**Electricity and Magnetism Guided Notes**

**What is electricity?**

The collection or flow of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the form of an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ charge

**What is static electricity?**

When two objects rub against each other electrons \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on an object causing it to have a different \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from its surroundings.

As electrons collect on an object, it becomes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ charged. As electrons leave an object it attains a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ charges. Charges interact with each other:



**What causes you to be shocked when you rub your feet across carpet?**

An electrical discharge is the passing of an electric \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ through the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from a negatively charged object to a positively charge object. This is what causes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ !

**What is a conductor and insulator?**

A conductor is a material which \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ an electric current to pass. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are good conductors of electricity.

An insulator is a material which does \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ an electric current to pass. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are good conductors of electricity. Plastic, glass, wood, and rubber are good insulators

**What is the difference between static electricity and current electricity?**

Static electricity is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or collects on the surface of an object, whereas current electricity is flowing very rapidly through a conductor.

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of electricity in current electricity has electrical \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ . Electric charges flow from an area of high voltage to an area of low voltage

**What are batteries?**

Batteries are composed of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ substance which can generate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which can be used in a circuit.

There are two kinds of batteries: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cell and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cell batteries.

**What is electrical resistance?**

Resistance (R)is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to the flow of an electric current, causing the electrical energy to be converted to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ .

**What are electric circuits?**

Circuits typically contain a voltage \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , a wire \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , and one or more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which use the electrical energy.

**What is a series circuit?**

A series circuit is one which provides a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pathway for the current to flow. If the circuit \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , all devices using the circuit will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ .

**What is a parallel circuit?**

A parallel circuit has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pathways for the current to flow. If the circuit is broken the current \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pass through other pathways and other devices will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to work.

**What is the difference between an open circuit and a closed circuit?**

A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **circuit** is one in which the pathway of the electrical current is complete and unbroken.

An \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **circuit** is one in which the pathway of the electrical current is broken. A switch is a device in the circuit in which the circuit can be closed (turned on) or open (turned off).

**What is magnetism?**

Magnetism is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of magnets

The earliest magnets were found naturally in the mineral *magnetite* which is abundant the rock-type *lodestone*. These magnets were used by the ancient peoples as compasses to guide sailing vessels.

Magnets produce magnetic \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and have magnetic \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ lines

Magnets have two ends or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , called north and south poles. At the poles of a magnet, the magnetic field lines are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ together.

**What are magnetic domains?**

Magnetic substances like iron, cobalt, and nickel are composed of small areas where the groups of atoms are aligned like the poles of a magnet. These regions are called domains. All of the domains of a magnetic substance tend to align themselves in the same direction when placed in a magnetic field. These domains are typically composed of billions of atoms.

**Electricity and Magnetism – how are they related?**

When an electric current passes through a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a magnetic field is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ .

**What is an electromagnet?**

When an electric current is passed through a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of wire wrapped around a metal core, a very \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ magnetic field is produced. This is called an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ .

**What are electric motors?**

An electric motor is a device which changes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy.

**What is electromagnetic induction?**

Moving a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of wire through a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ field produces an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ current. This is electromagnetic induction.

A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is used to convert mechanical energy into electrical energy by electromagnetic induction.

**Direct current versus alternating current – AC vs DC : What’s the difference?**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ current is electrical current which comes from a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which supplies a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ flow of electricity in one direction.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ current is electrical current which comes from a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ . As the electromagnet is rotated in the permanent magnet the direction of the current \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ once for every revolution.