Dancing Bats

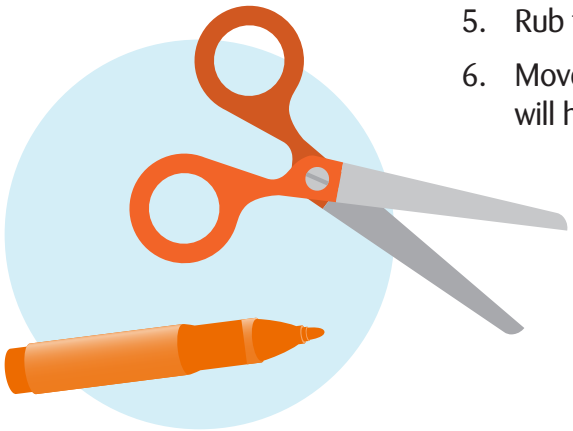
What did one bat say to another? Let's hang around together.

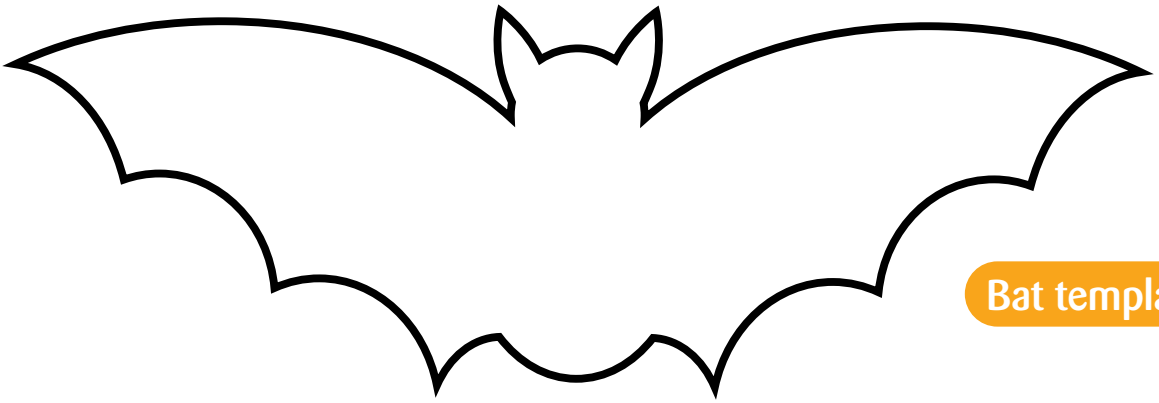
What You'll Need

- Tissue paper
- Balloon
- Markers
- Scissors
- Tape
- A head of hair/wool sweater

What You'll Do

1. Cut a bat or other fun shape, such as a flower, butterfly or a snake about six inches across out of the tissue paper. You can use the outline below as a template.
2. Decorate your cut-out shape with markers.
3. Tape the bottom of your cut-out shape to your work surface. Don't tape the entire object down! If using a bat, tape the body of the bat to the surface and leave the wings free.
4. Blow up and tie your balloon.
5. Rub the balloon back and forth on your hair or a wool sweater.
6. Move the balloon over your bat without touching it. What do you think will happen if you move the balloon near the bat? Try it! What happens?





Bat template

Museum of Virginia Science

www.smv.org

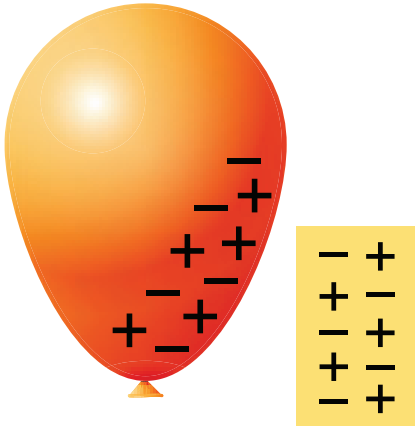
Dancing Bats

What's Going On?

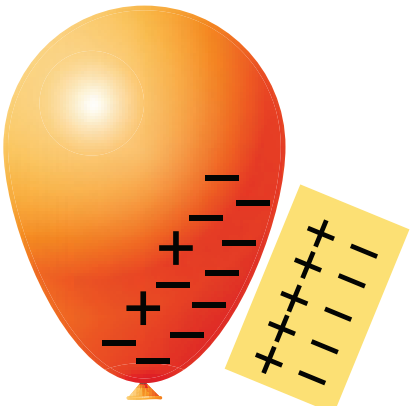
Did it look like the bat was dancing? It's thanks to static electricity!

In simple terms, static electricity is an imbalance between a negative and positive charge in an object. Where does this charge come from? All matter is made up of atoms and atoms consist of a nucleus containing neutrons (no charge), protons (positive charge) and an outer shell containing electrons (negative charge). Usually, the positive protons and the negative electrons cancel each other out resulting in a net neutral charge for the atom. Electrons are much more free to move than are the protons and neutrons in the nucleus. Static electricity usually forms in materials that do not conduct electricity well. Because they resist the free flow of elections, these materials (such as the wool sweater, your hair or the rubber balloon) can accumulate charge.

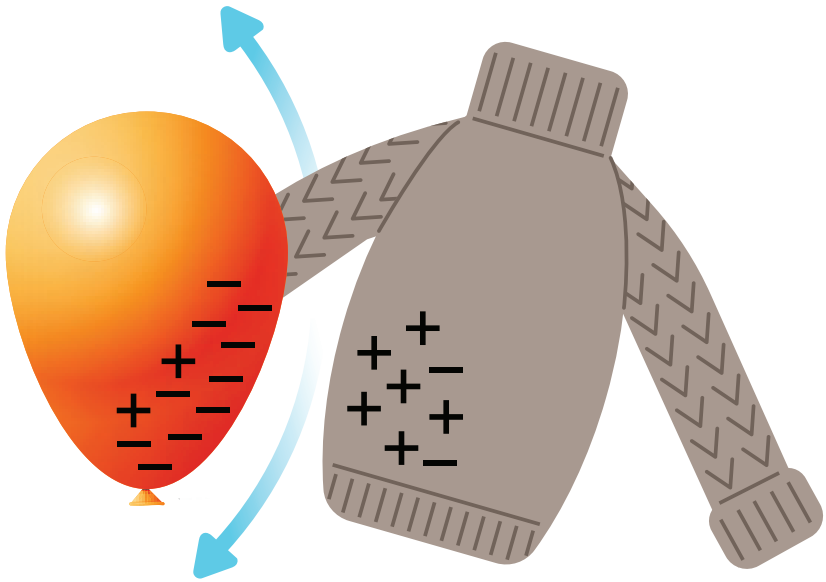
When you rubbed the balloon over your hair or the sweater, some of the electrons were transferred to the surface of the balloon giving it a slight negative charge. As you brought the now negatively charged balloon close to the tissue paper, the atomic charges within the paper rearranged. The electrons in the paper were strongly repelled by the negatively charged balloon leaving the positively charged protons in the paper to be attracted to the balloon, causing the balloon to stick to the paper. Opposites attract!



Tissue Paper



Tissue Paper
More positive near plastic



Dancing Bats

More Fun with Static Electricity!

What else can you attract with your charged balloon? Try different surfaces and objects.

Put an empty aluminum soda can on a table and bring the charged balloon close. What happens?

Once you charge the balloon, can it stick to a wall?

What happens when two negative charges meet? Hang a balloon from a pole or door frame so it can freely move and then charge it by rubbing it on your head. Take a second charged balloon and bring it close to the one tied by a string. What happens? These should move away from each other because the same charges repel! Scientists are still studying the properties of static electricity. A better understanding of static electricity can help us improve technology that uses it (for example, photocopying machines) as well as increase safety for jobs where a build-up of static electricity (a spark) can be dangerous.