
Synopsis: Balloon Buddies

In this activity we will charge balloons and observe how they interact with other objects.

Standards

4th Grade

1e. Students know electrically charged objects attract or repel each other.

9-12th Grade

5e. *Students know* charged particles are sources of electric fields and are subject to the forces of the electric fields from other charges.

5m.* Students know static electric fields have as their source some arrangement of electric charges.

Driving Questions

- 1.) How do charged things interact with:
 - Other charged things?
 - Neutral things?
- 2.) What does rubbing have to do with charge?
- 3.) Why are neutral things attracted to charged things?

Learning Objectives

- 1.) Students will learn that there are two types of charge: negative and positive.
- 2.) Students will learn that:
 - a neutral object is charge balanced. It has ~ the same number of electrons (negative charge carrier) as protons (positive charge carrier)
 - a negatively charged object has extra electrons
 - a positively charged object has some electrons removed
- 3.) Students will learn that an object, like a balloon, can be charged by rubbing it with materials that either remove or add electrons.
- 4.) Students will observe how charged objects interact to see that:
 - objects with like charges repel
 - objects with unlike charges attract
 - objects with a charge attract neutral objects

Balloon Buddies

Procedure

Explore in groups of two.

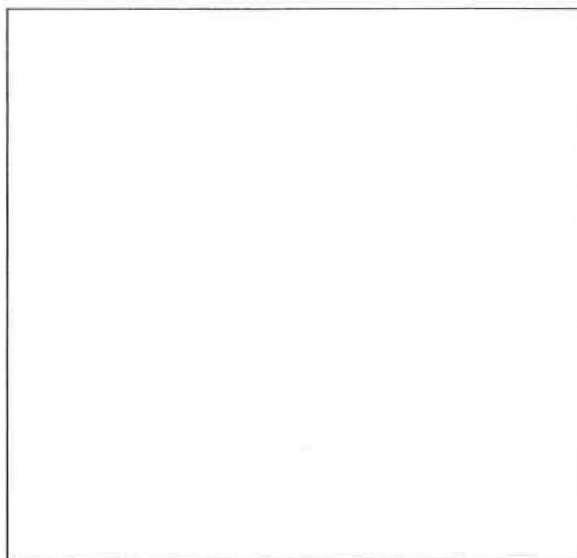
- 1.) Charge a balloon by rubbing it with a sweater or your hair.
- 2.) Bring a charged balloon near a few objects and record your observations in your book.
 - a. Your hair. (Is your hair attracted to the balloon? If you did the charging with your hair, try your partner's hair.)
 - b. Your sweater or shirt. (Will it stay put?)
 - c. The wall. (Can you get it to stick?)
 - d. A "hair bottle." (this one is touchy)
 - e. A trickle of water from the sink.
 - f. The tape from Sticky Charge Detector experiment?
 - i. Bottom?
 - ii. Top?

Quick follow up questions:

1. Why might the charged balloon be attracted to your hair? The wall? Your sweater?
2. Do you expect any of these objects to be charged?
3. Draw a sketch of the charge distribution on the balloon before and after charging. (Assume the balloon becomes negatively charged).



Before



After

Instructor Notes: Balloon Buddies

This activity, like all electrostatic activities that rely on building up and maintaining a charge, can be a bit temperamental. It will work best on a dry day with very low humidity.

Safety

This activity has little to no risk associated with it. Use common sense.

Materials

- Balloons
- Wool sweater or blanket or hair
- [optional] Hair bottle (baby oil with small pieces of “hair”)

Notes
