

7. What is the evidence that the electromagnet interacts with a magnet?
8. Does an electromagnet behave like a magnetic material or like a magnet? What is your evidence?

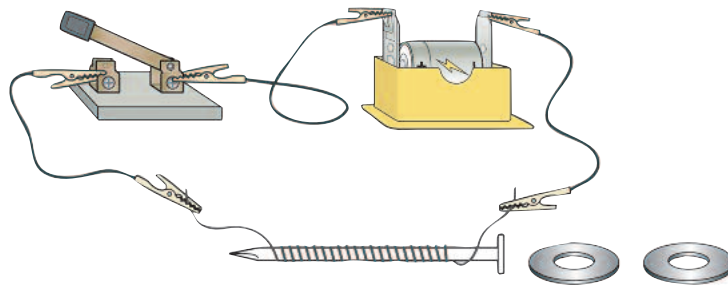
Participate in the class discussion to go over the answers to the last two questions.

Experiment 2: How can you make an electromagnet stronger?

Remember to share responsibilities among your team members.

STEP 1 Wrap about *30 turns* of wire around the large nail. Spread the coils over the length of the nail. Connect a hook-up wire to each end of the wire and assemble the circuit as shown in the diagram. (The enamel should be removed from the ends of the wire. Make sure you connect the hook-up wires to these parts.) Keep the switch off (handle up). The nail and coil of wire is an electromagnet.

STEP 2 Close the switch. Pick up the electromagnet and bring the flat head end of the nail to one of the washers. Try to lift the washer up into the air and hold it there. If the electromagnet is not strong enough to lift the washer, figure out how to make it stronger so it can lift the washer.



9. How did you make your electromagnet strong enough to lift the washer? (If it was already strong enough, record that.)

STEP 3 While the washer is lifted in the air, open the switch.

10. What happens to the washer?
11. Why do you think this happened?

Your team will need:

- 2 or 3 cells in holders
- switch
- 4 hook-up wires
- large nail
- long piece of enameled wire with insulation rubbed off the ends
- 2 or 3 large washers
- ruler

To Do

Team Member 1

Supply Master: gathers materials.

Team Member 2

Procedure Specialist: reads instructions and steps aloud.

Team Member 3

Team Manager: makes sure team stays on task and all team members are participating.

Team Member 4

Recycling Engineer: returns materials.