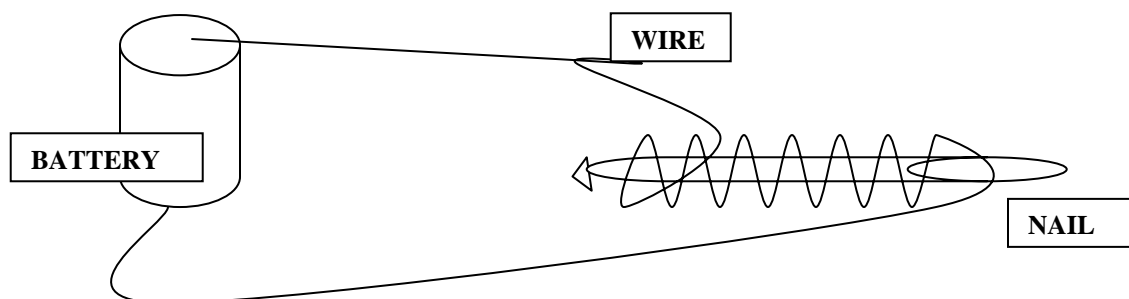




ELECTROMAGNET EXPERIMENT

Materials: D cell battery; [optional-battery holder; two battery clips or tape can be used to hold wire in place]; insulated copper wire; long iron nail; cup filled with small paper clips

Procedure:

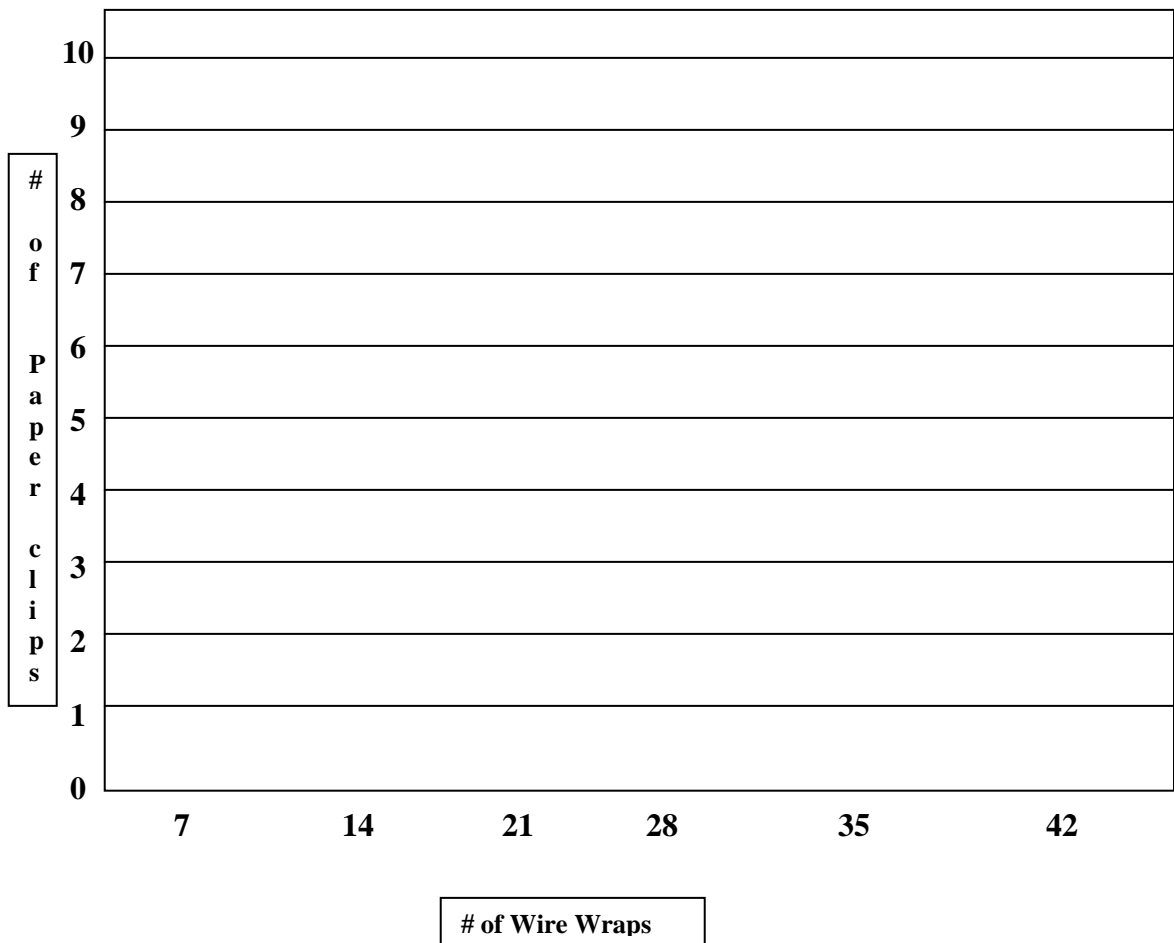


- 1) Place battery in the battery holder
- 2) Put the battery clips in the battery holder with the silver clip part facing outward.
- 3) Attach the stripped copper end of the insulated wire to the battery clip by *pushing in* the silver clip and holding it. Then slide the wire through. [OR eliminate steps 1-3 and use electrical or masking tape to hold wire in place]
- 4) Wrap the insulated wire around the nail seven times. Attach the other end of the stripped wire to the other battery clip.
- 5) You just made an electromagnet! Now, let's see how strong it is by trying to attract paper clips to it. Try to attract just one, and then try more. Do you feel the pull of your electromagnet? Write down the number (#) of paper clips you attract in the right column.
- 6) Repeat steps 4 and 5 for the remaining wire wraps - 14/ 21/ 28/ 35/ 42.

Observations:

<u># of Wire Wraps</u>	<u># of Paper Clips Attracted</u>
7	
14	
21	
28	
35	
42	

Create a bar graph using the data from the chart above.



Conclusion: _____

*****Note-**Children and even adults are amazed by this activity. Ferromagnetic objects are able to ‘turn’ into a magnet when brought into contact with electricity. Another great extension to this activity is to use a bar magnet and rub an elongated paperclip or sewing needle in the *same* direction at least 20x. Try and pick up a small paper clip. You have now magnetized the ferromagnetic object and made another temporary bar magnet by creating parallel ‘lines of force’ within a magnetic field.