



Lightning K-2

Lightning Science

LESSON PLAN 1

What Is Lightning?

Lightning is a large-scale electric charge that is accompanied by dramatic sights and sounds. Balancing the difference between positive and negative charges within clouds or between clouds and the ground produces static electricity.

Key Terms and Concepts

attract and repel	flash and bang	static electricity
cloud	lightning strike	thunder

Purpose

To explore lightning and its relationship to static electricity

Objectives

The students will—

- Role-play a thunderstorm, including lightning flashes and thunder claps.
- Demonstrate positive and negative attraction.
- Use *You're the Scientist: Static Electricity* to create static electricity, a good example of electricity in the air.
- Compose a list of opposites and play a game of opposites. (Linking Across the Curriculum)
- Make “mouth lightning.” (Linking Across the Curriculum)
- Design lightning art. (Linking Across the Curriculum)

Activities

“Create a Thunderstorm”

“Balloons and Static Electricity”



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What Is Lightning?

Materials

- Thunder-makers: cymbals, pots and pans or blocks
- Light switch or flashlight



"Create a Thunderstorm"

SET UP 10 minutes CONDUCT 25 minutes

Science: Physical Science; Fine Arts: Dramatic Arts

1.  Have the students talk about the sights and sounds they associate with a storm—rain, thunder, lightning and dark clouds.
2. Next, follow the steps below to create a thunderstorm in the classroom.
 - (a) Assign one student to act as lightning, that is, to flip the lights or a flashlight off and on.
 - (b) Assign several students to act as thunder, that is, to bang cymbals, pots and pans or blocks together.
 - (c) Have the rest of the class act as the storm while they follow the rain sequence below:
 - Rub hands together slowly, then more rapidly.
 - Slap hands against thighs slowly, then more rapidly.
 - Begin stamping feet on the floor slowly, then more rapidly.
3. Direct the lightning and thunder to begin while the “rain falls.” Signal the lightning and thunder to slowly subside and the rain to slow from stamping feet to slapping thighs to rubbing hands together slowly.



Wrap-Up

Talk with the children about their thunderstorm.

Make sure that they can identify the different parts of the storm. What caused the mock lightning in the classroom? (electricity from the electric light or the flashlight) Explain that electricity is also what causes lightning in a thunderstorm.



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LESSON PLAN 1

What Is Lightning?

Materials

- You're the Scientist: Static Electricity, 1 copy per team
- Balloons, at least 1 per team
- Puffed cereal

Optional:

- Pepper
- Bowl of water sprinkled with pepper
- Small pieces of paper
- More balloons



"Balloons and Static Electricity"

SET UP 10 minutes CONDUCT 30 minutes

Science: Physical Science and Inquiry

1. Guide a discussion of static electricity by asking the students—
 - What happens when you rub the fur of a cat and then touch a metal doorknob?
 - What happens when you shuffle over the carpeting in your stocking feet and then touch a friend?

As the students talk about the shock these things cause, introduce the terms "static electricity," "attract" and "repel."

Ask a pair of students to come to the front of the class. Have them face each other, arms extended, with palms together. As the students push away from and pull toward each other, say the terms "attract" and "repel." Then, explain to the students that they are going to become scientists to investigate static electricity.

TEACHING NOTE Depending on the ages and abilities of your students, they can work more or less independently as they perform the experiment and record their results using *You're the Scientist: Static Electricity*. Use the optional materials to let the students explore static electricity on their own and report to the class.

2. Divide the class into working teams of students. Distribute materials and *You're the Scientist: Static Electricity* to each team.
3. As the students follow the steps on the activity sheet, guide them in recording their results.

Answers to *You're the Scientist: Static Electricity*

1. After rubbing the balloon against your clothes, it will attract your hair and make it "fly" toward the balloon.
2. When you place the balloon against the cereal pieces, it will attract them and grains of cereal will stick to the balloon.
3. After a few minutes, the grains will "fly" off the balloon, repelled rather than attracted. (If you wait a few minutes, the same grains will be attracted once again.)



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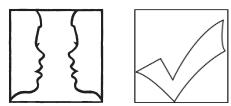
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LESSON PLAN 1 What Is Lightning?

Materials

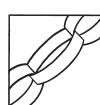
- Life Saver-type candy (wintergreen or peppermint)



Wrap-Up

As a class, discuss with the students their experiments and results. Make sure they understand that static electricity can attract or repel.

Discuss—Just as the balloon attracts your hair and the pieces of cereal, clouds and the ground both attract and repel. This electrical process is the basis of lightning.



Linking Across the Curriculum

Language Arts: Vocabulary

Introduce the term “opposites.” Ask the class why the words “repel” and “attract” are opposites. Then have the students name and list familiar opposites: stop and go, fast and slow, up and down, in and out, good and bad, hard and soft, low and high, etc.

Extension: Have the students play a game, providing the opposites for words you call out to the class.

Science: Physical Science

Help the students make “mouth lightning.” Darken the room. Once the students’ eyes are accustomed to the dark, have each student put a wintergreen or peppermint “Life Saver-type” candy into his or her mouth. As students break up the candy, have them open their mouths to see the bluish flashes of “lightning” they create in the air.

TEACHING NOTE Crunching on the candy makes light with friction, “triboluminescence.” The crushed sugar crystals create electric fields, similar to those created in a lightning storm. When the molecules recombine, they emit ultraviolet light, which you can’t see. The wintergreen or peppermint oil changes ultraviolet light to visible light.

Materials

- Black construction paper
- White paint or white markers
- Fluorescent (glow-in-the-dark) paints
- Flashlight

Fine Arts: Visual Arts

Have the students use white paint or markers on black construction paper to illustrate lightning flashes.

Extension: Let the students use “glow-in-the-dark” paints to make their lightning illustrations. Place their paintings around the room and darken the classroom. While the students create thunderstorm sounds (see “Create a Thunderstorm,” above), use a flashlight to illuminate different paintings to simulate lightning flashes.



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You're the Scientist: Static Electricity

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Name _____

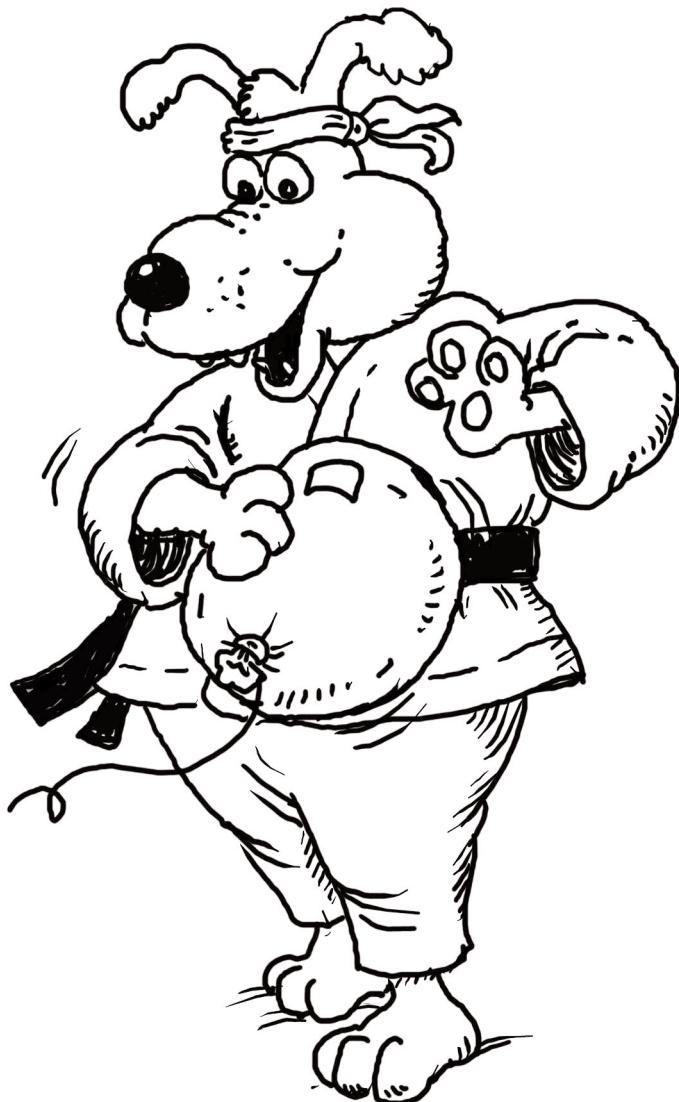
Directions: You are a scientist who wants to know more about lightning. Start by investigating static electricity.

What you need:

- Balloon
- Several pieces of puffed cereal

What you do:

1. Blow up and tie the balloon.
2. Rub the balloon against your clothes.



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Masters of Disaster® Lightning, Lightning Science, Lesson Plan 1/*What Is Lightning?*
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You're the Scientist: Static Electricity

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What do you feel?

1. Place the balloon against your hair. Draw a picture of what happens.
2. Scatter the cereal on the table. Place the balloon against the cereal. Draw a picture of what happens.
3. Wait a few minutes. Draw what happens to the pieces of cereal.

Note: Static electricity attracts and repels in your experiment. Lightning is electricity that is caused when clouds and ground attract and repel during a storm.

