

**SPS10. Students will investigate the properties of electricity and magnetism.**

c. Investigate applications of magnetism and/or its relationship to the movement of electrical charge as it relates to simple motors

**Build a Simple Electric Motor**

An \_\_\_\_\_ is an electrical machine that converts \_\_\_\_\_ energy into \_\_\_\_\_ energy.

**Today's Objective:** Today you will be creating simple electric motors and answering conceptual questions based upon your observations.

**Materials:** D Battery, 2 jumbo paper clips, Scissors, Magnet wire, Magnet, Electric tape/Rubber band, Marker, Ruler, Sand paper

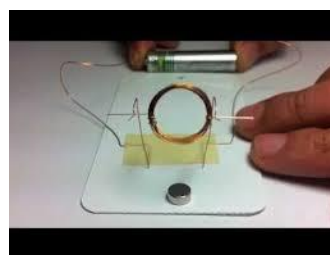
**Directions:**

1. Wrap the magnet wire around the marker about 20 times. Leave 5 centimeters of wire free on both ends of the wire.
2. Remove the marker and squeeze the coil of wire together. Wrap one end of the wire around the coil and then wrap the other end and make sure to have them on exact opposite sides.
3. Stand the coil of wire up, place the coil ends on the side of the table, and shave the top part of each end with sand paper
4. Unfold each jumbo paper clip and use the rubber band to wrap them around the battery making sure the hooked part is at the top. Put your coil of wire between the hooks in the paper clip.
5. Place a magnet on top of the battery in between the paper clips. You may have to give your coil of wire a push to start your motor. Yay! If you did it correctly your motor should spin using the alternating electromagnetic currents!



**Conceptual Questions:**

1. How is a motor made? \_\_\_\_\_  
\_\_\_\_\_
2. What types of energy transfer occurred to make your motor? \_\_\_\_\_  
\_\_\_\_\_
3. Why was it important that you only shave the top halves of your coil of wire? \_\_\_\_\_  
\_\_\_\_\_
4. Name at least 5 devices that motors are used in today. \_\_\_\_\_  
\_\_\_\_\_
5. Name 3 ways you could increase the strength of your motor. \_\_\_\_\_  
\_\_\_\_\_



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