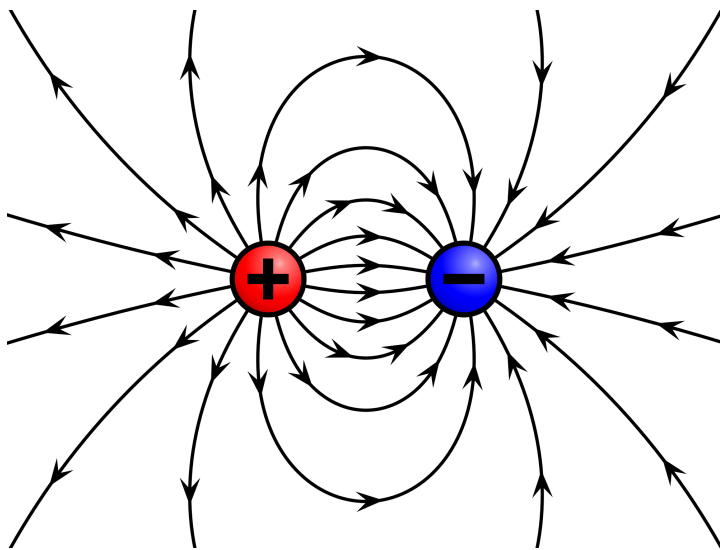
Electric Charge & Static Electricity

The charged parts of atoms are **electrons** and **protons**. Protons and electrons have opposite charges. The charge on a proton is positive (+) and the charge on the electron is negative (-).



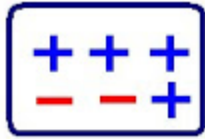
Charges that are the same repel each other, or push each other apart. Charges that are different attract each other. The interaction between electric charges is called static electricity.

1. The charge on a proton is _____.
2. The charge on an electron is _____.
3. Two protons are near each other. Do they repel or attract? _____
4. Two electrons are near each other. Do they repel or attract? _____
5. A proton and an electron are near each other. Do they repel or attract? _____

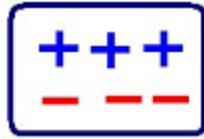


Force is a push or a pull on an object. In electricity, **electric force** is the attraction or repulsion between electric charges. Electric charges exert force over a distance. An **electric field** extends around a charged object. An electric field is a region around a charged object where the object's electric force is exerted on other charged objects. When one charged object is placed in the field of another charged object, it is either pushed or pulled. You can use electric field lines to represent an electric field. The electric force always points away from positive charges. The strength of an electric field is related to the distance from the charged object. The greater the distance, the weaker the field.

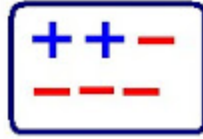
6. Arrows drawn to show the direction of the electric force around a charged object are called: _____.
7. Why can two protons repel each other when they aren't even touching?
8. Name two types of particles with electric fields: _____ & _____



positively charged object



neutral object



negatively charged object

<http://fjnk-fjnk.blogspot.com>

An uncharged, or **neutral** object has an equal number of electrons and protons. Electrons can sometimes leave their atoms because they are located outside the nucleus. An uncharged object becomes charged by gaining or losing electrons. If it loses electrons, it has an overall positive charge. If it gains electrons, it has an overall negative charge. The buildup of charges on an object is **static electricity**. Static means stationary

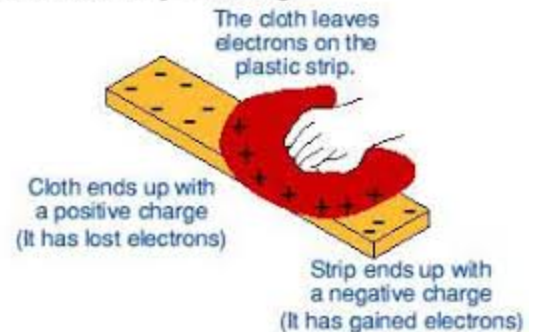
or not changing. In static electricity, charges build up on an object, but they do not flow continuously.

9. Which charged particle can leave an atom? _____.
10. If an atom has more protons than electrons, what kind of charge does it have?
_____.
11. What if an atom has more electrons than protons? _____.
12. What if the atom has equal electrons and protons? _____.

If an object gives up electrons, another object gains those electrons. There are three methods that can transfer charge to build up static electricity on an object: (1) **friction** (2) **conduction** and (3) **induction**. The fourth method of transferring charge always gets rid of static electricity: **grounding**.

Charging by friction is transferring electrons by rubbing two materials together. Charging by conduction is the transfer of electrons from a charged object to another object by direct contact or touching. Charging by induction is the movement of electrons to one part of an object caused by the electric field from another object. Grounding is the removal of static electricity by connecting a charged object to something very massive and neutral, like the earth. The charges move to neutralize the object, or to give it zero net charge.

Static electricity - rubbing



13. Which method of charging has to do with rubbing two uncharged objects together to give them a charge? _____.
14. Which method of charging has to do with charges being rearranged on an object?
_____.
15. Which method of charging has to do with a charged object touching another object?
_____.
16. Suppose you dry your clothes in a dryer, then when you take them out they cling to one another. Why do they stick together? _____
_____.