MEETS NATIONAL STANDARDS

# Ellie gets charged about Electricity!

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# What is Electricity?

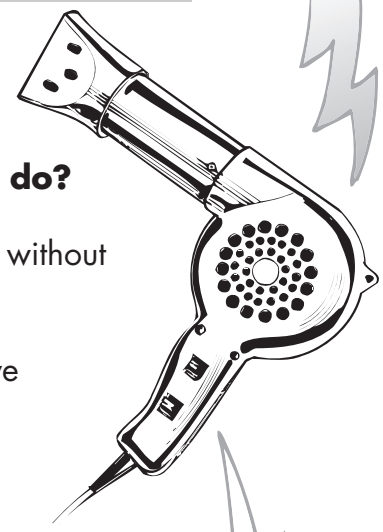
Have you ever touched something and got an electric shock? Your shock came from a buildup of static electricity. There are a couple of ways to make electricity. But all electricity comes from the movement of electrons from one atom to the next.

**Static electricity** is electricity that doesn't move. It builds up, and is released in one brief moment. **Electricity from batteries** is made by chemical reactions between two different metals.

Most of the electricity you use each day is made by **generators**, like the electricity in your home, your school, or even the streetlights in your neighborhood. Generators produce electricity through magnetism. In fact, you can't really separate electricity and magnetism. They're a package deal! Magnetism can create electricity and electricity can create magnetism.

Have you ever had a power outage in your neighborhood? How did it feel not to have electricity?

## Power Outage!



**If you had no electricity for 30 days, what would you do?**

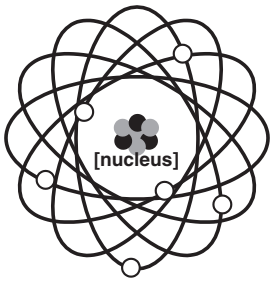
1. Make a list of 5 electrical items you think you ***could not*** live without for 30 days.

2. Make another list of 5 electrical items you think you ***could*** live without for 30 days.

| **Could Not Live Without** | **Could Live Without** |
|---|---|
| 1. _____ | 1. _____ |
| 2. _____ | 2. _____ |
| 3. _____ | 3. _____ |
| 4. _____ | 4. _____ |
| 5. _____ | 5. _____ |

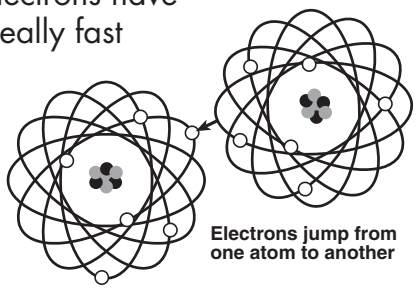
# The Tiniest Particles

Do you know what causes electricity? It's the movement of tiny charged particles known as **electrons**. Electrons are one of the tiniest particles in **atoms**. Atoms are so small that we can't see them with our eyes. In fact, scientists have to use a special microscope to see them.




● NEUTRON
● PROTON
○ ELECTRON

Each atom contains a center called a **nucleus**. The nucleus has a positive charge and contains particles called **neutrons** and **protons**. Electrons orbit around the nucleus. Electrons have a negative charge, which causes them to travel really fast around the nucleus.



Electrons jump from one atom to another

Most atoms contain the same amount of protons and electrons. If an atom has fewer electrons than protons, it is positively charged. If an atom has more electrons than protons, it is negatively charged.

Opposites really do attract in electricity! Simply put, electricity is the flow of electrons from an atom with too many electrons (negatively charged) to an atom with too few electrons (positively charged).

## Think It Through

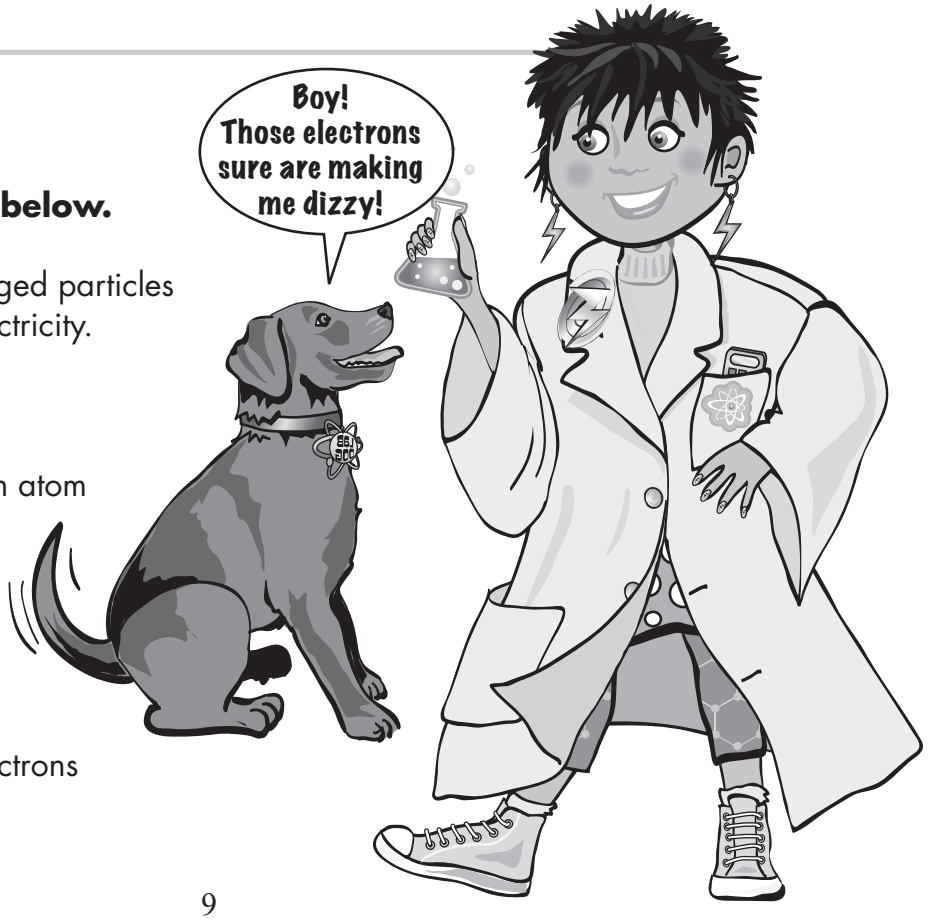
**Circle the correct answers below.**

1. The movement of tiny charged particles called electrons causes electricity.
   True False

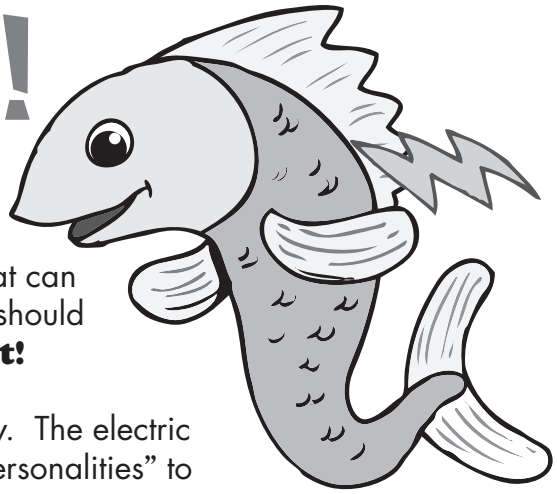
2. An electron:
   a. circles the nucleus of an atom
   b. has a positive charge

3. A nucleus contains:
   a. protons and neutrons
   b. electrons only

4. Electricity is the flow of electrons from atom to:
   a. nucleus
   b. atom



# Fish Power!



Did you know that all fish create tiny amounts of electricity in their muscles? It's true, and there are several fish with specialized muscles and organs in their bodies that can produce a lot of electricity! That may sound cool, but you should stay away from them because they can give you a real **jolt!**

The electric eel can generate up to 500 volts of electricity. The electric ray can put out about 220 volts. They use their "electric personalities" to defend themselves and stun their prey. Zap!!!!

Some fish have specialized skin cells that can detect electricity in other fish. Sharks have skin pores on their snouts that sense small amounts of electricity emitted by another nearby creature. Other fish have the same ability, but the cells are located in the stripes that run down their bodies.

## Fishing for Words!

**Find the following words in the word search below.**

| | | | |
|---|---|---|---|
| muscles | organs | generate | stripes |
| defend | stun | electric eel | volts |
| electricity | fish | sharks | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | R | B | A | D | E | F | E | N | D | K | H | G | V |
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| W | R | T | T | L | M | H | G | R | T | T | O | G | S |
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