For interactive presentations use
peardeck.com

For a regular presentation use
Mac: Preview Windows: Adobe Reader

To print worksheets out for students
print pages 2,6,14,21

Anything underlined is a hyperlink

Verizon Innovative Learning

innovative learning labs

LittleBits & Cardboard

What are LittleBits?

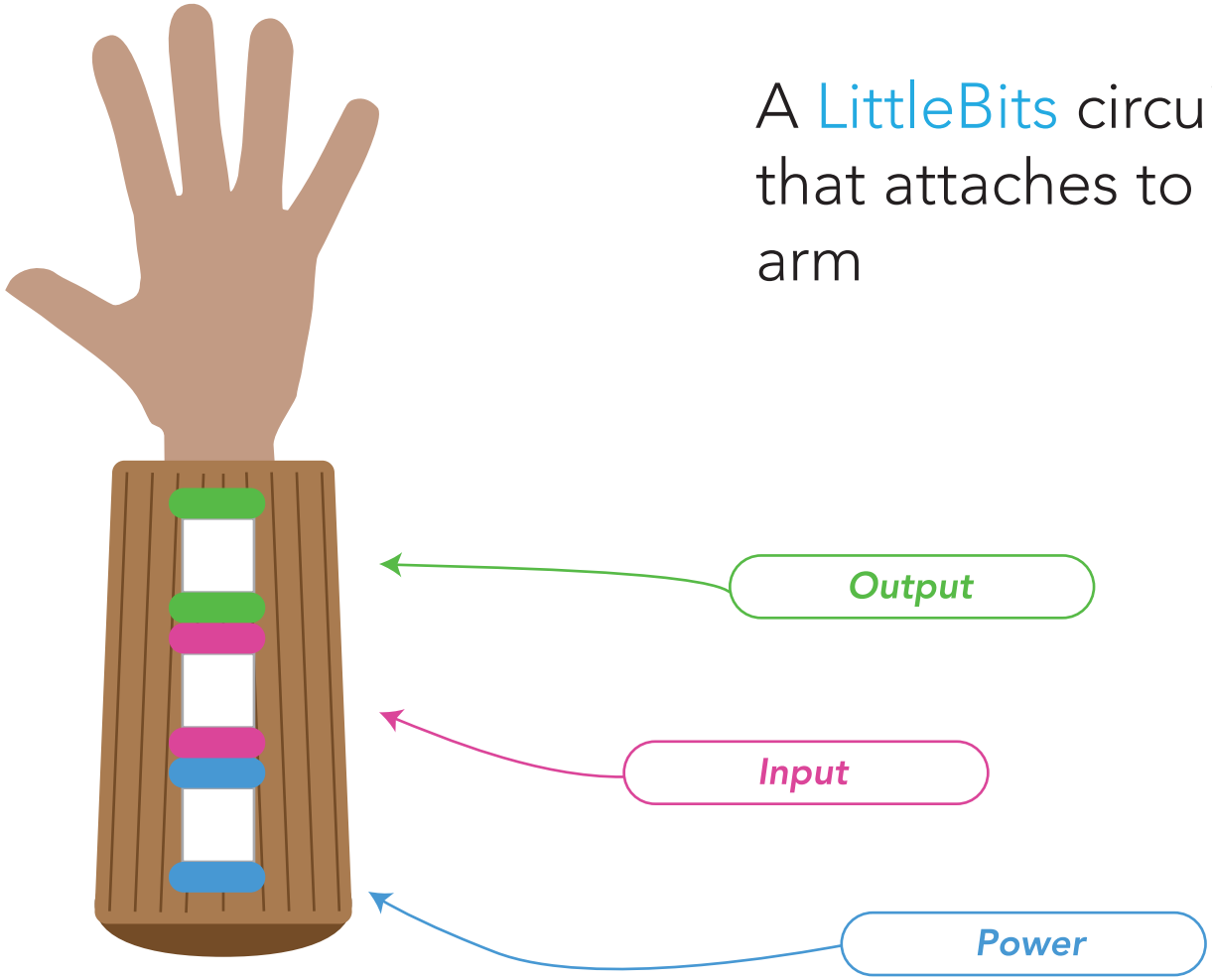
LittleBits are easy to use versions of common electronic components.

Instead of connecting components with wires, tape, or clips, they simply snap together with magnets.

Check out this short video about how they work and stuff you can make.

LittleBits Video

What we're Making



A LittleBits circuit that attaches to an arm

Inputs and Outputs

Inputs take in information and send a signal to the output to do something

Inputs include switches like buttons, or dimmers as well as sensors that detect temperature, light, and more.

Outputs include lights, speakers, and motors - Things that move, light up, or make noise

Power will either come from a battery or wall outlet.

Challenge #1

Turn on a motor

Write the bits you used below

Power	Input	Output

Material Preparation

Measure and cut these cardboard pieces using a ruler and utility knife, scissors, or exacto knife.

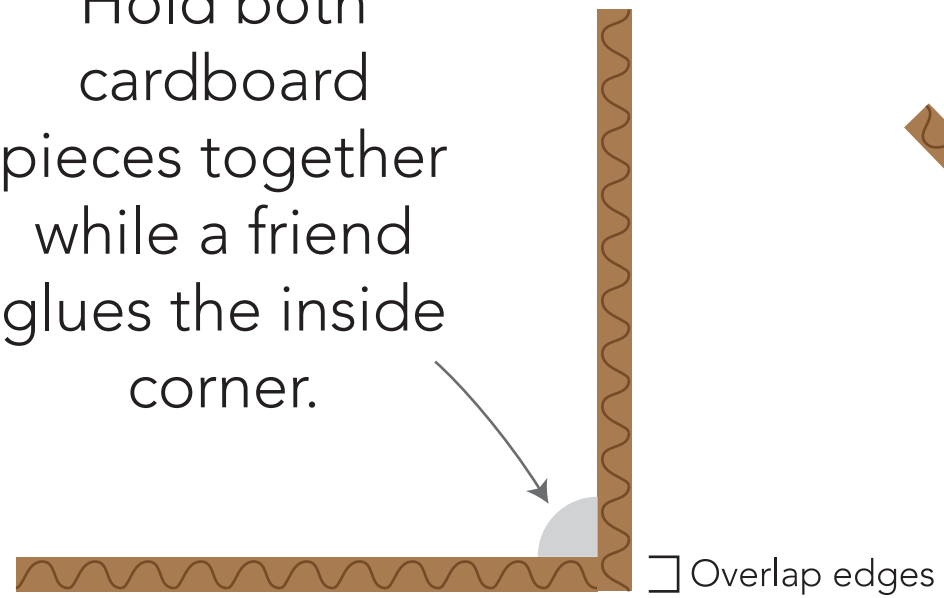
4 of these

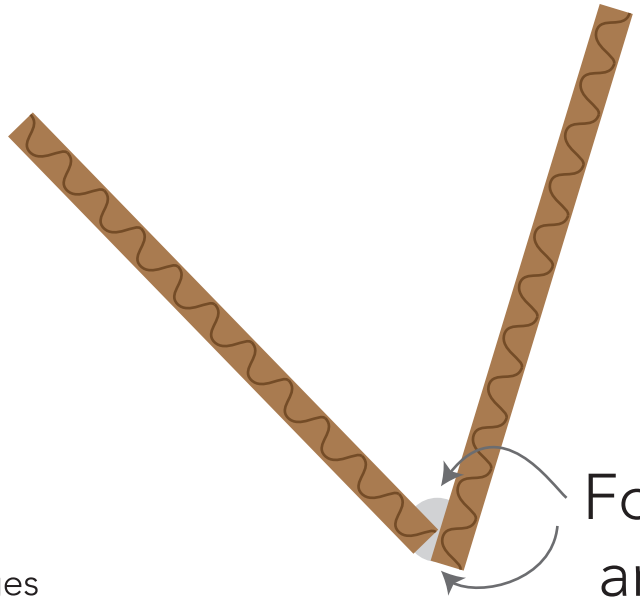
1 of these

Cardboard Construction

Glue 2 of your cardboard 6 inch pieces at a right angle
Glue the other 2 at an irregular angle like below.

Hold both cardboard pieces together while a friend glues the inside corner.

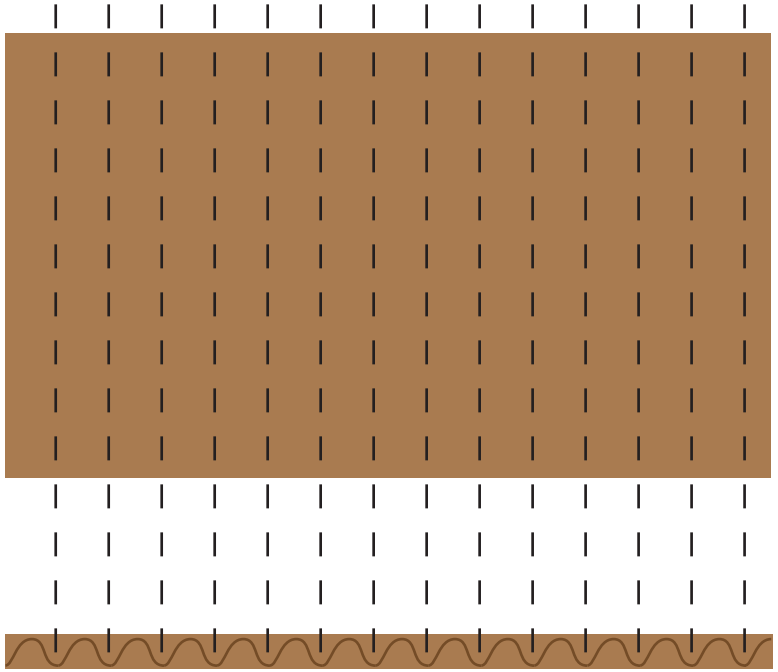


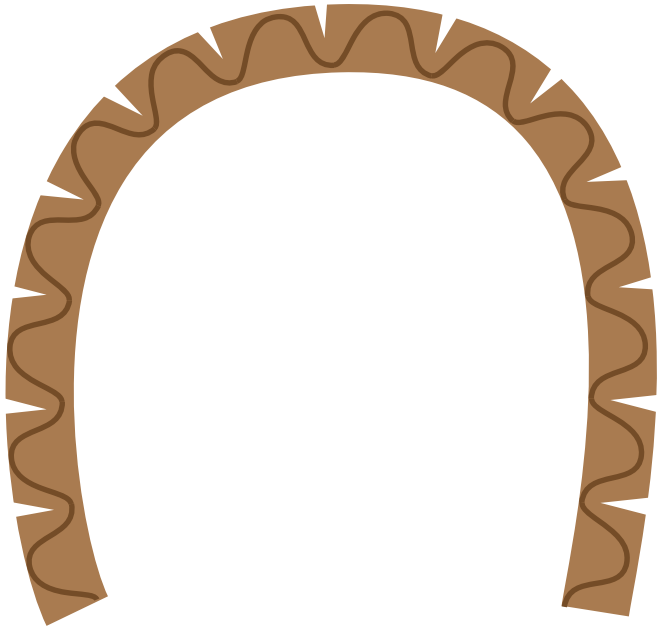


For irregular angles, use hot glue on both sides.

Cardboard Construction

With your 12 inch piece, cut halfway through the top with an exacto or utility knife several times to make it curve.





Those cuts let the cardboard bend on one side more than the other to make curves.

Gather Materials

LittleBits Battery

Curvy Cardboard Piece

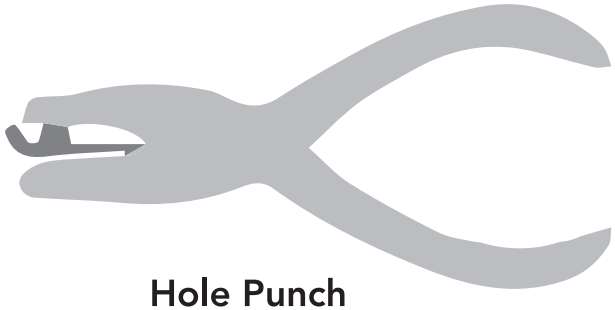
LittleBits Kit

Marker

Cutting Tool

Rubber Bands

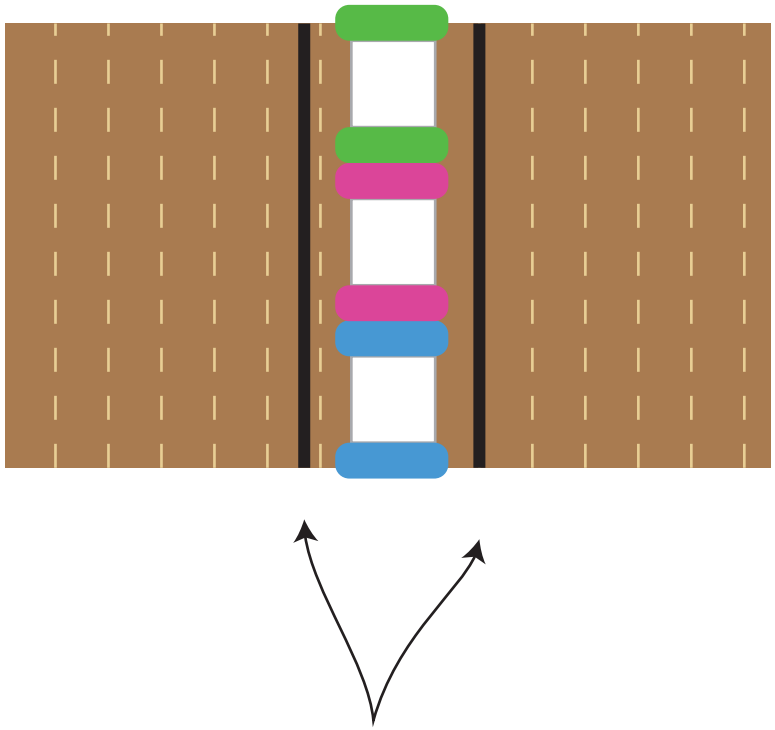
Cutting Tool



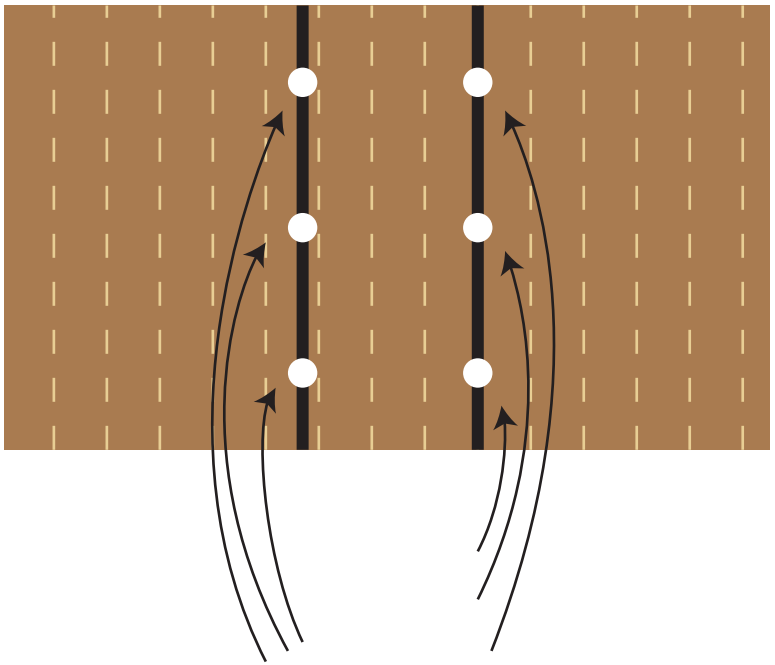
Hole Punch

Ruler

Trace and Cut



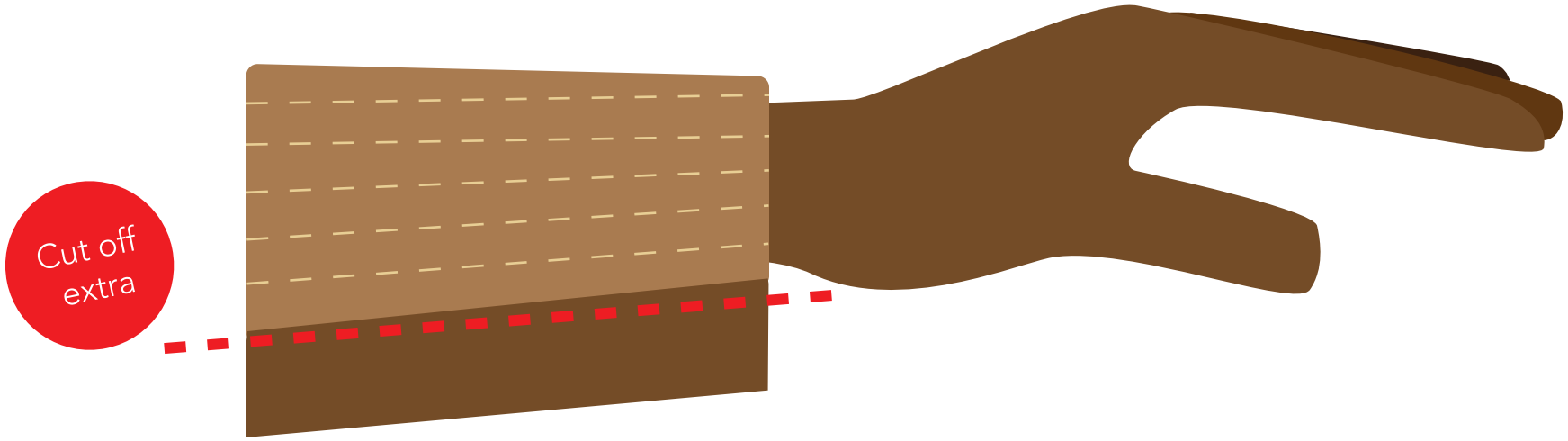
Mark the width of the LittleBits on your curved piece of cardboard.



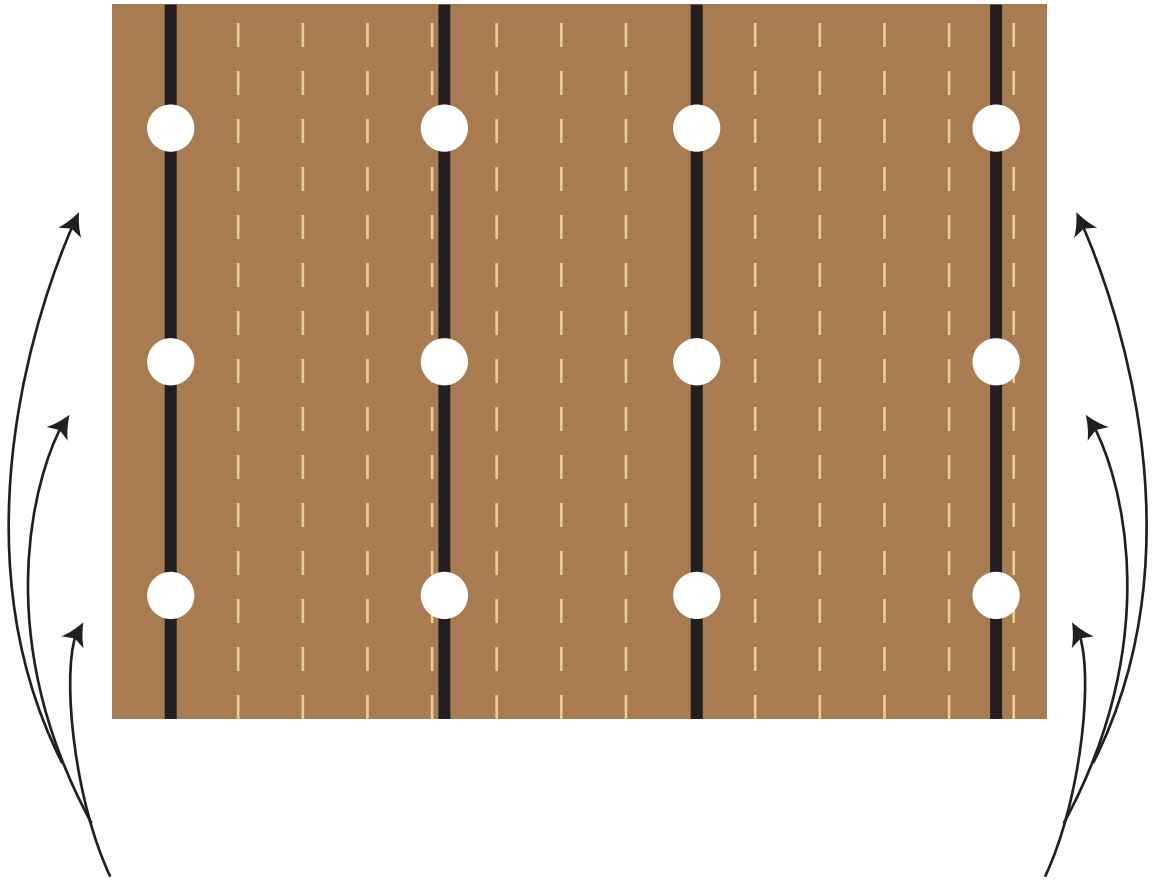
Use the hole punch to punch 2 holes for each LittleBit.

Fitting

Wrap your curved cardboard piece around your wrist and cut off extra so it fits snug.



Punch More Holes



Punch 6 more holes on the edges of your curved cardboard piece. These will help secure it to your wrist.

Design a LittleBits Circuit

Design a LittleBits circuit that can be a futuristic invention

Power

Input

Output

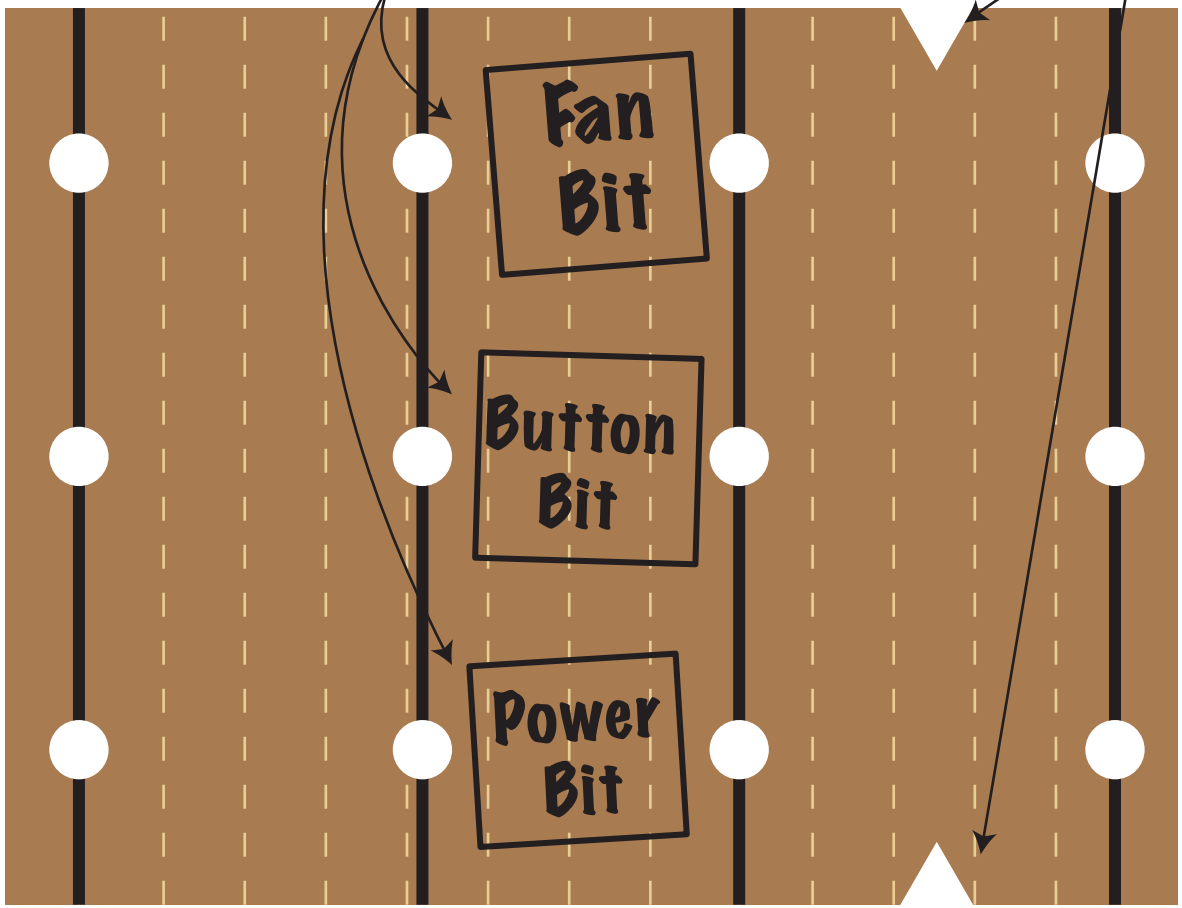
What's it do?

My circuit uses a button input and a fan output to propel me off the ground like a hoverboard

Write and Cut

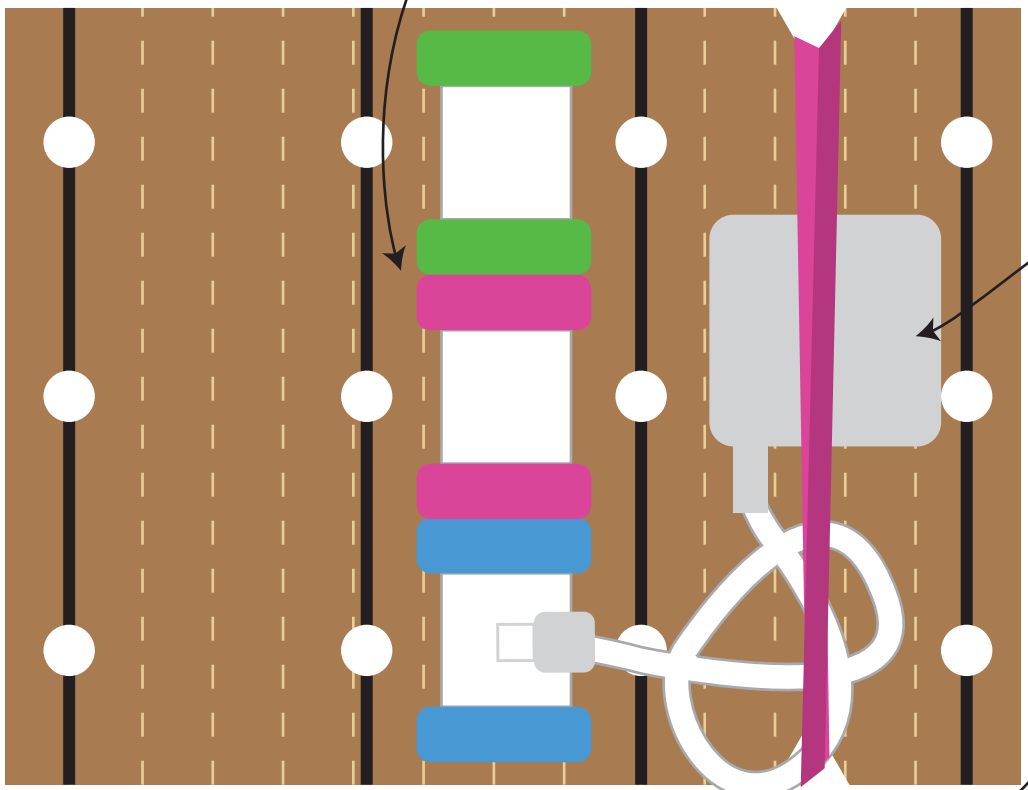
1. Write the LittleBits parts directly on your cardboard.

2. Cut triangular notches to the right of your first set of holes.



Attach It

3. Put your LittleBits circuit in place.

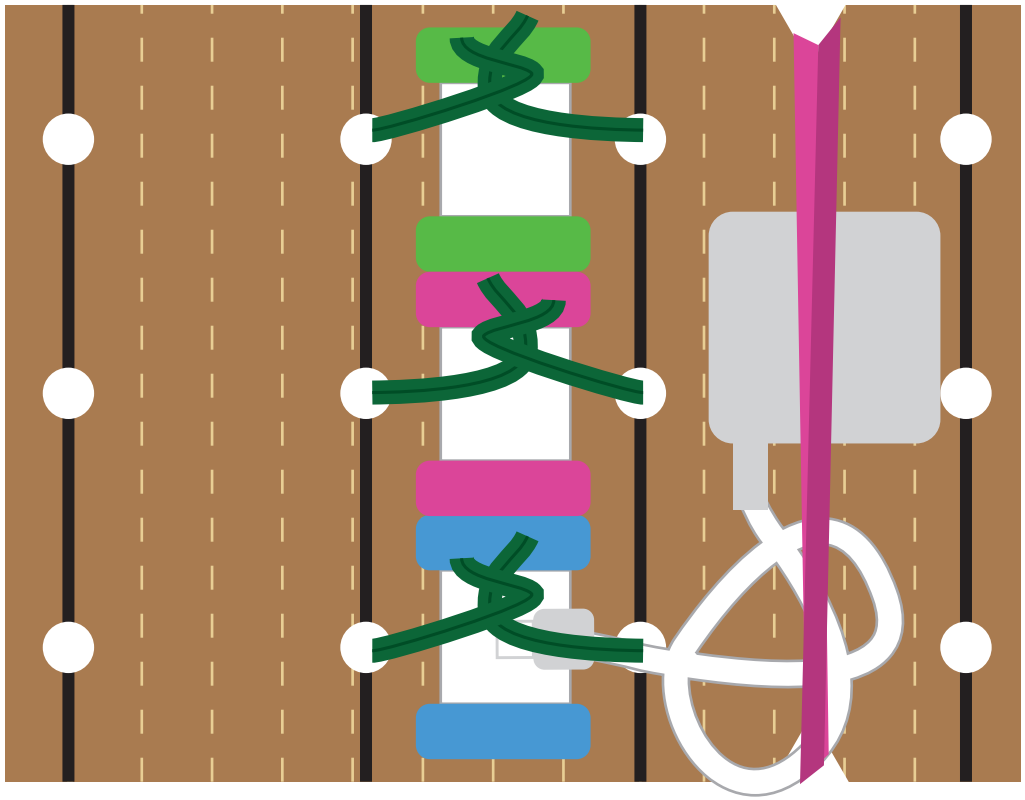


4. Place your battery between the triangle notches.

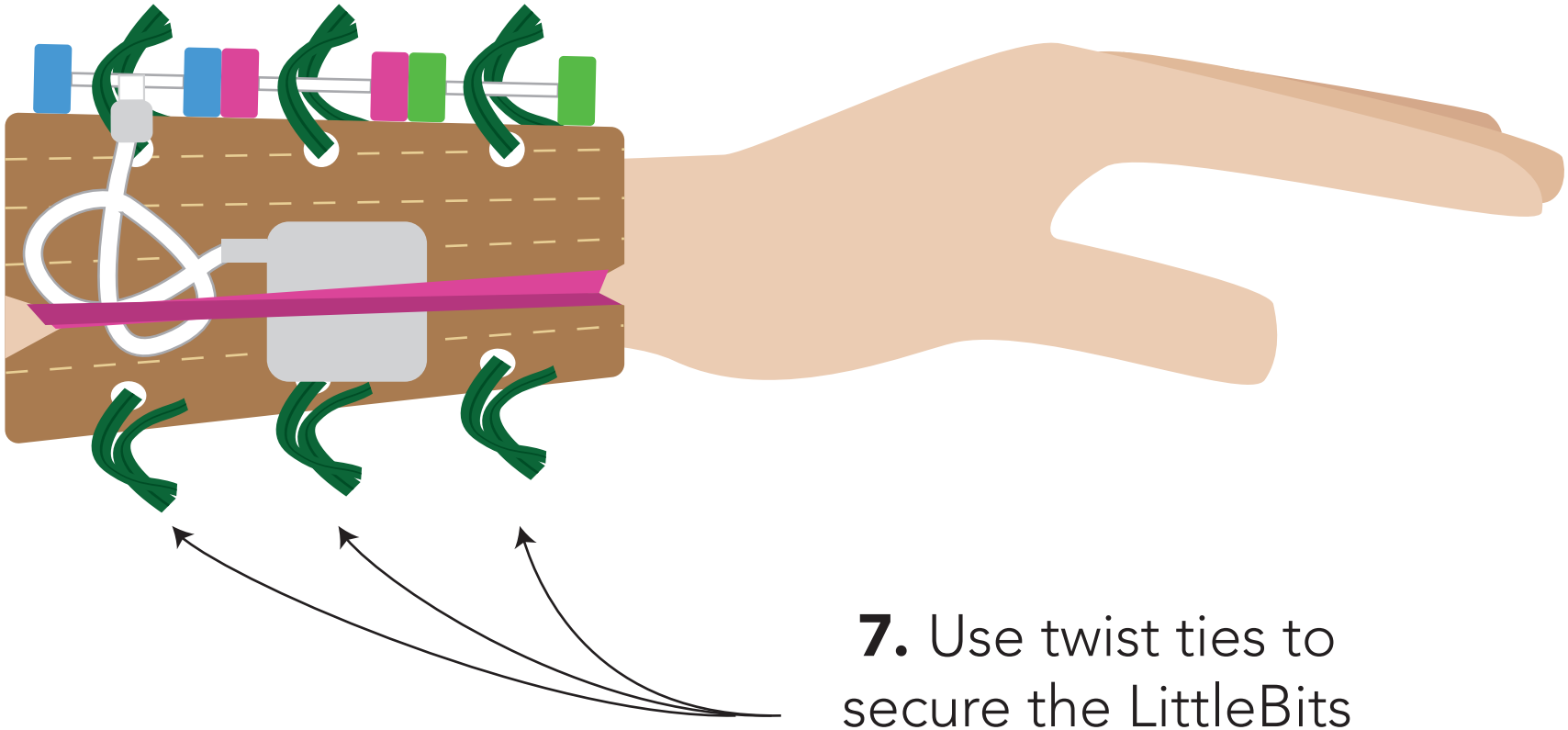
5. Wrap a rubber band around the notches to secure the battery to cardboard.

Attach It

6. Use twist ties to secure the LittleBits circuit to cardboard.



Wear It



7. Use twist ties to secure the LittleBits circuit to your wrist.

Share out your idea

What is it?

What LittleBits did you use?

How does it work?

What We Learned

It’s not too hard to make curved, or rigid cardboard structures. We’ll use our cardboard knowledge to make larger projects later on .

You can add electronics to almost any project. Add a wire bit if you need your circuit to fit across long objects

Reflection

What was hard about this activity?
What did you enjoy the most?
What did you learn?

Organize supplies and materials

Clean up the area around you

Next class we will be...