

Build a simple circuit robot pal from a paper cup!

- Paper cup
- LED
- Copper tape
- Pipe cleaner
- Button battery (CR2032)
- Marker
- Googly eyes (optional)

1. Turn the paper cup upside down so that the bottom of the cup becomes the top of your robot.
2. Bend apart the LED leads. Secure the LED to the top of the robot, with the shorter lead extending to the right, by overlapping each lead with a piece of copper tape and extending the copper tape over the cup edge to about halfway down the cup on each side.
3. Attach the button battery, using a copper tape loop, to the end of the copper tape on the right side of the cup with the positive battery terminal facing up. Add a ~1-in. piece of copper tape that extends from the top side (+) of the battery and onto the cup.
4. Cut the pipe cleaner in half. Strip about ½-in. of the fuzz off all ends, leaving bare wire exposed.
5. Take one pipe cleaner piece and place the wire end over the copper tape extension end from step 3 (right side of cup). Use a small piece of copper tape to secure it in place.
6. Take the other pipe cleaner piece and place the wire end over the copper tape end on the left side of the cup. Use a small piece of copper tape to secure it in place.
7. Thinking of the pipe cleaners like arms, add a face to the front of the paper cup to make a robot pal.
8. To activate the LED, touch the two bare ends of the pipe cleaner together. The circuit will close and the light will turn on! Your robot pal is cheering you on!

Note: Light emitting diodes (LEDs) are polarized and only allow current to flow in one direction. The longer lead is the anode (positive) and the shorter lead is the cathode (negative). An LED must be correctly connected to the power source to observe light. Be sure to connect the cathode to the negative battery terminal and the anode to the positive terminal.

- Discuss how closed circuits work: What occurs when the pipe cleaner ends attach together?
- Reflect on which materials conducted electricity.

DIY Paper Cup Robot by @moonshotkidz

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