



# The Mini Page

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**Next Week:**  
Our states:  
California



photo courtesy Washington State Department of Commerce

Electricity makes our modern life possible. We use it to power our lights, heat, computers, music, elevators, refrigerators and thousands of other things.

But most important, we would not exist without electricity. Electricity is necessary to make our brain, heart and other muscles work.

This week, The Mini Page learns more about electricity.

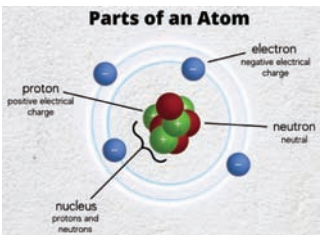
## Electron power

**Matter** is made up of tiny **atoms**, and they are made up of even tinier particles: **protons**, **electrons** and **neutrons**. Protons and electrons have an electrical charge. They each have the same amount of charge, no matter what material they're in. Neutrons have no charge.

Protons have a positive charge, and electrons have a negative charge. There are always the same number of protons and electrons in a neutral atom, or one with no charge. They balance each other out.

Protons and neutrons stay close together in the center, or **nucleus**, of the atom. Electrons speed around the nucleus in a kind of cloud.

Sometimes electrons leave their atom to join another atom. These traveling electrons are moving electrical charges. They make up an electrical **current**.



art courtesy sciencenotes.org

## Electrical current

Some atoms can lose or gain electrons more easily than others. For example, in metals such as copper, electrons are more likely to leave their atom and join another atom. The electrons move from atom to atom.

These moving electrons form an electrical current. They flow through a wire much like a current of water flows in a stream. The electrons in a current tend to move in the same direction.

Materials such as copper are good **conductors** of electricity because electrons can move easily between atoms. Atoms that do not easily lose or gain electrons can make materials known as **insulators**. For example, rubber is a good insulator. So are glass, plastic and dry wood.

## Electricity around us

Have you ever gotten a shock after walking on the carpet? When you rub your feet on the rug, electrons flow from the carpet to your skin. You build up an electrical charge until you touch something that is a good conductor.

If you touch something metal, or your pet, or another person, an electrical current forms between you and what you're touching, and you get a shock.

A lightning bolt is a much bigger version of what happens when you drag your feet across the carpet.



### Mini Fact:

Electricity flows throughout the U.S. through a system of wires and stations called the power grid.

## Electric bodies

Our bodies need electricity to work. Just like everything else, our bodies are made of atoms. The electrons in those atoms create electricity.

Electrical signals make our muscles work by causing them to **contract**, or become tighter.



They tell our hearts when to beat. We can think because electrical signals flash from cell to cell in our brains.

## Electrical power

Electricity is a wonderful part of our lives. But remember: It is powerful. Be careful around electrical outlets or machines. Here are some safety tips:

- Don't put your fingers or anything else into an outlet or appliance, such as a toaster, even if it is turned off.
- Keep electrical devices such as radios away from water (a good conductor).
- Don't take apart an electrical appliance, even if it is unplugged.

- Stay away from fences around electrical equipment.
- Don't fly kites near power lines.

## Resources



### On the Web:

- [bit.ly/MPelectricity](https://bit.ly/MPelectricity)

### At the library:

- "Electricity for Kids: Electric Power — Generation, Transmission and Storage" by Alex Rayn

## Try 'n' Find

Words that remind us of electricity are hidden in this puzzle. Some words are hidden backward or diagonally, and some letters are used twice. See if you can find:



ATOM, CHARGE, CONDUCTOR, CURRENT, ELECTRIC, ELECTRON, GRID, INSULATOR, LIGHTNING, LINES, MATTER, NEGATIVE, NEUTRON, NUCLEUS, POSITIVE, POWER, PROTON, STATION, WIRE.

S D E R Z N U C L E U S Z N K  
T I L E E R P O S I T I V E E  
A R E T R L O C A N W U K U G  
T G C T I X E T U E V A Y T R  
I H T A W O O C A R R M O R A  
O L R M B M H A T L R E M O H  
N C O N D U C T O R U E W N C  
N D N E G A T I V E I S N O S  
H N Q I P R O T O N W C N T P  
G N I N T H G I L X S E N I L



## Cook's Corner

### Garden Pasta Salad

#### You'll need:

- 1 (12-ounce) box tricolor rotini pasta
- 1 cup halved cherry or grape tomatoes
- 1 cup chopped cucumber
- 1 cup chopped bell pepper (any color)
- 1 cup chopped carrots
- 1/2 cup chopped black olives

#### What to do:

1. Cook pasta according to directions; rinse with cold water.
2. Pour pasta into a large bowl. Add all chopped vegetables and olives to pasta.
3. In a smaller bowl, combine mayonnaise, vinegar, spices and garlic; mix well.
4. Stir mayonnaise mixture into pasta and vegetables; toss to coat.
5. Chill for one hour to combine flavors. Serves 4.



- 3/4 cup mayonnaise
- 1 tablespoon red wine vinegar
- 1 teaspoon salt
- 1/4 teaspoon pepper
- 1 large garlic clove, minced or pressed

\* You'll need an adult's help with this recipe.

## 7 Little Words for Kids

Use the letters in the boxes to make a word with the same meaning as the clue. The numbers in parentheses represent the number of letters in the solution. Each letter combination can be used only once, but all letter combinations will be necessary to complete the puzzle.

1. kitchen furniture (5) \_\_\_\_\_
2. wise birds (4) \_\_\_\_\_
3. actress Millie Bobby (5) \_\_\_\_\_
4. hard to hold onto (8) \_\_\_\_\_
5. part of a minute (6) \_\_\_\_\_
6. not for the public (7) \_\_\_\_\_
7. it announces the winner (10) \_\_\_\_\_

ERY	WN	PP	OW
BLE	VATE	OARD	OND
BRO	SEC	TA	REB
PRI	SCO	SLI	LS

Answers: table, owls, Brown, slippery, second, private, scoreboard.



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## Mini Jokes



**Evan:** How did Ben Franklin feel when he discovered electricity?  
**Esther:** He was truly shocked!

## Eco Note



Scientists have found that more than 20% of the oceans have darkened over the past 20 years, shrinking the sunlit "photic zone," home of 90% of marine life. The darkening, revealed through satellite data and modeling, is caused by increased sediment and organic material, and changing conditions that block light. In some areas, the photic zone has become up to 330 feet shallower, forcing marine organisms to compete closer to the surface. The trend could disrupt ecosystems, affect fisheries and weaken the ocean's role in regulating climate.

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## For later:

Look in your newspaper for weather stories about electrical storms.

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