



STEM Detective Lab

We investigate STEM projects for you.

Halloween LED Throwies Instructions

Warning

There have been multiple reports of life-threatening injuries to children who have swallowed coin cell batteries. Experts have explained that this is a result of the current in the battery causing a chemical reaction, leading to burns in the esophagus.

Please keep all coin cell batteries and other small parts used in this activity away from young children.

Overview

The Grafitti Research Lab in New York City invented LED Throwies in 2006 to use as non-destructive graffiti. You can use this activity to engage your kids in an art project, a Halloween activity, or a STEM lesson on magnets and electronics.

Check out our blog post, "[The Halloween LED Throwies Mystery](#)", for an in-depth look at how we chose the materials listed below and to review the science behind LED Throwies.

You can build an LED Throwie with just an LED, a coin cell battery, and electrical tape. The following instructions include a few more supplies to enhance our Halloween LED Throwies' WOW factor.

Tools & Supplies

- 2 - 5mm two-legged LEDs
- 15mm neodymium magnet
- Glow-in-the-dark necklaces (optional)
- CR2032 coin cell battery
- 3-inch piece of electrical tape
- Scissors

Challenge

We designed our Halloween LED Throwies to blink non-stop to keep things simple, but adding a built-in switch will allow your kids to turn the LEDs off when not in use. Check out the **LED Fun Facts & STEM Questions** section of our post listed above for one possible solution.



Step 1: Test

Polarity, the direction current flows in an electrical circuit, is important with LEDs. Always place your LED's positive (+) leg on the positive side of the battery and the negative (-) leg on the negative side.

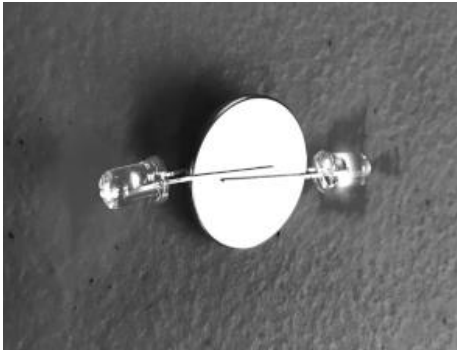
Note: The longer leg of an LED is positive (+), and the shorter leg is negative (-). The negative leg is also the leg closest to the flat side of an LED.



1.1 Test your LEDs one at a time. Remember to place the positive (+) leg of each LED on the positive side of your battery and the negative (-) leg on the negative side.

- If neither of the LEDs light up, try replacing your battery, then retest the LEDs.
- If only one of the LEDs lights up, switch the direction of the legs on the bad LED. Replace it with a new one if it still doesn't work.
- Once both LEDs light up, you're ready to assemble your LED Throwie.

Step 2: Assemble



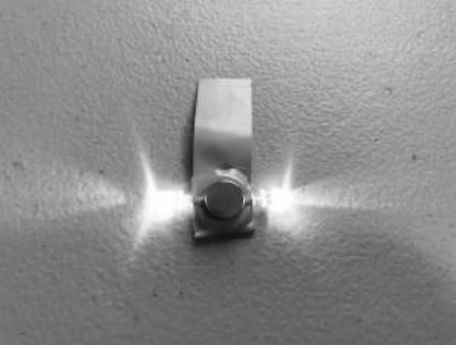
2.1 Attach your LEDs to the battery as seen in the picture to the left.

Remember, the positive (+) leg of each LED goes on the positive side of the battery and the negative (-) leg on the negative side.



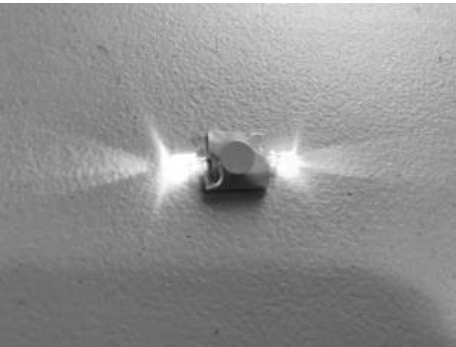
2.2 Cut a 3-inch piece of electrical tape and wrap it once around the battery and LED legs. Make sure the tape is securely attached to the battery and only wrap it around the battery once. Leave the extra tape loose.

Note: The LED legs are taped securely against the battery to keep the electric current flowing.



2.3 Carefully place the neodymium magnet on top of the battery.

Note: LED Throwies will work without the neodymium magnet, but the magnet will attach your Throwies to strong metal objects.

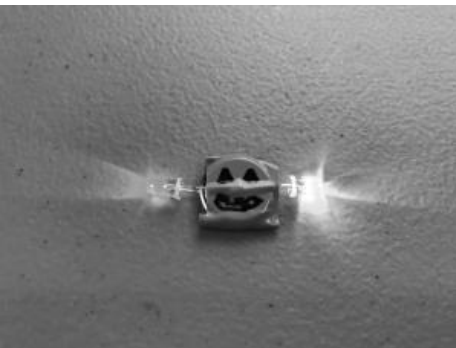


2.4 Now fold the rest of the electrical tape over the magnet and around the battery.

Challenge: We designed our Halloween LED Throwies to blink non-stop to keep things simple, but adding a built-in switch to your Throwie will allow you to turn the LEDs off when not in use.

A **switch** is the part of the circuit designed to open and close a gap in the circuit's conductive path. How can you create a gap between your LED legs and the battery?

Step 3: Finish



3.1 All that's left is to decorate your Throwies with a spooky face. That's it!

Enjoy your Halloween LED Throwies!

Note: Turn the optional glow-in-the-dark necklaces into hoops for a late-night game of Haunted Throwies Yard Darts

