

Whale Card Directions

The Whale Card Kit contains everything you need to make one card for a fun activity that also teaches how to build a circuit and make a switch.

Included with the kit are extra stickers and plenty of copper tape to build the Robot Pop-up and even make a creation of your own. If you have never built a circuit or worked with copper tape before, this activity is a great place to start.

Time to complete: Approximately 40 minutes

Kit Contents

- One white card
- One white envelope
- Paper cutouts
 - One whale
 - Water drops for whale waterspout
 - One seagull
 - Two waves
- Six feet (1.8 m) of ¼ inch (0.64 cm) copper tape
- Six Chibitronic Circuit Stickers (two each in red, blue, and yellow)
- One ½ inch by 1 inch (1.27 cm by 2.54 cm) piece of rectangular cardstock to use for a switch
- One 3v coin cell battery
- One star-shaped paperclip
- Glue dots



Tools you will need (not included)

- Scissors
- Tape measure or ruler
- Pen or pencil

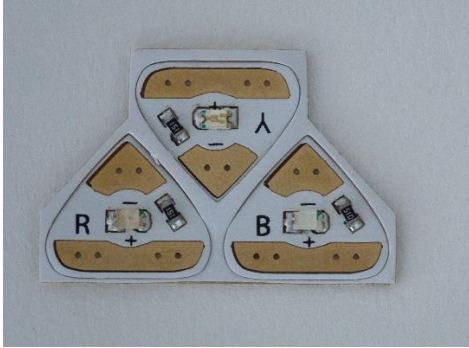
IMPORTANT: Please do the [circuit tutorial](#) first if you have never built a circuit!

Directions

Step 1: Get familiar with Chibitronic Circuit Stickers

Chibitronic stickers are polarized so one side needs a positive connection and the other needs a negative connection. Chibitronic stickers have the positive charge on the broad side of the sticker.

Note the gold strips on the lights. The lights' undersides have the same strips. 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 ensure a consistent connection. It is also important to make sure that the stickers are in firm contact with the copper tape.



Step 2: Mark the card to place the whale, the waves, and the eye

Before doing anything else, you will first mark the location you want for the waves and the whale. This will help you know where the copper tape and battery need to be so that all connections can be made, and the whale can be lined up properly with the eye. Here's how to do it:

- Place the waves on the card where you like then position the whale so that the eye is located above the waves on the white of the card. The waves are different so pay attention to which one is on top.
- Make a pencil mark along the top of one of the waves for the higher wave set so you can line
- Make another pencil mark where the whale's eye will go.





Step 3: Mark the battery location

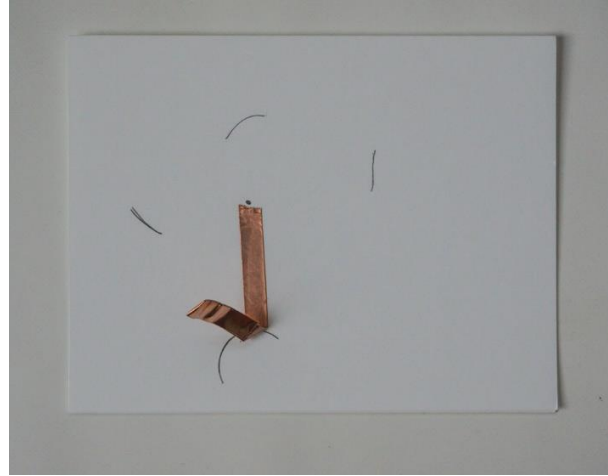
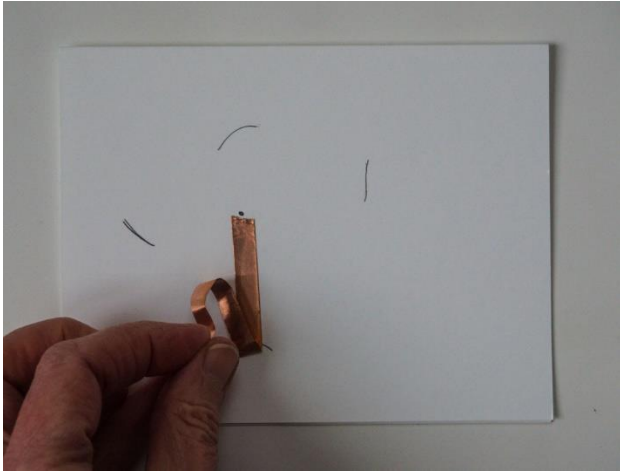
- Place the battery below the mark for the eye, near the bottom of the card.
- Trace it to mark the location.



Step 4: Place the copper tape from the eye to the battery

This first piece of tape will have a little tab at the bottom end that you will place over the battery to make the negative connection. Here's how you make it:

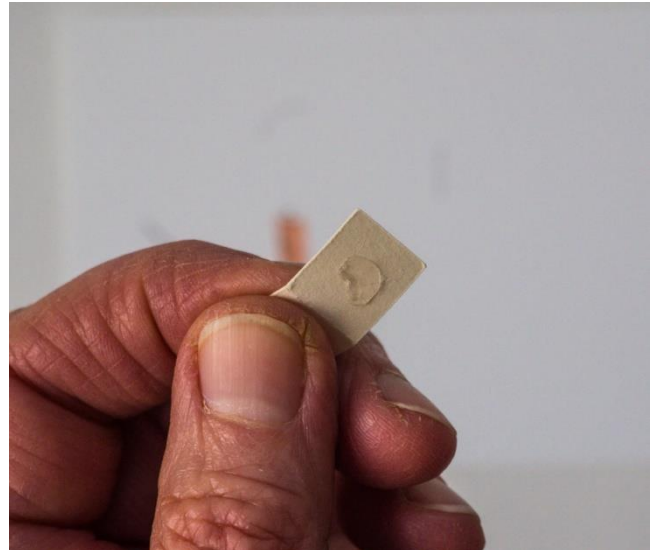
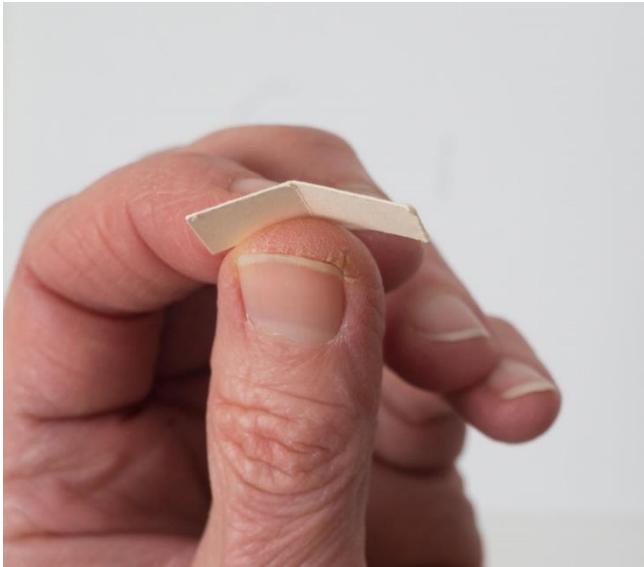
- Measure the distance from the mark for the light to close to the bottom of the card. Add one more inch to it. It should be about 3 inches (7.62 cm) total.
- Cut a piece of tape to that length.
- Peel the backing off and attach it to the card vertically starting directly below the mark you made for the eye.
- When you get to the edge of the battery mark, fold the tape back on itself, then fold the loose piece of tape in half, sticking it to itself to form a tab.



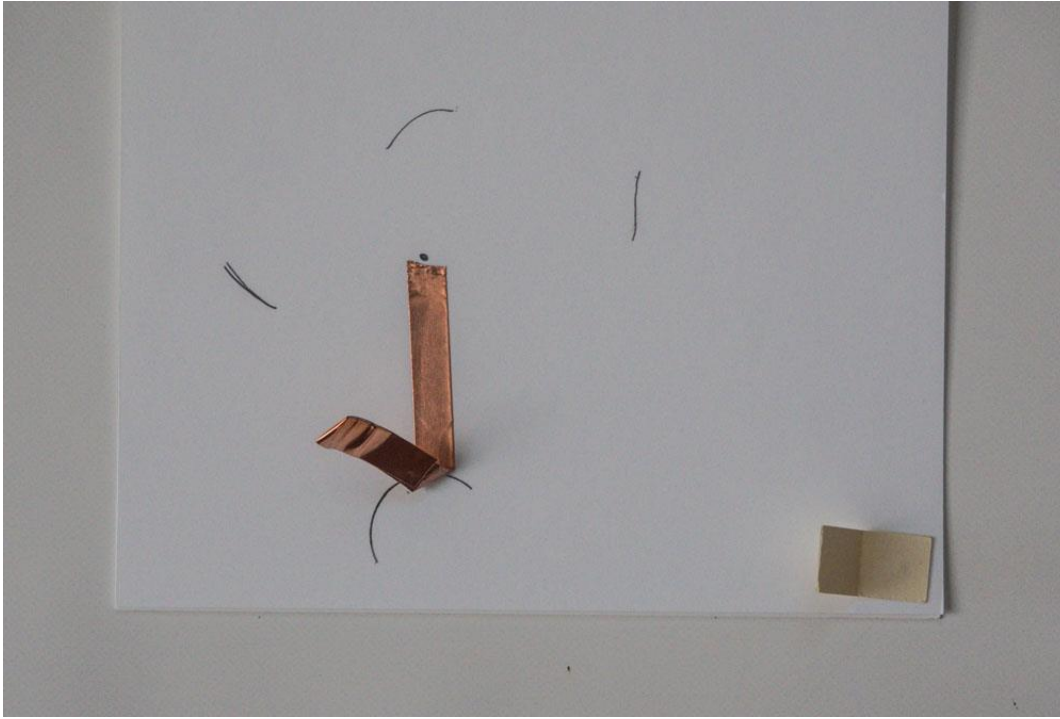
Step 5: Place the switch and the second piece of copper tape.

The switch is made from the 1 inch (2.54 cm) by ½ inch (1.27 cm) rectangular piece of cardstock. It will be a simple on/off switch. When you press it, the light will come on.

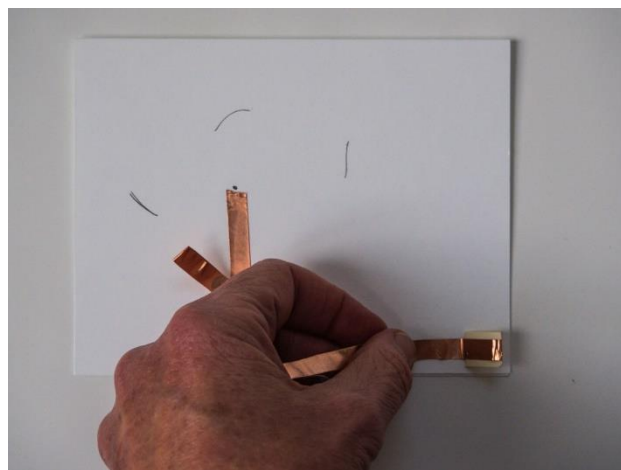
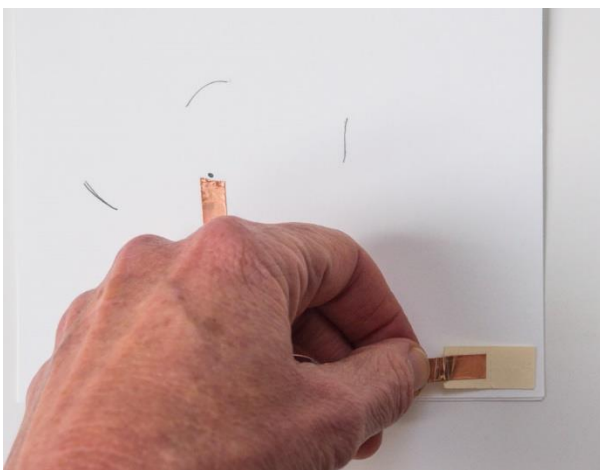
- Fold the rectangle along the dotted line.
- Place a glue dot on one of the outer sides.

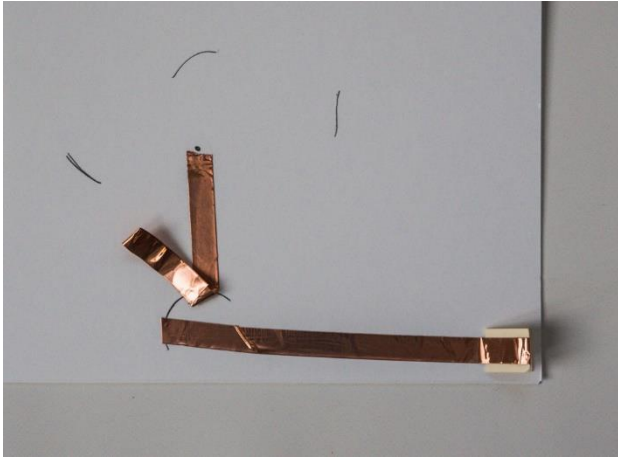


- Place it near the lower right corner of the card, with the opening toward the right vertical edge of the card.



- Measure the distance from the left side of the mark for the battery to the left edge of the switch with the switch folded shut.
- Add 1 inch (2.54 cm) to that measurement. You should have about 4 inches total.
- Cut a piece of copper tape to that length.
- Open the switch and, start sticking the tape the switch just to the left of the fold, heading to the left.
- Close the switch, fold the tape over the edge, and continue adhering it across the card and over the mark for the battery.

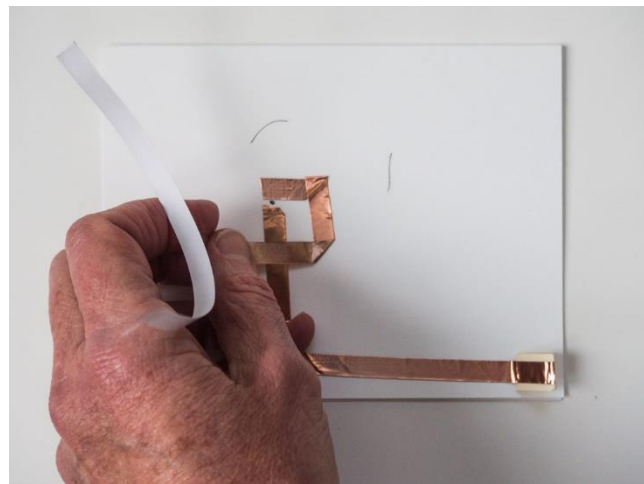
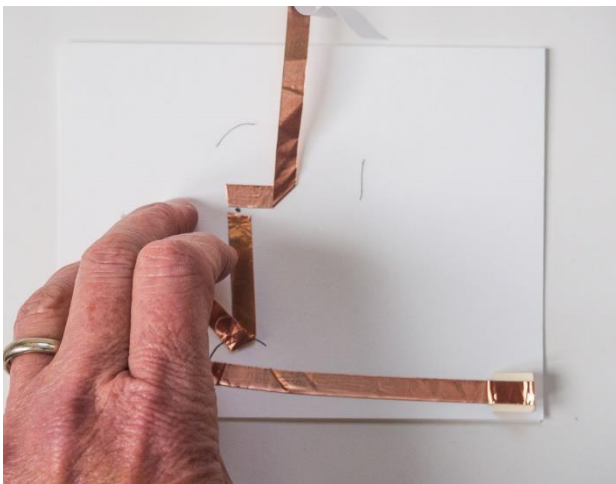




Step 6: Place the final piece of copper tape and secure the switch

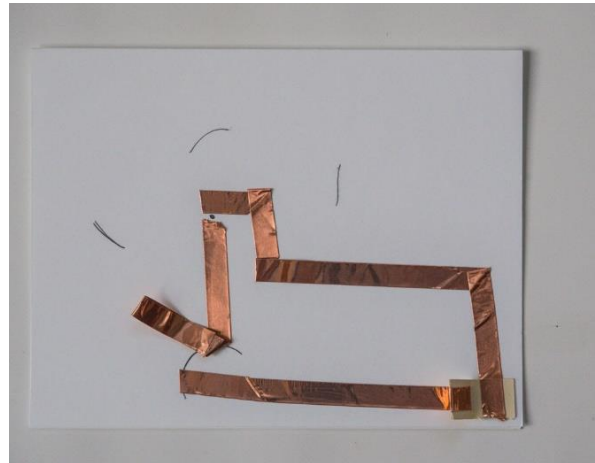
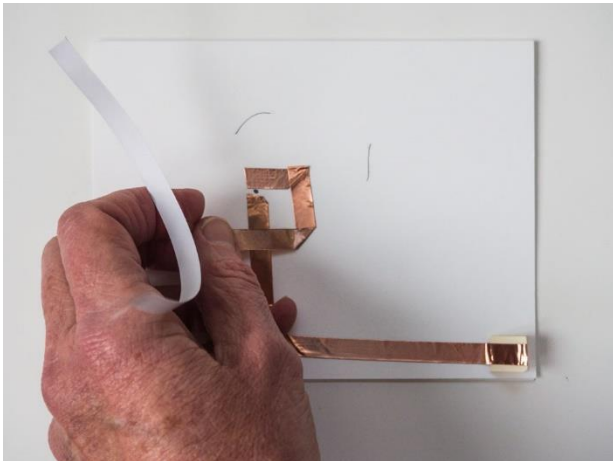
The last piece of tape runs from the top of the eye to the right side of the switch. You will need to be careful in your placement to make sure that the tape is hidden by the whale and the waves.

- Measure the horizontal distance from the eye mark to the right edge of the card then measure from the eye mark to the bottom of the card. Add the distances together. It should be around 7 inches (17.78 cm). Add another inch (2.54 cm) to accommodate folds in the tape. It should be around 8 inches (20.32 cm). Cut a piece of tape that length.
- Start the copper tape above the eye mark about 1/8 inch (.32 cm) away from the other piece of tape. You need them close enough together to ensure a good connection.
- Place the tape horizontally to the right about an inch.
- Fold the tape up then back down to make a corner. Continue placing the tape downward for about an inch or so.



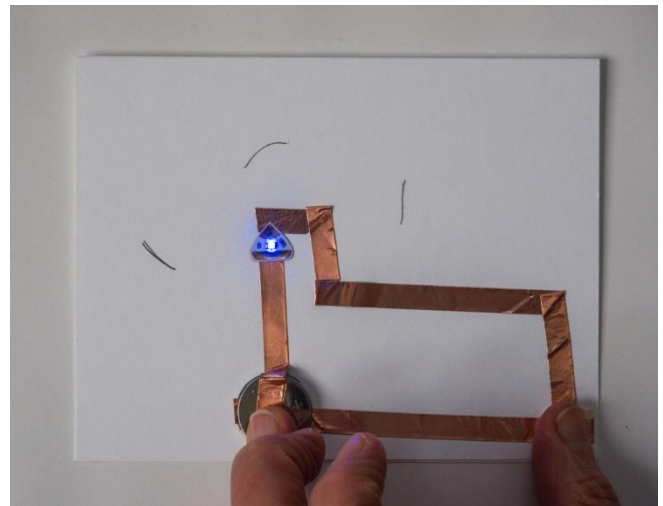
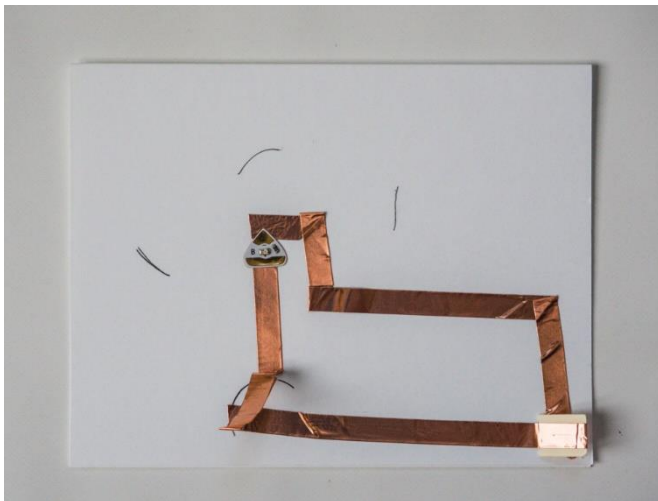
- Fold the tape to the left then back to the right to make another fold. Place the tape horizontally until it is directly above the right side of the switch.
- Make another fold to direct the tape down toward the switch.
- Place the tape over the right side of the switch, making sure it is not in contact with the other piece of tape when the switch is open.

- Tear or cut off any extra tape.



Step 7: Attach the Chibitronic Sticker and test the connection

- Place a Chibitronic sticker over of the eye mark, with the positive side on the bottom strip of copper tape. Press both top and bottom firmly to make sure the connection is solid.
- Place the battery over the battery mark, positive side up.
- Place the tab you made with the end of the tape over the battery and hold it down while simultaneously pressing the switch.

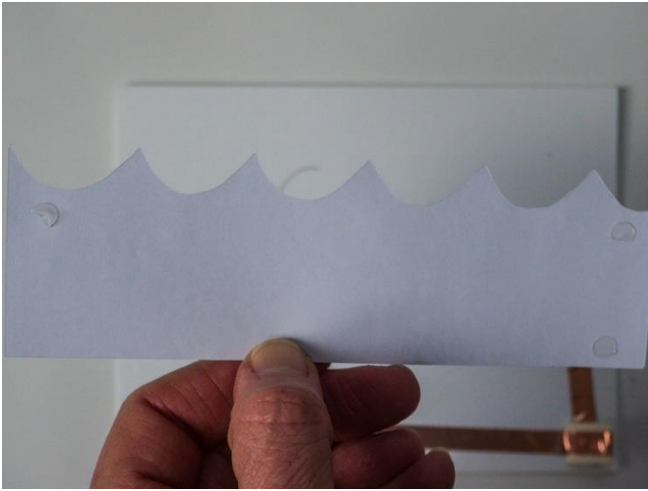


- Does the light work? If not, check the Trouble Shooting guide at the end of this document.

Step 8: Decorate the Card

- Take the wave that you are using to hold the whale and turn it so the wrong side is showing.

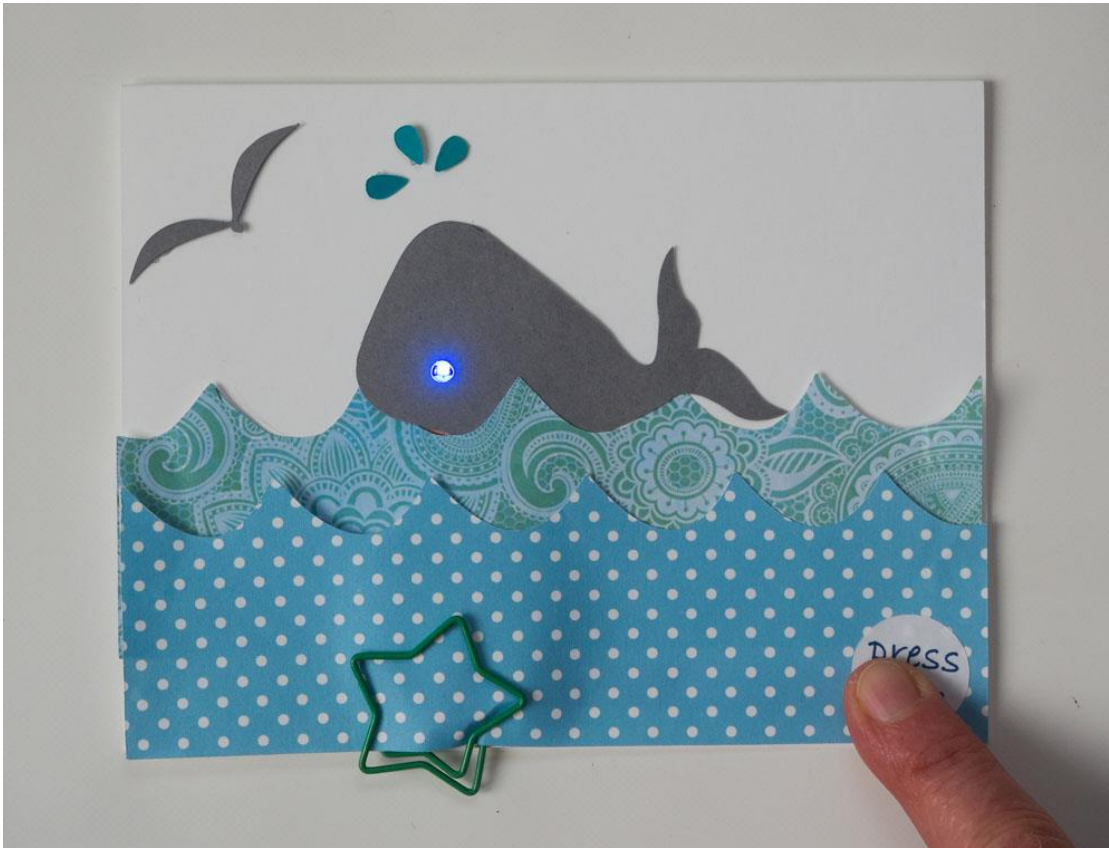
- Place an upper and lower glue dot on the right edge of the wrong side and just an upper glue dot on the left edge.
- Place it right side up on the card, matching the marks you made for placing it.



- Place the glue dots for the lower wave in the same manner, and place it on the card so that the bottom of the wave aligns with the bottom edge of the card.
- Place two or three glue dots on the back of the whale then place it making sure to align your placement marks. Also make sure that the LED is showing in the eye hole.



- Carefully lift the bottom wave and place the battery on the battery mark between the two pieces of copper tape. Make sure the positive side is up. Use the star-shaped paper clip to hold it in place.
- Place the "Press Here" sticker over the switch.
- Place the seagull and the water spout using bits of the glue dots to make sure they don't show.



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 that is touching the positive side of the battery.

- Check to see if the Chibitronic stickers are in firm contact with the copper tape.
- Make sure the positive side of the battery is touching the copper tape that connects to the positive side of the Chibitronic stickers, and the negative side of the battery is connected to the copper tape that connects to the negative side of the stickers.
- Does the copper tape have any rips that are breaking the connection?
- Check to see if there are any places where the positive side of the tape touches the negative side without going through a sticker. (This would be a short circuit.)
- Make sure the conductive edges of the lights are overlapping the copper tape enough to make a solid connection.
- Firmly press around the edges of the lights and anywhere the copper tape overlaps to make sure the connection is good.
- If all else checks out, then try a new 3V coin cell battery.