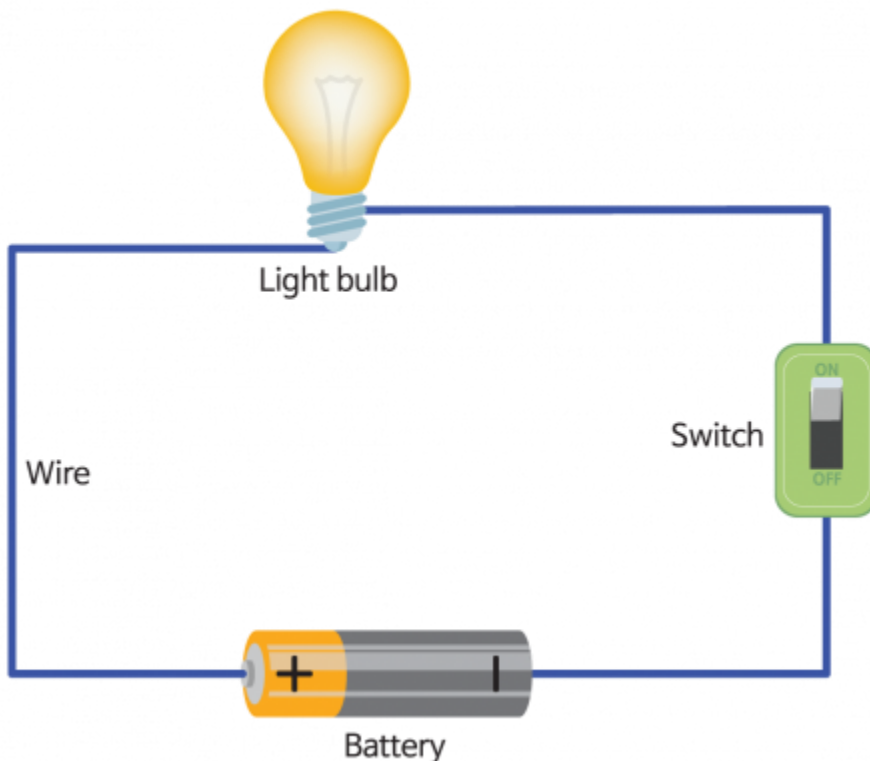




Electrical Circuits

Path for transmitting **electric current**.

An electric circuit includes a device that gives energy to the charged particles **representing** the current, such as a **battery** or a **generator**: devices that use current, such as **lamps**, **electric motors**, or **computers**; and the connecting wires or transmission lines.

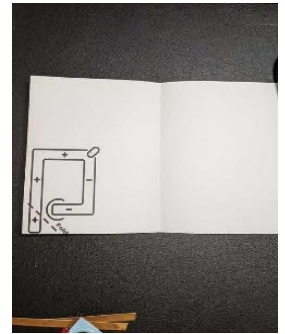
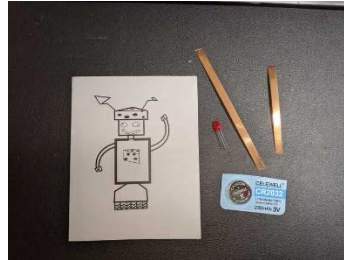


Circuit Card



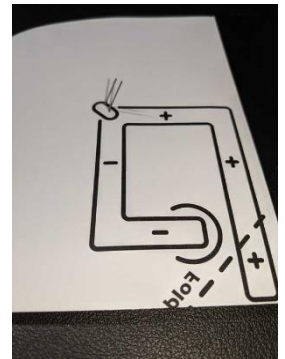
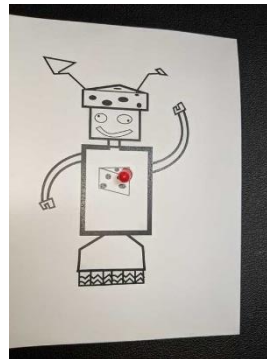
Need:

- Paper Card with Design and Circuit outline & diode holes
- Copper Tape (2 pieces cut to fit your circuit)
- Battery (CR2032)
- Light Bulb (5mm LED Light Emitting Diode)

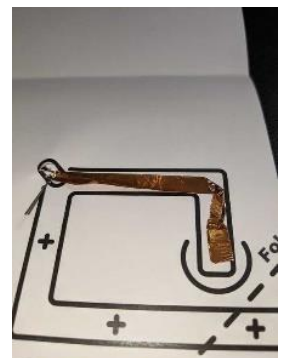
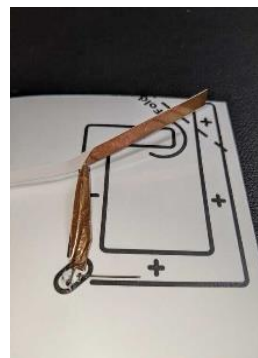


Directions:

1. Find the diode holes in the front of the card and insert in the diode. One wire in each hole.
2. Open the card and bend the wire along the circuit lines. Short wire is negative and longer wire is positive.
3. Unpeel the copper tape a little at a time. Make sure it covers the wire, follows the circuit line and is still all connected at the bend. Make sure the shorter piece of tape is the for the negative.



Step 1

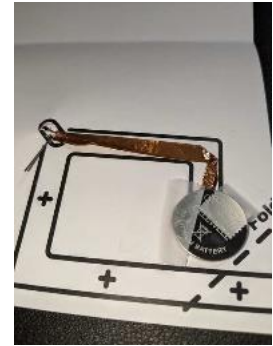


Step 3



Circuit Card

4. Place the negative side of the battery down on the end of the copper tape. Using a small piece of transparent tape, tape the battery down. Only tape down a small side of the battery as the top must make contact with the copper tape.



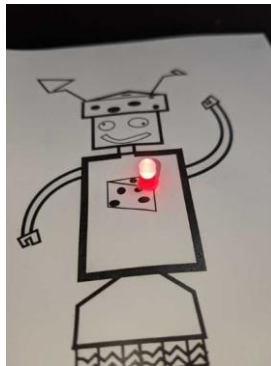
Step 4

5. Place copper tape on the positive side.

6. Fold the corner over the battery making sure the copper tape is in contact with the battery.



Step 5



Step 6

Note: If light does not come on, make sure the battery is touching both pieces of copper wire. Also make sure the copper tape is not broken on the bends and is covering the diode wires.



Brush Bots

Need:

- Toothbrush Head
- Double-sided foam tape
- Transparent tape (2 small pieces)
- Battery (LR44, 1.5 V)
- Motor (DC 3V 6mm x 10mm Miniature Micro Vibrating)
- Self-sticking googly eyes
- Chenille Stem (2 pieces about 3 inches each)

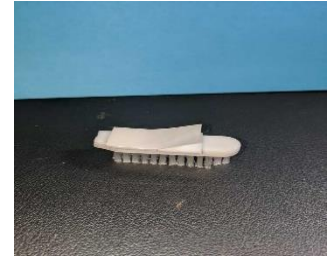
Directions:

1. Remove the backing from one side of double-sided foam tape and attach to the flat side of the brush.
2. Unpeel the other side of the tape.
3. Attach the motor to the tape so it hangs slightly over the back edge of the brush. Vibrating part should move freely.
4. Tape the motor's blue or black wire to the negative side of the battery using a very small piece of transparent tape. Then push the battery into the double-sided tape.
5. Position the two chenille stems between the battery and the motor and bend them like legs.
6. Peel and stick on the googly eyes to the front of the brush.
7. Place the second motor wire in between the chenille stem and to the top of the battery. It should begin to vibrate. Put it on a flat surface and watch it go. (May need a second piece of transparent tape to attach the second motor wire to the top of the battery)

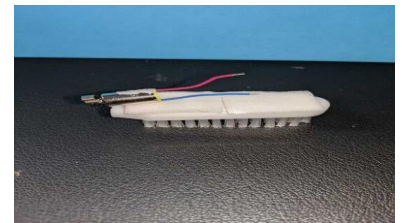
Note: If it doesn't work, make sure both motor wires are connected to the battery.



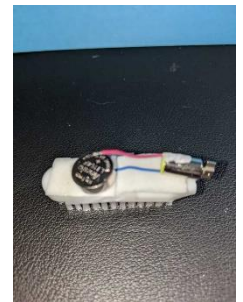
Step 1



Step 2



Step 3



Step 4



Step 5



Step 6



Step 7