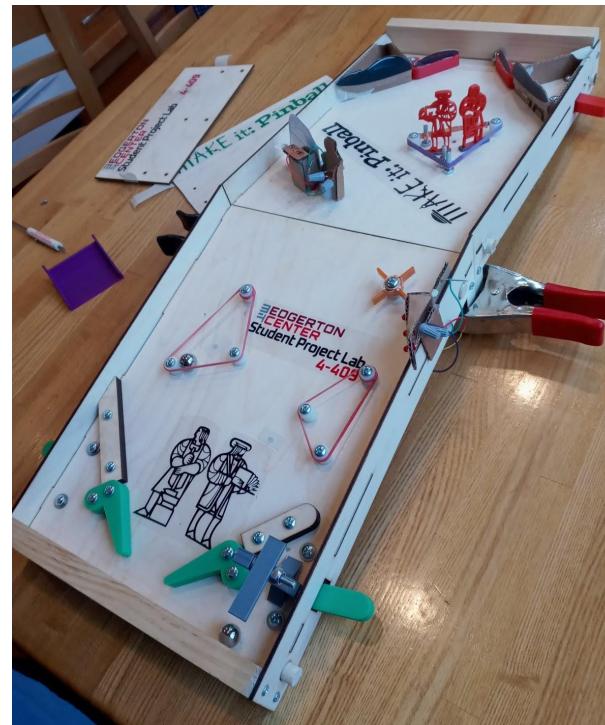


MAKE it: Pinball

**EDGERTON
CENTER** Student Project Lab **4-409**



Kit Contents

Game Board Pieces

- Playing Surface
- Side Panels (2)
- Back Panel
- Support Dowels (2)
- Support Boards (2)

Parts Bag

- Paddles (2)
- Levers (2)
- Paddle Parts Bag**
 - Washers (8)
 - 1" Bolts (6)
 - 1.75" Bolts (2)
 - Hex Nuts (4)
 - Lock Nuts (4)
 - Rubber Bands (2)
 - Balls (3)
 - Wood Screws (14)

Electronics Bag

- Buzzer
- LEDs (4)
- 1000uF Capacitor (2)
- 47Ω Resistors (3)
- Wire Nuts (10-14)
- Loose parts CR2032 Batteries (2)
- Copper Tape
- Wire Bundle
- Extra Parts (for design, backup)
 - Washers (4)
 - 1" Bolts (5)
 - 1.75" Bolts (5)
 - Spacers (8)
 - Hex Nut
 - Lock Nut
 - Rubber Bands (3)

Recommended Materials

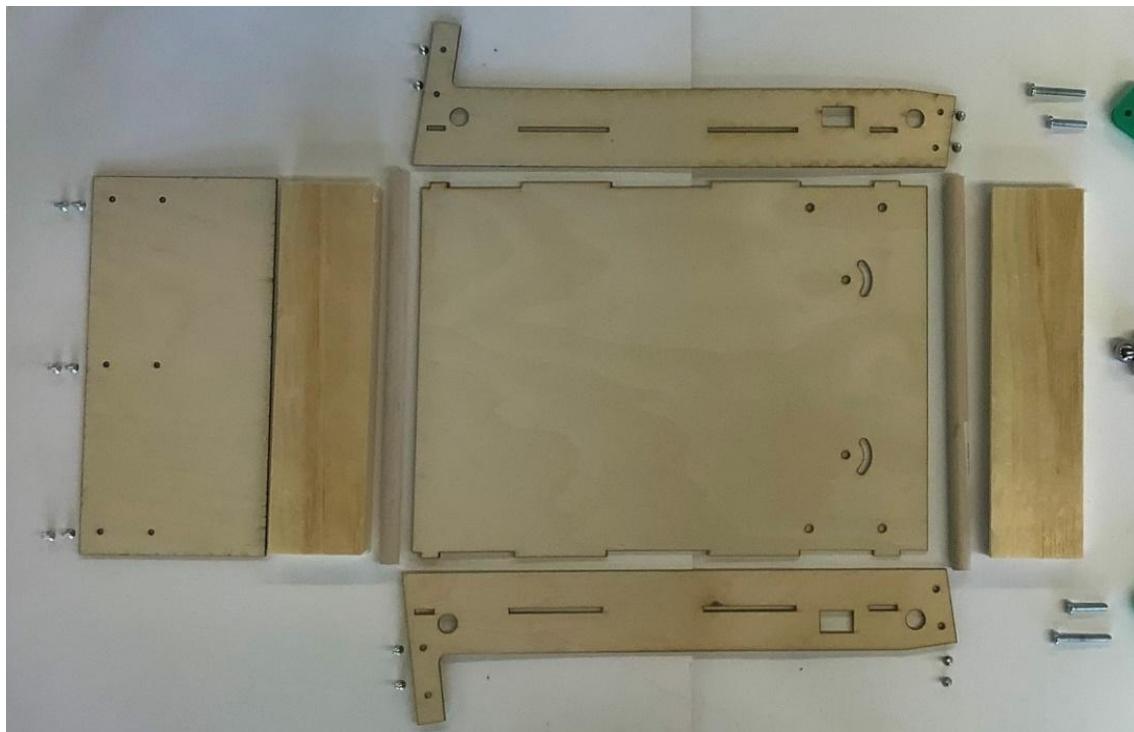
- Phillips Screwdriver
- Pliers or 3/8" Wrench/Nut Driver
- Drill + Drill Bits (for making holes)
- Craft Knife
- Scissors

- Cardboard
- Paperclips
- Scotch and/or Masking Tape
- Ruler for design

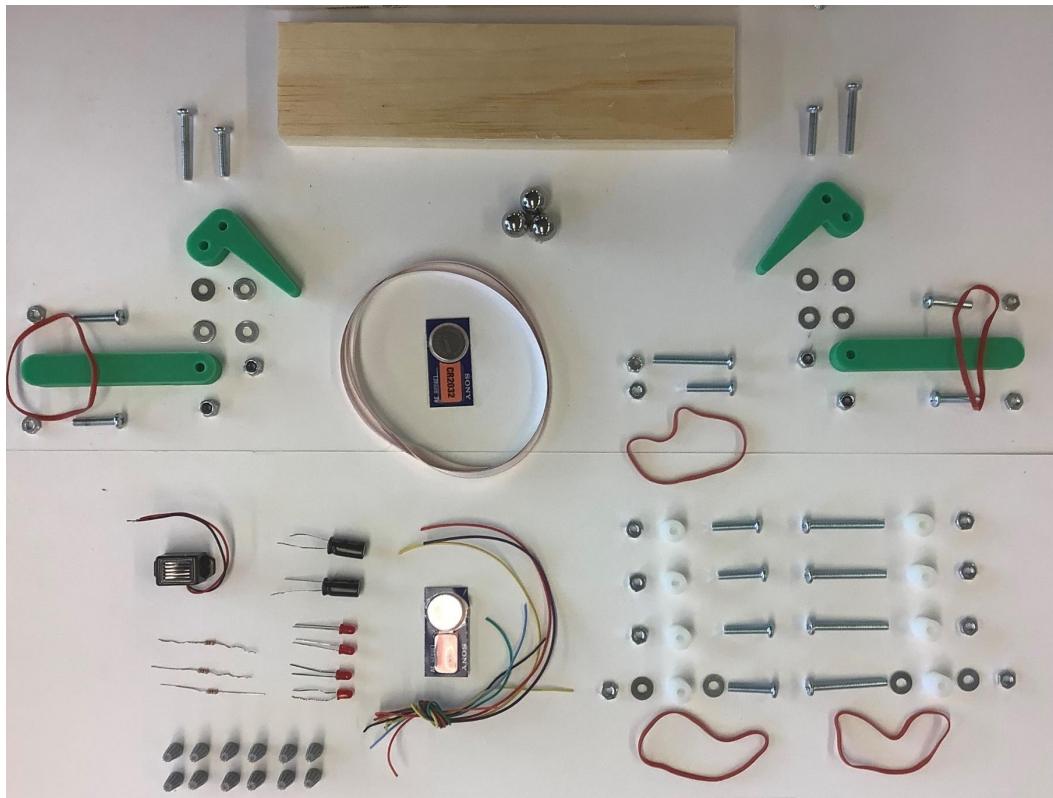
Autodesk Fusion 360 [[verify your educational account under "Get Started", return and select "Get product" under Fusion 360](#)]



High-level kit layout



Game board parts



Remaining parts

Construction: Game Board

To assemble the board, we will need all of the wood pieces and the 14 wood screws.

Insert the playing surface into the side panels, holding upright. It is normal if the pieces wobble or require substantial force.



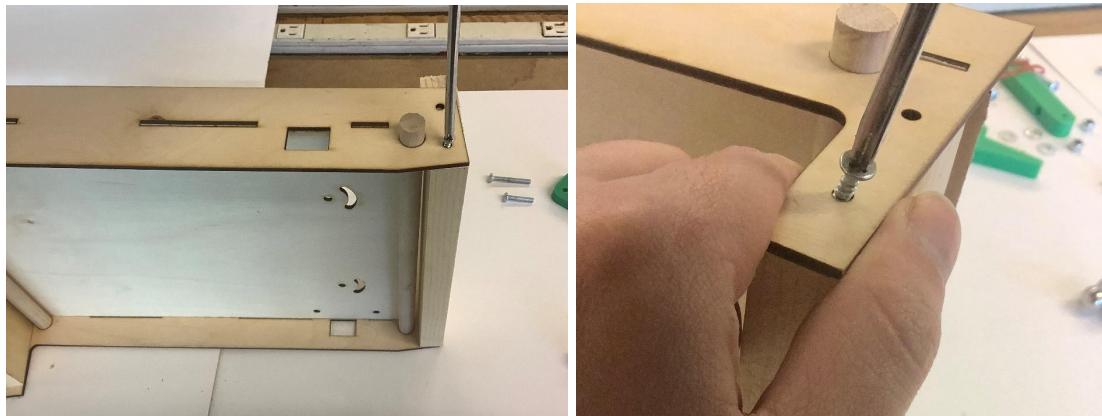
Stabilize by placing the dowels through the holes. This may require substantial force.

Now align the boards with the base of the panels, that is, forming a flat surface against the plane shown.

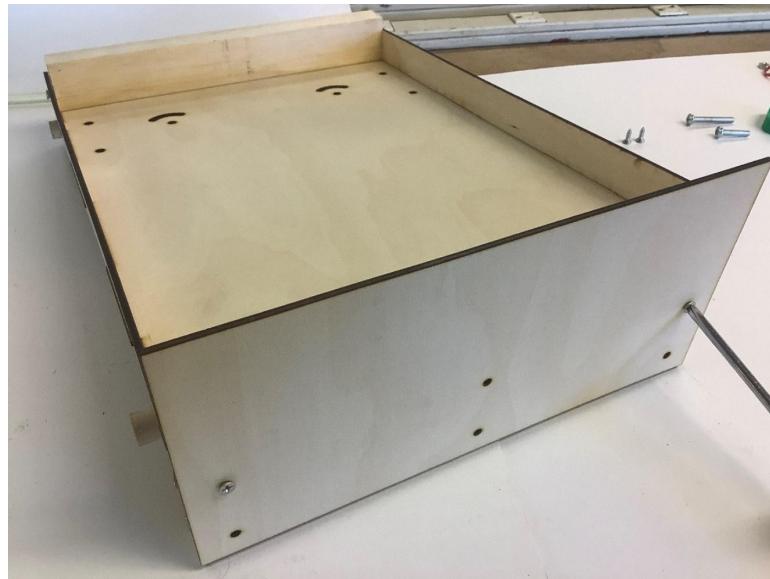


With a screwdriver, begin inserting wood screws through the 4 holes on each side panel.

Be sure to hold the pieces together and apply a downward force to tap holes into the boards.



Now move to the back. Insert 2-6 screws as needed to hold the back panel without warping.



Construction: Paddles



When following these steps, be sure to align your paddles correctly.



Gather the rest of the paddle hardware.

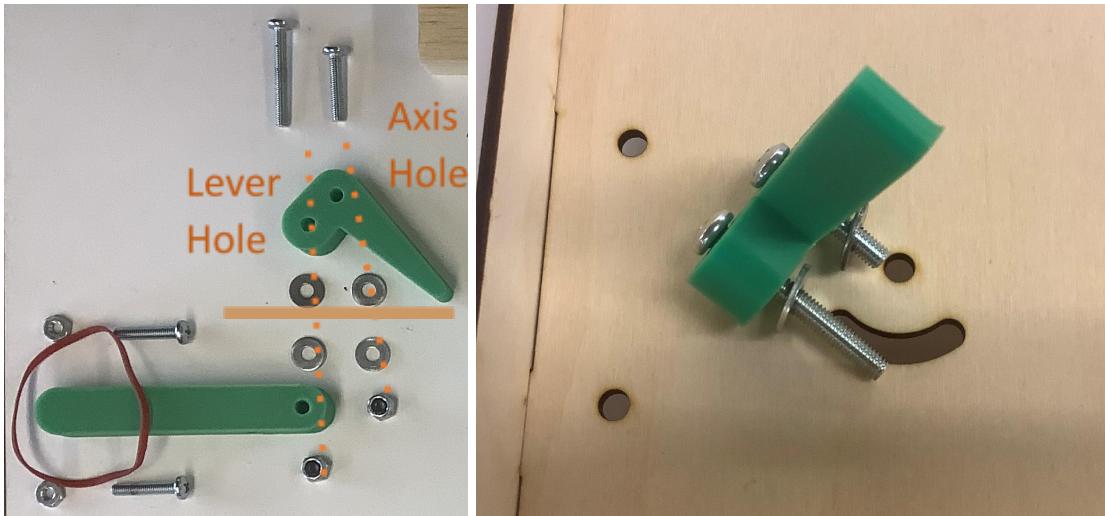
Be sure to inspect your paddles and pushers.

You may need to push a bolt through holes to remove “manufacturing defects”

On the top side of the board, align a paddle so that it points towards the center of the board as above.

Place a short bolt through the axis hole and a long bolt through the lever hole.

Place a washer on each bolt before inserting through the board.



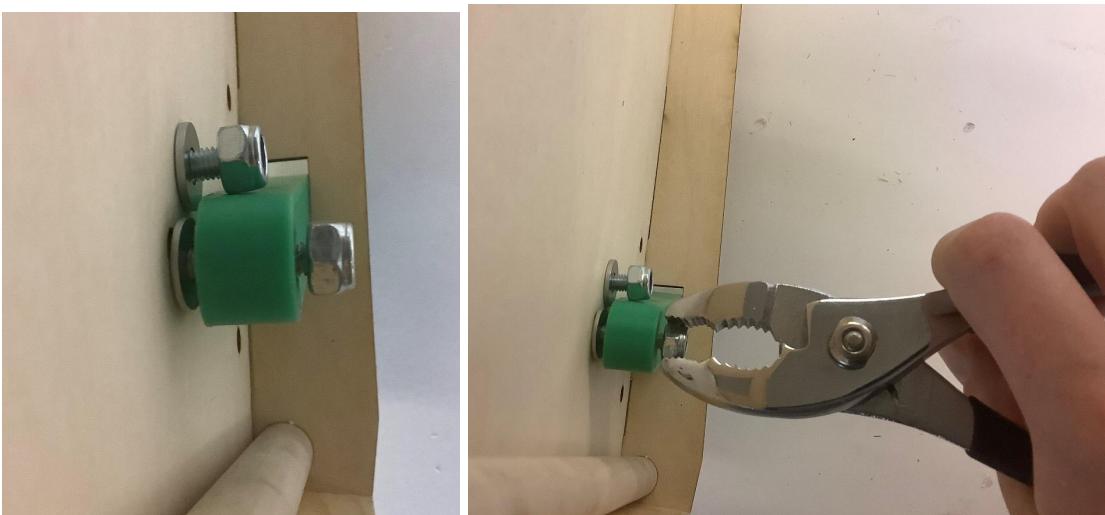
On the bottom, place another washer on each bolt.

Place the lever through the side cutout and onto the long bolt.

Now cap each bolt with a hand-tightened lock nut.

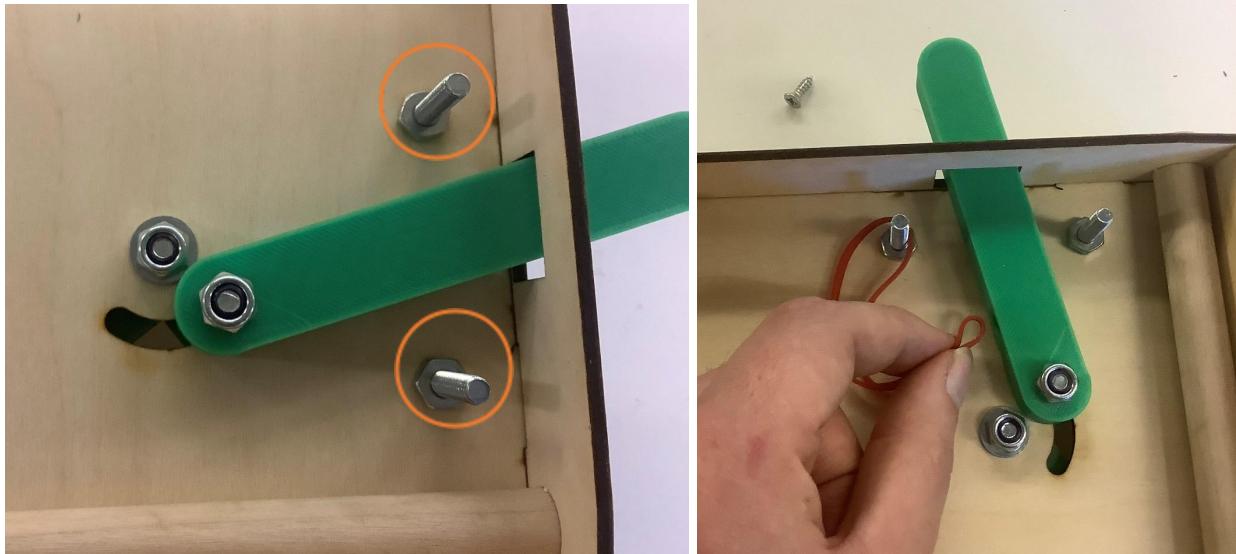
Holding each lock nut with pliers, screw in each bolt until the bolt nearly reaches the end of the lock nut.

The lever and paddle should move freely.



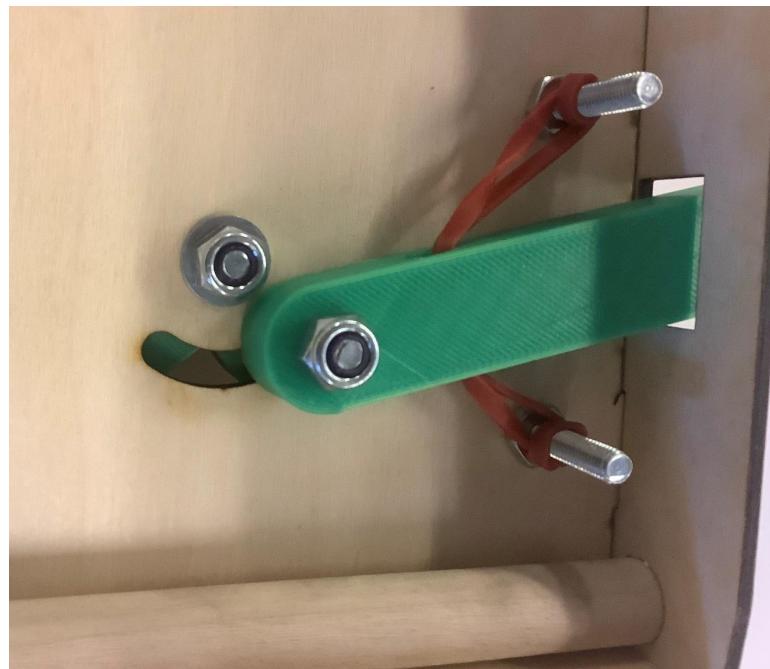
Place 2 short bolts through the remaining holes and secure with hand-tightened hex nuts.

Wrap a rubber band around one bolt; pinch to feed through the hole in the pusher.



Wrap the rubber band around the other bolt.

You'll likely need to wrap at least twice around each bolt to ensure tightness.



Play around with the locknuts until the assembly moves smoothly.

Repeat for the other paddle.

With a small sliver of cardboard and some tape, add some bumpers and enjoy your new pinball board.

