Name _____ **Date** _____

Lab: Hans Oersted – Electricity/Magnetism **Period** _____

Background information: Hans Oersted was one of the first scientists to discover a connection between electricity and magnetism. He knew that a compass would move based on the magnetic field of the Earth. Do the following activity to see what he discovered.

Materials: Battery, wire and a compass.

Procedure: Hook the wire up to each end of the battery. Move the wire (which now has a current flowing through it) over the compass. Observe what happens and then answer the questions below.

Questions:

1. Draw a diagram below showing how you set up your experiment.

2. What happened to the compass needle when you moved the connected wire over it?

_____

_____

3. What makes a compass needle move? _____

_____

4. What can you conclude about what is created as a current flows through a wire? _____

_____

_____

Putting Hans Oersted's discovery to use:

Problem: How can we create a temporary magnet using Hans Oersted's discovery?

Materials: Dry Cell (Battery), wire, nail, paperclips

Procedure:

1. Use just the nail to try to pick up the paper clips. Does it work? _____.
2. Coil the wire around the nail, as shown in the figure below, 10 times. Connect ends to the dry cell. Hold nail over the paper clips. Does it attract the paper clips? _____ How many paper clips could you pick up with 6 coils of the wire? _____
3. Now coil the wire 16 times. How many paper clips can you pick up? _____
4. Use the alligator clip to connect the two dry cells. Now see how many paper clips can be picked up with 10 coils and two dry cells. _____
5. Use both dry cells and as many coils of the wire as you can. What is your total number of paper clips? _____
6. What two factors affect the strength of the electromagnet?

_____

_____