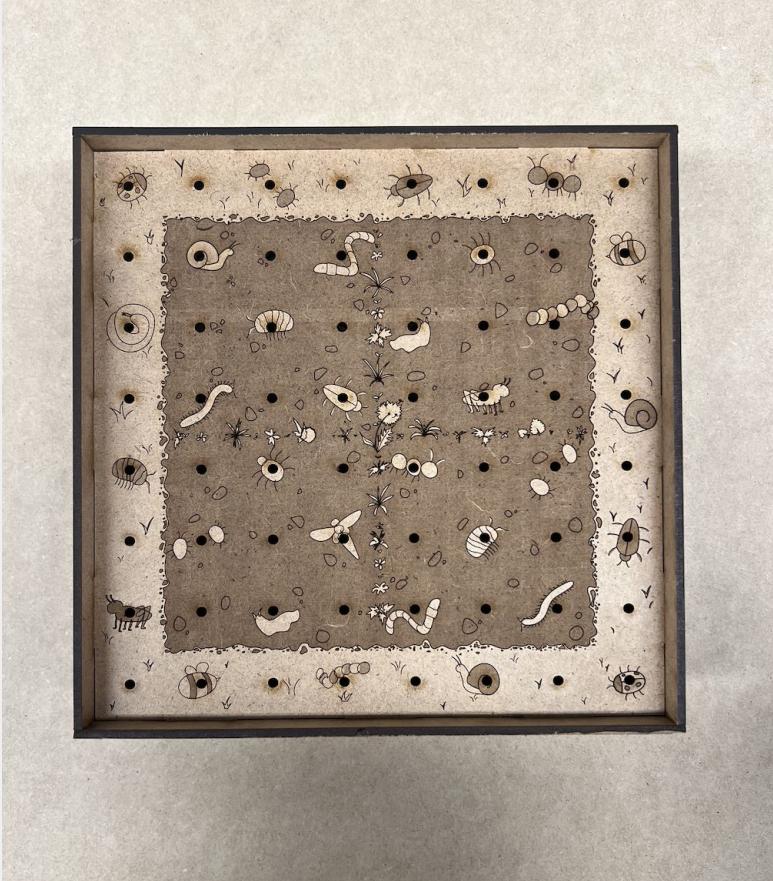


GARDEN BOARD GAME

Crys Doan, Tati Sun, & Zena Watfa



CONCEPT

Our project aims to reimagine classic board games as an immersive garden experience. We plan to have a main board in the shape of a wooden garden bed along with a mix of plant-shaped pieces. The board will include 8x8 holes that the pieces can then be inserted into for various games- Tic Tac Toe, Connect 4, and Checkers. The box will be laser cut MDF, and the pieces will be 3D printed with PLA plastic in two different colors- black and white. The box will be constructed with 1/4 inch MDF, with an 8x8 inch surface and a 2 inch thickness, with one drawer coming out from the side using 1/8 inch MDF. The board pieces will have small pegs underneath that will perfectly fit into the game board's holes, and will resemble various flowers and plants. There will be garden themed etchings on the board in order to indicate different game surfaces based on what game is being played. There will be etchings indicating 4 different 3x3 surfaces for Tic Tac Toe, while the entire board will be used for the games of Checkers and Connect 4.

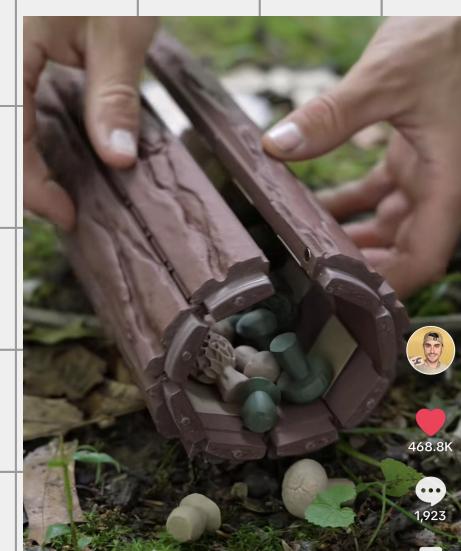
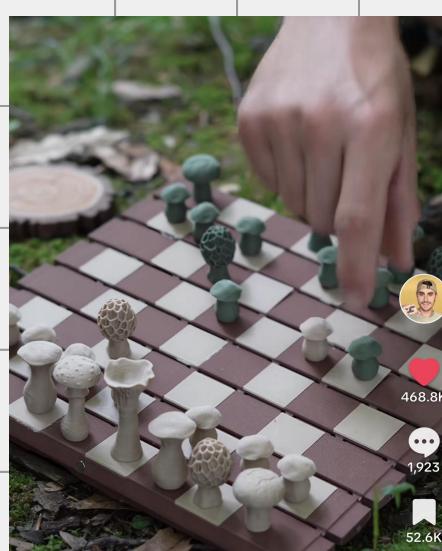
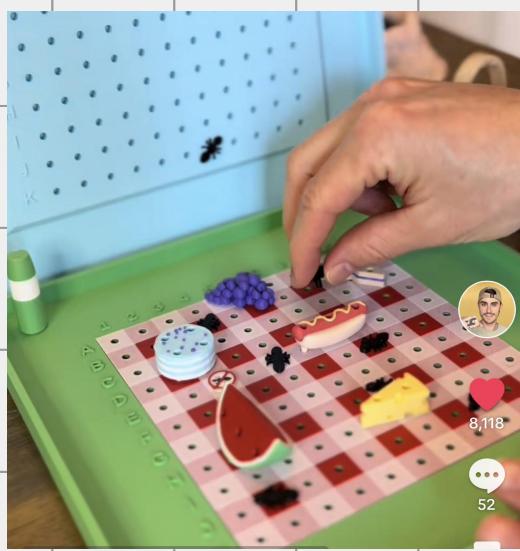
Our game board is for all ages 4 and up, and is meant to be a fun travel-sized version of our favorite classic games with a garden narrative. For example, in checkers, players must move their pieces to avoid bugs etched on the surface, symbolizing how players can only move on one color of the board. We intend for each game to follow a fun storyline that follows the central theme of the garden.

RESEARCH

We were inspired by an engineer on TikTok who makes creative products through 3D printing. A few of his designs include a picnic-themed Battleship game, as well as a forest-themed Chess set. His creative spins on classic board games were the driving force behind our central idea of making a game that was centered around gardening.

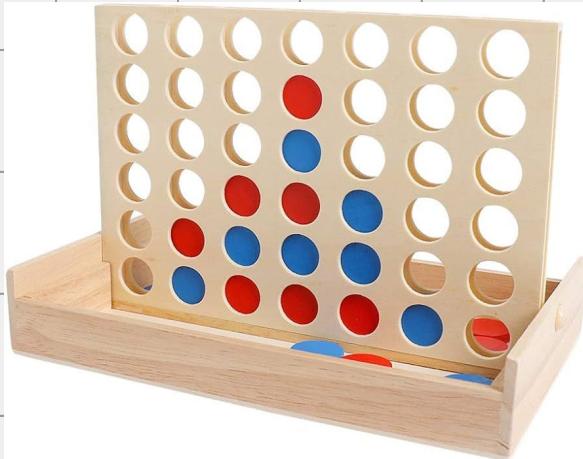
The image shows a screenshot of a TikTok profile for 'ForgeCore'. The profile picture is a man wearing a cap. The bio reads: 'Colby - Engineer 3D files here' with a thumbs-up emoji. Below the bio are links to 'Thangs.com/ForgeCore' and 'Showcase'. The stats are 48 Following, 294.7K Followers, and 9.3M Likes. The feed shows several posts:

- Pinned: 'Monsterra Costers' (12.8M likes)
- Pinned: 'Printable' (9.3M likes)
- Pinned: 'Desktop GOLF!' (12.3M likes)
- 'Desktop Disc Golf'
- 'Forest Chess Set'
- 'Bambookends'



RESEARCH

We knew we wanted our game to be as versatile as possible, so we looked at existing games and tried to find ones that used similar layouts so that we could combine them into one unique board. We also considered how well the games could be played as travel-sized versions.



RESEARCH

We then looked at inspiration for the types of imagery we wanted to include in our game such as flowers, plants, and insects.



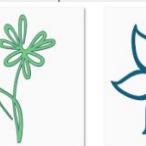
Cactus



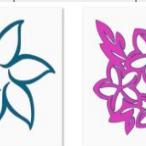
Flower 1



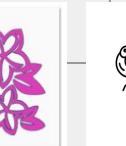
Flower 2



Flower 3



Flower Abstract



Flowers



Hibiscus 1



Hibiscus 3



Hummingbird



Uly



Rose One Leaf



Rose Two Leaf



Rose With Stem



Rose



Simple Flower 2



Simple Flower



Spring Flowers

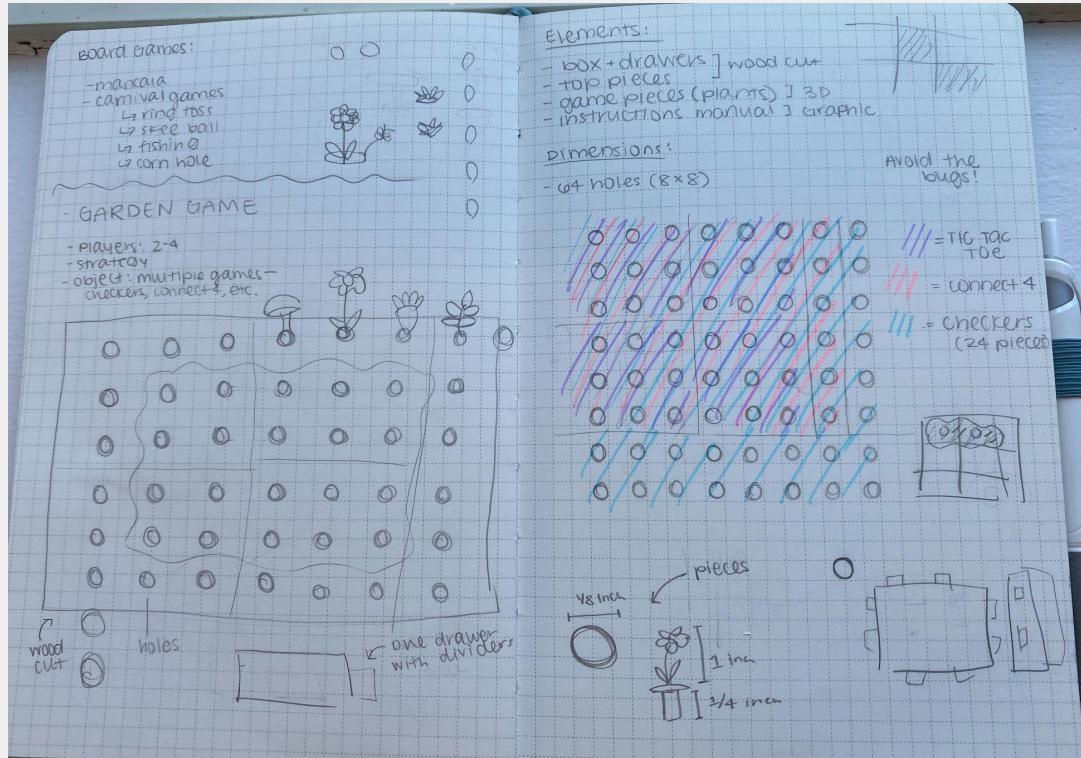


Trumpet Flower

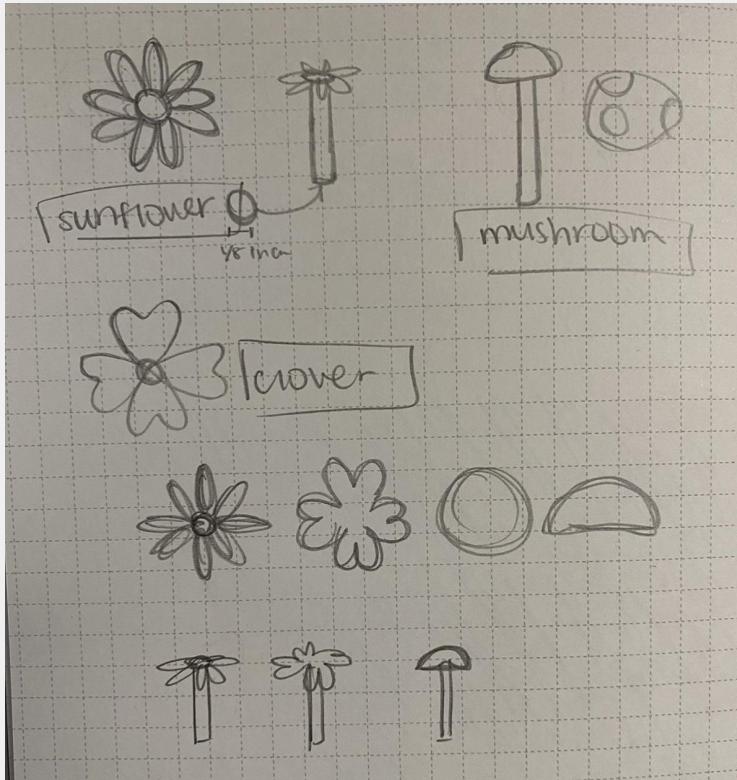


SKETCHES

We began sketching ideas for the layout of our board, trying to figure out how to divide the grid so that it would work for Checkers, Connect 4, and Tic Tac Toe. We also considered all of the elements that we wanted to include, such as a drawer to hold all of the pieces.



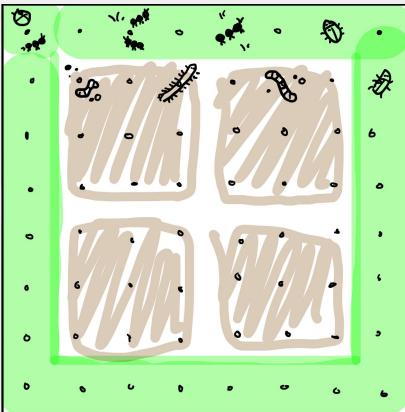
SKETCHES



Sketches for our game pieces

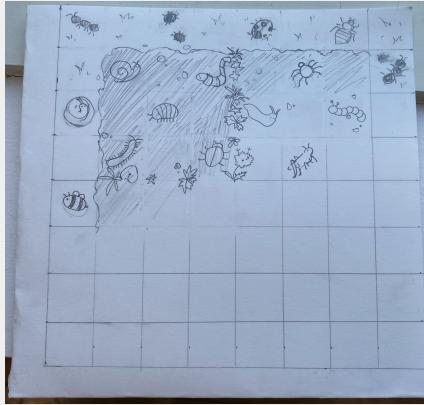
We wanted to include a variety of plants and use pegs for the stems of the pieces so that they could fit into the holes of the main board

SKETCHES

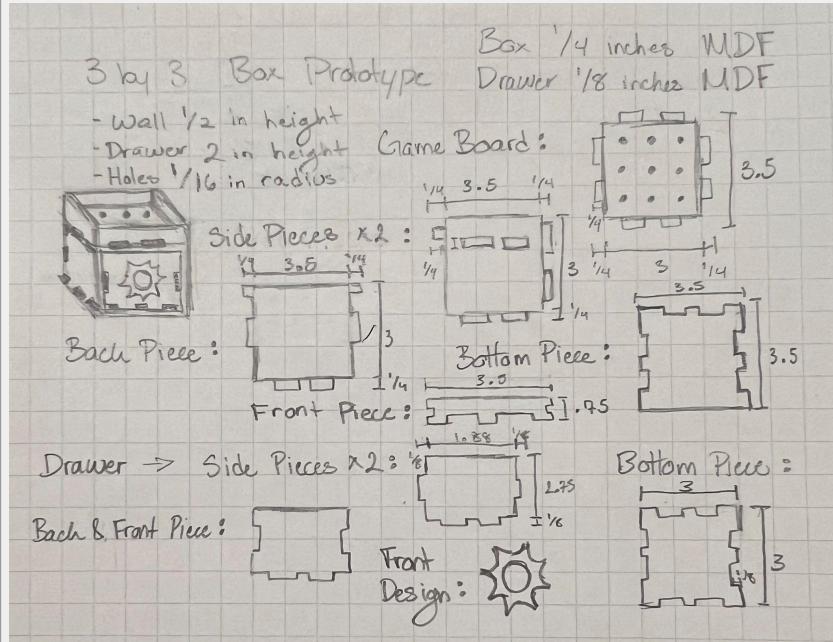


Sketches for the board top

We wanted to be able to distinguish the difference between the tic tac toe plots and the checkers squares on the board top, so we sketched some ideas, at first just having different dirt plots with a big dirt plot for Connect 4, and smaller dirt plots somehow distinguished for tic tac toe. In the end, the whole board could be used for Connect 4 and checkers.



SKETCHES

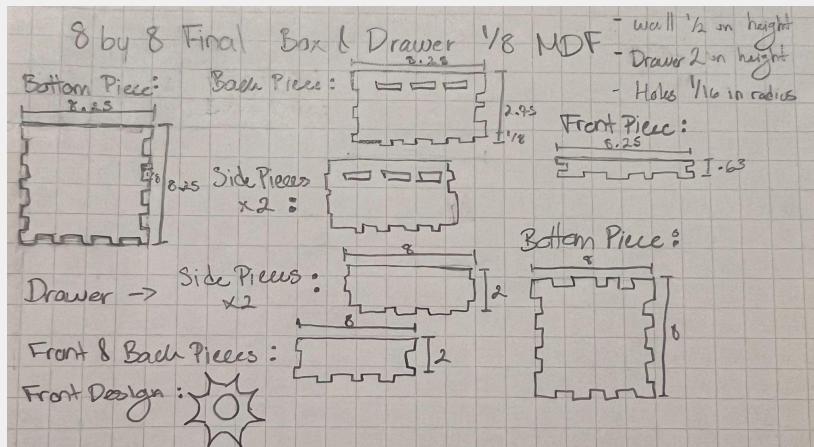


Sketches for our mini box prototype

We knew we wanted the outer frame of the box to be thicker and the drawer to be thinner. We wanted to see if the $\frac{1}{2}$ inch height frame would be fitting for our final.

Along with the 2 inch height drawer.

SKETCHES



Sketches for our final box

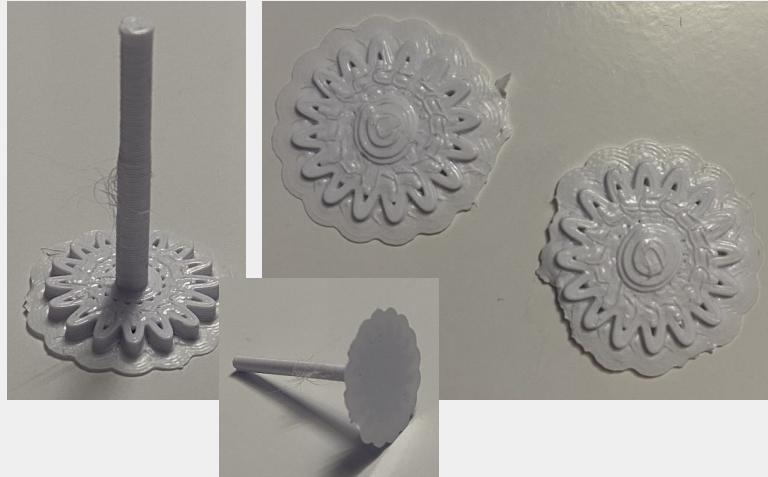
Since the laser cutter gave us trouble cutting through $\frac{1}{4}$ inch MDF. We decided to make everything out of $\frac{1}{8}$ inch MDF.

PROCESS

Our first step was to create miniature versions of our board as a prototype, in addition to the game pieces to ensure that they would fit well together. We also wanted to test out different versions of the illustrations on top of the board.

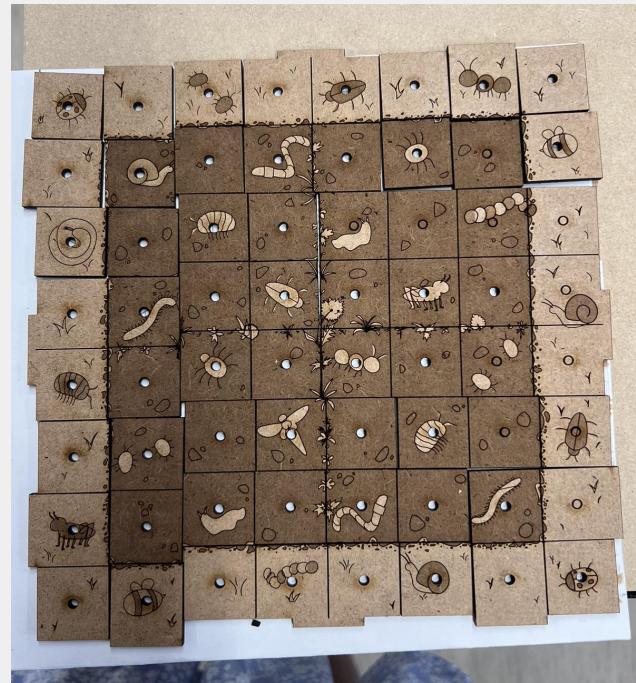


We unfortunately experienced issues with the laser cutter and the prototype was slightly burnt



Our first attempt at printing the pieces. The tops were flat and lost a lot of detail due to their orientation.

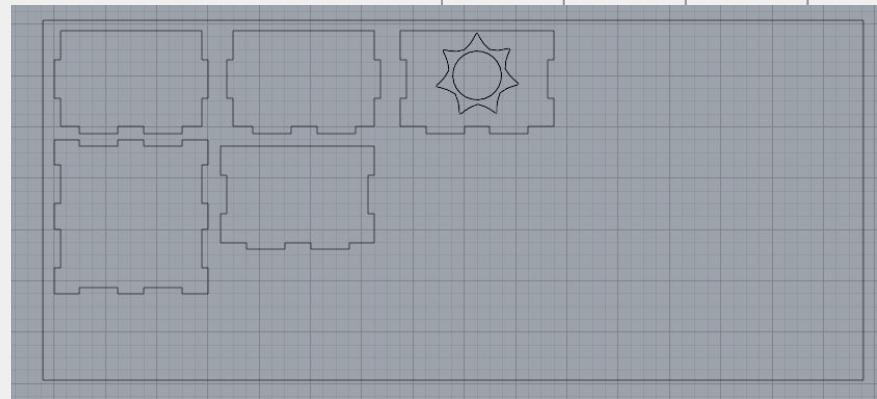
PROCESS



A second prototype and a failed version of our final board top

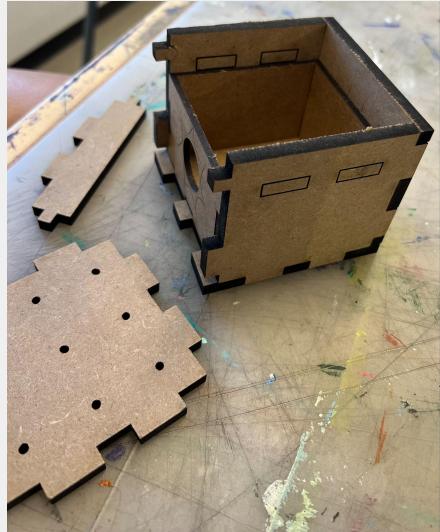
PROCESS

We wanted to use scraps to make our mini prototype so we made a rectangle that was the size of the scrap to make sure everything would fit.



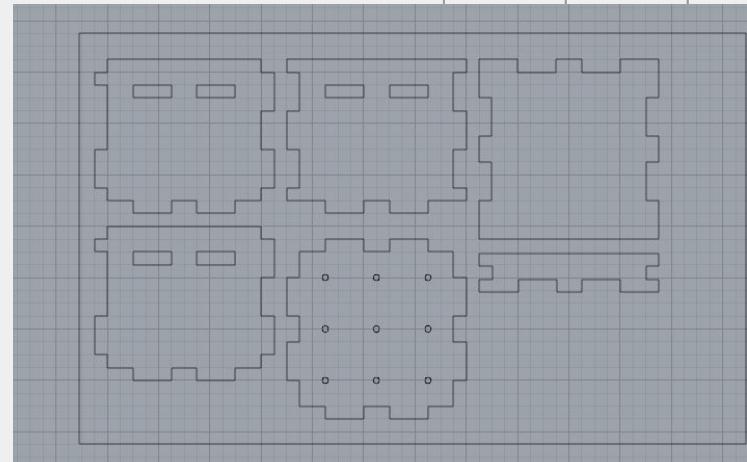
PROCESS

We noticed 2 errors when putting this prototype together (the front piece and the bottom piece). We also couldn't get the cut outs, out, because the laser cutter just wouldn't cut all the way through.



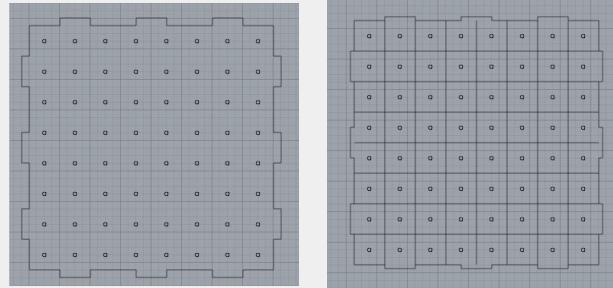
PROCESS

We fixed our two mistakes in Rhino, but this was also where we decided for our final we should just use $\frac{1}{8}$ inch MDF because the laser cutter would cut all the way through.

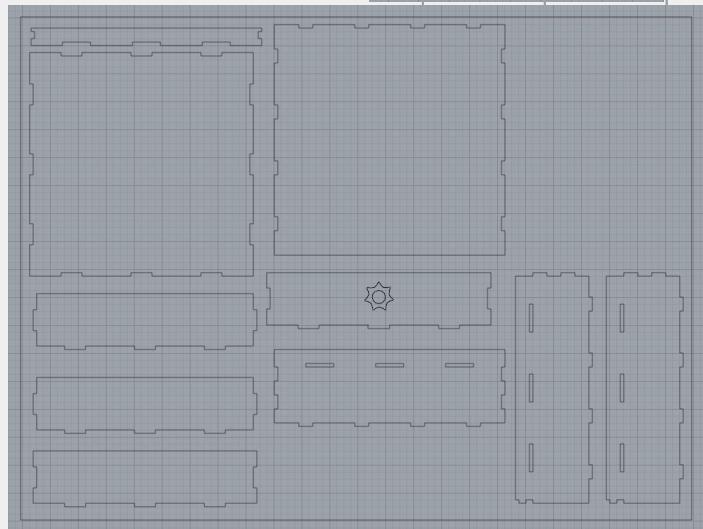


PROCESS

We started with the game board piece. We changed all the $\frac{1}{4}$ inch teeth to $\frac{1}{8}$ inch. We also added lines to help guide the bugs and weeds that were drawn on illustrator.



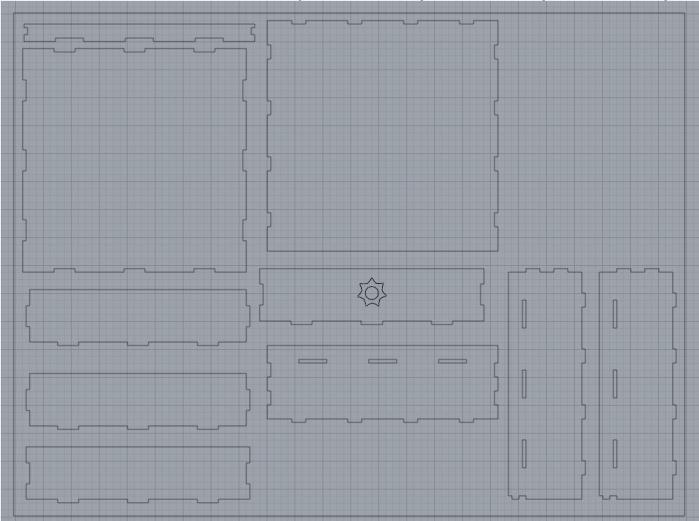
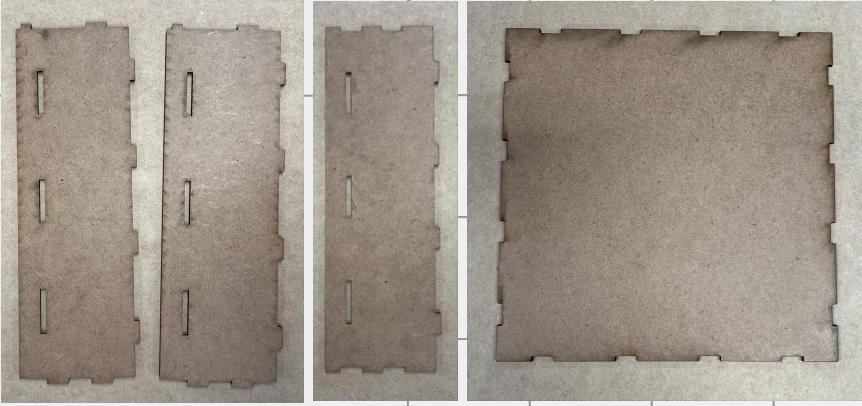
Using the teeth created for the game board piece, we transferred it to the other pieces to also change them from $\frac{1}{4}$ to $\frac{1}{8}$ inches.



PROCESS

After printing we noticed four of our pieces weren't right.

We went back to Rhino and fixed those mistakes, making our final product!

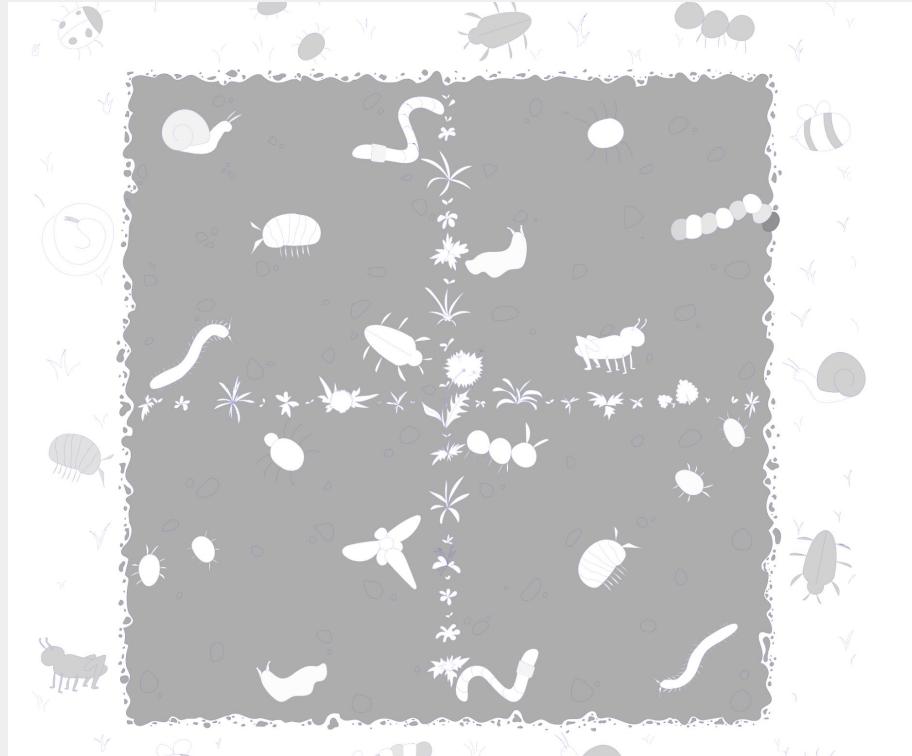


PROCESS

The bugs were drawn on Illustrator before being copy and pasted onto the final board, at which point the weeds, grass, dirt, and stones were also added. Only on the final board file were the line weights of the strokes changed, and proper color adjustment was done for the laser cutting processes.

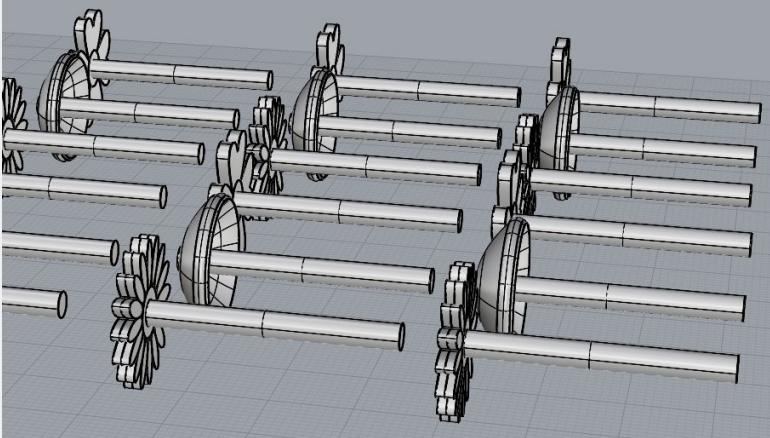


PROCESS



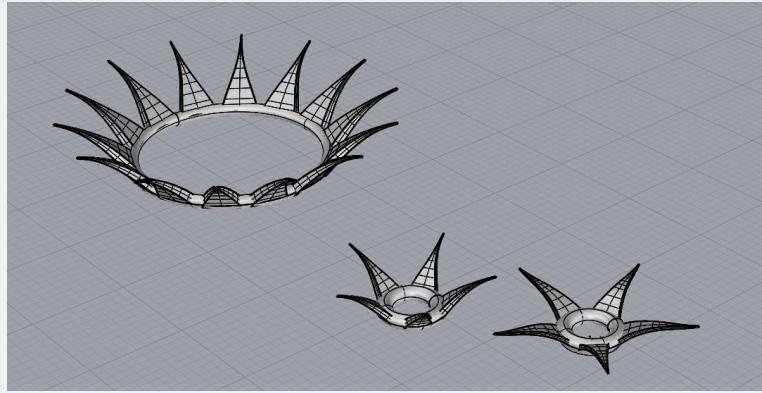
The final board top design.

PROCESS



Changing the orientation of the pieces while printing preserved the details of the tops as well as strengthened the pegs.

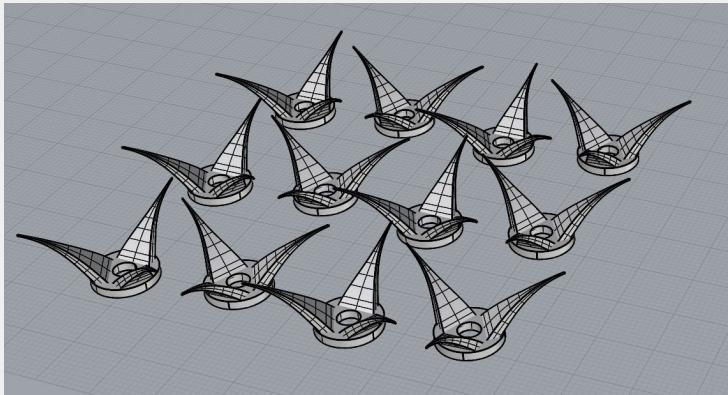
PROCESS



We went through multiple different prototypes of the crown pieces, with the earlier versions being either too big or too small and not printing properly. Most of them ended up being too fragile to even cut out of the supports.

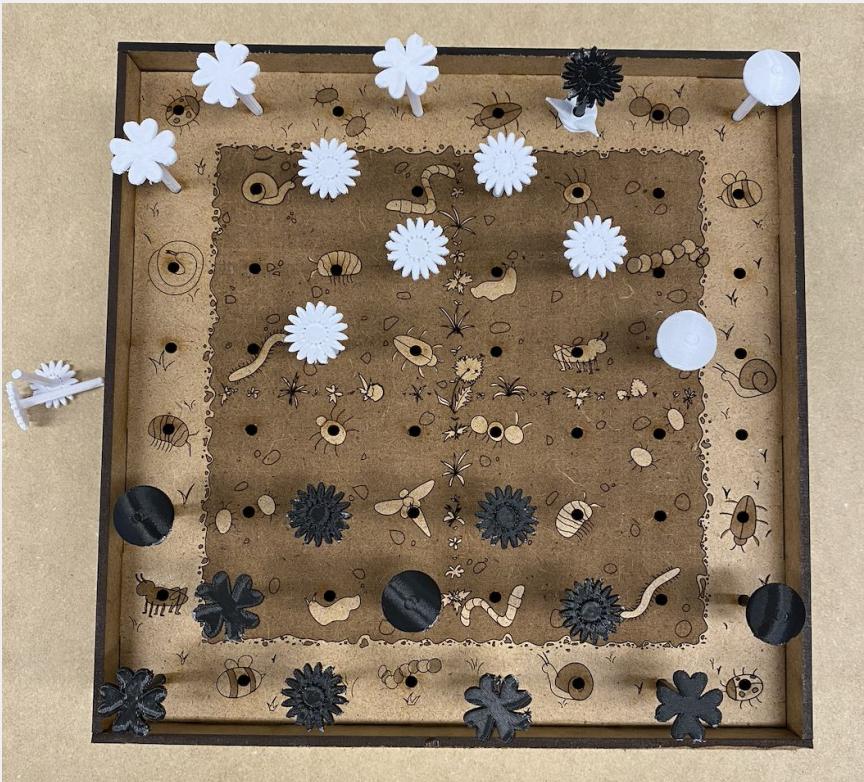


PROCESS



We finally landed on this final version that was the perfect size.

FINAL OBJECT



GAME INSTRUCTIONS



CHECKERS

2 Players

Objective: Capture all of your opponent's plants or block them so they cannot move.

Setup: Each player places 12 pieces of the same color on the first three rows closest to them, being careful to not place any pieces on an insect!

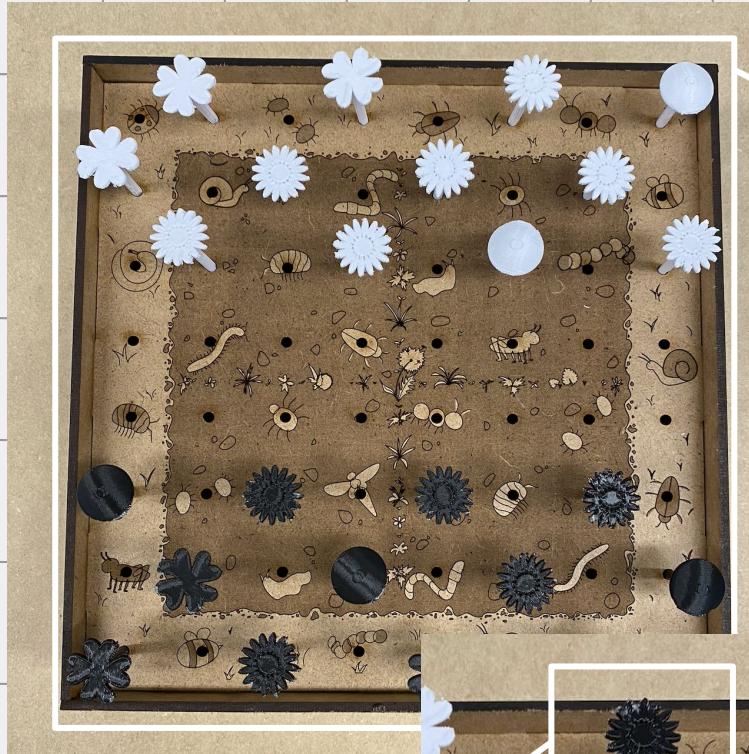
Game Play:

-Moving Pieces: Pieces move diagonally forward to an adjacent empty square.

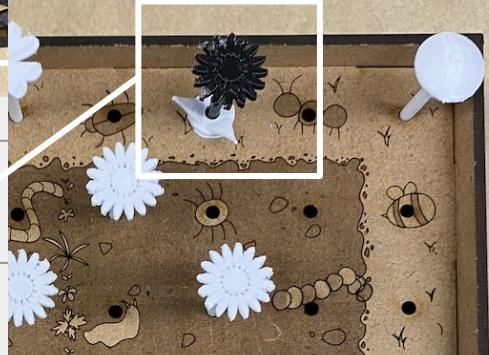
-Capturing Pieces: Capture an opponent's plant by jumping over it diagonally to an empty square immediately beyond it. If a jump is available, it must be taken. Multiple jumps are allowed if, after each jump, another capture is possible.

-King Pieces: When a piece reaches the farthest row from the starting position, it becomes a King. Place a ring of leaves around a King piece in order to easily identify it. Kings can move and jump diagonally both forward and backward.

Winning the Game: The game is won when one player captures all of the opponent's pieces or blocks them so they have no legal moves left.



Use entire board



CONNECT 4

2 Players

Objective: Be the first player to form a horizontal, vertical, or diagonal line of four of your own colored plants.

Game Play:

-Players choose any one of their colored plants.

-Players must plant their piece in any of the columns on the game board. The piece must be planted on top of the existing pieces in the chosen column or in an empty column, simulating gravity.

Winning the Game: The first player to connect four of their own plants in a row horizontally, vertically, or diagonally wins the game.

Use entire board



TIC TAC TOE

2-8 Players

Objective: Be the first player to get three of the same colored plants in a row horizontally, vertically, or diagonally.

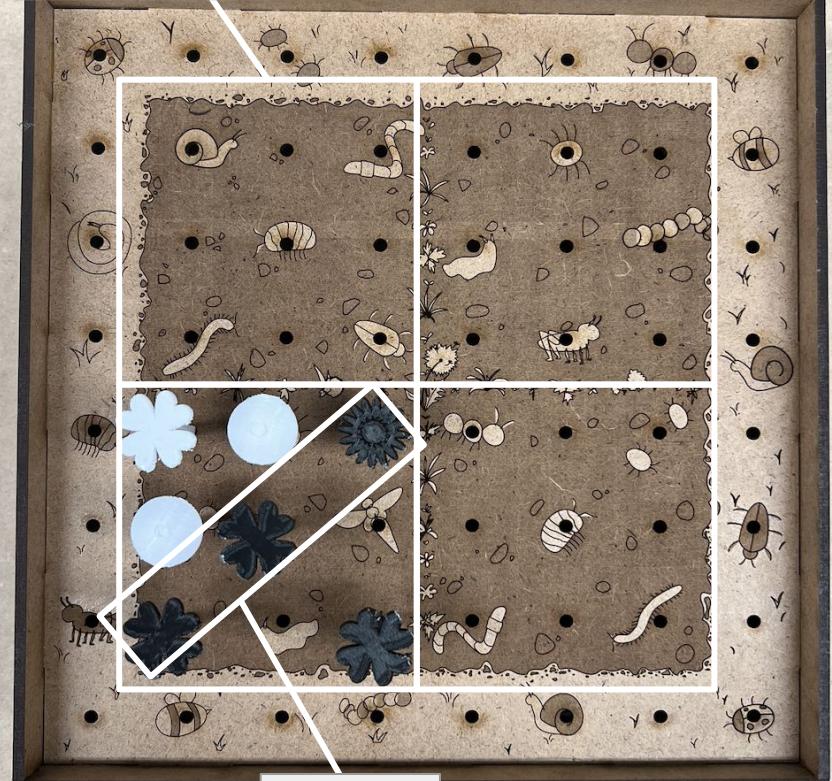
Game Play:

- Players alternate turns, planting one of their pieces in any empty space on the board.
- Players continue to plant their pieces in empty spaces, aiming to get three in a row.

Winning the Game: The game is won when a player plants three of their pieces in a row. If all spaces are filled and no player has three in a row, the game is a draw

*Players can play up to 4 games at once

Use any of the 4 central grids



FUTURE IMPROVEMENTS

- Add dividers in the drawer, to help stay organized
- Have printed directions stored in the drawer
- For the walls of the box, we'd add wood designs, bugs crawling up, and weeds surrounding the bottom
- Create an easier way to open the drawer
- Make pieces, children safe



**THANK
YOU**