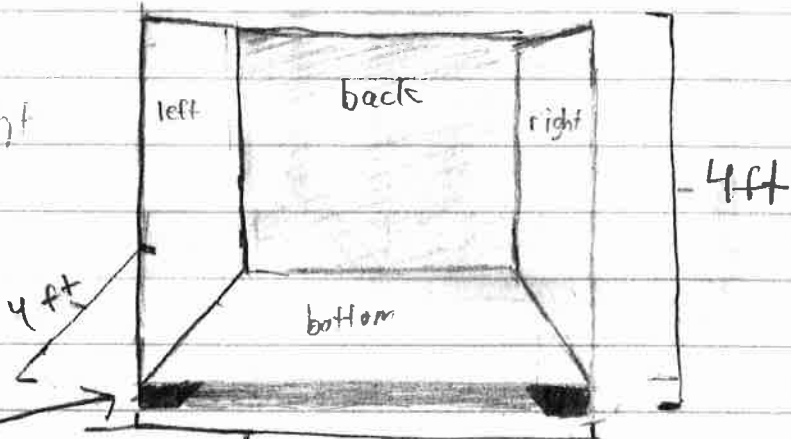


Obadiah weidman
Oliver schmitz
Sam shelton
Daniel Rongner

52
words

1/11/22 d entry 1/2
began building the frame. 4x4x4x

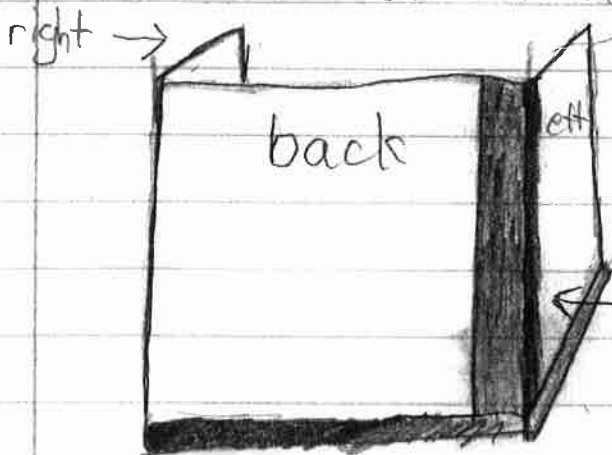
* unsure
if the 3rd right
side is going to
be inserted



placed 2x4 to support
the sides of the box.
- without the 2x4 the sides wouldn't
be stable and would fall over.

1/11/22 (entry 2)/2

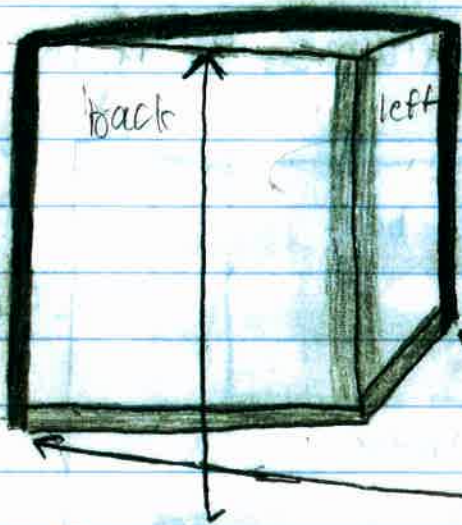
used $2\frac{1}{2}$ inch screws to make the frames



2 more 2x4's
to support the
sides

46 words

1/12/22 (entry 1/1)



ran into the problem of the sides not being stable enough.

- took 2 hours to solve

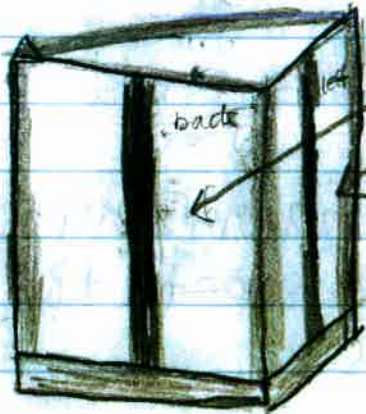
to stabilize the frame added 2x4s as

a 2x4 on top connecting the sides to increase stability

*did not add the right

sides

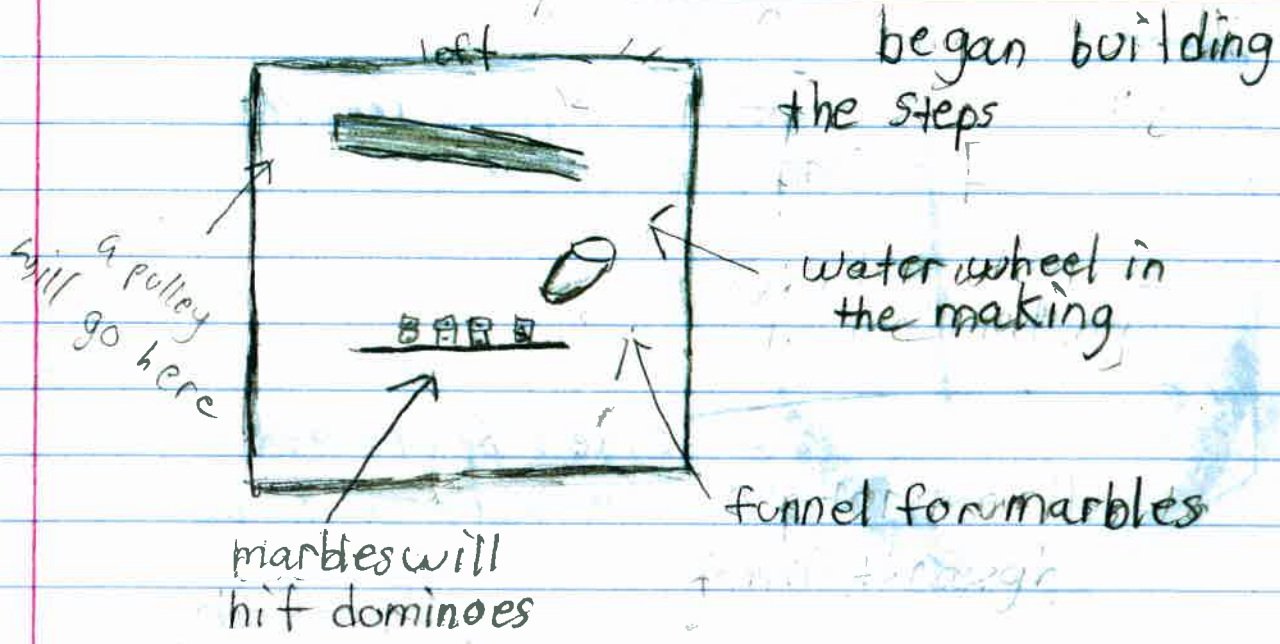
1/13/22 (entry 1/1)



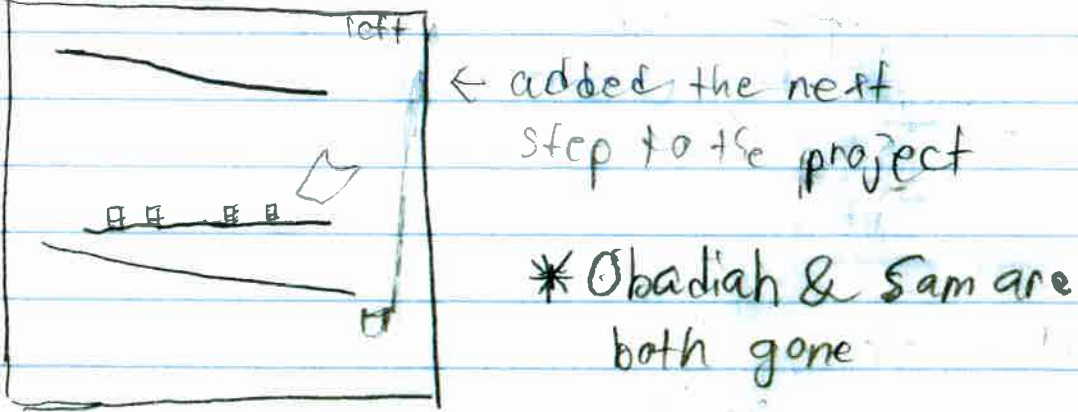
added boards to screw boards into

35 words

1/18/22



1/25/22

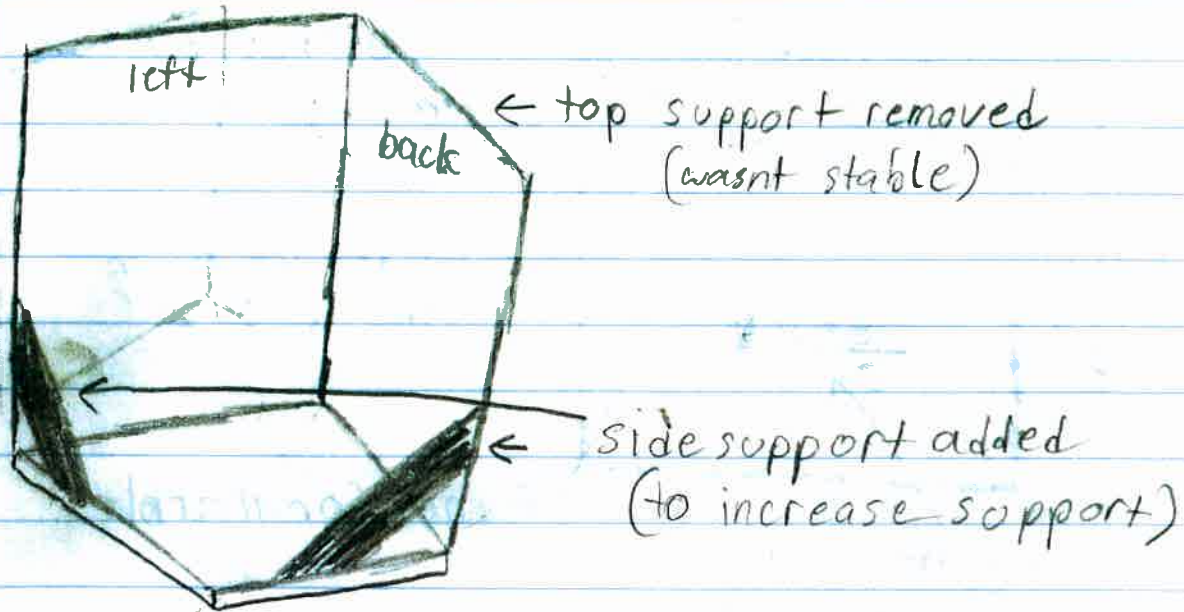


* on Hiatus

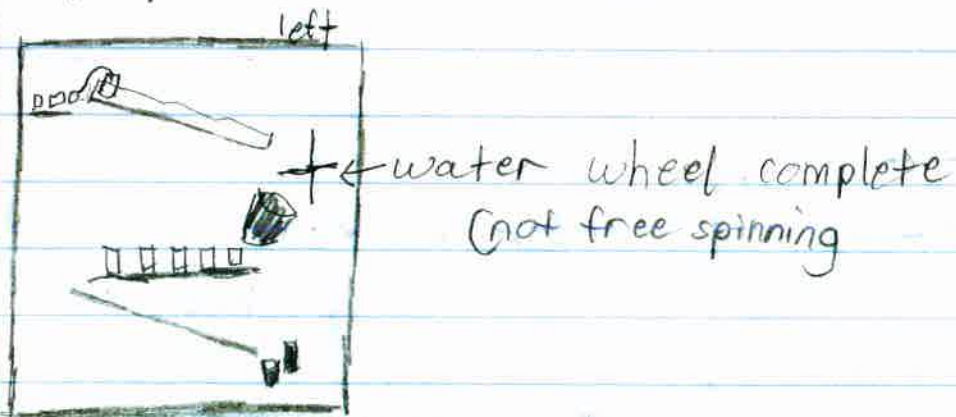
2 words

2/7/22

The team is back



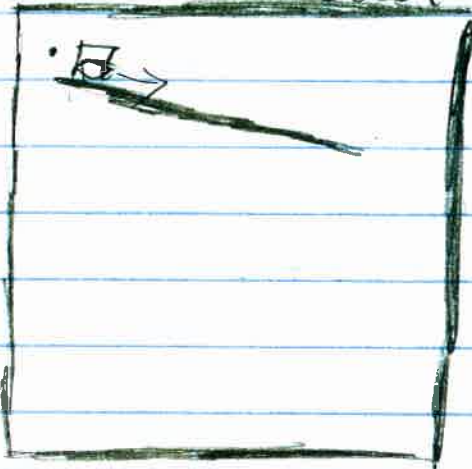
2/8/22



25 words

2/11/22

back

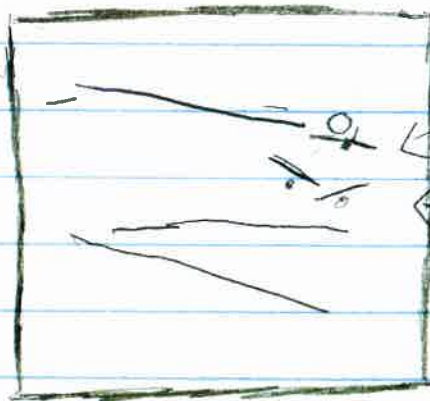


* adding final steps to the projects initial design.

2/15/22

going back to redo previous steps

2/20/22



removed funnel & water wheel
platforms for ball to fall down

79 words

3/1/22

- removed everything from boards
- began painting board blue color for the sky
- * while mixing spilled a large amount of paint on the floor

3/2/22

- finished painting walls and added aesthetics.

3/4/22

- rebuilt and added all steps to the project (that were previously completed)

3/9/22

- revised steps that were flawed

3/12/22 (entry 1)

- began working on presentation

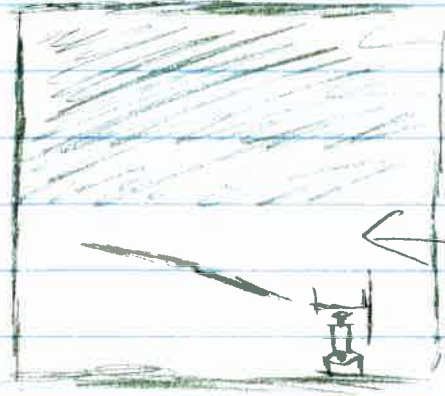
3/12/22 (entry 2)

- working on final step of project
- wanting to do a baking soda & vinegar reaction using syringe
- thought that bowling pin falling on syringe would work

~~44~~
45 words

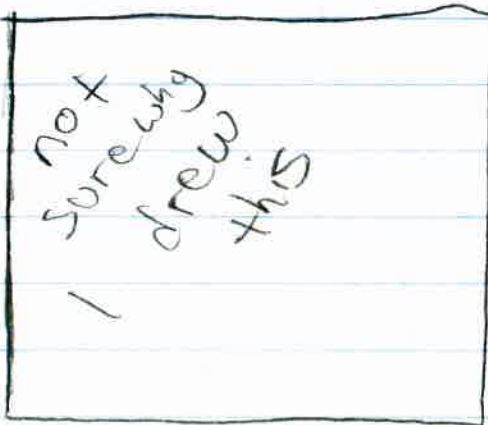
3/14/22

• revised final step



• baseball falls on a plate to push down the syringe
• need fuel line for hydraulics

3/17/22



no
screw
drew
this

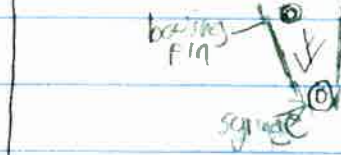
- got fuel line
- first bottle used wasn't sturdy so it was switched out.
- bottle wouldn't stay in the right place

44 words

3/13/22

- finally began working on final step
- ← after second last step
- + final step didn't work

top-down view



3/7/22 (forgot this)



- second last step completed
- marble hits a backboard and bounces back to hit the cop
- inside the cop is a ball which rolls down a tube to hit a baseball

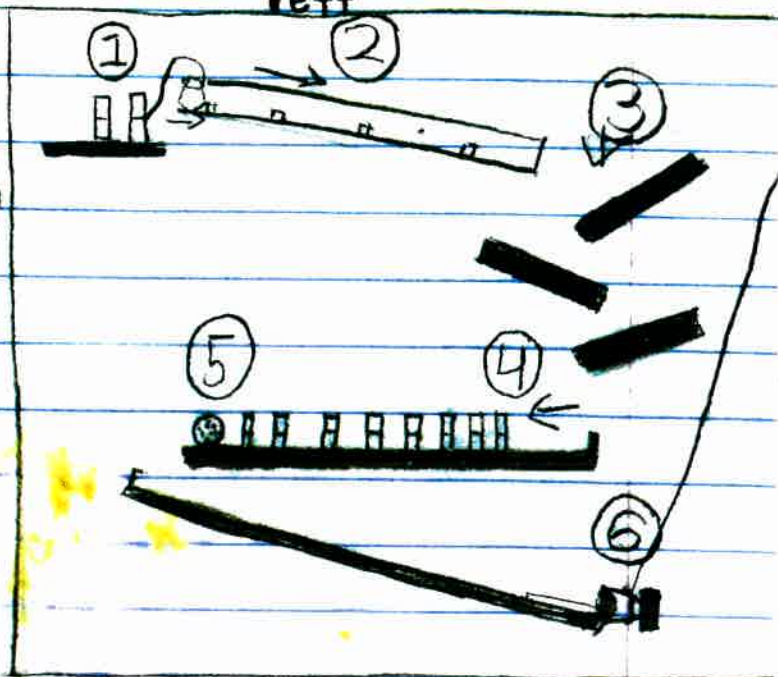
77 words

Daniel

Final design

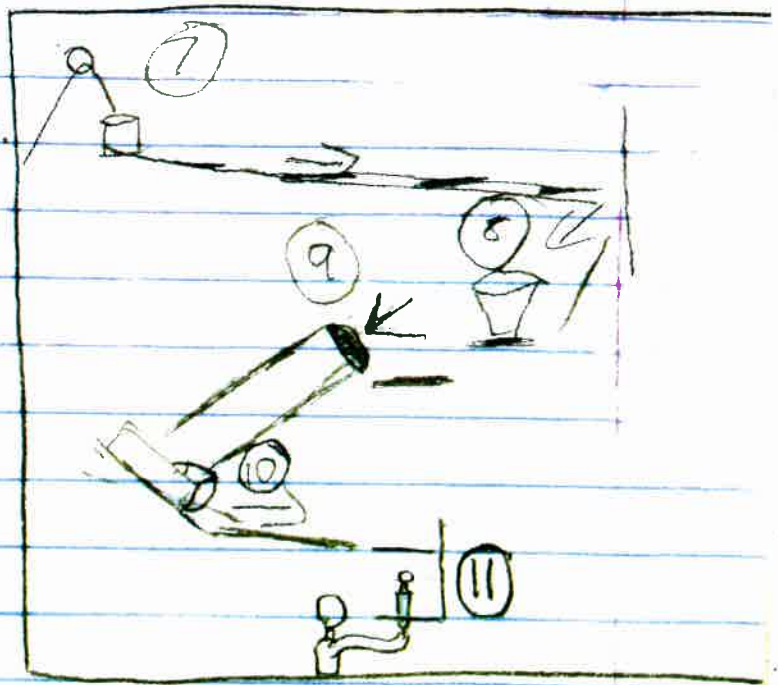
left

1. dominoes get pushed over releasing marbles.
2. marbles fall down a ramp to a drop.
3. after the drop marbles fall through blocks of wood.
4. marbles hit over a set of dominoes
5. dominoes knock over golf ball



6. golf ball goes into cup, pulling string.
7. string pulls up a cup releasing marbles falling down a ramp hitting a cup.

8. cup knocks over a cup releasing a golf ball
9. golf ball falls down a ramp to dislodge a baseball.



10. baseball falls onto a plate pushing down a spring.

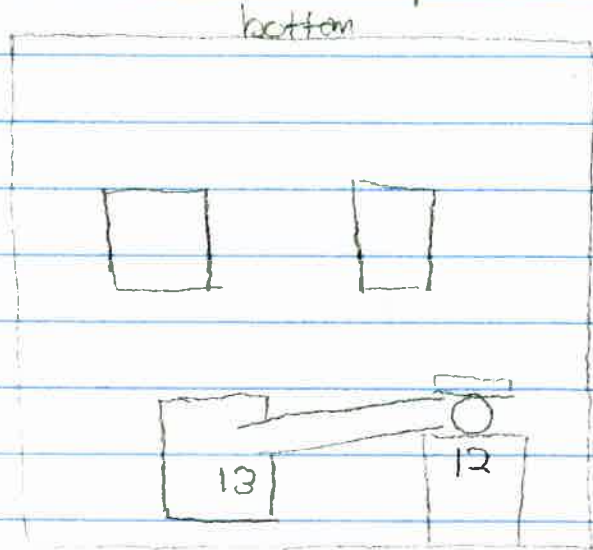
11. spring releases vinegar through a fuel line into a cup of bathing soda.

51 words

final design (extended after the first competition)

12. balloon inflates
to transfer its energy
into the hotwheels
car which rolls down
the hotwheels track

13. Hotwheels car pushes
down a switch
releasing the stored
energy of batteries
that are kept hidden
in order to turn on lights



Major successes and challenges

All work and supplies were kept in a small 15x25 ft area in the back of a church

Large problems on the final step of the machine.

 Took several hours of brainstorming and testing to find a solution

Restricted use of powertools, only had 2 drills, and 2 saws

Several total hours of arguing over the entire duration of building the machine

Had limited amounts of paint and nearly ran out of paints while painting

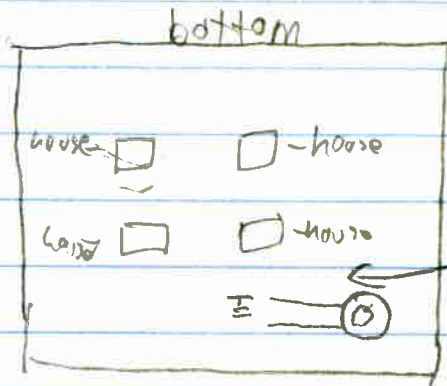
Many distractions were encountered while building the machine

Had trouble setting up wires and connecting them to the batteries

33
words

4/11 continuing to add steps and new components to the project

4/12



balloon inflates and pushes
a car to press down
a switch, turning on lights

4/12 painted houses

4/13, completed design

4/19 worked on journal

78
Words

Lumber:

2x4=\$496.00

4x4 1/2 = \$226.00

lumber total price \$695.00

Screws:

1 1/2"=\$10.40

1 1/4"=\$11.40

Screw total price \$21.80

Paint:

Yellow paint=\$22.95

Blue paint=\$22.95

Red paint=\$22.95

Paint total price \$68.85

Cotton balls:

White cotton balls=\$4.98

Cotton ball total cost \$4.98

Miscellaneous stuff and recycled materials:

cups=\$3.99

Popsicles stick=\$3.00

dominos=\$3.00

Hot glue=\$5.00

Random wood=\$10.00

string=\$.50

Pulley=\$.30

styrofoam=\$1.00

Vinyl tubing=\$2.00

Glue/adhesives/puddys=\$15.00

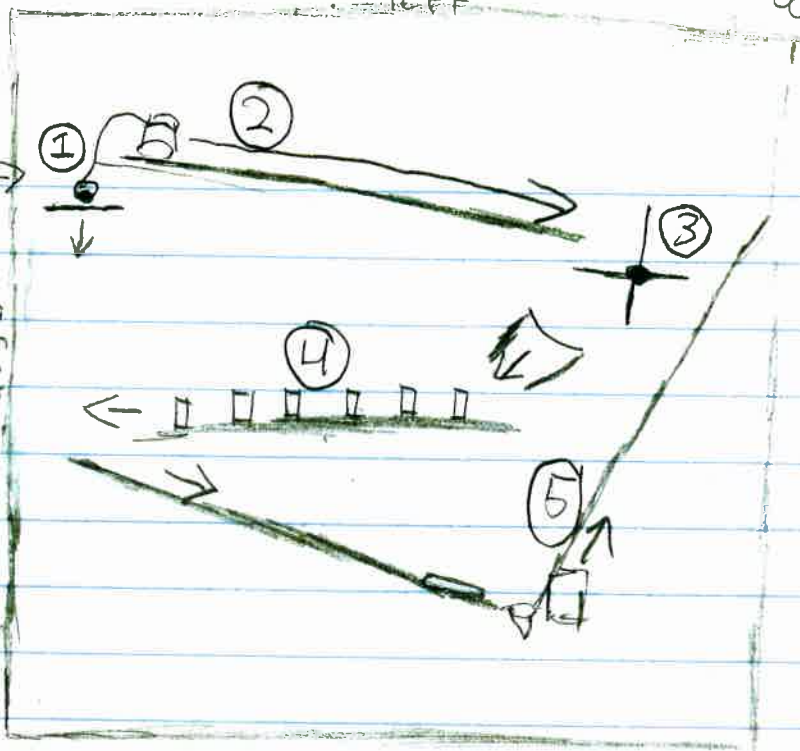
12% of
materials were
recycled without
including donated recycled wood

23% of materials were
recycled if you include
donated wood

first design left

94 words

1. ball falls down pulling a string
2. string pulls a cup over with a golf ball inside
3. ball hits a water wheel and goes through a funnel and hits dominos

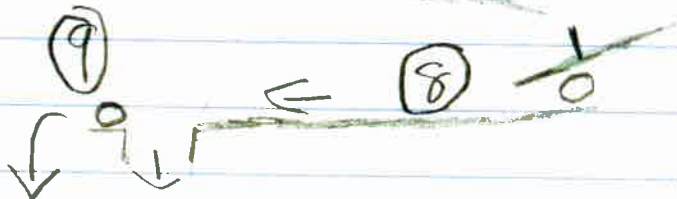


4. dominos fall over and onto a downward angled board and into a cup

5. cup falls down pulling the string of a pulley



6. string pulls up a cup which releases marbles



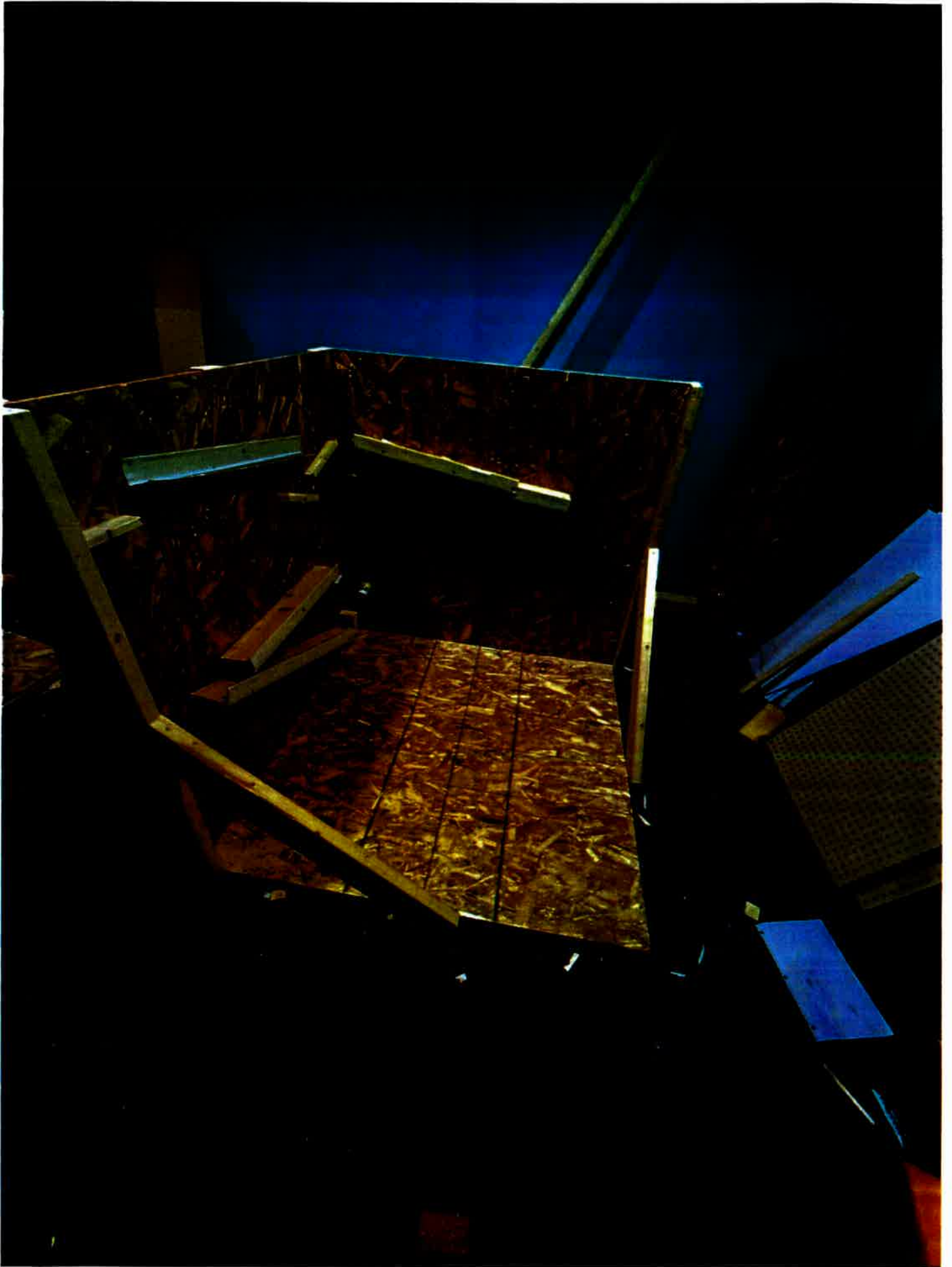
7. marble fall down a slanted board onto a seesaw?



8. seesaw releases a ball which goes down a ramp

9. ball hits a chunk of "plutonium" which knocks it into a "nuclear reactor"
0. plutonium turns on a light









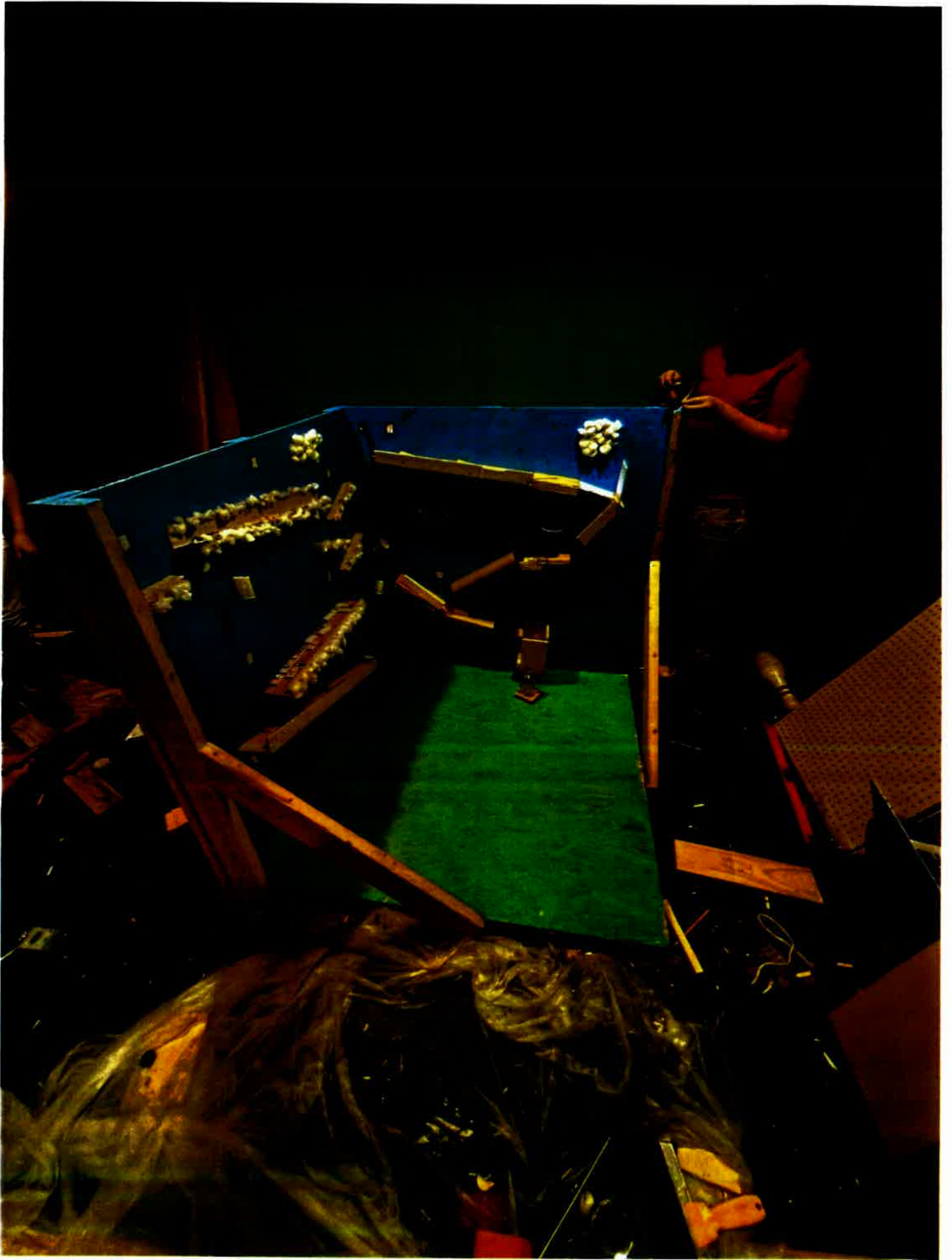






Image Details

1. First image taken on January 24th, 2022
First image ever taken on the machine, little to no work was done we just have finished building the frame and making the first few steps
2. Second image taken on february 28th, 2022
Some changes done to the machine
removed top support from frame
Added side supports, to increase the stability
Added steps to the machine
Revised steps that were flawed
3. Third image taken march 10th, 2022
Painted walls with a mixture of white and dark blue
Added multiple more steps
Increased aesthetic aspect
4. Fourth image taken march 22, 2022
Near final design (final design before preliminary round)
Completed aesthetics, and looks to the machine
Completed final steps that we had trouble with
5. Final image taken april 19th, 2022
Steps were added after first competition
Hotwheels and lights added
Increased number of steps by 2

Advanced components used

1. Chemical reaction, in step #11 of our machine a syringe is used to push vinegar into a cup of baking soda, creating Carbon Dioxide CO_2 , water H_2O , and sodium acetate $\text{C}_3\text{H}_3\text{NaO}_2$
2. Electrical components, Power switches, batteries, light bulbs, and wires were all used in step # 13
3. Mechanical components, step number 6 includes a pulley system to transfer energy from one side of our machine to the other.
4. Fluid power components, hydraulics were used in step 13 of our machine to push vinegar into the cup of baking soda.

392
words

Individual reflections

Daniel:

My name is Daniel Rongner, I had fun building and working on this machine. While building I learned many new things, such as the correct ratio of vinegar to baking soda needed to make an efficient reaction, 1 part baking soda to 2 parts vinegar. This machine really challenged my teamwork skills and helped me solve problems that I had not faced before. One of the first challenges that we faced really had me thinking of ways to solve it. I had to make a solution that not only worked but also looked good.

Obadiah:

Hello, my name is Obadiah Weideman. I was one of the main engineers of our group, together with Sam. I had fun on this project and made the bonds with my friends stronger. The project helped me get better at cutting with a handsaw and progressing with my engineering skills. The largest problem that I encountered was in our last step where we had to mix vinegar and baking soda in a reaction, it took me over an hour of thinking to fix the problem. My personal opinion is that we all did very well working together working on the machine, doing our very best to get everything working perfectly and done quickly.

Oliver:

For the project I was the artist and helped make the theme and design. Through our machine we redesigned steps and used the stem proues many times. And I learned how to work together and work with wood and equipment used for the project. My job that i want to do is managing my family business and that needs skills in handy work, and this project helps me advance those skills that I need

Sam:

Hi, I am Sam and I was one of the engineers and a small piece of the design team. During this project I learned that I like to work with my hands and how much time and work go into these projects. I think I might like to go into construction or concrete which I do in the summer. With these projects its a love heat relationship some time we like getting out of class to work other times we didn't even want to look at them but in all good spirits it was a good fun project and i would do this again

