

Define the following vocabulary.

- Static electricity
- Insulator (electrical, not heat)
- Law of conservation of charge
- Charging by contact
- Conductor (electrical, not heat)
- Charging by induction

Positive and Negative Charge

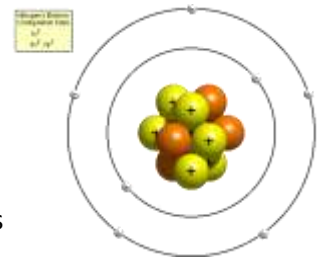
There are two types of electric charge.

- protons have exactly one unit of _____ electric charge
- electrons have exactly one unit of _____ electric charge

Neutral atoms are made of equal quantities of positive and negative charges.

Check your Understanding:

Neutral nitrogen has 7 protons and therefore, _____ electrons.



Transferring Charge

Some atoms hold electrons more tightly than other atoms.

With sufficient energy, an electron can be removed from an atom and be freed from its attraction to the nucleus. Electrons occupy the vulnerable outskirts of atoms

Refer to Figure 2: Which object has a stronger hold on the electrons? _____.

Charges accumulate on one of the objects. This is referred to as _____.

Conservation of Charge

Refer to Figure 2: How does this example satisfy the law of conservation of charge?

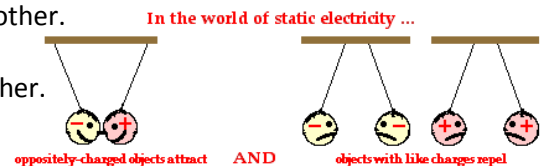
Charges Exert Forces

What causes the static cling between clothes?

What happens to the “static cling” force as the clothes are pulled apart?

The two types of electric charge are opposite types of charges.

- One is _____ and the other is _____.
- Two opposite charges _____ each other.
- Two like charges _____ each other.



Electric Field

What is an electric field?

Comparing Electric and Gravitational Forces

Which force is larger, electric or gravitational?

Conductors and Insulators

Conductors distribute charge equally on surface

- Electrons move easily through the material.

Provide examples of good conductors of electric current.

Insulators keep charges where they are (no flow).

- Provide examples of good insulators.
- Label the materials (conductor & insulator) on the picture to the right.



Charging Objects

- Charging by contact
 - feet on carpet
 - combing hair of a dry day
 - socks fresh out of the dryer
- Charging by induction

Summarize the example provided in the book (Figure 7). Sketch a picture if it helps you understand it better.

Lightning, Thunder and Grounding

Lightning is an unbelievably huge static discharge. A static discharge is a transfer of charge between two objects. What two objects cause the static discharge that creates lightning?

- Summarize this occurrence (page 197 is very helpful).

Thunder is a bang produced by the extreme temperature differences in the air.

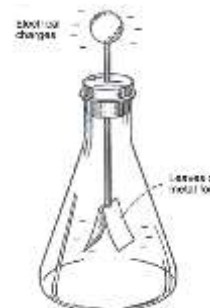
What is meant by grounding?

What is a lightning rod?

Detecting Electric Charge

What is an electroscope?

- Describe the appearance of the electroscope when the electroscope is not charged?
- Describe the appearance of the electroscope when the electroscope is charged?



Check your understanding.

1) _____ are the charged parts of an atom.

2) Electrical forces can cause objects to _____.

3) Two objects are charged as shown at the right. Object X will _____ object Y.



4) Balloons X, Y and Z are suspended from strings as shown at the right.

Negatively charged balloon X attracts balloon Y. What can you conclude about balloon Z?

