

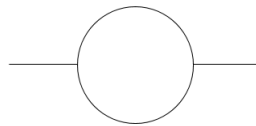
In this activity, you will be building a simple motor out of components you would find around the house.

Materials:

- magnet wire
- D-cell battery
- two paper clips
- magnet
- scissors
- tape

Procedure:

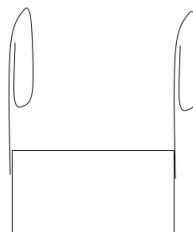
- a. Wrap the magnet wire around your D-cell battery (or a similar round object) about 10 times. The ends of the wire should protrude like wings from the center of the loop on both sides (see diagram below):



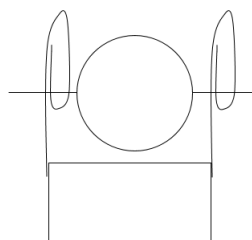
- b. Using one blade of your scissors, scrape off the magnet wire coating along the top half of each of the wings.
c. Next, unfold the outermost bend of the paperclips (see diagram below):



- d. Then, attach the unfolded segment of each paper clip to either pole of the battery (see diagram below):



- e. Finally, slide the wire wings into the holders created by the paper clips (see diagram below):



Name:

Date:

1. Now it's time to get your motor moving! Grab your magnet, and slightly push the wire loop with your free hand to start it rotating. Move the magnet toward the wire loop. Does the loop continue to rotate, or does it slow to a stop when the magnet is close?

2. Arrange your magnet so that the loop reacts differently than in your previous results (i.e., if the loop continued moving, make it stop, and if it stopped, make it continue moving). How did the arrangement of the magnet differ in this case?

3. When the exposed sides of the wings are in contact with the paper clips, the current flowing through the loop induces a magnetic field. Based on your observations, are the magnet and the loop attracting or repelling each other when the loop continues moving?

4. Find a classmate who has a wire loop with a different number of coils in it. When you put your magnet near their loop, does it rotate at the same rate, at a greater rate, or at a lower rate? Explain why you think the rate of motion is relative to the number of coils.
