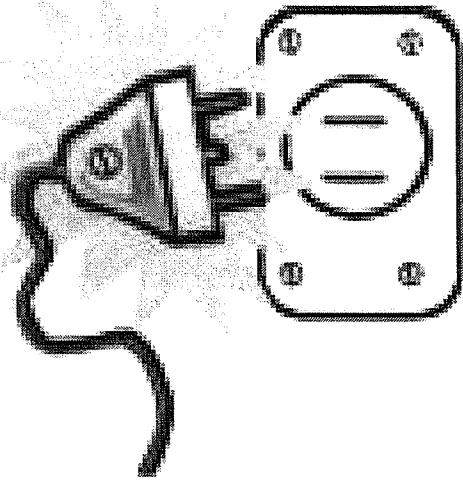


Mc CAIG ELEMENTARY SCHOOL

ELECTRICITY

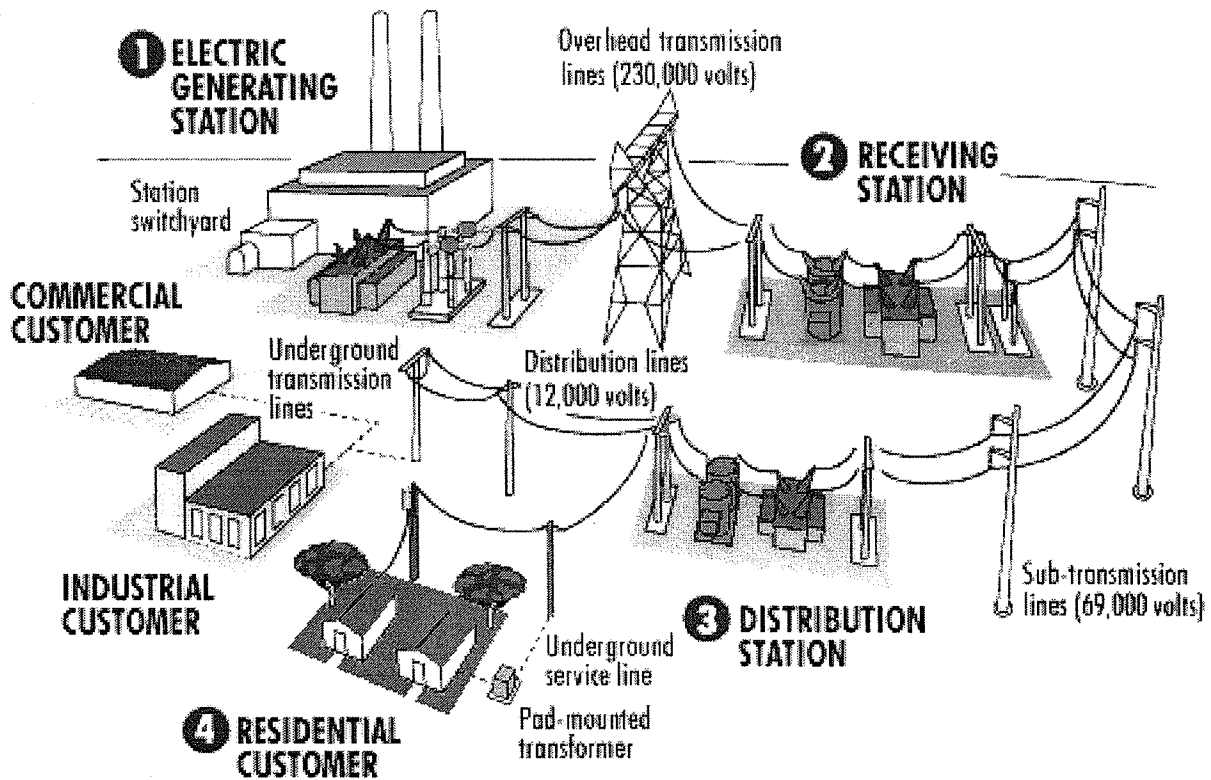


SCIENCE
Cycle 3

**S
T
A
T
I
C

E
L
E
C
T
R
I
C
I
T
Y**

STUDENT: _____



Teacher: Mr. D. Strina

STATIC ELECTRICITY

from the series *Electricity and Magnetism*

Name _____

M
A
T
T
E
R

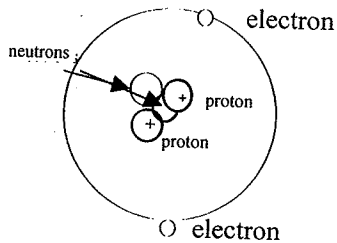
O
F

F
A
C
T

All things are made of matter. Anything that has weight and takes up space is matter.

Matter is made up of atoms. Atoms are so tiny that in a little pencil dot (.) there are more atoms than you could even count.

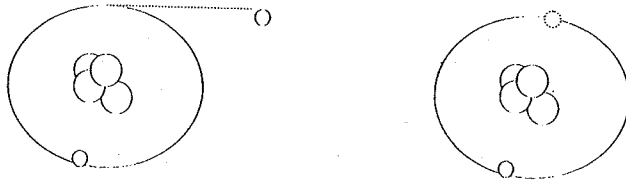
Atoms are made up of even smaller things called electrons, protons, and neutrons. Electrons and protons have electrical charges. Neutrons, which are next to the protons, have no electrical charge.



Electrons have a negative charge.
Protons have a positive charge.
Neutrons have no charge.

Atoms normally have the same number of electrons and protons, so they have a balanced charge.

However, when objects rub together, they can lose or gain electrons. In other words, when one object rubs against another, some electrons may go out of one object and into the other object. This throws the balance of protons and electrons off for each object. One object has lost electrons, so it has more protons and an overall positive electrical charge. The other object has gained electrons, so has more electrons than protons and a resulting negative electrical charge.



If you rub a comb with wool, the comb gains electrons from the wool. Then, when you bring the comb near pieces of paper, the charged comb attracts the paper. (The electrical charge causes the paper to cling to the comb.)

STATIC ELECTRICITY
from the series *Electricity and Magnetism*

Name _____

**P
R
E
-
T
E
S
T**

A. Directions: Pick the definition in column B that best matches the word in column A. Write the letter of the definition on the blank line.

A

1. repel _____
2. proton _____
3. electron _____
4. static electricity _____
5. atom _____
6. attract _____

B

- a. A part of an atom that has a positive charge.
- b. When two objects rub and gain or lose electrons.
- c. All things are made of these. They are the "building blocks of matter."
- d. A part of an atom that has a negative charge.
- e. Objects with like charges jump apart.
- f. Objects with opposite charges come together.

II. Directions: Answer the following questions about static electricity.

1. Why will you sometimes get a shock after walking across a carpet and then touching a metal object, such as a door knob?
2. If you pull a wool sweater over your head, you will often end up with a wild hairdo. Your hair is hard to comb and wants to stand up. Why?
3. Name the three primary particles of an atom and give their charges.

4. Fill in the missing words:

Like charges (charges that are the same) _____ each other.

Unlike charges (opposite charges) _____ each other.

Name _____

STATIC ELECTRICITY
from the series *Electricity and Magnetism*

**C
A
N
Y
O
U
E
X
P
L
A
I
N
I
T
?**

Directions: Try these demonstrations and then give an explanation of how they work.

1. Rub a comb with wool and bring it close to pieces of paper.
2. Put a page from a newspaper against a wall and rub it all over with the edge of a pencil.
3. If you rub your feet across a carpet during the winter, you will often get a shock when you touch a metal object.
4. Sometimes when you pull a sweater over your head, your hair will stick up. You might even hear a crackle.

All of these are examples of static electricity. See if you can think of some other examples.

My examples of static electricity:

Name _____

STATIC ELECTRICITY
from the series *Electricity and Magnetism*

**P
R
O
G
R
A
M

Q
U
I
Z**

Directions: At the end of the program, there is a short quiz. You can record your answers on this sheet.

1. Electricity is defined as the flow of _____.
a. protons b. neutrons c. electrons d. atoms
2. The center of an atom is called the _____.
a. nucleus b. proton c. orbit d. electrons
3. Objects that don't allow electrons to flow easily through them are called _____.
a. protons b. insulators c. conductors d. neutrons
4. There are two kinds of electricity called static and _____.
a. protons b. conductors c. electrical d. current
5. Charges that are unlike will _____.
a. repel b. attract c. conduct d. current
6. What kind of charge does a proton have?
a. repel b. neutral c. positive d. negative
7. What kind of charge does a neutron have?
a. repel b. neutral c. positive d. negative
8. What kind of charge does an electron have?
a. repel b. neutral c. positive d. negative
9. Name some things you should avoid if a lightning storm approaches.

Name _____

STATIC ELECTRICITY
from the series *Electricity and Magnetism*

**P
O
S
T
-
T
E
S
T**

I. Directions: Define the following terms.

1. repel-
2. attract-
3. static electricity-
4. current electricity-
5. atom-

II. Directions: Answer the following questions with short answers.

1. What are the three primary particles of an atom and their charges?
2. Describe how the electric ferry is set up and how it works.
3. Why does a balloon cling to a wall after you rub it in your hair?
4. Why do we sometimes get a small shock after walking across a carpet and touching a doorknob?
5. What should you do to protect yourself during a lightning storm?