

## **5. DIY PRESSURE SENSOR**





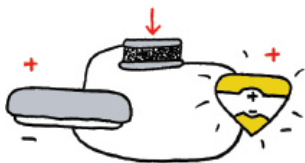
## 5. DIY PRESSURE SENSOR

Rather than turning your lights fully on or fully off with a switch, you can gradually fade your LEDs in and out using a pressure sensor. The black conductive plastic in your kit has a **resistance** that changes with pressure. In other words, how well it conducts electricity changes when you press on it. We can use this to make a pressure sensor.

The harder you press, the better the material conducts, and the brighter your light shines.



**Sensor NOT pressed:**  
**LED is dim**



**Sensor pressed:**  
**LED is bright**

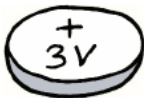
When you don't press, conductive particles in the plastic are far apart. Electrons cannot flow well, so your light is dim. When you do press, the particles are squashed together and the electrons can find more and easier paths to flow, and likewise the light gets brighter.

## You will need:



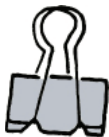
x 1

LED circuit sticker



x 1

3V coin cell battery



x 1

binder clip








conductive foil tape

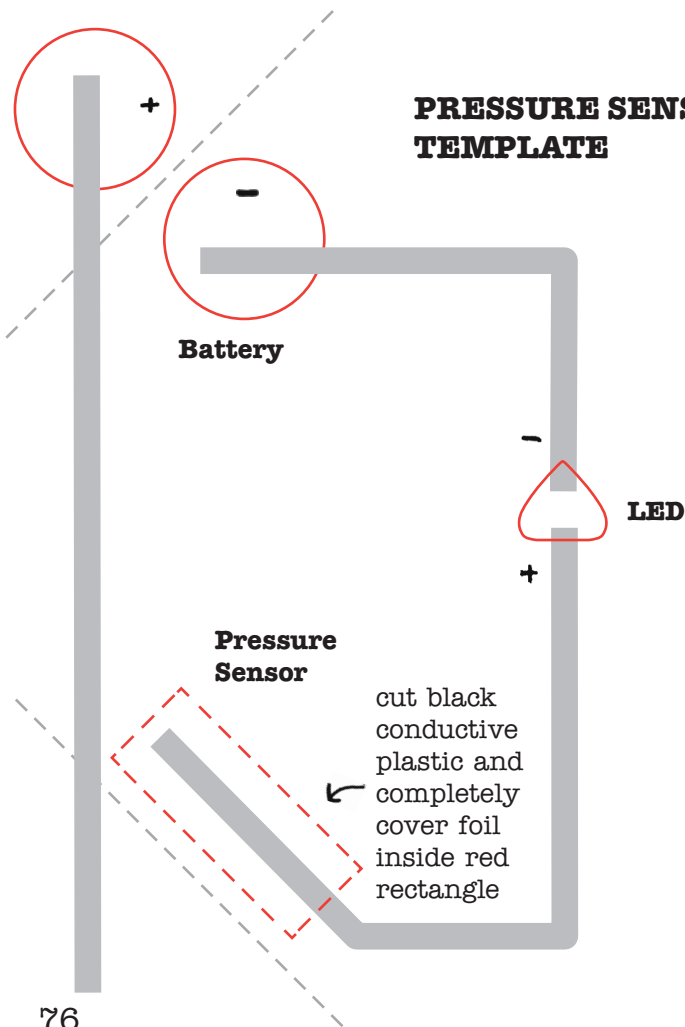


black conductive plastic

## Directions:

1. Turn to the next page and stick foil tape over the gray lines.  

2. Fold the top page corner along dotted line and clip your battery in place with a binder clip.  

3. Stick an LED sticker over the footprint and fold along the dotted line at the bottom of the page. Your LED will turn on, since you've just made a switch!  

4. Unfold the switch you just made and cut the black conductive plastic in the shape of the red dotted rectangle.  

5. Put the plastic over the dotted rectangle and fold the bottom flap again. Now when you press, the light will become brighter the harder you press – you just made a pressure sensor!  

6. Turn the page. When you press on the heart, something comes to life! What is it?

# PRESSURE SENSOR TEMPLATE





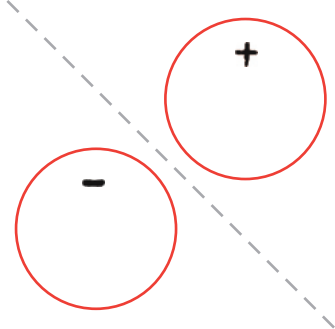




What comes to life when you press the heart?  
Draw it on this page!

## **YOUR TURN!**

You can turn any of the switches we've made into pressure sensors, just by placing a piece of black conductive plastic in between the contact and the gap. Try making a switch somewhere on this page using a flap of paper, and then turn it into a pressure sensor!





## TRY THIS!

Lots of cool effects happen when fading in and out instead of blinking on and off. Try these!

### Make a bend sensor



You can use the conductive plastic to make a bend sensor. Just make a long switch and place the plastic in between the gap and the contact. When you bend the sensor, the light will shine brighter!

### Secret messages

By drawing images on the back side of a page so that it covers your light when the page is folded, you can make images that appear only when the light shines through. The brighter the light, the clearer the image's shadow will appear!

