

Electromagnets



Electromagnet and Compass

Question

- How will electric current passing through a wire affect a compass?

Hypothesis

In your science notebook, write a hypothesis stating how you think electric current passing through a wire will affect a compass.

Materials

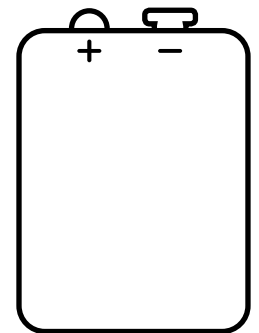
- 9-volt Battery
- Compass
- Alligator clip
- Nail

Vocabulary

- conduct
- direct current
- electricity
- electromagnet
- energy flow
- magnetic field
- repel

Procedure

- Take the nail and hold it next to the compass. Move the nail around over the compass and observe the interaction. Record your observations in your science notebook.
- Connect one end of the alligator clip to the negative terminal of the 9V battery.
- Wrap the wire of the alligator clip around the nail, starting at the flat end or head of the nail, and moving towards the pointed end. Leave enough wire to reconnect the battery.
- Connect the other alligator clip to the positive terminal of the 9V battery.
- Hold the pointed end of the nail near the compass. Observe the interaction. Record your observations in your science notebook.
- Hold the flat end or head of the nail near the compass. Observe and record the interaction.



Part One Conclusion

- What did the electric current create when it passed through the wire around the nail?
- What are the two poles of a magnet called?
- Which pole was the flat end of the nail? Which pole was the pointed end of the nail? Support your answer with your observations.
- How do the parts of an electromagnet work together to create magnetism?
- Will you accept or reject your hypothesis? Upon what experimental evidence are you basing your conclusion?