

SPS10. Students will investigate the properties of electricity and magnetism.

c. Investigate applications of magnetism and/or its relationship to the movement of electrical charge as it relates to electromagnets

Build an Electromagnet Lab

Define the following:

Electricity - _____

Magnet - _____

Magnetic domains - _____

Electromagnet - _____

Today's Objective: Today you will be creating electromagnets, filling in your chart, and answer conceptual questions based upon your observations.

Materials: Battery, Battery holder, Electrical wire, iron nail, paper clips, sand paper, ruler

Directions:

1. Wrap a nail with 10 coils of wire making sure to leave 2 inches of wire on each side to attach to a battery. Use sand paper to strip the coating off of the ends of both sides of the wire.
2. Attach the wires to a battery. Observe how many paper clips you can pick up.
3. Then wrap 20 coils and see how many paper clips you can pick up and try again with 30 coils.
4. Record your data in the table below. Next move a compass around your electromagnet and observe what happens.

<i>Electromagnet type</i>	<i># of paper clips picked up</i>
An electromagnet with 10 coil wraps	
An electromagnet with 20 coils	
An electromagnet with 30 coils	

5. You will then answer conceptual questions based upon your lab. **(Remember to take your Electromagnet apart once you are finished to keep from draining out the battery!!!)**

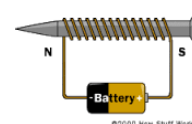
Conceptual Questions:

1. How is an electromagnet made? _____
2. Name 3 factors that can affect the strength of an electromagnet _____

3. Why is an electromagnet more powerful when it has an iron core? _____

4. What is the main benefit of an electromagnet compared to a permanent magnet? _____

5. What happened when you moved the compass around the electromagnet? Explain why. _____



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