TAPING PAPER CIRCUITS

SIMPLE CIRCUIT

In the simplest circuit, the + tab of an LED is connected to + on the battery and the - tab of this LED is connected to - on the battery. Connections are made with copper tape (shown in grey in the diagram).

The LED can be taped or soldered to the copper.

To secure the battery and create electrical connections between it and the copper tape, fold a corner of the page over and clip it around the battery.

Behavior: LED is always on.

CIRCUIT W/ SWITCH

In this simple circuit with a switch, the - tab of an LED is connected to - on the battery and the + tab of this LED is connected to a piece of copper tape. A third piece of tape is connected to + on the battery. A gap (shown at the bottom of the diagram) is left between these two pieces.

When a conductive material is placed between the gap, the switch is “closed” and the LED turns on. Use another piece of copper tape or any conductive material (paper clip, aluminum foil, keys...) to close the gap.

Behavior: LED is on when the switch (gap) is closed.

ADDING LEDS

Add LEDs by connecting the + tabs of additional LEDs to the + tab of the first LED and the - tabs of additional LEDs to the - tab of the first LED.

This is called adding LEDs “in parallel”. You can add as many LEDs as you want. As you add more, they’ll all get slightly dimmer.

Junctions between two different pieces of copper tape need to be soldered together to create a robust electrical connection.

Behavior: All LEDs are on when switch is closed.
A PUSH BUTTON

This circuit is similar to the simple circuit with a switch, but it uses a 3-layer push button design with additional layers cut from a second piece of paper. The middle layer is a spacer to keep the switch from closing when it is not being pressed. The top layer has 3 strips of copper tape. When any strip is pressed down, it will close the switch and turn on the LED. Tape all the layers together once.

Behavior:
- LED is on when the switch is closed.
- LED blinks on and off when a finger is slid across the switch.

Materials:
- Coin cell battery, CR1220
  Digikey part # P033-ND
- All electronics can be purchased from Digikey: http://www.digikey.com/
- Surface mount LED
  Digikey part # 160-1737-1-ND
- 1/4" copper tape
  Digikey part # 3M1181A-ND
- Clear tape or soldering iron & solder
- + card stock paper