**Electricity Study Guide**

Like the charges in an Atom !

**Electric Charge**

 Charge is a fundamental property of matter, like mass.

Objects are either positive, \_\_\_\_\_\_\_\_\_\_\_\_, or\_\_\_\_\_\_\_\_\_\_\_\_.

**Protons** have a \_\_\_\_\_\_\_\_\_\_\_ charge

**Neutrons** have a \_\_\_\_\_\_\_\_\_\_ charge

**Electrons** have a \_\_\_\_\_\_\_\_\_\_\_ charge

Electric Charges work like magnetic poles.

Which two go inside the house (nucleus)?

\_\_\_\_\_\_\_\_\_\_ charges attract

\_\_\_\_\_\_\_\_ charges repel

**Electrical forces cause electrons to move.**

***Electricity is moving electrons.***

Atoms contain an equal number of protons and electrons, so they cancel each other out.

When something **loses** electrons it becomes \_\_\_\_\_\_\_\_\_\_\_\_\_\_ charged.

When something **gains** electrons it becomes \_\_\_\_\_\_\_\_\_\_\_\_\_\_ charged.

BUT

Atoms can gain or lose electrons

 Electric charges (-) are Electrons moving in a wire

**Current Electricity**

**Static Electricity**

building up in one place.

*Static* means **still**

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Lightening is a huge build up of

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_ electricity**

in the clouds, just like when you drag your feet across a carpet. When enough charge is built up to break through the air, lightening occurs, releasing

the charge. You also **discharge** static electricity when you touch a doorknob.

**Current:** is the **flow** of electrons; just like water flows down a stream.

***Charged objects try to discharge because***

***all objects want to be electrically neutral.***

**Energy Source**

A **circuit** is the pathway that electrons travel through;

(Think of a sidewalk)

**Parts of a circuit**

**Conductor**

**Load**

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 Pathway that gets electrons

 from energy source to load

 (wire)

**2 Types of Circuits**

**Parallel**

The World **Series** is several games, one after the other

**Series**

Has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_paths for

electrons to follow

Has only one \_\_\_\_\_\_\_\_\_\_ for

electrons to follow

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Like parallel lines





Turn one bulb off and they both go off

Your house is a

 parallel circuit

More bulbs in a series circuit means they get dimmer

**Conductor**

 Let’s electricity run through it Examples:

***Conductors of electricity also conduct heat, thermal energy.***

**Insulator**

 Doesn’t let electricity run through it Examples:

Electrical wires have a metal center

to conduct electricity surrounded by

insulation for protection.

A. The charge that attracts protons.

B. A buildup of charge on an object.

C. A material that resists the flow of electricity.

D. movement of electrons from one place to another

E. The charge that attracts electrons.

F. A material that does not resist electricity.

G. The pushes and pulls that electric charges exert on each other

H. An object that has equal amounts of positive and negative charges.

1. Insulator

2. Conductor

3. Positive

4. Negative

5. Electricity

6. Electric charge

7. Static electricity

8. Electrically neutral

**Matching !**

Draw a line to connect the term to the meaning.

**I**nsulator? or **C**onductor?

After you rub a balloon on your hair it might stick to a wall.

**Why? Be specific.**

\_\_\_\_ Silver

\_\_\_\_ Wood

\_\_\_\_ Air

\_\_\_\_ Glass

\_\_\_\_ Copper

\_\_\_\_ Pure water

\_\_\_\_ Gold

\_\_\_\_ Styrofoam

\_\_\_\_ Aluminum

**S**eries or **P**arallel circuit?

 List three things you MUST have for a complete circuit:

1)

\_\_\_ Only one path for the electricity.

\_\_\_ Dependent paths.

\_\_\_ How your house is wired.

\_\_\_ Independent current paths.

\_\_\_ Can turn off one light without others turning off.

\_\_\_ If you turn off one light, all the lights turn off.

\_\_\_ More than one path for the electricity to flow.

2)

3)

**NOTES:**

An atom that loses electrons becomes (negative/positive)? Circle one

An atom that gains electrons becomes (negative/positive)? Circle one