

SCIENCE FUN #5 MAY THE (ELECTROMAGNETIC) FORCE BE WITH YOU!!

If you remember, last time we talked about magnets. Magnets create an “invisible glue” where they stick to some metals. Do you remember which metals?

But how are magnets made? Well, it turns out that we use electricity to make magnets (and later you can see that magnets make electricity!).

But wait, what is electricity? If you remember, electricity is simply the movement of incredibly tiny things called electrons. Electrons move really easy through some things, like metals, but not so well through others, like plastic. So if you notice an electrical cord like what we use for a lamp is copper wire (where the electrons go) surrounded by plastic (so we don’t get shocked by the electrons!).

But when electrons move, they create magnetic lines of force! Don’t believe me? Well, this week we’re going to make an ELECTROMAGNET! That is, we are going make a magnet from electricity!

LET’S BUILD AN ELECTROMAGENT!!

Here’s what you need (these are all in your supply bag)

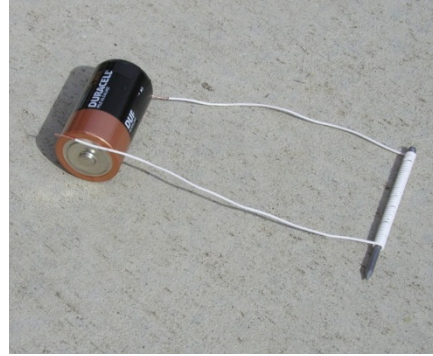
- One “D” battery
- About 3 feet of insulated copper wire
- A large threaded bolt
- Electrical Tape
- Some paper clips

Step 1. Hold the wire about 6 inches from one end. Now wrap the rest of the wire around the bolt starting at one end of the bolt, and then go all the way to the other end of the bolt, like shown here. Leave about 6 inches of wire at the other end. **BE CAREFUL! DO NOT**



OVERLAP THE WIRE WHEN WRAPPING THE BOLT. IF YOU DO THAT THEN THE ELECTRICITY WILL GO BACK AND FORTH AND THE MAGNETIC LINES OF FORCE WILL BE CANCELED OUT.

Step 2. Now tape one end of the wire to the “positive” end of the battery. Tape the other end of the wire to the “negative” end of the battery. **BE CAREFUL!! WHEN YOU ATTACH THE SECOND END OF THE WIRE, THE BATTERY WILL BEGIN CONDUCTING ELECTRICITY THROUGH THE WIRE COIL IMMEDIATELY. THE BOLT MAY GET HOT SO HOLD IT GENTLY!!**



Step 3. Now test your magnet. Test it by placing it against a paperclip or another small piece of metal. If the bolt picks up the metal object, the magnet is working!!

Step 4. When you're finished using the magnet, detach the wire ends from the battery.

So what did you learn? Are electricity and magnetism related? Are they the same thing or different things?