

DIY – Pocket Flashlight

Courtesy of Childrens Museum of Houston and Instructables.

Visit the website here: <https://www.instructables.com/Pocket-Flashlight/>

Link to tutorial on YouTube https://youtu.be/sYif_tA9Wcl

Light up the dark with this simple flashlight while illuminating the very basics of electric circuits. Also a great introduction to measurement!

These kits are suggested for children over age 8. CHOKING HAZARD: This kit contains small pieces and is not suitable for young children without adult supervision. Adult assistance may be required for some children.

Required Materials:

Provided in kit:

- 1 - CR2032 3V Coin Battery
- 1 - LED, 5mm white, slow burning
- 1 - 6" x 4½" Self-adhesive foam sheet
- Ruler

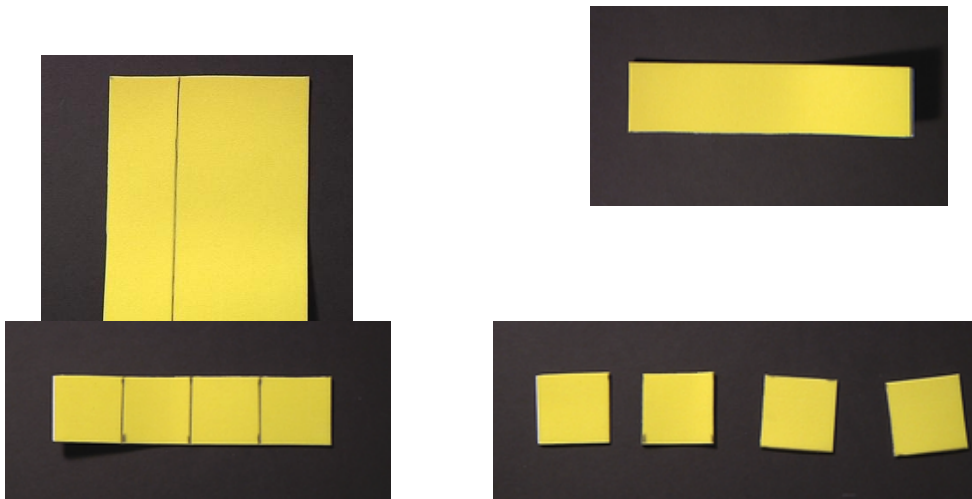
Needed from home:

- Scissors
- Pencil

Step 1:

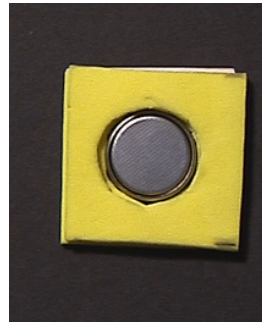
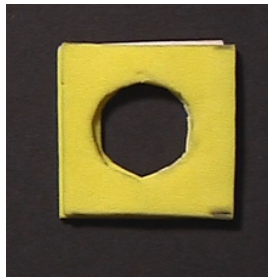
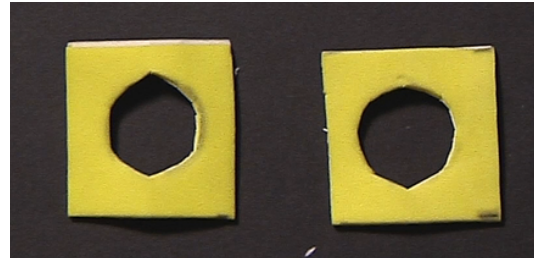
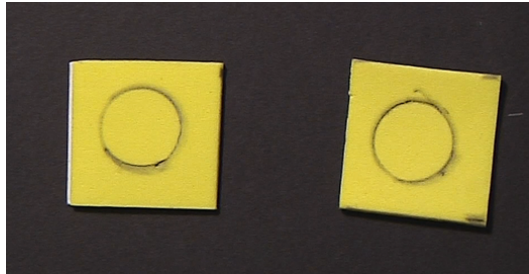
Use the ruler to measure and mark a point 1½ inches along the short edges from one of the long ends of the foam sheet. Draw a line across. Cut off the strip. Place the remainder of the foam off to the side to use as repair foam for when the battery needs changing.

Use the ruler to measure and mark points at 1½, 3, and 4½ inches along the long sides of the foam strip. Draw lines across. Cut along the lines to get four 1½ inch squares.

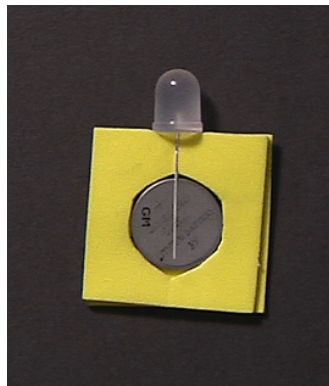


Step 2:

Use the battery to trace a circle onto the center of two of the foam pieces. Fold each piece of foam in half and cut out the circles. Save the circles. Remove the backing from both pieces and attach the two together. Insert the battery into the hole in the two pieces of foam.

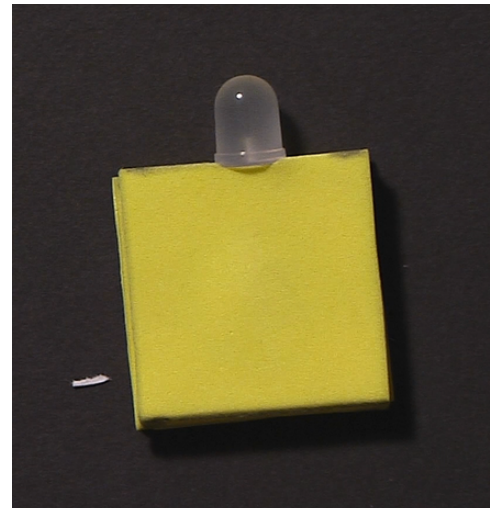
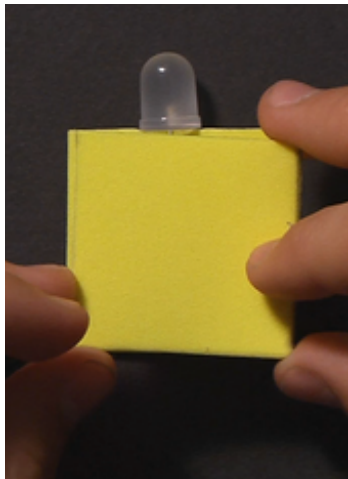
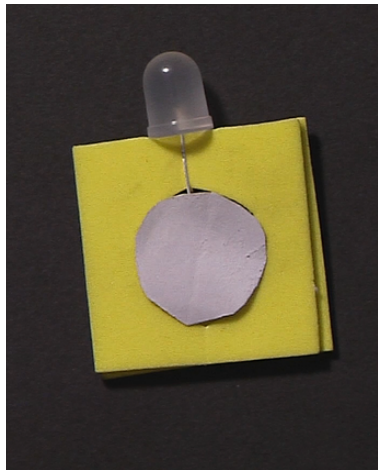
**Step 3:**

Slide the LED over the foam and battery with the long wire on the “+” side of the battery and the short wire on the other side of the battery. Make sure to bend the leads back away from the battery so the LED is off before continuing.



Step 4:

Peel the backing off one of one of the circles from step 2 and place it over the battery and LED lead. Peel the backing off one of the remaining squares and attach it to the battery-LED foam. Only press it on around the edges, not the center over the battery or else you will bend the leads to permanently touch the battery. Repeat on the opposite side of the flashlight. Again, make sure to only press around the edges, not the center over the battery.

**Step 5:**

To operate it, gently squeeze the center of the flash- light with your fingers and the light should turn on!

How it works:

Your Pocket Flashlight is a “squeeze switch.” In order for any electrical circuit to work it needs three parts: a power source (battery), a path for electricity to flow (LED leads), and an output (LED). Circuits can either be open (“off”) or closed (“on”). The circuit inside the flashlight is open because the LED lead is not touching the battery. When you squeeze the foam and press the LED lead to the battery, it closes the circuit and switches the LED on.