

SCIENCE | TECHNOLOGY | ENGINEERING | MATH

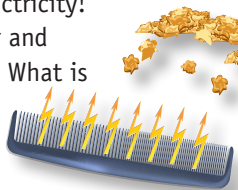
This special Newspaper In Education feature is brought to you by the St. Louis American Foundation, the Missouri Press Foundation and this newspaper.

What Is Static Electricity?

Have you ever walked across the carpet, touched the door knob and received a zap? That is static electricity! Have you ever taken off your hat in winter and your hair stands on end? Static electricity. What is static electricity and how is it formed?

Everything is made up of atoms. Atoms contain protons (which have a positive charge), electrons (which have a negative charge), and neutrons (which are “neutral” and do not have a positive or negative charge). There is usually a balance of protons (positive) and electrons (negative). However, when you rub two items together, such as walking across the floor, or combing your hair, you create friction. Friction will move protons from one item to another. When an item has more protons than usual, it has a positive charge. When it has more electrons than usual, it has a negative charge.

Opposites attract. Therefore, a positively charged item will attract a negatively charged item. Have you ever rubbed a



balloon against your hair and watched as your hair raised and moved towards the balloon? This is an example of a positively charged item attracting a negatively charged item. This process is called static electricity.

Try It: Grab a comb and some cereal.

Comb your hair. The friction creates a positive charge on your comb. Place the comb near the pieces of cereal. The cereal will be attracted to the comb and will move toward it.

Read About It: Are you interested in learning more about static electricity? Check out these books:

“Where does electricity come from?” by C. Vance Cast
 “Electricity and Magnets: Hands on Science” by Sarah Angliss
 “The Magic School Bus” and the “Electric Field Trip” by Joanna Cole

Learning Standards:

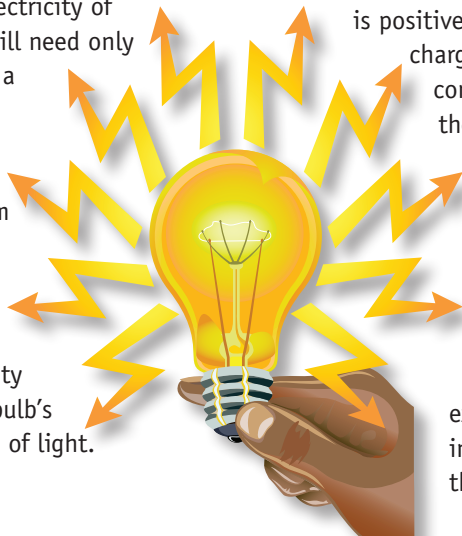
I can read nonfiction passages to understand a concept.
 I can apply the main idea in an experiment.
 CCS.ELA-LiteracyCCRA.R.2, CCS.ELA-Literacy.CCRA.L.6

Become A Mad Scientist!

Are you ready to create some static electricity of your own? For this experiment, you will need only three items: a comb, a light bulb, and a dark room.

Process:

- STEP 1.** Comb your hair for a minimum of 20 strokes. This is friction.
- STEP 2.** Place the comb to the metal base of the light bulb.
- STEP 3.** Observe as the static electricity will travel through the light bulb’s filament creating short bursts of light.



Analyze: How does this happen? The friction of combing your hair moves electrons to the comb. Now your body is positively charged and the comb is negatively charged. The metal in the light bulb is a conductor and sends the electricity through the bulb. Metal is a great conductor, which means that it allows electrons to move through it more effectively. Plastics, cloth, and glass typically act as insulators, which means they block the flow of electrons.

Learning Standards:

I can follow instructions to complete an experiment. I can use information to make inferences and deductions while observing the results. CCS.ELA-Literacy.CCRA.R.1

Growing future scientists, technologists, engineers, and mathematicians with the newspaper!

Extra! Read All About It!

Solving problems with technology:

There are many social, economic, or environmental problems that can be solved with science and technology. Use the newspaper to find an example of a problem that can be overcome with science or technology. What is the solution?

Enhancing Literacy Skills:

When reading the newspaper, you will see many new words that are unfamiliar to you. Use context clues to guess the



meaning of unknown words. Use a dictionary to confirm the definition of the word. Create a vocabulary log of the new words you learn.

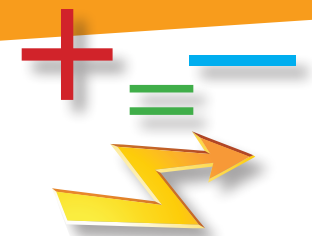
Learning Standards:

I can read a nonfiction text to locate main idea and supporting details. CCSS.ELA-Literacy.CCRA.W.4, CCS.ELA-Literacy.CCRA.R.2

Go Figure!

Static electricity isn’t the only place where you will encounter positive and negative forces. Solve the following math problems which use “positive” and “negative” numbers.

- $-7 + 12 = \underline{\hspace{2cm}}$
- $17 + -3 = \underline{\hspace{2cm}}$
- $-8 \times 7 = \underline{\hspace{2cm}}$
- $-6 \times -9 = \underline{\hspace{2cm}}$
- $6 - -3 = \underline{\hspace{2cm}}$
- $-15 - 8 = \underline{\hspace{2cm}}$
- $18 / -3 = \underline{\hspace{2cm}}$
- $-25 / -5 = \underline{\hspace{2cm}}$



In the News:

Use the newspaper to find six numbers. Use these numbers to create three math problems of your own. Trade math problems with a classmate and solve.

Learning Standards:

I can add, subtract, multiply and divide to answer a math question. CCSS.MathContent.3.OA.A3