

Do Space Summer 2021

TAKE & MAKE: ROCKET PAPER CIRCUIT



INTRODUCTION

Launch your way into summer with this fun Take & Make! With this kit, you'll be using conductive tape to create a circuit that connects an LED to a battery and lights up the window of your rocket ship.

WHAT YOU'LL NEED:

Here's what you'll find in the kit:

- 1 Passport
- Nylon Conductive Tape
- Battery
- LED
- Foam Tape

You'll also need:

- Scissors
- Ink Pen or Pencil

Subjects:

- Energy
- Engineering

Standards:

- PS3.D
- ETS1.A
- ETS1.C

nextgenscience.org

Maker Capacities:

- Tinker to Explore
- Finding Opportunities

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Key Terms

- Circuit
- LED
- Conductive
- Knolling

Let's Make This!

Start by pulling out all of the pieces of the kit and checking to make sure they are all there.

I put all of my supplies and equipment at right angles to each other. This is a technique known as **knolling**. Knolling lets you easily see if you're missing a piece.



Next, use your ink pen or pencil to poke a small hole in the window of the spaceship.

The hole is where we will place our LED. Be careful not to make it too large, or the LED will not sit securely. You want to use the very tip of the ink pen or pencil. You may need a grown-up to help you with this.



Why does it work?

The tape we're using is conductive. That means electricity will flow through it. By joining the positive side of the battery to the positive side of the LED we allow electricity to flow from the battery to the LED.

When we do the same thing with the negative sides of the battery and LED we complete the circuit and the LED powers up.

Mix-it up!

A switch is something that stops and starts the flow of electricity on a circuit. We've created this circuit so it's always on. Can you find a way to build a switch? Check out: https://browndoggadgets.dozuki.com/c/Basic_Paper_Circuits for examples of switches for paper circuits.



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Let's Make This!

Now unwrap the battery and test the LED and battery.

Both the battery and the LED have a positive and negative side. On the battery, the positive side is marked with a plus. On the LED, the positive side is the longer of the two leads. Place the two positive sides together to complete the circuit and make the LED light up.



Once you've tested your battery and LED it's time to install the LED.

Slide the LED through the hole you made in your passport cover legs first.

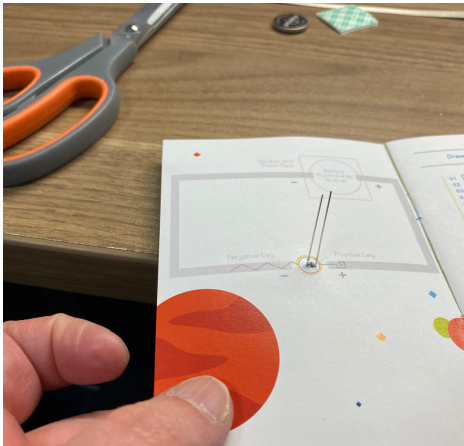


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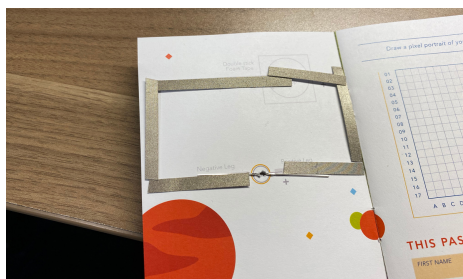
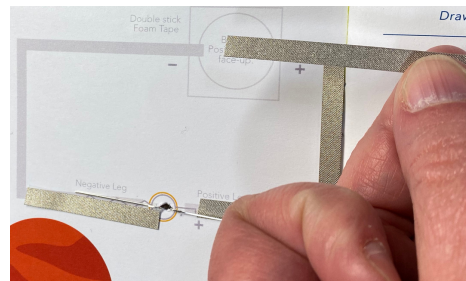
Let's Make This!

Twist your LED so that the positive leg is on the right and the negative leg is on the left, and bend them so they are flat.



Measure and cut your conductive tape.

You want enough tape so that it overlaps at each corner, but the positive and negative sides do not touch. You also want to make sure you have enough tape so that the battery has a good connection.



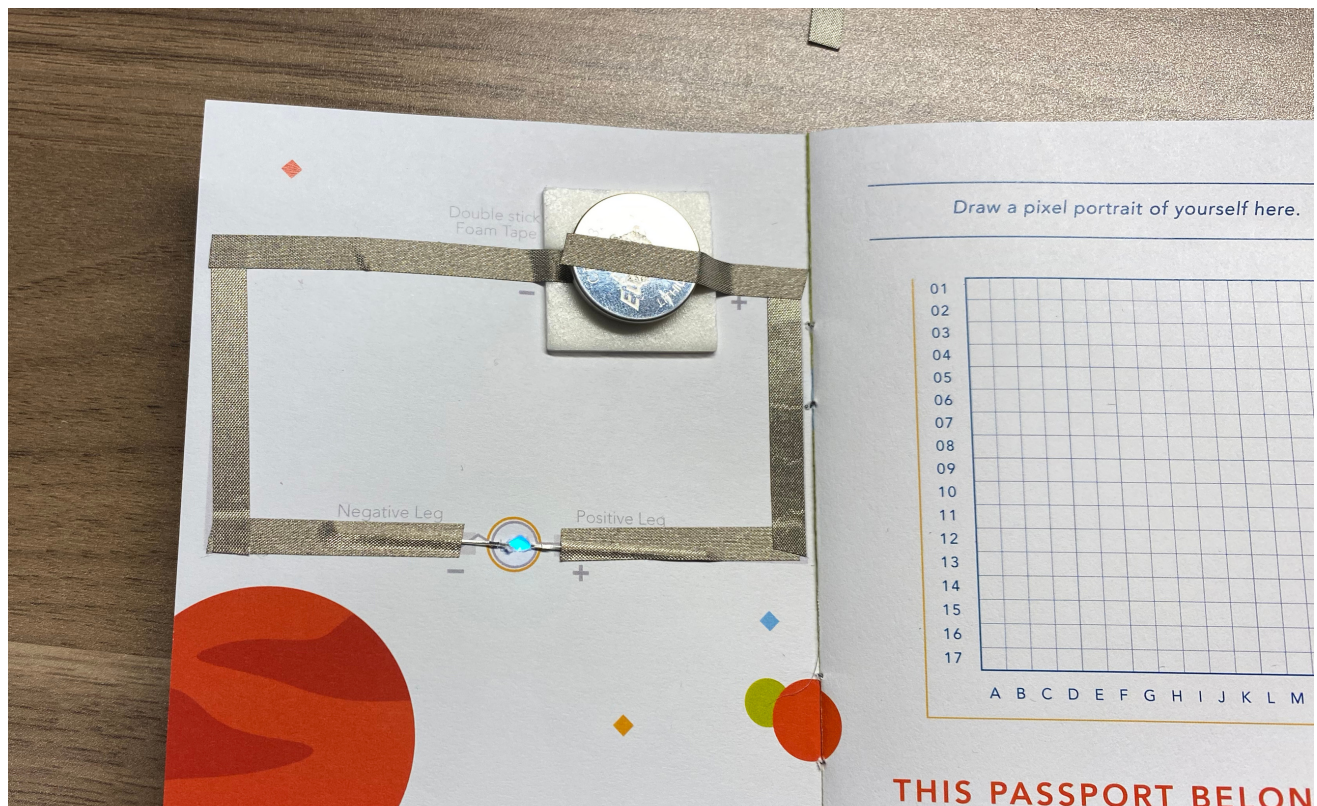
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Let's Make This!

Once you've cut all of your pieces, peel the backing off of the tape and the foam tape and put everything in place.

Put the tape for your negative connection down over the foam. Then place the battery, negative side down onto the foam so that the negative side of the battery touches the tape. The positive side of the tape will go over the battery. Once everything is connected it will light up.



Not lighting up? Here are some things to check:

- Make sure that the two pieces of tape are touching at each corner.
- Make sure the tape is making a good connection with each leg of the LED, but not touching the other leg of the LED at the same time. There should be some space between the tape like the picture above.
- Make sure the positive side of the battery is facing up.
- Make sure that the negative leg of the LED (the shorter one) is on the left, and the positive leg of the LED (the longer one) is on the right.



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