

Snowman Decoration Kit Directions

The Snowman Decoration kit comes with everything you need to make a decoration that teaches some basics about circuitry. The circuit pattern in this kit is a parallel circuit used to light up the snowman's buttons. For more on circuits, see the circuit tutorial.

Time to complete: 20 minutes

Kit Contents

- Two snowman cutouts (front and back)
- Six feet (1.8 m) of 1/4 inch (6.4 cm) copper tape
- Six Chibitronic lights (2 each pink, green, and orange)
- Two paper hat cutouts
- Two toothpicks
- Red yarn for scarf
- Red ribbon for hanging
- One large paperclip
- Glue dots
- Two 3v batteries



Tools you will need (not included)

- Scissors
- Tape measure or ruler
- Pen or pencil

Directions

Step 1: Mark the buttons on the snowman back

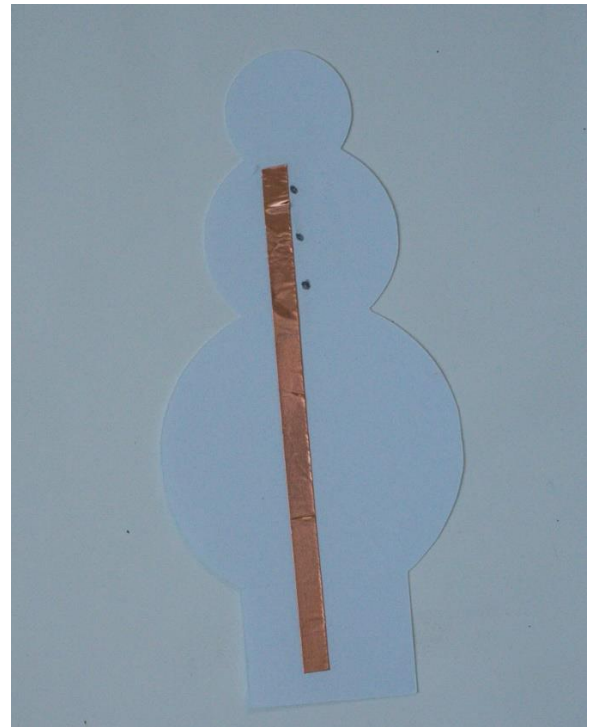
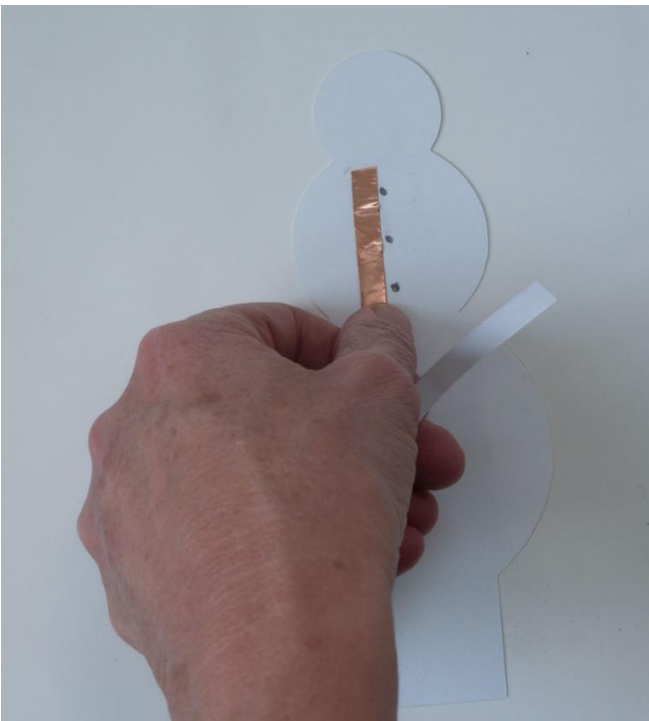
- Take the snowman front and back and place them on a flat surface, wrong sides together. The front of the snowman should be the one on top.
- Mark the button locations, by drawing a dot in the three holes located on the snowman front.



Step 2: Build the circuit for the lights

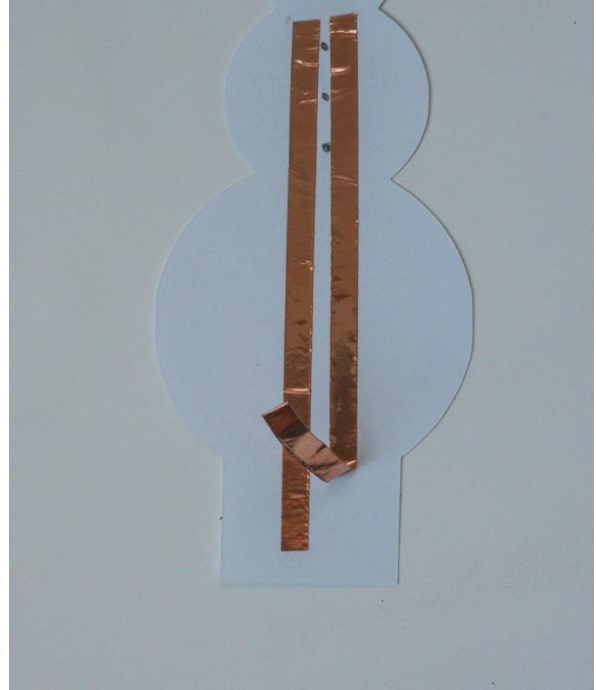
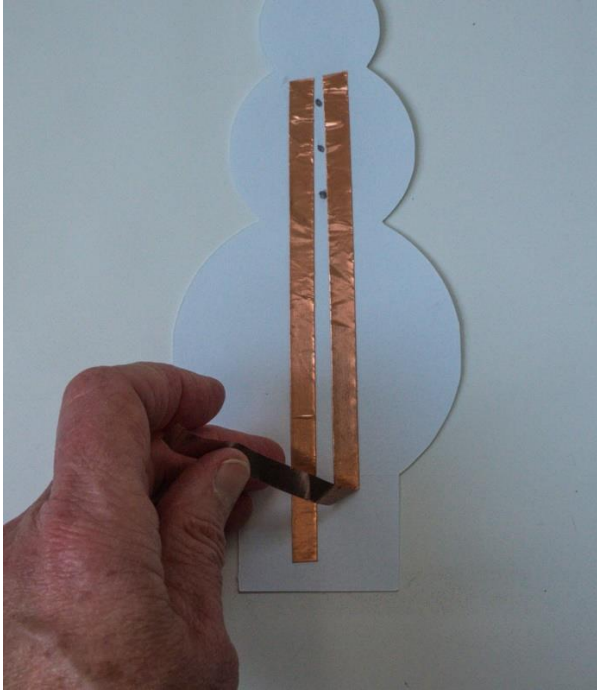
To make the circuit, you will place two pieces of copper tape vertically on the inside of the snowman's back. The battery will go on top of the shorter piece of tape and then you will create a tab with the longer piece of tape to place on top of the battery. This will create a closed circuit:

- Cut a piece of copper tape that is about 5 inches (12.7 cm).
- Place it vertically along the left side of the marks you made for the buttons. Make sure that it is close to the marks to ensure a good connection. Continue it across the fold line onto the rectangle at the bottom that forms the base of the snowman.



- Cut another piece of tape that is about 7 inches long (17.8 cm).

- Place it vertically along the *right* side of the button marks, staying close to the marks but not touching the other piece of copper tape. You want about an 1/8 inch (3.175 mm) between the two pieces of tape.
- Extend the tape just over the fold line but do not continue past there.
- Remove the backing from the remaining tape. Find the center of the loose tape, then fold it at the center and stick it to itself. You should now have a loose piece of tape with no adhesive showing.



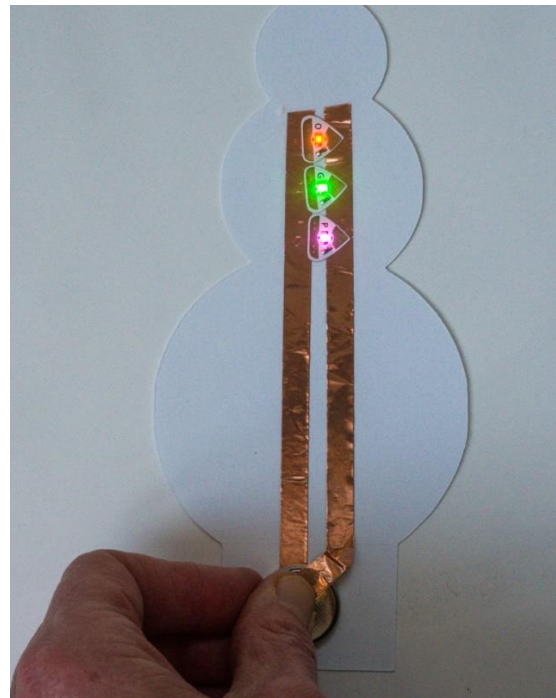
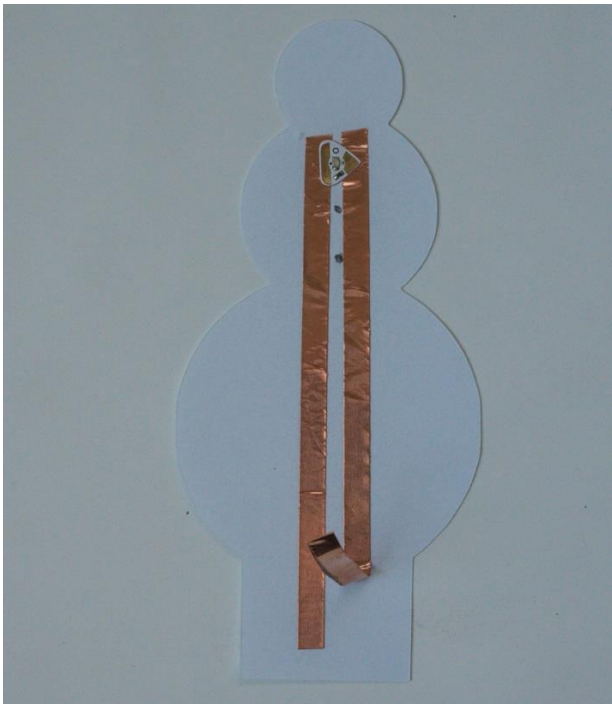
Step 3: Get familiar with the Chibitronic Circuit Stickers

- The Chibitronic stickers are polarized so one side needs a positive connection and the other side needs a negative connection.
- The Chibitronic stickers have the positive charge on the broad side of the sticker.
- Note the gold strips on the lights. The undersides of the lights have the same strips. When you build your circuit, these are the conductive surfaces that you need to ensure are in contact with the copper tape.
- The adhesive on the stickers is conductive so it helps to make sure you have a consistent connection.
- When you complete the design, it is still important to make sure that the stickers are in firm contact with the copper tape.



Step 4: Place the stickers

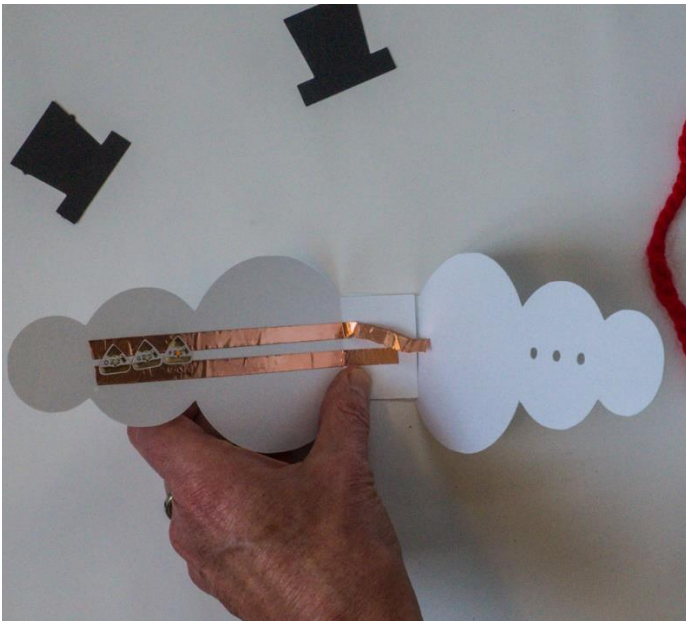
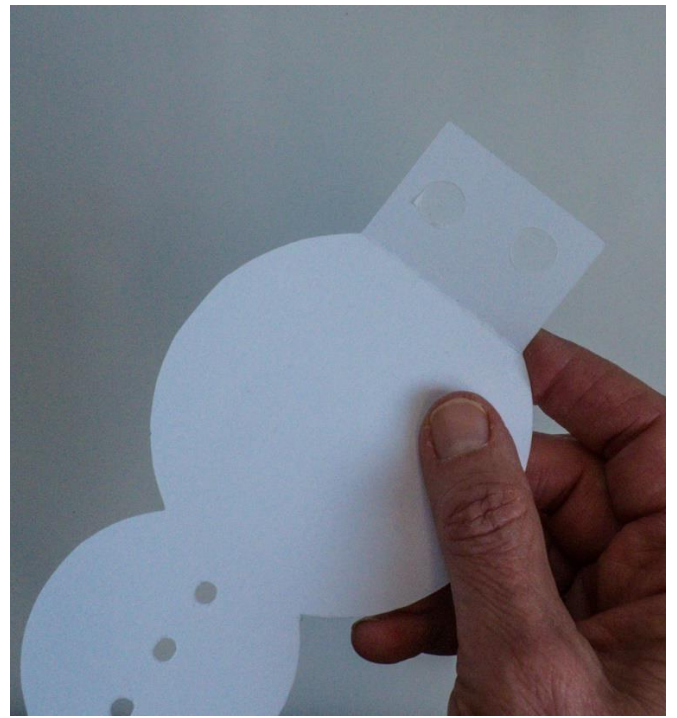
- Place the stickers with the positive side on the left. Try to get each LED lined up over one of the marks you made while being careful not to overlap the stickers. This could cause a short circuit.
- Press each sticker firmly on to the copper tape to ensure a good connection.
- Test the connections by placing the battery positive side down on the fixed piece of copper tape, place the loose tab over the top to connect with the negative side, then press firmly to ensure the battery is fully connected.



Troubles with the connection? Check the troubleshooting guide at the end of this document.

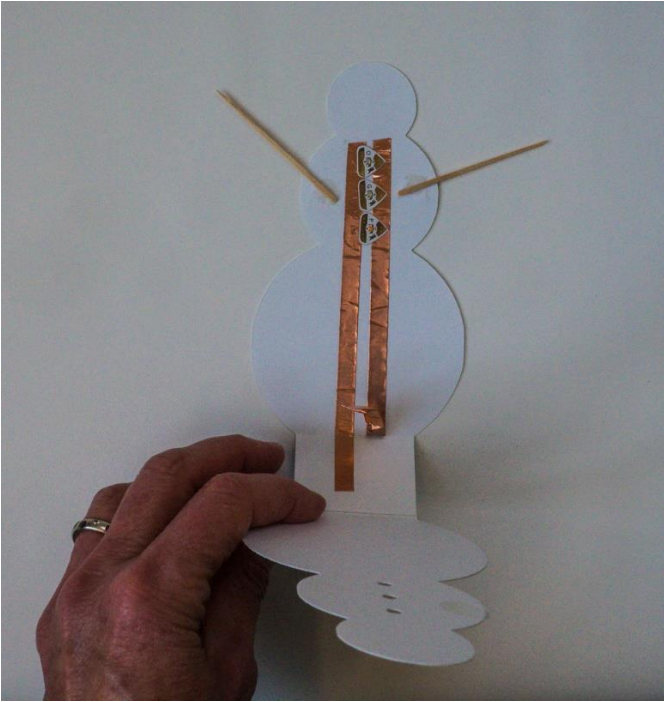
Step 5: Put the snowman parts together

- Hold the snowman front with the right side facing you, then fold the end tab away from you to form a right angle. Do the same with the back of the snowman.
- Place glue dots on the wrong side of the tab for the robot front, then line up the tab for the back and secure it.

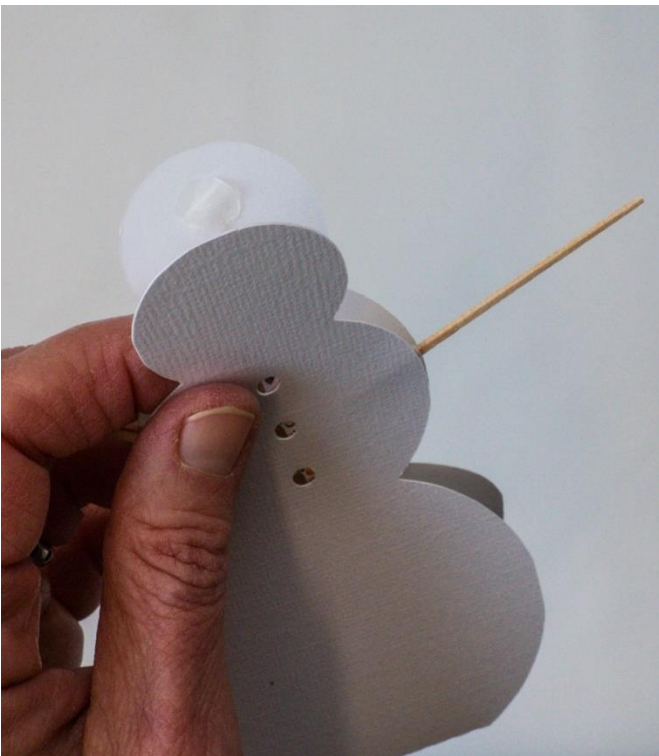


Step 6: Add the arms and close the sides

- Put glue dots on each side where you want the arms to be located.
- Stick the toothpicks to the glue dots then press the sides together.

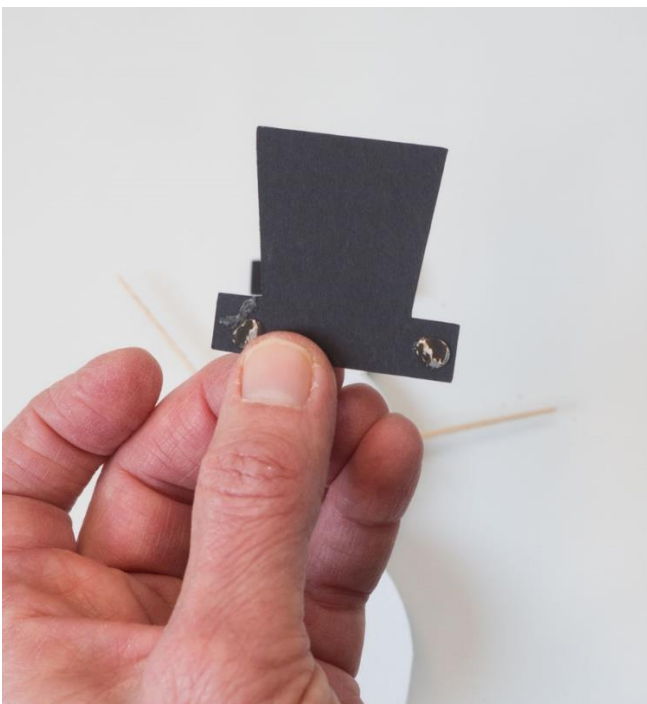


- Place glue dots along the sides and top of the snowman to stick the front and back together. Try to leave the bottom snowball open to accommodate the battery.



Step 7: Finish decorating the snowman

- Draw a face on the snowman with a pencil or marker.
- Place a glue dot on the top of the snowman's head and secure the hat to it.
- Turn the snowman over. Place glue dots on the outer edges of the hat and secure the other hat to it.

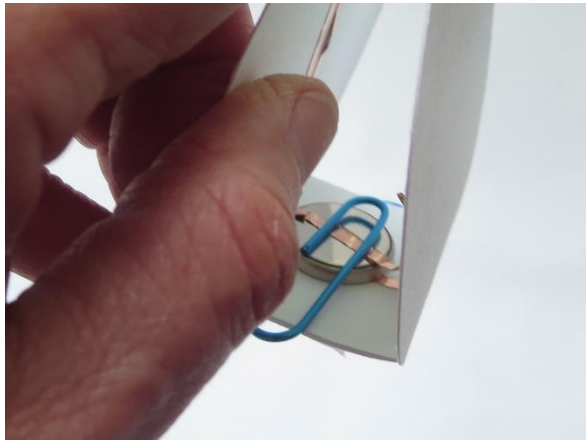


- Place a glue dot in between the hats at the top to secure them a little better.
- If you like, add the ribbon by sticking it to the glue dot before pressing the hats together.
- Cut a triangle of the orange felt. Place a glue dot on it and add it to the snowman's face.
- Tie the scarf around his neck.



Step 8: Add the battery

- Place the battery, positive side down, on the attached piece of copper tape on the tab.
- Place the loose piece of tape over it.
- Gently slide the paperclip over them to hold the whole thing in place.



Having trouble with getting your LED circuit to work?

Try the following:

- Make sure the positive side of the light is connected to the copper tape or wire that is touching the positive side of the battery.
- Make sure the battery is in firm contact with the copper tape.
- Is the positive side of the battery touching the negative copper tape or vice versa?
- Does the copper tape have any rips that are breaking the connection?
- Are there any places where the positive side of the tape or wire touches the negative side without going through a light? This would be a short circuit.
- Make sure the conductive edges of the lights are overlapping the copper tape enough to make a good connection.
- Firmly press around the edges of the lights and anywhere the copper tape overlaps to make sure the connection is good.
- Try a different battery.