Project Exploration creates transformative learning opportunities for youth underrepresented in the sciences --particularly students of color and girls -- by equipping them with the skills, practices, and mindset needed for a lifelong pursuit of learning. STEM@Home makes activities around science, technology, engineering, and math accessible and fun to do at home. This STEMbook activity, resources, and more are available at www.projectexploration.org/stemathome.

In this activity, you will:

learn about how electricity travels through a circuit.

do it together

Supplies Required:

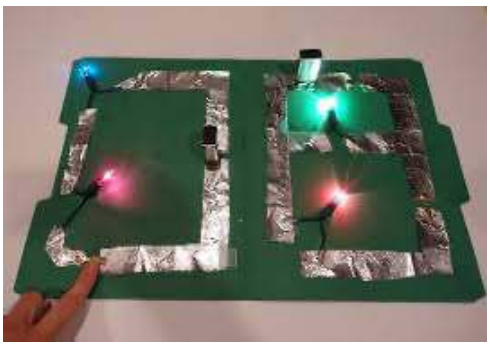
- File folder
- Tape
- Aluminum foil
- Brass fasteners
- Scissors
- 9 volt battery
- String of holiday lights

Video

Learn about circuits: https://tinyurl.com/y5uo7vdq

Overview

Electric circuits are paths for transmitting electric current, or moving electricity. Such circuits allow electricity to be used to provide power to lights, appliances, and many other devices. Wires made of metal and covered in plastic carry the electricity around a circuit. Metal is a good conductor of electricity, which means it can pass along the wire easily and well. The plastic around the wire insulates the electricity. The electricity is very powerful, and the plastic keeps it contained so that it does not harm people or other objects. Electric circuits can be set up in two ways. They can be either a series circuit or a parallel circuit. In a series circuit, all parts of the circuit are connected one after another to form a loop. Let's make one!



Instructions

1. To prepare the lights, you will need to cut the string apart and score the bottom of each light (about 3 cm) with scissors – just enough to remove the plastic coating.
2. Cut the aluminum foil into strips to serve as the "wires".
3. Place your lights on to the file folder and then connect them using your strips of foil, leaving two gaps, one for the switch using brass fasteners and one for the battery. Stick the foil down with tape, ensuring that it touches the exposed wires of the lights.
4. You can set your circuit up any which way you like, as long as it connects to the battery and switches. Use the image below as an example:

Additional Resources

Think About It! What happens with you lift the brass fasteners? Find a piece of rubber--and eraser or a rubber band--and place it on the foil. What happens?

1. Explore this interactive about circuits: https://tinyurl.com/wm43k7u
2. What are different types of electrical circuits? https://tinyurl.com/y7l5dpqv

Share It Out

Share on social media: Take a photo of your circuit and explain how circuits work! Share on social media and use the hashtags:

#HolidayCircuit
#ProjectExploration
#StemAtHome

For more activities like this one, go to www.projectexploration.org/stemhome. If you're interested in learning more about Project Exploration and our free events, programs, and activities, please complete our interest form and a staff member will be in touch with you: www.projectexploration.org/interest.