

ENERGY CONVERSION: MOTORS

Question for kids: How do motors use electricity?

Have your kids ever wondered what makes a motor go? They can figure it out with this simple electrical experiment. With supplies that range from batteries to paper clips, you'll make a simple motor that doesn't look like what's in your car, but it still will surprise and delight when it starts spinning!

MATERIALS FOR THIS ACTIVITY:

- [Wire, insulated copper, #24, 15ft.](#)
- [Neodymium disc magnets, 0.5" \(2/pack\)](#)
- [Battery holder & joiner, D cell](#)
- [Battery, D-size, heavy duty, 2/pack](#)
- [Rubber bands, 1.4 oz. bag](#)
- Paper clips, 2 identical



WHAT IT TAKES



FOLLOW THIS EASY, STEP-BY-STEP ACTIVITY

In this activity, kids will use more complex instructions, along with magnets and a few household paper clips to make a simple motor. Adult supervision is suggested.

- 1** Wrap several loops of the wire in a small circle. Wrap the ends of the wire around the main loop a couple times on opposite sides of the original loop to secure it. This is called an armature. (See our TIPS below for a video demonstration.)
- 2** Take two paper clips and open them up. Carefully form a small loop at the end of each paper clip. Attach the non-looped ends of the paper clip to the battery holder and install the battery into the battery holder.
- 3** Set a neodymium magnet on top of the battery in the center.
- 4** Carefully place the armature in the loops on the end of the paper clip. If the motor doesn't start immediately, try carefully spinning the armature.

HOW

BUY EVERYTHING YOU NEED FOR THIS ACTIVITY IN ONE PLACE

See all of these products and more on [one handy shopping page](#).



Wire, Insulated Copper, #24, 15 ft.

Perfect for connecting



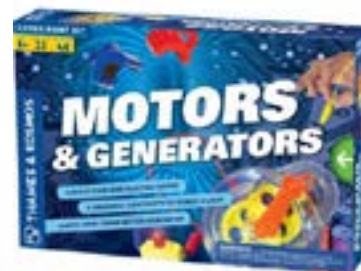
Neodymium Disc Magnets, 0.5" (2/pk)

Have a pull force of 10 lbs.



Battery Holder & Joiner, D Cell

Use alone or with multiple holders



Thames & Kosmos Motors & Generators

Explores simple motors in a hands-on way

[See all related products](#)

A FEW TIPS TO HELP YOU OUT

- See the webpage for this activity for a Home Science Tools video demonstrating a similar motor activity.
- The motor will only spin in one direction, therefore if you need to jump start the spinning, try both ways.
- The ends of wire from the armature need to be straight in order for the motor to work.
- Make sure the paper clips are firmly attached to the terminals of the battery.
- The bundle of wire in the armature need to be cleanly wound.

GO BEYOND THE ACTIVITY!

- Take the other neodymium magnet and hold it on the opposite side of the armature as the first magnet while the motor is spinning. Observe what happens as you move it closer. Flip the magnet over and observe what happens.
- A generator is just a motor working in reverse. Explore this concept by playing with a generator to power a circuit.

NEED HELP WITH THIS ACTIVITY?

Call 1-800-860-6272 or email service@homesciencetools.com.

SHOP

TIPS

MAKE IT YOUR OWN

HELP

WANT MORE?

Time to get serious!