# Light Up Card Making STEM Kit
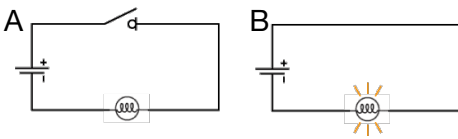
**We recommend watching the video instructions at:**
**www.NogginBuildersFoundation.org/Light-Up-Card**
*If you do not have access to the video, please follow these instructions.*



### How This Project Works: Open & Closed Circuits

Electrons are tiny particles that flow through a circuit and create electricity. Electrons can only flow around a closed loop (we call this a closed circuit). If there is a gap in the loop, the electrons will not flow and there will not be electricity.



### Understanding the Components

LED: Look at your LED carefully! Each LED has one prong that is slightly longer than the other - this is the positive lead. You'll need to know which side is positive when you assemble your circuit.

Battery: One side is positive and one side is negative.

Copper Tape: this adhesive tape is conductive and will be the "wires" for our circuit. Peel off the backing carefully to stick in place.



### STEP 1: Decorating Your Card

Decorate the front of your card any way you want! Decide where you want to place your light and poke a small hole using the point of a pencil.

### STEP 2: Assembling the Circuit

You will assemble the circuit on the back side of the front flap of your card. Your circuit will look like "A" above, meaning it will be open.



Gently bend the legs of the LED so they are straight out to the sides from the top. Pay attention to which side is positive and mark that on your card.
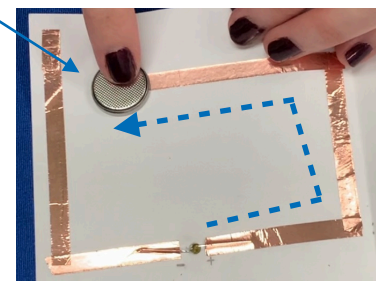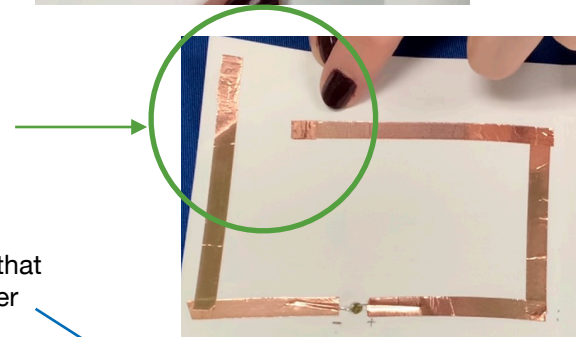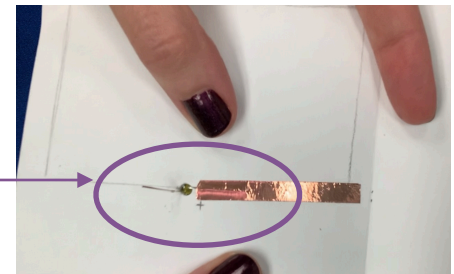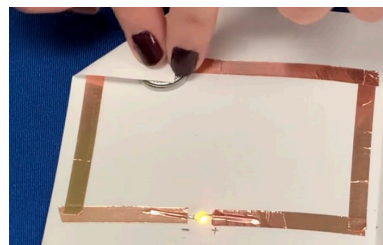
Attach copper tape to each leg, pressing very firmly and gently, to ensure a good connection. Then extend your copper tape around the circuit.



Make sure your copper tape does NOT connect. We want the circuit to be open. Leave a space and extend the copper tape above the circuit, so that when you fold down a corner of the card, it will connect with the rest of the circuit closing the loop.

Finally add your battery. Trace your copper tape back to the LED to check which end (+ / -) of the LED will be connected to the battery and make sure that side of the battery is down, touching the copper tape. Make a loop of copper tape, sticky side out, to attach the battery to the card.

### STEP 3: Using Your Card

Fold over the corner of your card so that the copper tape connects with the battery and creates a closed circuit, like "B" above. This will turn on the LED! You may want to mark the corner of your card to show the recipient where to fold and press.





**Questions? If you have any questions, please email us at hello@NogginBuildersFoundation.org**