

# Can You Create Electricity?

**Estimated Time:**

**Prep:** 15 min.

**Activity:** 20–30 min.

## Introduction

### Overview

**Experiment:** Students create **static electricity** in two different ways.

**Key Concepts:** Students will understand that matter has **electrical charges** that **repel** and **attract** one another. They will learn that **electricity** happens when negatively charged particles move from one object to another.

### Lead-In

Explain that all matter is made up of **atoms**. Atoms contain even smaller particles with positive and negative charges. When an object has more negatively charged particles than positively charged particles, it needs to release or let go of the negative particles to balance the charges. Explain that lightning is a movement of negatively charged particles that releases lots of energy. Scientists have figured out how to create electricity to provide power to our homes. Can you make electricity? How do these charged particles move and work?

## Teacher Preparation

### Teacher-Provided Experiment Materials:

- Paper or small paper circles
- Salt
- Hole punch
- Finely ground pepper
- Balloon filled with air

### Try This! Materials:

- Balloon filled with air
- Scraps of tissue paper
- Pieces of aluminum foil
- Yarn
- Pipe stems

### Prepare:

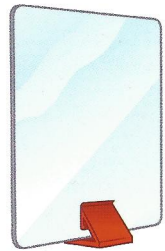
- Make copies of the Experiment Sheet.
- Use a hole punch to make small paper circles.
- Fill a balloon with air.

**Note:** If a child's hair is too short, have her complete the experiment with a partner who has longer hair.

## Vocabulary

- ◆ **atom** the smallest particle of matter that exists alone or in combination with other atoms to form a molecule
- ◆ **attract** to pull or draw in
- ◆ **electrical charge** a property of matter related to the balance of positive and negative charges in an object
- ◆ **electricity** a form of energy that occurs from the movement of electrons from one atom to another
- ◆ **repel** to push away
- ◆ **static electricity** a buildup of the electrical charge on the surface of an object

## You Will Need



mirror with plastic stand



wool cloth



plastic dish

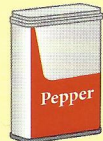


plastic spoon

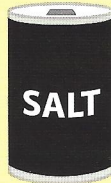


teaspoon

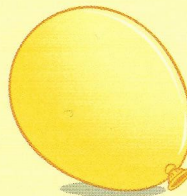
### Teacher-Provided Materials



pepper



iodized salt



balloon filled with air



small paper circles

Name \_\_\_\_\_ Experiment To Create Electricity

### Can You Create Electricity?

	Hypothesis What do you think will happen?	What happened?	Conclusion
Balloon and Hair			
Balloon and Paper Circles			
Spoon and Salt/Pepper			

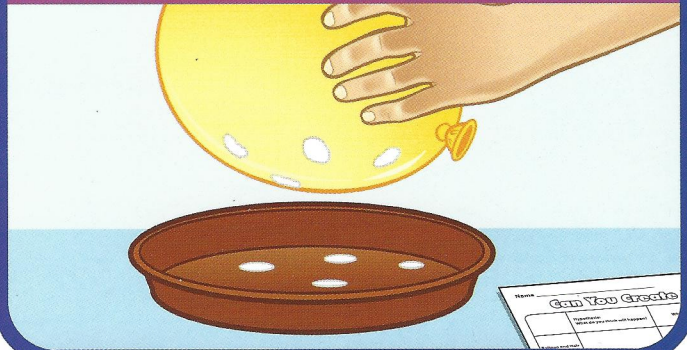
Experiment Sheet

## Procedure

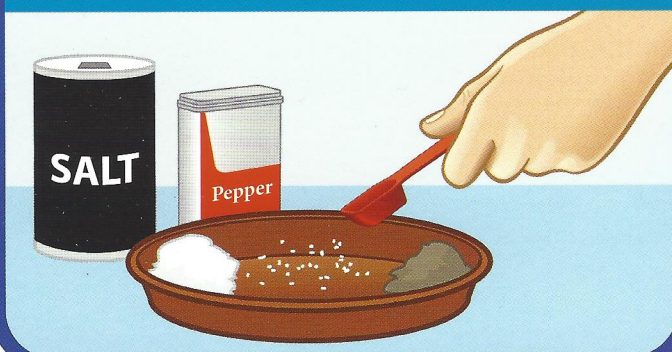
- 1 Read steps 1–4 and write your hypothesis. Look in the mirror. Rub the balloon on the top of your head for 10 seconds. Slowly raise the balloon. Record the results.



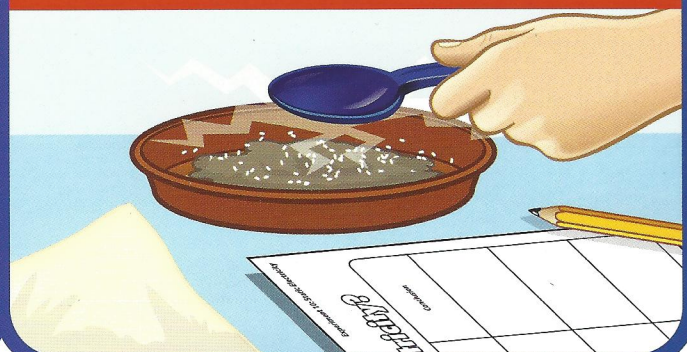
- 2 Place a pile of paper circles in a dish. Rub the balloon on your head again. Then hold it over the paper circles. Record the results.



- 3 Place one teaspoon of salt and one teaspoon of pepper in a dish and mix them together.



- 4 Rub the plastic spoon with the wool cloth for one minute. Then hold the spoon over the salt and pepper. Record the results.



Name \_\_\_\_\_

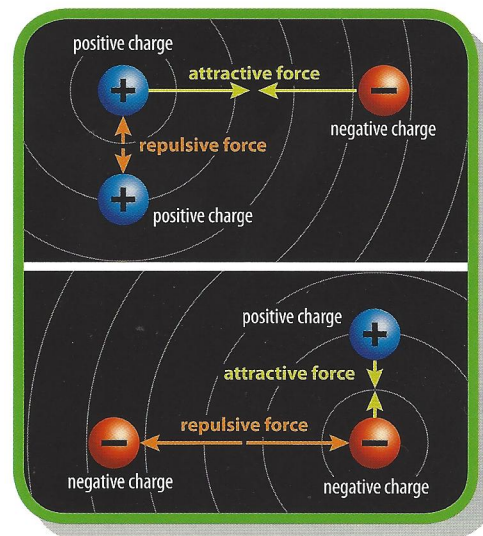
# Can You Create Electricity?

	Hypothesis: What do you think will happen?	What happened?	Conclusion
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## Why?

Static electricity happens when charged particles move from one object to another. When students rubbed the balloon and the spoon, they built up negatively charged particles in each object. And when children rubbed the negatively charged particles from their hair onto the balloon, their hair became positively charged. Particles with the same charge repel each other, so individual hairs repelled each other—and stood up. However, particles with opposite charges attract one another. So the negatively charged spoon and balloon pulled up the positively charged parts of the atoms in the paper circles and pepper. But since salt is heavier than pepper or paper circles, static electricity can't lift it as easily.



## Discussion Prompts & Questions

- Can you see static electricity?
- Why do you think your hair stood up?
- What do you think happened when you rubbed the balloon on your head and the spoon with the wool cloth?
- What do you think would happen if you did not rub the balloon or the spoon?



## Sentence Frames

- I think that I can make electricity by \_\_\_\_\_.
- I think my hair stood up because \_\_\_\_\_.
- When I held the spoon over the salt and pepper, the pepper \_\_\_\_\_ and the salt \_\_\_\_\_.



## Try This!

Help students learn more about the types of materials that are attracted to a negatively charged balloon. Provide an assortment of materials, such as scraps of tissue paper, pieces of aluminum foil, yarn, or pipe stems. Have students build up the negative charges by rubbing an air-filled balloon on their head. Which materials are attracted to the balloon?