



Building a Simple Electromagnet

— USING WIRE AND A NAIL —

Name: _____ Date: _____



QUESTION

Can we turn a regular nail into a magnet using electricity?



HYPOTHESIS

I think _____



MATERIALS

- 1 iron nail (2–3 inches long)
- Insulated copper wire (about 2–3 feet)
- 1 AA battery (1.5V)
- Tape
- Paper clips
- (Optional) Sandpaper



OBSERVATIONS

What happened?



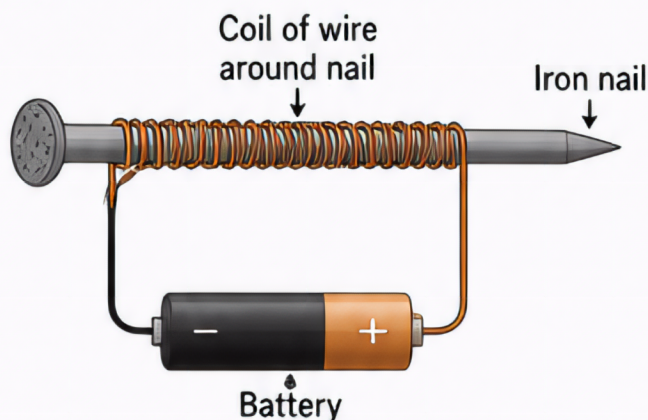
CONCLUSION

Did your electromagnet work? ☐ Yes ☐ No ☐ Partly

What did you learn?



DIAGRAM



PROCEDURE

1. (Optional) Use sandpaper to gently clean any rust or coating off the nail.
2. Starting near the head of the nail, tightly wrap the wire around the nail in one direction. Make 20–40 tight turns. Leave a few inches of wire at each end.
3. Tape the wire ends to the battery terminals: one end to the positive (+) side and the other end to the negative (–) side.
4. Test your electromagnet by touching the nail to paper clips.
5. Try changing the number of turns or using a different battery. Test again!



HOW IT WORKS:

Electric current flowing through the coil of wire creates a magnetic field. The magnetic field makes the nail behave like a magnet while the current flows.