

**JL BOCES**

## **LED Light up Card**



**Presenter:** Jana Rogers

### **Description of Project**

Why buy a boring old greeting card, when you can make an amazing light up card!

### **Materials Needed**

1. Paper (cardstock, cut up manilla folders--- any kind works, but heavier paper holds up better)
2. Pencils/Markers/Crayons/Paint- However you want to draw on your card
3. LED Light (3 mm) any color
4. Copper Tape
5. Button Battery
6. Regular scotch tape (optional)

7. Scissors (optional)

## Steps

1. Fold your piece of paper in half (or quarters for a smaller card). If repurposing a folder, cut along the fold to the size you would like.
2. Sketch out your card design for the front of the card (in pencil). Mark where you want the light to be with an **X**. Poke through with a pencil. Also mark where you want the user to "PRESS HERE" to turn the light on with a **O**.

3. On the inside of the card (behind the front) sketch out your circuit. You will need two straight, parallel lines, about 1 inch apart, on either side of the **X** (hole). At the end of one line will be your battery. This is where you will "press here" so it should be behind the **O**. Mark a + sign on the side that will not have the battery, and a - sign on the side that has the battery.



4. Cut two strips of copper tape, about the length of the parallel lines on your sketch. Peel and tape each strip to the lines on the paper.
5. Remove one button battery from the packaging and use ½ a glue dot to tape down on the end of the bottom copper tape. Make sure that the battery comes into contact with the tape. You should tape it "+" side down.



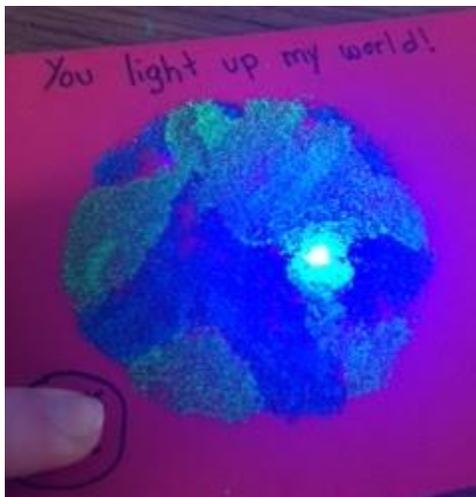
6. Insert the LED into the hole so the light is on the front of the card. Spread the "legs" of the LED. The longer leg is the positive side, the shorter leg is the negative. The negative side should be on the side with the battery.
7. Use a piece of copper tape to be the switch. Test the circuit and make sure the LED lights up.
8. Tape down the "legs" of the LED with straight copper tape in parallel pieces. You may want to use scotch tape on top to secure the connection.

9. Create the “switch” by folding over a piece of copper tape so that it is long enough to go from the top length of tape to the battery. Tape it to the copper and secure that with scotch tape, or you can use a glue dot above the copper. Only secure the top end. Let the bottom end rest slightly above the battery. This will be what the recipient presses to turn the light on!



10. Sketch your inside card below the circuit. If you would like, you can tape a piece of paper over the circuit so that it is not visible on the inside of the card.
11. Complete your drawings for the card.

## Finished Project



## Tips and Suggestions

1. If you fold the paper into quarters, you can put the circuitry behind the inside of the card so it is not visible.
2. If the LED does not work, try reversing the legs of the LED. They are fairly close in length, so you may have the backwards. If that doesn't work, try flipping over the battery, you may have put the wrong side down.
3. Parallel circuits work great for adding multiple lights along one path, simple circuits. The more lights you add, the dimmer the LEDs get (FYI)
4. Go to [instructables.com](http://instructables.com) for more directions.

## Extension Projects

Once you understand parallel circuits and LEDs you can use them to make a whole host of things. Check out these additional projects:

1. If you are interested in creating more with paper circuits, check out <http://chibitronics.com/craft-guide/>. They make paper circuit stickers that make things very easy and light weight!
2. This PDF has great circuit templates <http://highlowtech.org/wp-content/uploads/2012/08/PaperCopperTapeHandout.pdf>
3. More circuit templates can be found <http://highlowtech.org/?p=2505>
4. Circuit town project can be found here <http://www.instructables.com/id/Simple-Circuit-Town/>
5. Another great inspiration is the Circuit Scribe pen, which would eliminate the need for the copper taping. <http://www.circuitscribe.com/products/circuit-scribe-conductive-ink-pen>

