

Age:

5-13

Participants:

Group, Family, Pair

Charge It

Supplies

- *masking tape*
- *ruler*
- *2 empty aluminum cans*
- *4 balloons*
- *1 yard (1 meter) of string*
- *scissors*
- *thread*

Why

To explore electrical charges that can push and pull.

What

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 positives, 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. For example, when you rub a balloon with a wool sock, some of the socks' electrons transfer to the balloon, increasing the number of electrons on the balloon. What happens? The balloon now has a negative charge and the sock has a positive charge, and they attract each other.

How

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 objects 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.

- Using masking tape, mark a "start" and a "finish" line on the floor about 1 yard (1 meter) apart.
- Place 2 empty soft drink cans on their sides on the starting line.
- Inflate and tie-off 2 balloons. To charge the balloons, rub them rapidly back and forth on your clothing for a minute.
- When you're ready for the race, hold the balloons near the cans, without touching them to the cans, and have someone say "go."

- Each person tries to move his/her can across the finish line using only the static electricity of the balloon.
- After the race, ask participants to identify whether the part of the can nearest the balloon had similar or opposite charges. How could they tell?

Balloon Pendants

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

Stand Up

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

