

Light-Up Greeting Card



Fold a real working circuit into a card - open it and a tiny LED glows to say hello.

A Little Bee Crafty printable project

At a glance

Age range	9+ (great first electronics project)
Hands-on time	About 45-60 minutes
Skill level	Intermediate (careful taping; tests + fixes)
Mess level	Low (paper, tape, no glue needed)
Adult supervision	Light - mainly battery safety

This is a paper circuit: a real electric loop built flat on a card using copper tape instead of wires. A coin-cell battery powers a tiny LED, and the card's own fold becomes the switch - press the flap (or open the card) and the two copper ends touch, completing the loop so the light comes on. The printable includes a true-to-scale circuit map showing exactly where the copper tape runs, where the battery sits, and which LED leg goes where, plus a clear diagram of the fold pressure-switch.

The big idea: electricity needs a complete loop. Break the loop and the light goes out; close it and the light comes on. The card's fold opens and closes that loop.

What you'll need

Materials

- 1 printed Circuit Template (last page of this PDF) - print on cardstock if you can
- 1 sheet of cardstock or stiff folded paper for the card cover
- Copper tape - about 12 in (the conductive adhesive kind; thin roll)
- 1 coin-cell battery, 3V CR2032 (the flat silver button kind)
- 1 LED, 3mm or 5mm, any color (these run on about 3V)
- Clear tape (to hold the battery and add extra strength at corners)
- Markers, stickers, or paper scraps to decorate the front

Tools

- Scissors
- A ruler (to check the 1-inch scale box and press tape flat)
- A pencil
- Optional: small needle-nose pliers to gently bend the LED legs
- Optional: a coin to burnish (rub) the copper tape down firmly

Safety first

Coin-cell batteries are a serious swallowing danger - they can badly hurt a child or pet if swallowed. Keep them out of reach of little ones, count them, and store spares in a sealed container. The battery may get slightly warm if the circuit is left on - that is normal, but slide it out when you are done. Copper tape edges can be a little sharp; press them down flat.

Before you print:

Print the template page at 100% / Actual Size (turn OFF 'Fit to page' or 'Scale to fit'). Check the 1-inch box with a ruler before cutting - if it measures 1 inch, every piece will be the right size.

Circuit basics first

Two things to know before you build. ONE: an LED only lights one way. Its longer leg is positive (+) and must connect toward the battery's + side (the smooth, marked side facing up). TWO: copper tape carries electricity along its length, but a fold or overlap can break the connection - so when tape turns a corner, fold it back on itself rather than cutting and butting two ends together.

1 Print and check

Print the Circuit Template at 100% (use cardstock if you have it). Measure the 1-inch box so the battery and LED land in the right spots.

2 Lay the first copper track

Peel and stick copper tape along the line marked 'Track A', starting at the battery + pad and running to the LED + mark. Press it down firmly and burnish with a coin.

3 Turn corners with a fold

Where the track changes direction, fold the tape back over itself to keep it connected - do NOT cut and start a new piece at a corner.

Build the circuit

- 4 Lay the second track**

Stick copper tape along 'Track B', from the LED - mark to the battery - pad area, following the template. Leave a small GAP at the switch fold - that gap is your on/off switch.
- 5 Place the LED**

Set the LED on its mark so the long (+) leg rests on Track A and the short (-) leg rests on Track B. Tape each leg down flat onto the copper with clear tape, pressing leg-to-copper tightly.
- 6 Add the battery**

Set the coin cell on its pad, + side (smooth, marked) facing UP onto the copper. Fold the template's battery flap over the top and tape it down so it presses the battery firmly onto both pads.
- 7 Make the switch**

Find the two copper pads at the fold line. When you press them together (by folding the flap or opening the card), they touch and the LED lights. Test it now - press to check it glows.
- 8 Mount and decorate**

Tape or glue the circuit sheet inside your cardstock cover. Poke the LED through a tiny hole in the front if you want it to shine on the cover, then decorate around it.

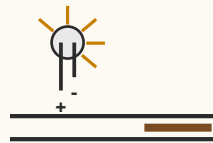
The fold pressure-switch

OPEN = light OFF



Pads do not touch -
the gap breaks the circuit.

CLOSED = light ON



Press the flap (or open the
card): pads touch, it lights.

If it won't light

> LED is in backwards

This is the most common fix. Flip the LED so the LONG leg is on Track A (the + side) and try again.

> Loose connection

Press every spot where copper meets a leg or the battery. Burnish the tape with a coin. Add a little clear tape over each LED leg.

> Battery upside down or weak

The + (smooth, marked) side should face the copper as the template shows. If it still won't glow, try a fresh CR2032.

> Broken track at a corner

Check that corners are FOLDED, not cut. A tiny break stops all the flow - patch it with a short overlapping piece of tape.

Make it yours

> Two lights

Add a second LED in parallel - run both + legs to Track A and both - legs to Track B. Two glowing eyes on a bee make a cute card.

> Always-on vs. press

For a card that lights only while open, put the switch gap at the spine fold so opening the card closes the circuit.

> Blink it

Swap in a self-blinking LED (no extra parts) for a twinkling star or firefly card.

The learning (quietly)

A paper circuit makes invisible electricity visible. Builders learn that current only flows around a complete loop, that an LED has a direction (polarity), and that a switch is simply a controlled gap in the loop - the same logic inside every gadget they own. The project rewards careful, tidy work: a single loose corner means no light, so makers practice methodical testing and troubleshooting - form a hypothesis, change one thing, test again. It quietly bridges crafting and engineering, and the payoff, a card that truly lights up, makes the abstract idea of a circuit click in a way no worksheet can.

Light-Up Card - Circuit Layout



Print at 100% / Actual Size, on cardstock if you can. Lay copper tape on the gray tracks.

Line key

- SOLID line = CUT line (card edge)
- DASHED line = FOLD here (do not cut)

Check this box with a ruler.
It must be 1 inch at 100%.

1 inch
(2.54 cm)

 GRAY/COPPER band = lay copper tape here

Tracks A and B never touch except at the switch.

