Light-up Gift Box

Are you ready to light up your holidays? Design your own gift box that twinkles using concepts of geometry and circuits.

Materials

- Conductive copper tape
- Coin cell battery 3v
- Construction paper
- Gift Box Template
- Hole punch
- LED Diode
- Markers
- Pencil
- Scissors
- Thread/twine

How to

1. Cut along the dark, solid lines of the gift box template. You should be left with a shape that looks like a "t."
2. Flip your template over and decorate the outside of your gift box with markers. You may want to cut/punch holes for the light to shine through your design.
3. Flip your template back over so the decorated side is face down on your surface. Punch two holes at the outer corners of the bottom square and the top square. Punch one hole each at the top outer corner of the crosswise squares.
4. Fold and unfold the pattern along all the dashed lines to create creases .
5. On the bottom square of your gift box, start building the circuit. Place your conductive copper tape along the tape lines. Use the copper tape to tape the coin battery in the circle and the light switch on the star. Test your circuit to ensure it works! (Follow this resource video for a detailed guide and troubleshooting support.)
6. Run your thread through all the holes, starting with the bottom square that has the circuit.

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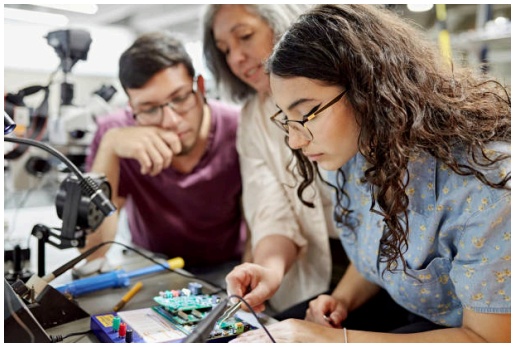
7. Gently pull the two ends of the thread together to make the gift box into a cube and press on the folded switch to light it up!

8. Try creating your own designs by drawing new shapes and cutting them out of your extra construction paper!

STEM Career

Electrical engineers design, build, and test systems that use electricity, like power plants, electronics, and communication devices. They help make sure electricity is safely delivered to homes and help create new technologies, such as smartphones, computers, and robots.



How it works

A geometric net is the term used to describe what a 3D shape looks like if it is unfolded and laid flat. Our gift box template is made up of six squares. When all of the squares' edges are pulled together by the thread, the net forms a cube. By adjusting the sizes or shapes of the geometric net, you can create different 3D shapes.

A circuit is a path that electricity flows through. In a very simple circuit, a power source or a battery provides electricity to an object, such as a light, motor, etc. There are usually conductors, like wires or our copper tape, between the power source and object that allow electricity to travel a farther distance between them. The circuit in our template is initially an open circuit, meaning there is a gap in the path of the electrical current. The rectangle at the bottom edge of our template acts as a switch and, when folded over so the copper tape connects, creates a closed circuit with good electrical current throughout.

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