



We hope you enjoy your **Creative Circuits** Classroom STEAM Kit! Have a great time exploring Science, Technology, Engineering, Art and Math with these fun activities designed just for you.

This kit includes written instructions for the following activities included in the **Creative Circuits** kit:

- Modeling Dough Circuits
- Popsicle Stick Flashlights
- LED Sculptures

Visit our website www.kidsdiscoveryfactory.org/classroomkitvideos to follow along with us as we provide a step by step walk-through of the activities, or choose which activities to do when, based on your schedule.

Thank you for your continued support of Kids Discovery Factory.

Materials Included:

Playdoh (1 per student)
Electrical Tape (1 per class)
Electrical Wire (2 per student)
Cell Battery (1 per student)
Led Light (3 per student)
Cardstock (1 per student)
Craft Stick (1 per student)
Binder Clips (1 per student)
Copper Tape (1 per class)
Pipe Cleaners (2 per student)
Scotch Tape (1 roll per class)



Modeling Dough Circuits

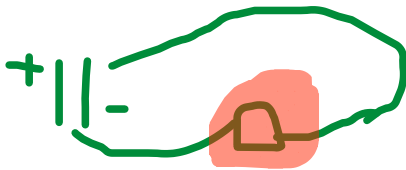
Supplies:

Playdoh
Cardstock
2 Pieces of Wire
Led light
Electrical Tape
Cell Battery*

Directions:

Pre-experiment

Pass out the Modeling Dough Circuits Worksheet. Read through the description of a simply circuit. Have students attempt to plan out their Modeling Dough Circuit with a drawing. Their drawing should be similar to this: This shows the battery, connected by wires to the bulb inside their modeling dough creation.



Experiment

Give each student all the materials listed above (Cut them four small pieces of electrical tape). Instruct them to create a creature / design out of playdoh. Connect one end of one wire to one of the LED light diodes. Insert your LED light and connecting wires into the playdoh where you would like them to light up. Use the electrical tape to attach one end of each wire to opposite sides of the cell battery. (Electrical tape may be needed to attach wire to bulb.) Watch as their creation lights up!

Troubleshooting Tips:

- Flip your battery, switch witch side the wire connects to your battery.

Post Experient

*Remove the cell battery for the next experiment.

LED Sculptures

Supplies:

Pipe Cleaners
LED Light
Lithium Battery
Electrical Tape
*Scissors



Directions:

Pre-experiment

Have students get their scissors to use during this activity. Pass out the LED Sculpture Worksheet. Review the idea of conductors and insulators. The worksheet has students make hypothesis about what items are insulators and which are conductors.

Answer Key:

I Glass	I Rubber	C Concrete	C Lemon Juice
I Wood	I Playdoh	C Steel	I Cotton
C Salt Water	C Gold	C Copper	I Paper
C Pipe Cleaners	I Oil	I Diamond	I Plastic

Experiment

Cut off about 1/2 of an inch of the chenille covering from both ends of your pipe cleaners. You will have to use your scissors and fingers to pull off the fluff.

Bend your pipe cleaners in the shape of a Christmas tree.... Or other shape if you prefer. (Just make sure that both tops and bottom wire end up close to each other.



Next you want to look at your LED light. Notice that one of the metal leads is longer than the other. The longer end is the positive (+) end. Twist the positive lead around the top of one of the pipe cleaners, and the negative lead to the top of the other pipe cleaner. Note which is which.



Look at your coin battery. Find the positive (+) side. It will be labeled with a '+'. Tape the bottom of the pipe cleaner that is connected to the positive (+) side of the LED to the positive side of the coin battery.

Tape the bottom of the pipe cleaner that is connected to the negative side of the LED to the negative side of the coin battery.

Your sculpture should now be lit. You have created a circuit!



Post Experiment

Remove the battery and LED Light for your next experiment

Popsicle Stick Flashlights

Supplies:

Copper Tape

Popsicle Stick

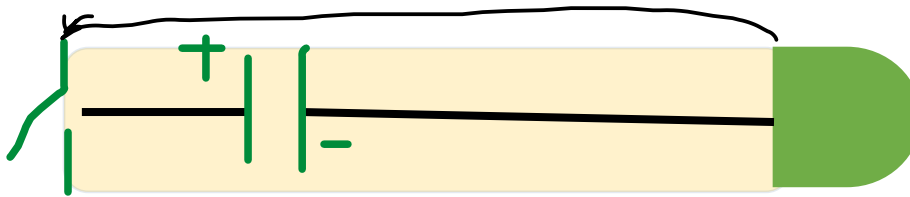


Cell Battery
Led Light
Binder Clip
*Scissors

Directions:

Pre-experiment

Pass out materials and worksheet. The worksheet introduces the concept of a switch. It also asks students to draw their next circuit they will create.



Experiment

Have students cut the end off of their popsicle stick, so that it is straight on one end, instead of rounded.

Take your LED light and place it on the top of the curved part of the craft stick. Each side of the craft stick should have one wire of the led light going down it.

Cut two pieces of copper tape slightly shorter than the craft stick. Guide the tape from the curved tip of the craft stick, completely covering the LED prong down to the end of the stick. Repeat on the other side of the craft stick, covering the LED prong on that side as well.

Add the binder clip (with prongs up) to the straight end of the craft stick. Place the cell battery on the craft stick so when the prongs of the binder clip are down they make a connection with the battery. Once the battery is in the correct location take a piece of transparent tape and secure the battery. (Only place the tape at the top and bottom of the cell battery, we want the prong of the binder clip to be able to make direct contact with the battery.)

Place both prongs of the binder clip in the down position. The LED light should turn on and off as you move the prong of the binder clip on and off of the battery. You have made a circuit with a switch!

Troubleshooting:

- Make sure your copper tape isn't too long that it touches the plastic of your binder clip.
- Make adjustments to your battery placement. Flip battery.
- Make sure the binder clip prong is touching the battery and not the clear tape.