Balloon Static Electricity

Thank you for downloading the science and mathematics activity packet! Below you will find a list of contents with a brief description of each of the items. This activity packet contains all the information (including any handouts) you will need to run this activity in your own classroom or at a science festival.

Please note: some activities might require the need for a facilitator to be present to oversee the activity. Activities that require a facilitator will be clearly noted.

-Community Resources for Science

Balloon Static Electricity

ACTIVITY PACKET CONTENTS

1. Organizer instructions
    - Print suggestion: 1 for the facilitator
    - This is for the person running the activity
    - Includes information for setup prior to the event (e.g., materials prep)
    - Estimated cost for one set of supplies, excluding common household items
2. What's Going On?
    - Print suggestion: 1 to put in a plastic sign holder
    - Explains the science behind the activity
3. Participant instructions (tabletop)
    - Print suggestion: 1 set to put in 3 plastic sign holders
    - This packet contains 3 activities
4. Take home ½ sheet for participants
    - Print suggestion: depends on number of expected participants; each page contains 2 half-sheet handouts
    - Easy-to-follow materials list and instructions for participants to try the activity at their homes

Balloon Static Electricity

ORGANIZER INSTRUCTIONS

Grade(s): K-5

Standard connections:

Next Generation Science Standards: Science and Engineering Practices

- **Asking Questions and Defining Problems:** Ask questions based on observations to find more information about the natural and/or designed world
- **Developing and Using Models:** Use a model to test cause and effect relationships or interactions concerning the functioning of a natural or designed systems

Objective: Students will explore static electricity in 3 hands-on activities

Activity overview and background: Three activities

- Recycled Can Race: race using static electricity to move objects
- Balloon Pendant
- Stand Up: create an electric charge by rubbing a balloon against your clothing

Estimated cost for activity supplies: $6

Materials

- Balloons ($2.50/25 pack)
- String/thread, cut in 8-inch and 1 yard (3 ft) pieces ($3.50/400 ft twine)
- Scissors
- Empty soda cans (need at least 2)
- Masking Tape
- Table for the Recycled Can Race

Setup:

1. Set up all stations
2. Recycled Can Race
   - On the table, use masking tape to mark starting and finishing lines
   - Set out empty soda cans and balloons
3. Balloon Pendant and Stand Up
   - Place balloons and string with scissors
4. Place What's Going On? and Instruction materials on the table

Suggested Setup:

- Cut out the string/thread in advance for Balloon Pendant and Stand Up

What's Going On?

Electrical charges are either positive or negative. Protons carry positive charge, while electrons carry negative electrical charge. Opposite charges, a positive and a negative, attract each other. Similar charges, like two positive, repel each other.

Scientists believe that under certain conditions, objects lose or gain electrons. One way to change the charge on an object is to rub it rapidly against other objects.

Static electricity is an imbalance of these charges on the surface of a material.

How does it work?

In this activity, you will experiment with static electricity. Your local weather may affect the results of these activities. It is easier to produce static electricity in a cool, dry climate. When the weather is wet or humid, it is difficult for object to hold an electrical charge because the increased water vapor in the air tends to pull the charge away from the object.

Recycled Can Race

Have a race using static electricity to move objects!

What you'll need:

- 2 empty soda cans
- 2 balloons

1. Place 2 empty soft drink cans on their sides on the starting line
2. Inflate and tie-off 2 balloons
    - To charge the balloons, rub them rapidly back and forth on your clothing for a minute
3. Inflate and tie-off 2 balloons
    - To charge the balloons, rub them rapidly back and forth on your clothing for a minute
4. When you're ready for the race, hold the balloons near the cans, without touching them to the cans, and have someone say "go!"
5. Each person tries to move his/her can across the finish line using only the static electricity of the balloon
6. *Could you identify whether the part of the can nearest the balloon had similar or opposite charges?*
    - *How could you tell?*

Balloon Pendants

*This activity requires 2 people

What you'll need:

- 2 balloons
- 1 yard (1 meter) string

1. Inflate 2 balloons, and then tie the balloons on opposite ends of the string
2. Stretch the string between 2 people
3. Each person rubs a balloon back and forth rapidly on his/her clothing or hair
4. As each person holds onto his/her balloon, one person grabs the center of the string
   - *What do you think will happen when each person drops his/her balloon?* Try it!
5. Why do you think this happen?

Stand Up

What you'll need:

- 8 inches of thread
- Inflated balloon

1. Get a length of thread about 8 inches (20 centimeters) long
2. At the end of the thread, tie a loop large enough for one of your fingers, and then slip it on
3. Rub an inflated balloon rapidly against your clothing
    - Rubbing the balloon gives it an electrical charge
4. Hold the balloon near the loose end of the thread and see what happens.
5. Then move the thread farther from the balloon
    - *Can you explain what happened and why?*

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TRY IT AT HOME!

What you'll need:

- 2 empty soda cans
- 2 balloons
- String or thread (8-inches and 1-yard)

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5. Then move the thread farther from the balloon
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