Pop-Up Circuit Cards

Creating a pop-up circuit card is a fun way to learn about circuits and practice design and troubleshooting skills.

Also visit http://makezine.com/projects/led-pop-up-cards/ where we found this fun idea

Materials List:
(Most of these supplies can be purchased on amazon.com)

- **Card stock paper, variety of colors**
- **Paper scraps and arts and crafts bits for decorating**
- **Scissors**
- **Tape**
- **Glue sticks**
- **Pencils**
- **Markers, colored pencils etc.**
- **5mm LEDS**

Positive leg

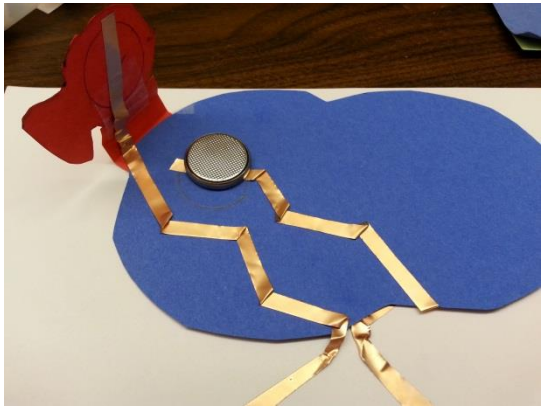
Negative leg

- **Cr2032 lithium 3 volt batteries**

Positive

Negative

- **¼ inch copper tape**



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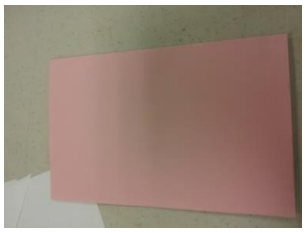
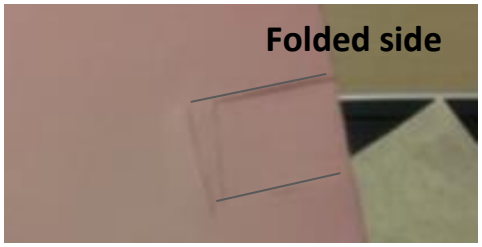
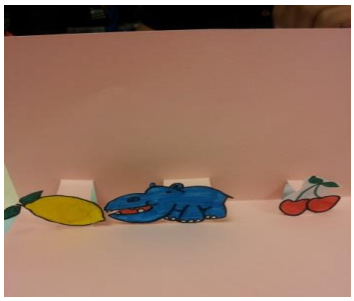
1.) **Take the piece of card stock that you want on the inside of your card and fold it in half.** After you are done you can always add another piece of paper to serve as the outside of the card.



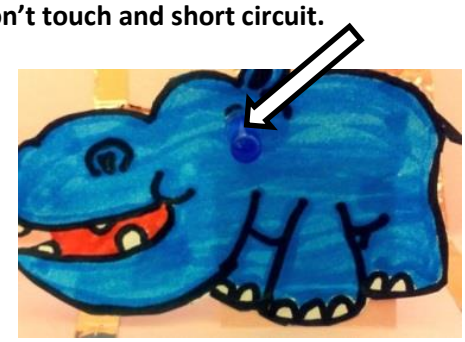
2.) **Cut 2 two-inch parallel lines through the fold for each pop up. Doing this creates the 'pop-up' effect. You can have more than one if you want.**



3.) **Draw the designs that you wish to pop up, cut them out and place them on the pop-up pieces using either tape or glue.**



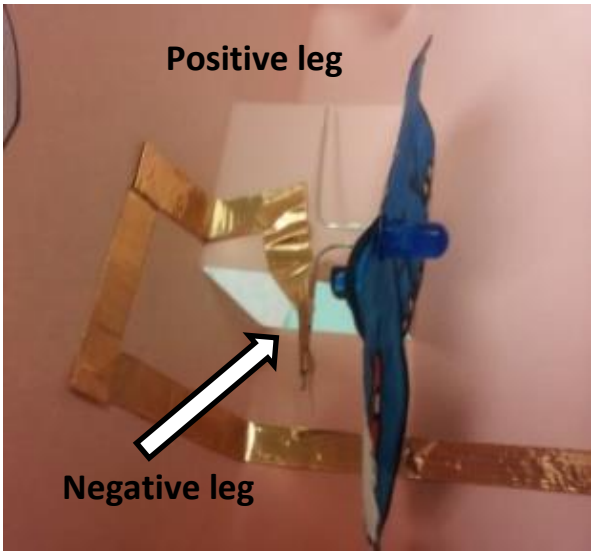
4.) **Put the LED where you want it to light up your design and separate the LED legs so that so they don't touch and short circuit.**



5.) **Decide where you want your battery and switch and run the copper tape from the negative leg of the LED (the shorter one) to the battery location.**

Leave the copper tape a little longer if you are not sure where you want your battery. The circuit works better if the tape is all one piece.

6.) **Tape the copper tape on the negative end of the LED, making sure it does not touch the positive end.**



Use the non-sticky side of the tape touching the LED's leg. The sticky side is not as conductive.

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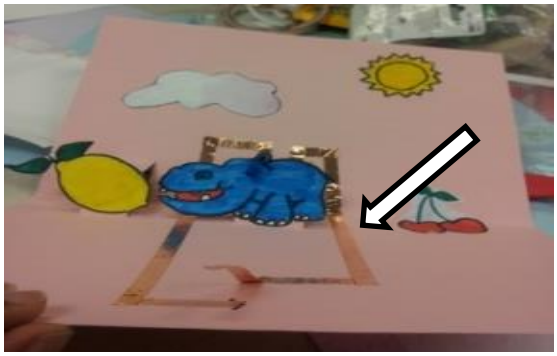
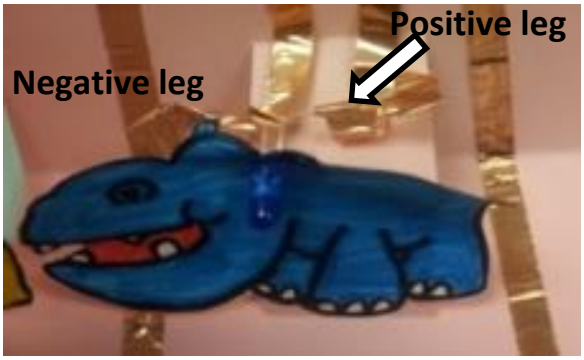
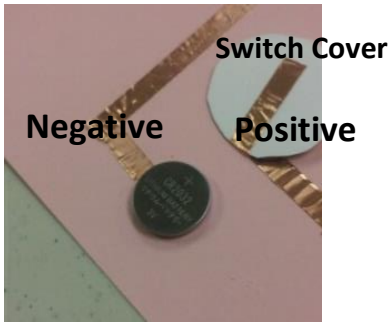
7.) **Now run the copper tape from the positive leg of the LED (the longer one) to the battery's location.**



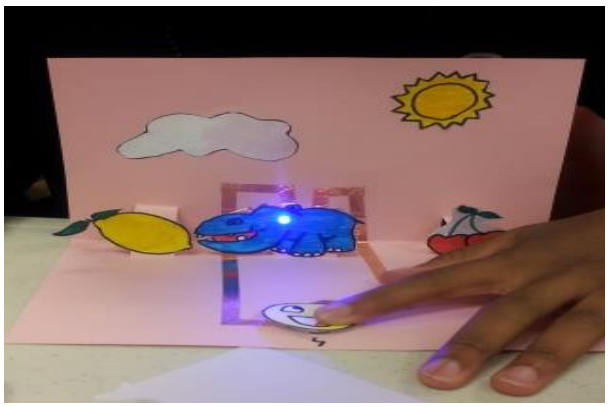
8.) **Put the copper tape around the positive end of the LED making sure that it doesn't touch the negative end.**



9.) **Use your tape to attach the negative run of the copper tape to the negative side of the battery. Remember to have the non-sticky side of the copper touching the battery.**



10.) **Make sure the copper on the switch lines up to touch the battery when you push on it.**



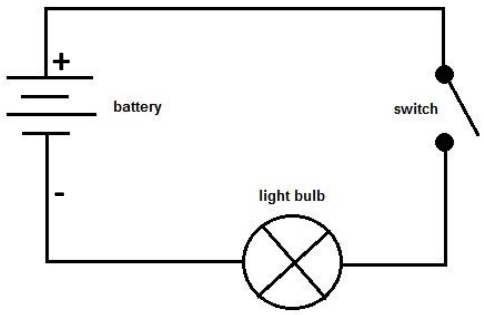
Now design a switch cover, out of paper scraps. Use the sticky side of the tape to attach it to your switch cover that way the non-sticky side will be touching to the battery.

And now you have created a circuit in your pop up card…..congratulations!

Pictured here is circuit diagram for the type of circuit used to create this pop up card.

A circuit diagram is a drawing of a circuit.

Electricians and engineers (and you) can use these symbols to draw the circuit for a design, project or invention.



Picture from www.teachengineering.org

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