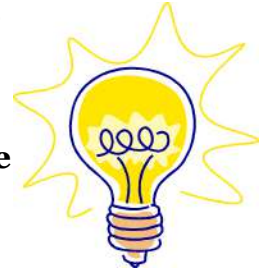


Name _____ Number _____ Date _____

Study Guide: Electricity and Electromagnetism Test

Now that we have concluded Investigations 3 and 4 of our Magnetism and Electricity unit, we will have a test on the concepts we have learned on **Friday, March 18th**.

How should I study? Use this study guide, any labs and worksheets from these investigations (in your science folder), and any other handouts to help you review for the test.



Electricity Key Concepts: From our in-class investigations, be able to explain the following big ideas...

- A D-Cell is a source of electric energy.
- A light bulb is an energy receiver that produces light.
- To make a complete circuit, energy must travel in a loop or circle, moving from the negative end of the battery and back around again to the positive end of the battery.
- A motor is an energy receiver that produces motion.
- A switch is a device that opens and closes a circuit.
- Schematic diagrams use symbols to represent circuits. They are a neat, accurate and universal way (understood by many people) to draw a circuit. You will need to be able to draw a simple, neat schematic diagram on the test.
- Materials that allow the flow of electric current are conductors.
- Materials that do not allow the flow of electric current are insulators.
- All metals are conductors.
- Metals (like the wires we have been using in class) that are covered with an insulating layer, typically plastic, which will not conduct electricity.
- The difference between a parallel circuit and a series circuit, and when it might be beneficial to use each one. (Think about our string-of-lights problem lab!)

Electricity Vocabulary: Study the following terms (in the terms to know section of each of your packets):

D-Cell

circuit

switch

schematic diagram

series circuit

electricity source

component

closed circuit

conductor

parallel circuit

electricity receiver

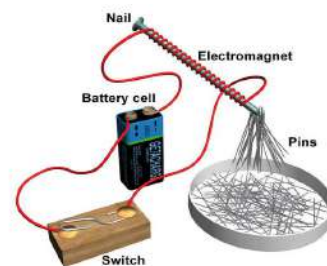
circuit base

open circuit

insulator

Electromagnetism Key Concepts: Know the following **big ideas** from our investigations:

- An electromagnet can be made by winding an insulated wire around an iron or steel core (in our investigations, we used a rivet) and running a current through the wire.
- The magnetism produced by an electromagnet can be turned **on and off**, usually with a switch.
- The location of the wrapped wire affects the strength of the electromagnet. The **closer and tighter** the wire is wound to the end of the core, the stronger the magnet will be.
- The **more winds** on the core of an electromagnet, the greater the strength of the magnetic force. The magnetic field is created by the current running through the wire. Therefore, **more wire = more current and a stronger magnetic force**.



Real Life Examples – Electromagnets can be found in large cranes that move massive amounts of metal, and also in door bells, telegraphs, and generators or turbines.

Major Advantages – The biggest advantage of creating and using an electromagnet is the **ability to turn the magnetic force on and off**. Permanent magnets do not have this ability. This makes it easier for people to use and control electromagnets.



Electromagnetism Vocabulary - Be familiar with the **terms** that we have used throughout our investigations, which can be found in the terms to know section of your Investigation 4 packet.

- coil
- core
- electromagnet