Do Space Summer 2021

TAKE IT AND MAKE IT: LIGHT UP WANDS

INTRODUCTION

It's not true magic, but with a little circuit wizardry and the components provided by Do Space you can make your very own wand that lights up! We'll be using LEDs and batteries to create a circuit. This wand is perfect for your next DnD game or cosplaying your favorite witch or wizard.

WHAT YOU'LL NEED:

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

- LED Wire
- Battery Holder
- Battery
- Electrical Tape

You'll also need:

- A stick
- Duct Tape or Hot Glue
- Things to decorate your wand

Subjects:

- Energy
- Engineering

Standards:

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

nextgenscience.org

Maker Capacities:

- Tinker to Explore
- Finding Opportunities

agencybydesign.org
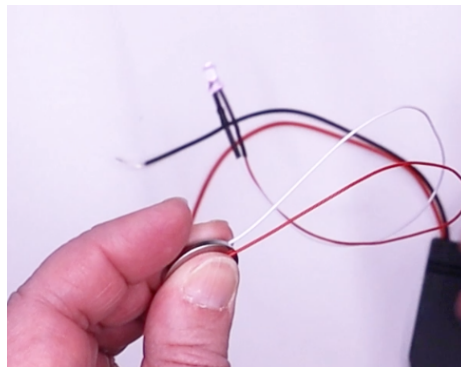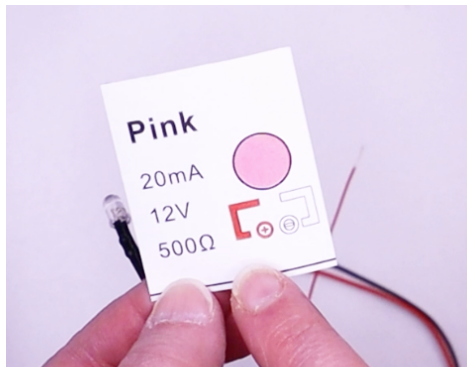
Key Terms

- Circuit
- LED

Let's Make This!

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

Remember if you're missing a piece you can email Do Space at programs@dospace.org and we'll get you a replacement part.
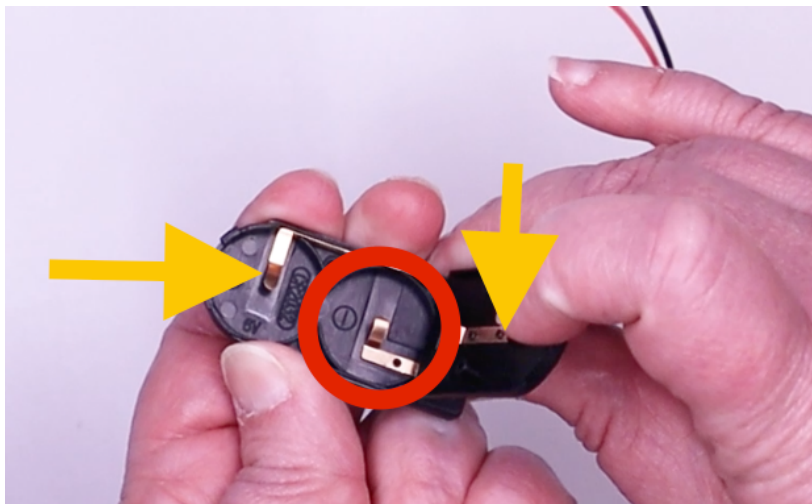
Next test your LED to make sure it works.

All of the LEDs come with a small sheet of paper that tells you which wire is positive and which wire is negative.

Now install the battery in the battery holder.

This battery holder holds two batteries, but we only need one for this project. Put the battery in the spot marked with the red circle negative side down. To finish the circuit we need to make sure that the metal prongs in the other battery section are touching. (yellow arrows). If they aren't bent so they touch when you close the battery holder bend them up a little bit.

Why does it work?

Both the battery and the LED have a positive and a negative side. By connecting the positive sides together and the negative sides together is creates a circuit that allows electrons to flow from the battery to the LED.

Mix-it up!

These LEDs are not diffused. By diffusing them you spread out the light and cause them to glow more. Check out https://www.instructables.com/13-Ideas-for-Diffusing-LEDs/ for ideas on how to diffuse the light.

Don't want to make a wand? There's plenty of other cool things to make with our LED Wires. By using a pencil and some air dry clay you could make your own sonic screw driver! Just make sure your LED works before you start applying the clay.
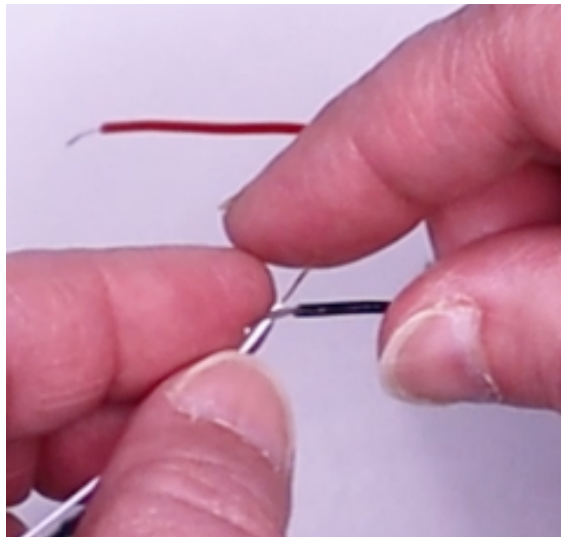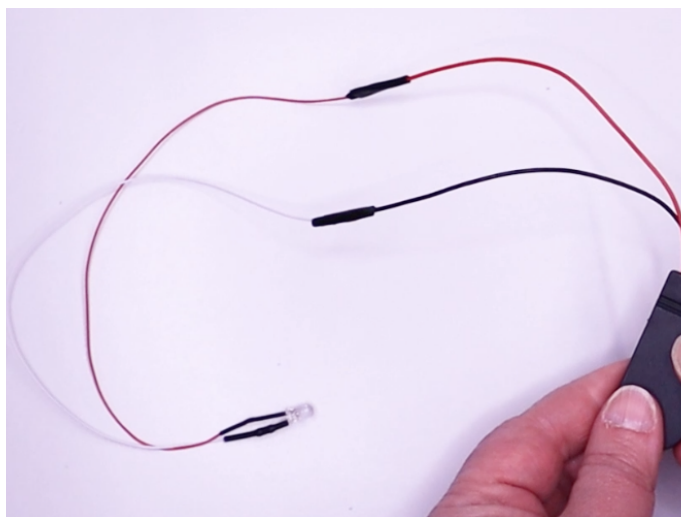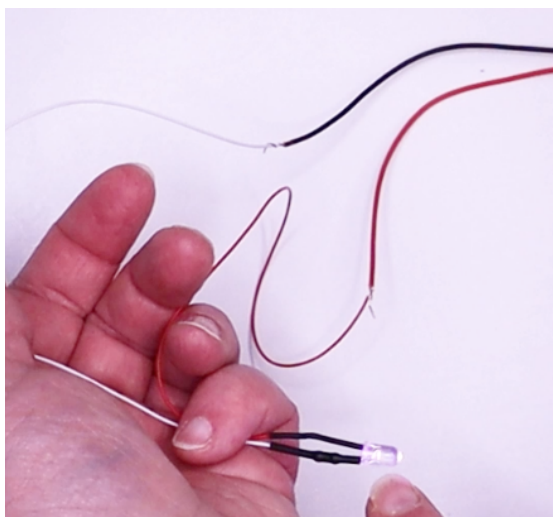
Let's Make This!

Now connect the battery holder to the LED by twisting the negative wires together.

The battery holder negative wire is black. Twist it together with the negative wire for the LED. (check the sheet the LED came with if you're not sure.)

Do the same thing with the positive side and test the circuit

If it's not working check and make sure you've connected the correct sides to each other. Also, check and make sure the exposed wires are touching each other. If it works you can secure each of the connections by wrapping them with electrical tape.

Let's Make This!

Now attach your **LED** to your stick and secure it with duct tape, hot glue, or electrical tape. Then wrap the wiring around your stick.

Now it's time to decorate!

Once you've got the wires secured, decorate to your heart's desire. I used twine, beads, and some scrap leather.