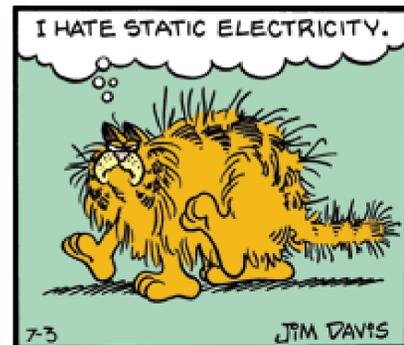


These pages are taken from the G3 "Static Electric Forces" journal.



What is Static Electricity?

Have you ever seen your friend's hair sticking straight up in the air after playing with a balloon? Or maybe you've bumped into a person and felt or seen a small shock of electricity. If you are wondering why this happens (or, more likely, how to use it to ZAP your friends), the answer is static electricity.



What Is Static Electricity?

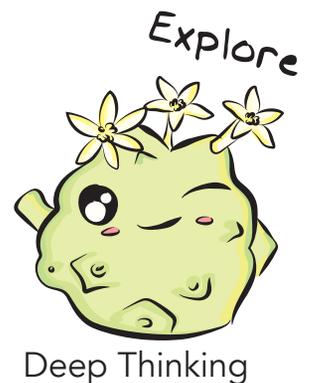
Static electricity is the buildup of an electric charge on the surface of an object. Have you noticed clothes sticking together after coming out of the dryer, or plastic wrap sticking to your hand, or your hair standing up straight after lying on a trampoline? Static electricity can cause objects to **attract** or **repel** each other. You can see and feel the affects of these forces. Try it!

Charm a Snake with Static Electricity

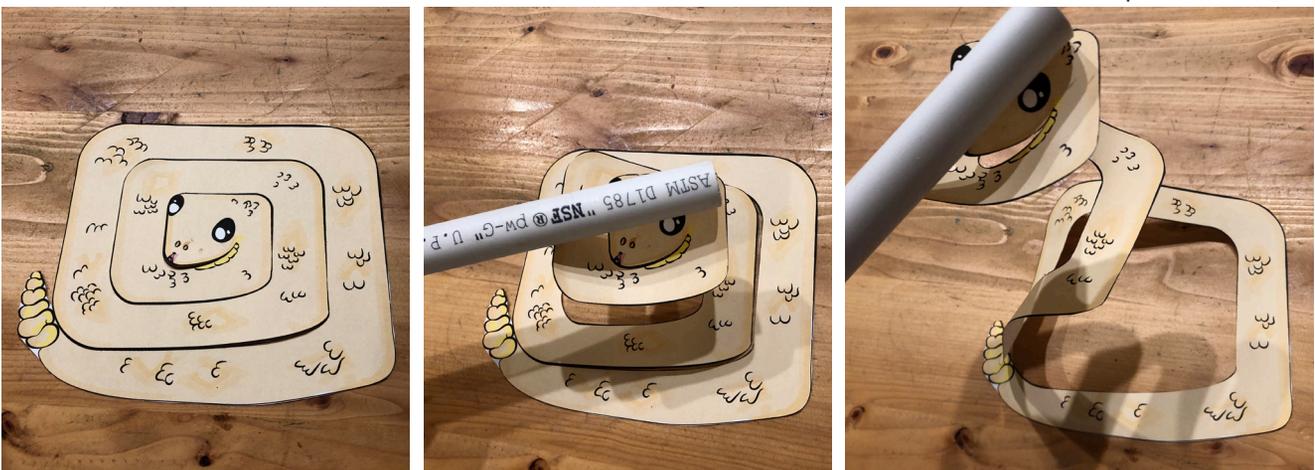
You can charm a paper snake with static electricity. Try it!

1. Rub your plastic wand on fuzzy clothing to build up an electric charge on your wand.
2. Next, hold the wand near your snake's head and watch it rise to touch the wand.

Now the snake is stuck to the wand! You can lift it and watch it uncoil!



Deep Thinking



Charge your wand with static electricity to make your paper snake uncoil.

All Matter Is Made of Atoms

All matter is made up of small particles called **atoms**. These particles are so small that we can't see them with our eyes, but they are there. In fact, atoms are so small that you could fit around seven and a half trillion atoms in the period at the end of this sentence. To make this number easier to understand, that's about how many ants exist in the whole entire world!



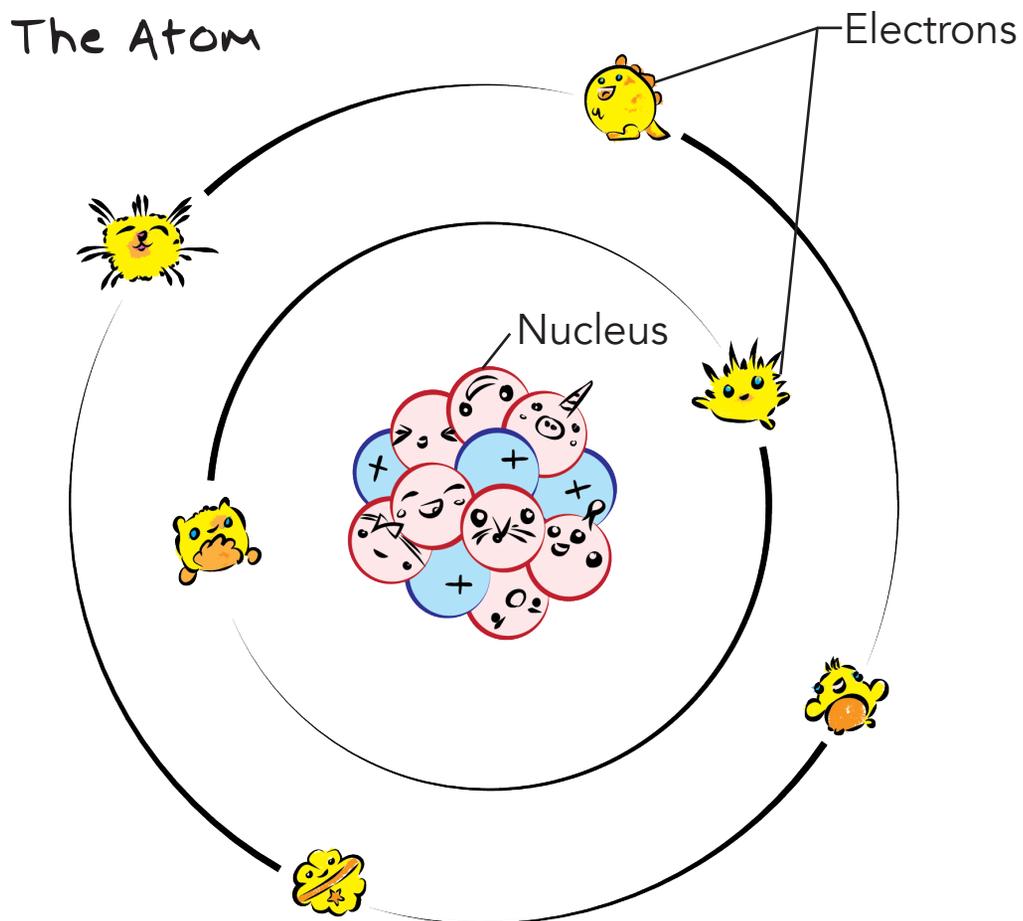
About 7 trillion ants exist in the world.

Here's a Tip

If you can't build up a good charge on your own clothing or hair, try rubbing your wand on different things around the classroom such as your backpack, a fuzzy coat, a wool sock, or a piece of paper. If a classmate is good at charging their wand, perhaps you could ask them to charge your wand too.

Static Electricity Is a Buildup of Electrons

Atoms combine to make matter like Lego parts combine to make bigger creations. All atoms have a center called a nucleus. Atoms also have electrons that go round and round the nucleus. **Electrons** are what electricity is made of. The flow of electrons is called electricity. A motionless buildup of electrons on an object is called static electricity. The word static means "to stay still."



Electrons orbit around the nucleus of an atom. When spare electrons build up on an object, the buildup is called static electricity.

Opposite Charges Attract

Do you remember the rule you learned while studying magnets? "Opposites attract!" Negatively charged electrons are attracted to the atom because the electrons and the nucleus have opposite charges. Because of this, they stay together. If you have a buildup of electrons on an object, that object becomes charged. A charged object is attracted to any other object with an opposite charge. This force of attraction can cause objects to move even if they are not touching.



Explore

Make Salt and Pepper (or Confetti) Dance

You can make salt and pepper dance on a piece of paper using your wand charged with static electricity.



Try this activity to make small particles of salt and pepper dance using static electricity.

What Happened to My Pet Soda Can?

Sometimes, if you rub the right materials together you can create a static electric charge. When objects become charged with static electricity, you can sometimes observe and feel forces, such as when the soda pop can follows your wand.

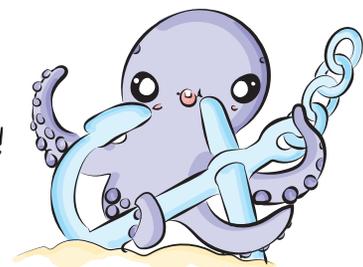
Explain the phenomenon:

Why does the can follow the plastic wand?



Cause	Effect
I rub the plastic wand on something fuzzy and then hold it near the can.	The can rolls across the table following the wand.

Explain the Phenomenon!



The Shocking Truth

Now, we can finally discuss how and why static electricity can sometimes result in shocks. If a static electric charge builds up enough, instead of just causing a force of attraction, a **static electric discharge**, or shock can occur. The shock happens when electrons jump through the air over to the object they are attracted to. Lightning is an example of a very powerful static electric discharge.



Lightning is caused by a buildup and discharge of static electricity in clouds.

You may have experienced a static electric discharge on a trampoline or when you scoot your feet across the carpet to shock someone. When you touch something else you may hear a snapping sound and see a tiny flash of light.