

# TAKE & MAKE KIT

## Circuit Art

TIME: 45 min - 1 hour  
CONTAINS SMALL PIECES

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## What's in this kit?

Learn about LED lights, batteries and make your own light up circuit art. Combine science, electronics and art to make your very own creations!

### You will learn:

- Circuitry
- How to power LED lights
- Positive and negative charges
- Paper folding

## Let's Get Started!

### Materials

LED light  
Battery  
Copper tape  
Straw or pencil  
Tissue paper  
String  
Construction paper

### Tools

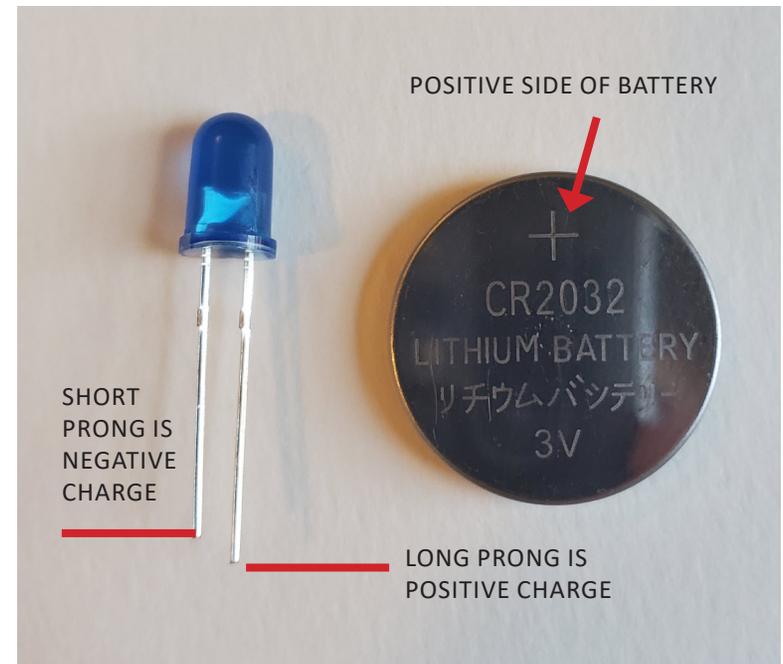
Scissors  
Glue or tape  
Coloring supplies

## Predictions!

A **circuit** is a complete path of an electrical current without any breaks. A circuit usually starts at a source of energy (in this case a battery) and can run through specific materials that allow the flow of electricity.

The battery creates energy that is fed to the LED light once the circuit is complete. What will be the requirements to complete the circuit?

Hint: The LED has two different lengthened prongs coming out of it. The short prong is a negative charge and the long prong is a positive charge. The battery also has a positive and negative side.



## Activity 1: LIGHT UP CARD

### Step 1 - Prepare copper tape

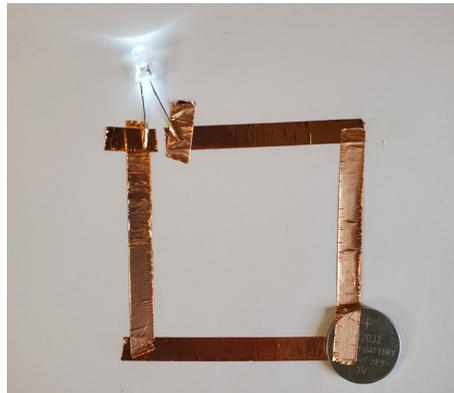
Use the provided card template to complete this step. Lay down copper tape over the diagram.

### Step 2 - Align positive and negative charges

Take note of the lengths of the LED prongs (see previous page). The longer prong is the positive charge, the shorter prong is negative. Each side of the battery also has a positive and negative side. Look for the plus (+) sign on the positive side. The prongs of the LED MUST line up to the respective battery sides.

### Step 3 - Create the circuit

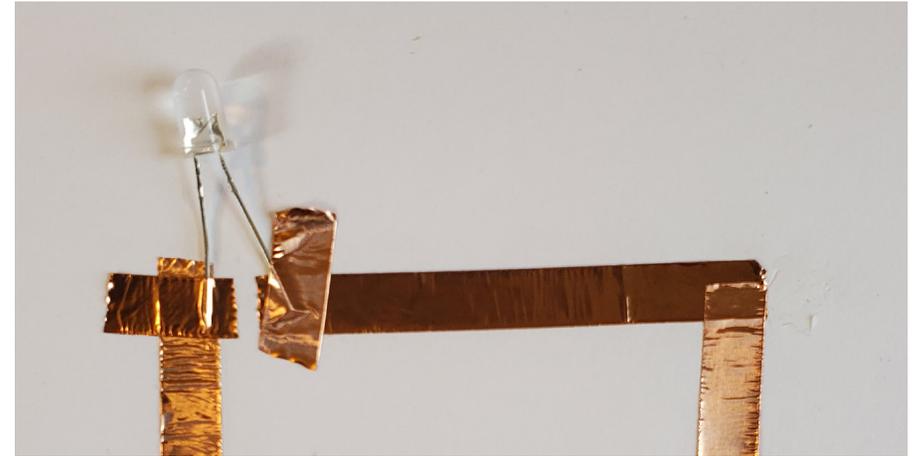
Tape down the battery with the positive side facing up. The copper tape should go ON TOP of the battery. You can use more tape to secure it. The back of the battery should only touch the copper tape on the negative side.



### Step 4 - Secure the LED

Use more copper tape to hold the LED prongs in place.

**IMPORTANT:** Make sure the positive prong (the longer one) goes to the positive side and the negative prong (the shorter one) goes to the negative side of the battery.



### Step 5 Decorate!

Fold the paper over and decorate your card. Try to incorporate the light into your drawing!



## Activity 2: FLOWER

### Step 1 - Stack paper evenly

Take the 3 sheets of tissue paper and lay them on top of each other evenly.

### Step 2 - First Fold

Start by folding the base of all three pieces of tissue 1 inch over itself.

### Step 3 - Keep folding 'Accordion Style'

Flip your tissue paper over and do this again. Keep doing this all the way until the tissue paper now looks like an accordion.



### Step 4 - Tie around center

Use scissors to stylize the ends of your tissue paper to resemble flower petals. If you have a stapler, you can staple right in the middle of the tissue accordion, otherwise use the piece of string provided to tie a knot around the center of the tissue.



### Step 5 - Spread out petals

Starting with the outermost layers of tissue paper, you're going to pull them away from the main folds. This doesn't have to be a perfect process. You may even end up tearing some petals and that's ok! To get a puffier look, you can even crumple or roll the tissue paper.



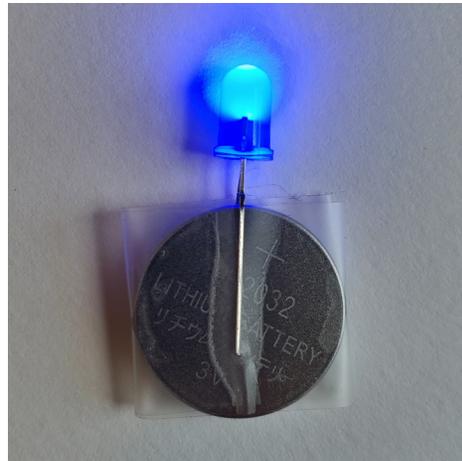
### Step 6 - LED + Battery = Light!

Take note of the lengths of the LED Prongs. The longer one is the positive charge, the shorter the negative. Each side of the battery also has a positive and negative side.

Slip the battery between the prongs of the LED. Have the positive side of the battery touch the longer, positive prong. Have the shorter prong on the negative side of the battery.

The prongs of the LED MUST line up to the respective battery sides.

Wrap a piece of tape around the led and battery to keep it in place. Or tape one side down and the light will remain off until you pinch it, this will complete the circuit.



### Step 7 - Cut out leaves

Cut out the templates for the leaves and the stem. You can either color these and use them for your flower, or you can trace them onto a different piece of paper or cardboard and cut this out. Cereal boxes work great!



### Step 8 - Assemble stem

Using glue or tape, you're going to roll the long rectangle around the straw/pencil. Use glue or tape to secure it from getting loose.

### Step 9 - Attach leaves

Overlap the edges of the leaves and glue them onto the stem.

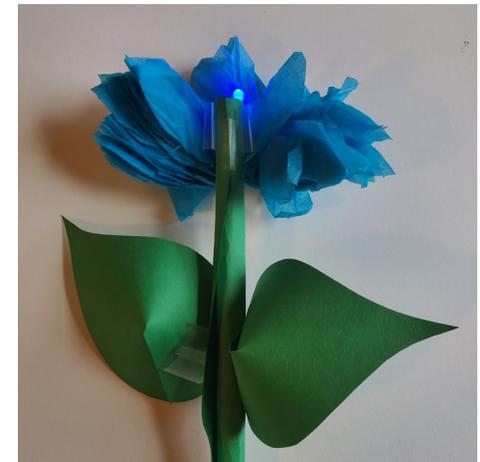
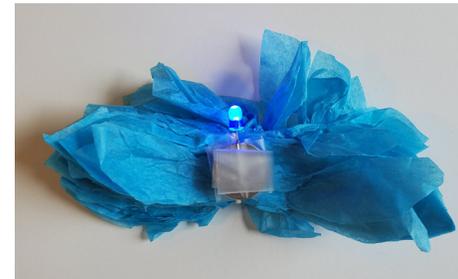
### Step 10 - Put it all together

Glue or tape the LED onto the flower and then the flower onto the stem.



### You did it!

Who knew making your own circuit could be so...Floral!



## Go Beyond

If you are going to leave it on all the time, take note of the date and time you put it together. How long does the battery last?

You might not want to have a light that's always on. Maybe you want to craft a switch. Can you do this by sliding paper in between the battery? What about breaking the circuit?

Notice how the tissue paper glows with the LED? Is this tissue paper transparent or translucent?

**Transparent:** Think of a regular house window. It allows almost all light to pass through. It is transparent.

**Translucent:** Imagine a pane of glass, but that pane of glass is very dirty so only some light is able to pass through. It is translucent.

The tissue flower is translucent!

## Challenge!

What else can you illuminate? What does a clear water bottle look like in the dark on top of this little light? Experiment with other materials such as paper towels, cloth, and various papers.

What lights up, glows, or has an interesting effect when you put a light to it.

## Real World

Curious about how simple LED inventions can make a big difference in the world? Look up Liter of Light @ Night on YouTube.com to find out how The Liter of Light Foundation used LEDs and simple circuits along with accessible materials to create lamps.

HANG OUT,  
MESS  
AROUND,  
GEEK OUT.



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