Effect of Coils on an Electromagnet

Problem: How does the number of coils affect the strength of an electromagnet?

Hypothesis:
If the number of coils increases, then the strength will _____ because...

Variables:

Independent (manipulated)-
# of coils

Dependent (responding)-
strength of electromagnet "# of paperclips"

Procedure:

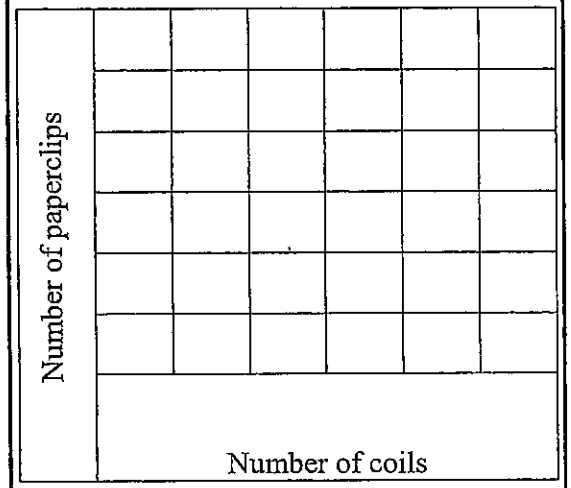
1. Place the copper wire on the center of the nail, and wrap one side of the wire up and one side going down. Make 5 coils on each side. (Ask teacher for directions on how to do this.)
2. Create a circuit using the battery.
3. Once the electromagnet is ready, place some metal paper clips on the table. Pick up the electromagnet and run it through the paper clips. Observe what happens; record data.
4. Dismantle the circuit and wrap 5 more coils on each side.
5. Repeat steps 2 & 3.
6. Dismantle the circuit and wrap 5 more coils on each side.
7. Repeat steps 2 & 3.

Results:

Data

# of Coils	Number of paperclips picked up					
	Trial					
	1	2	3	4	5	Ave.
5						
10						
15						

Graph:



Materials:

- iron nail
- copper wire
- battery
- battery holder
- small paperclips

Conclusion: