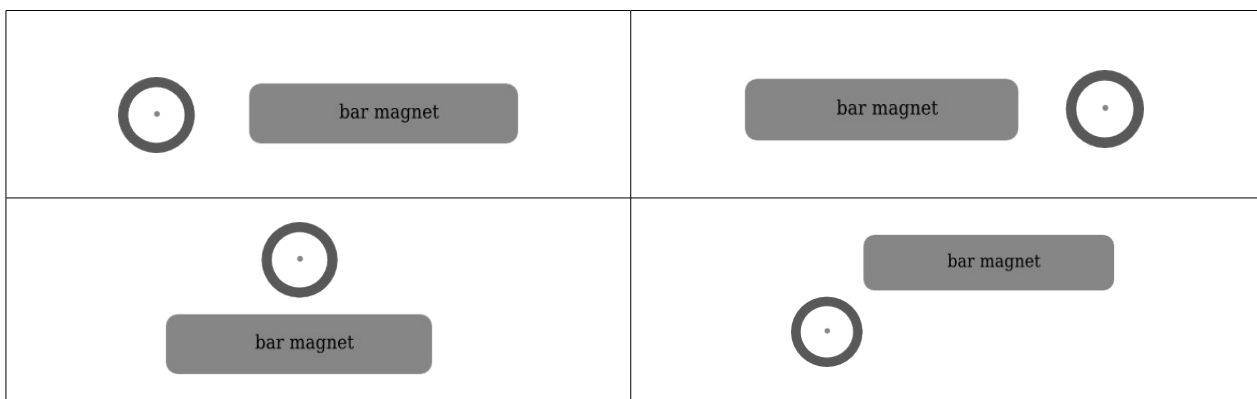


Follow-up Activity for Faraday's Electromagnetic Lab

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1. Could a magnet affect an electric current? How or why?
2. What are some of the ways that you could make a magnet?
3. Look at the lab equipment. Identify the following parts: compass, wire coil, bar magnet, meter, battery. (Note: be careful when handling the magnet -- it is very strong.)
  - a. Predict what will happen if you place the compass near the bar magnet. For each of the compass positions shown below, sketch the compass needle. Explain your reasoning.

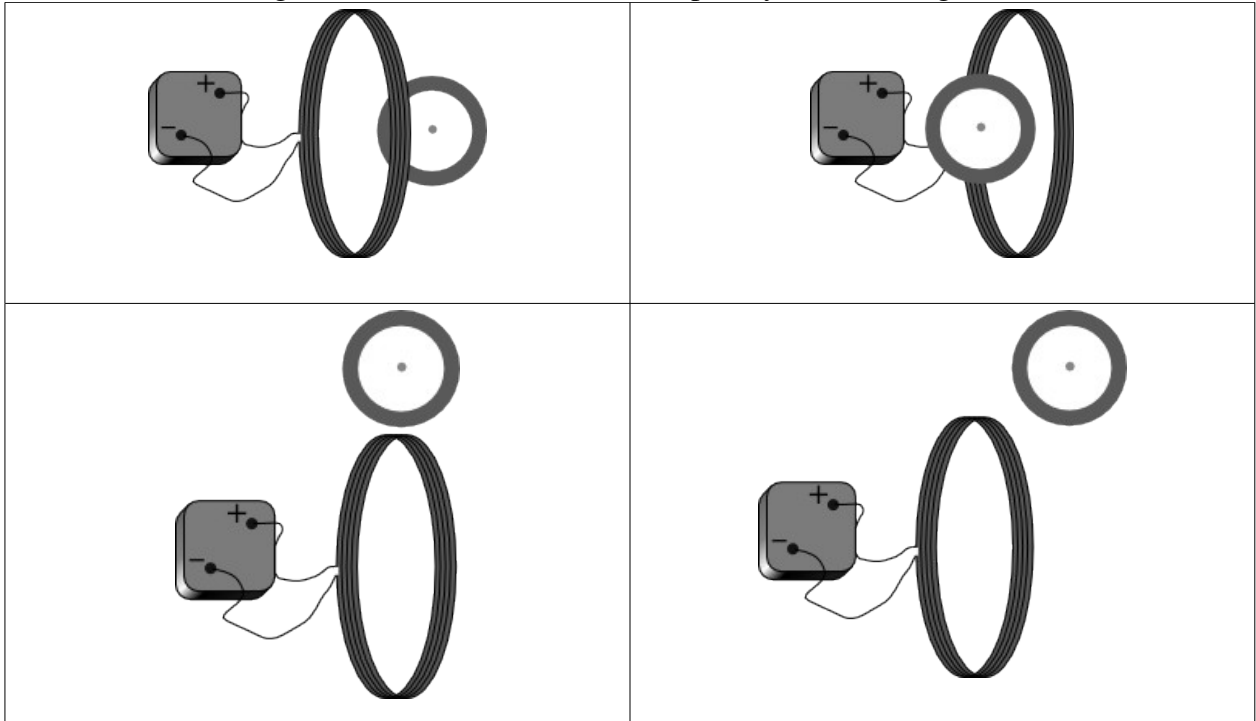


Now check your prediction.

- b. Connect the wire coil to the meter. Predict what will happen if you
  - i. move the magnet beside or through the coil
  - ii. move the coil beside or around the magnetExplain your reasoning. Now check your predictions.
- c. Explain what is happening in the meter and coil as you perform the actions above. How would you change the apparatus to make the meter react more strongly?
- d. Suppose you hold the coil and magnet flat (horizontally) at the same height.
  - i. What would you expect the meter to do when you move the magnet horizontally?
  - ii. Suppose the coil is then rotated 90 degrees (but keeping the edge toward the magnet). What would you expect the meter to do when you move the magnet horizontally?Explain your reasoning. Now check your predictions.

e. Suppose you connect the coil to the battery.

- i. Predict the direction that the compass needle will point when you hold the compass at the locations shown in the figures below. (In the figures, the view is from above, and the compass is at about the height of the center of the coil.) Explain your reasoning.



Now check your predictions.

- ii. How would these answers change if you swapped the two wires connected to the battery? Explain your reasoning. Now check your predictions.

4. Have you ever heard of a "magnetic field"? If so, in what context? Describe your impression of a magnetic field (draw a picture if that helps).

5. After hearing about Faraday's Law, a student suggests that maybe you could build a bicycle light using this idea. She has a light bulb, a magnet and a lot of wire. How would you design the bicycle light?