

Electric & Magnetic **FUN**OMENA

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TABLE OF **Contents**



4
Electricity



12
Magnetism

24
Glossary/Index



Electricity

The best present that Sophie Frost will ever get might be the portable media player that her grandmother gave her. It may have saved her life.

Sophie, fourteen, was out walking when a rainstorm blew in. She was wearing the device at the time. She sought shelter from the rain under a tree.

Flash! Lightning struck the tree and knocked Sophie down.

Lightning is a very powerful force of nature. It can cause great damage. It can be dangerous if it strikes a person. But Sophie suffered only a few burns.

Why did Sophie survive the lightning strike? Because it traveled down the device's wire instead of through her body, her doctor said.

Electrical Power

Lightning is a type of energy called electricity. The word *electricity* comes from the Greek word for a substance that first showed how electricity works. That substance is amber.

About 2,500 years ago, a Greek scientist named Thales was working with pieces of amber. He discovered that rubbing the amber with a cloth gave it the power to attract bits of straw.



▲ Amber is the hard, golden resin of trees.

Electrostatics

Thales didn't know what was going on. But scientists now know that rubbing amber creates an electric charge. When an electric charge builds up in an object, the result is static electricity. The word *static* means "not moving."

Thales rubbed amber to create static electricity. Rubbing other materials, such as plastic and glass, can have the same effect.

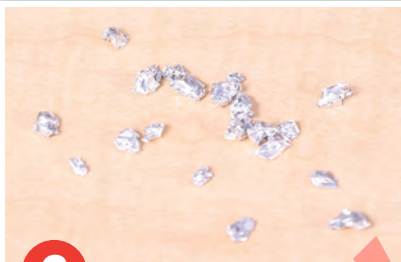


Static Electricity “Magic”



1

Cut a piece of aluminum foil into small pieces.



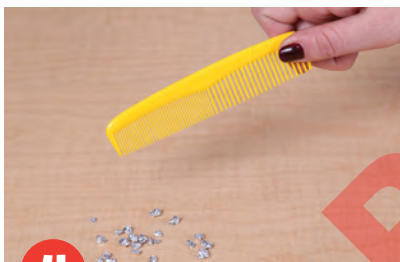
2

Place the pieces on a flat surface.



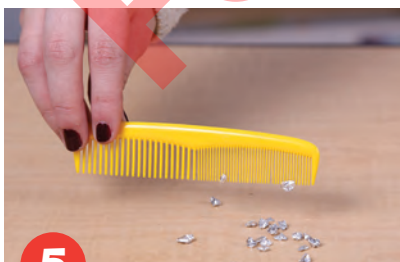
3

Run a plastic comb through your hair over and over for about thirty seconds.



4

Hold the teeth of the comb about one foot above the pieces of foil.



5

Slowly bring the teeth closer to the pieces of foil.



6

What happens? The pieces of foil leap upward and cling to the comb.

Charged Up

Why did the comb pick up the pieces of foil? Because there are two types of electric charge: positive and negative.

When electric charges are strong, they will react. They will force each other either together or apart.

Like Charges Repel



1

Blow up two balloons and tie them shut.



2

Tie a 1-foot string to the end of each balloon.



3

Rub each balloon with a wool sock or mitten for a minute. The rubbing creates a negative charge in each balloon.



4

Hold the end of each string, one in each hand. Dangle the two balloons in midair.



5

Slowly bring the balloons closer together.



◀ **What happens?**
The two balloons move away from each other because they both have a negative charge. Negative repels negative.

Opposite Charges **Attract**



1

Rub one of the balloons once again with the wool sock for a minute.



2

Hold the end of the string in one hand and dangle the balloon in midair.



3

Hold the sock in your other hand.



4

Slowly bring the balloon close to the wool sock.



▲ What happens?

The balloon moves toward the sock. The balloon has a negative charge, and the sock has a positive charge. Positive attracts negative.