

# Robotics Engineering Notebook



team name: **Falcon Blade**

team number: **33472B**

season: **2022 - 2023 VRC Spin Up**

start date: **6/23/2022**

end date:

book number: **#1**

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The Robot  
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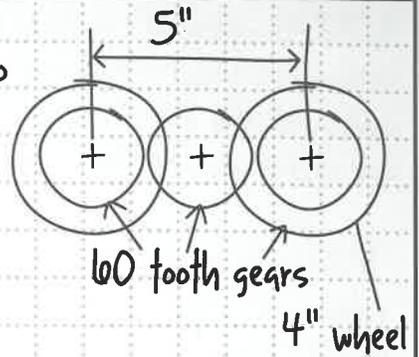


## Sugg

- Make an
- Use every page.
- Print all entries in permanent ink.
- Do not use markers that can bleed through the paper.
- All entries are sequentially numbered from page to page.
- Do not remove pages from the bound notebook for any reason.
- Provide a brief statement of the objectives for the session.
- Use a single line to cross out a mistake in an entry.
- Document all research and cite your sources.
- Label all pictures, sketches and calculations.
- Use a glue stick or tape to permanently attach any inserted items.
- Clearly indicate the date before or after each entry on a page.
- Mark off all excess space on a page with an X and initial it.
- Never erase or remove anything from the engineering notebook
- Do not use White Out.
- Show all work for formulas and conversions.
- Entries should be clear and complete so that someone else can follow and understand your design process.
- Document all testing and code debugging.
- Sign and date each page.
- When the notebook is full, archive it and start a new one.
- Store the notebook in a safe place.
- Include outlines for oral presentations on the project upon its completion.
- Study some sample engineering notebooks at <http://www.vex.com/vrcteams> for inspiration.
- Photocopies of engineering notebooks can be used to support presentations such as the VEX IQ STEM Research Project.

**Think. Create. Build. Amaze. VEX.**

9/21 - Our current drive train is 1 to 1 with (2) 393 motors and 4" wheels. In order to go faster, we will need to change the gear ratio of the drive train. There are several ways to accomplish this mechanically, so I need to do some calculations first to determine the speed of the current drive train. - DR



$$\text{Circumference} = \text{Diameter} \times \pi = 4'' \times 3.14 = 12.56''$$

The 393 motor has two speeds, low and high. Using the motor information we got off [www.vexrobotics.com](http://www.vexrobotics.com) site, we calculated the speed of our robot - DR

At 7.2V Low Speed = 100 RPM  
High Speed = 160 RPM

Low Speed

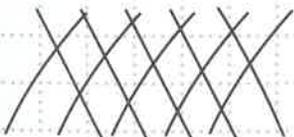
$$100 \frac{\text{rev}}{\text{min}} \times \frac{1 \text{ min}}{60 \text{ sec}} = 1.667 \frac{\text{rev}}{\text{sec}} \times 12.56 \frac{\text{inches}}{\text{rev}} = 20.93 \frac{\text{inches}}{\text{sec}}$$

High Speed

$$160 \frac{\text{rev}}{\text{min}} \times \frac{1 \text{ min}}{60 \text{ sec}} \times 12.56 \frac{\text{inches}}{\text{rev}} = 33.49 \frac{\text{inches}}{\text{sec}}$$

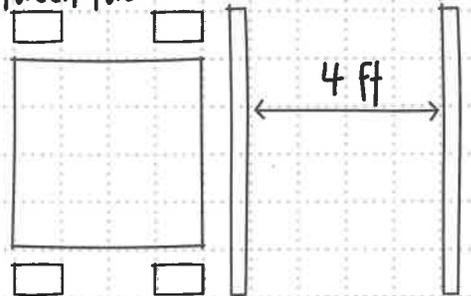
9/22 - To test these calculations, we ran our robot between two lines that were 4 ft apart and timed how long it took.

In Low Speed  $20.93 \frac{\text{in.}}{\text{sec}} = \frac{48 \text{ in.}}{X}$



- DR

$$X = \frac{48}{20.93} = 2.29 \text{ sec}$$



Journal Entry

9/21 - Nancy and I have been driving the Clawbot around the field and I think it needs to be faster. Today we worked on some basic calculations before we changed about our robot. My teacher does not like it when I tear apart my robot right before a competition. I am not sure why, we are just trying to make it better! - DR

project Drive Train Modification designed by: Dan RECF witnessed by: Nancy RECF  
date: 9/21/13

## Team Photo

Me

N/A

N/A

N/A

## Team Profile

~~T. Johnson, M. Buttler, L. ...~~

Trean Johnson - leader, main builder, main driver, and the main writer  
for the Engineering notebook.

# My Projects

page	project	date
Pg. 3	Game Play and Rules	June 27, 2022
Pg. 4	Field OverView and Scoring	June 27, 2022
Pg. 5	Game Specific Definition	June 28, 2022
Pg. 6	Game Specific Definition	June 28, 2022
Pg. 7	Game Specific Definition	June 29, 2022
Pg. 8	Game specific Definition	June 29, 2022
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Pg. 10	Tray / Pad / Launch Pad	June 29, 2022
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Pg. 15	Different Fly wheel Builds	August 18, 2022
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Pg. 23	Intake details	September 26-27, 2022
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Pg. 29	Fly wheel testing	October 17, 2022
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Pg. 35	Intake and Rubber Bands	November 2, 2022
Page 36	RPM	November 7, 2022
Page 37	Roller change	November 14, 2022
Page 38	Meeting log	November 16, 2022
Page 39	Meeting log	December 5, 2022
Page 40	Thinking	December 12, 2022
Page 41	Meeting log	December 19, 2022

# My Projects

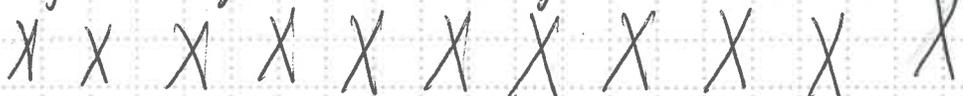
page	project	date
Pg 42	Meeting log	January 9, 2023
Pg 43	End Game	January 11, 2023
Pg 44	Meeting log	January 19, 2023
Pg 45	Meeting log	January 25, 2023
Pg 46	Meeting log	January 30, 2023
Pg 47	Meeting log	February 1, 2023
Pg 48	Meeting log	February 9, 2023
Pg 49	Meeting log	February 7, 2023
Pg 50	Meeting log	February 9, 2023
Pg 51	Meeting log	February 16, 2023
Pg 52	Meeting log	February 27, 2023
Pg 53	Meeting log	March 6, 2023
Pg 54	Meeting log	March 8, 2023
Pg 59	Meeting log	March 9, 2023

June 27, 2022

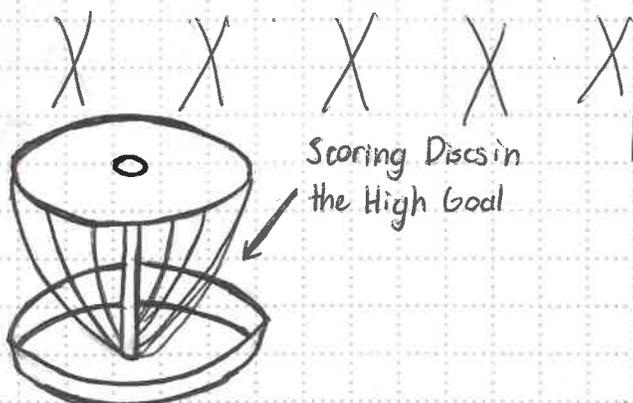
Vex Robotics Competition Spin Up is played on a "12x12" square field, in head-to-head matches, two (2) Alliance - one (1) red and one (1) blue, composed of two (2) Teams each - compete in matches consisting of a fifteen second (0:15) Autonomous Period followed by a one minute and forty-five second (1:45) Driver controlled Period.



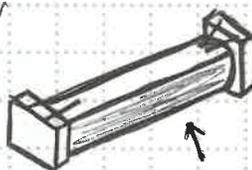
The object of the game is to attain a higher score than the opposing alliance by scoring discs in goals, owning rollers and covering field tiles at the end of the match.



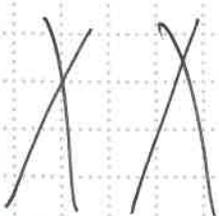
An Autonomous Win Point (AWP) is awarded to any alliance that owns two rollers and has scored at least two discs in the high goal at the end of the Autonomous period. An Autonomous Bonus is awarded to the alliance that has the most points at the end of the Autonomous period.



Scoring Discs in the High Goal

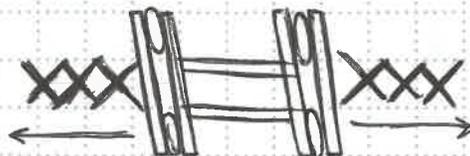


Obtaining your color on Rollers



Or scoring in the Low Goal

End Game!



Covering the field tiles at the end of the matches

Journal Entry: I need to know how the game is played and how the new rules... may affect this year's game, this is gonna be tricky because you need to figure out how your robot is gonna work.

project Game play and Rules

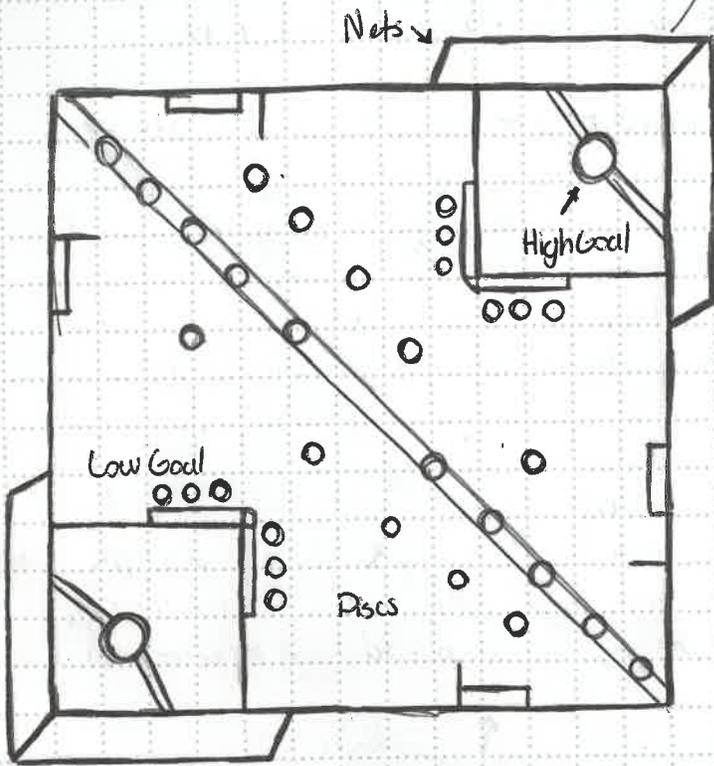
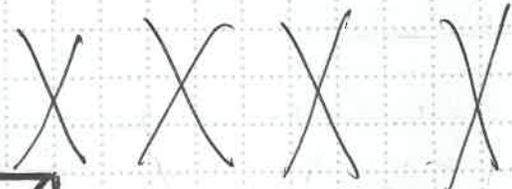
designed by: Treon Johnson

witnessed by:

date: 6/27/2022

June 27, 2022

Field Overview



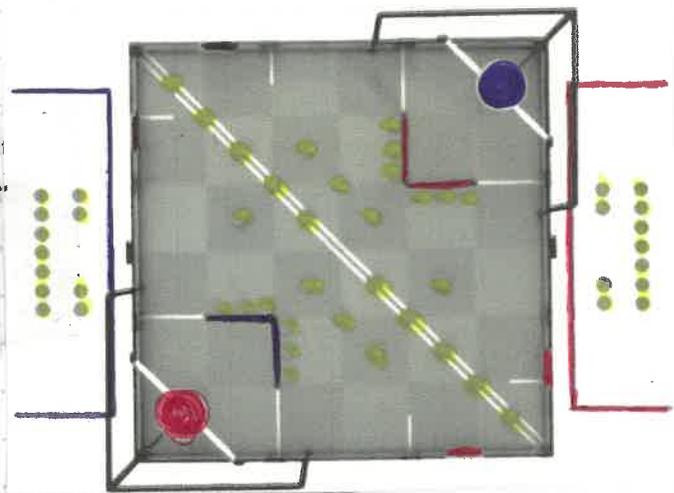
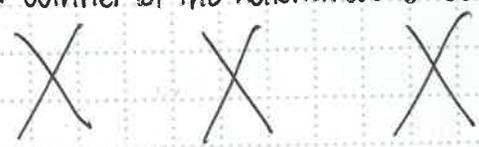
The Vex Robotics Competition Spin Up field consists of the following

- \* Sixty (60) Discs.
  - 8 that begins as Preloads, four (4) per alliance
  - Fourteen (14) that are used as match load discs, seven (7) per alliance
- \* Four (4) Rollers
- \* Two (2) High goals, one per alliance
- \* Two (2) Nets, one behind each high goal
- \* Two loaders, one in front of each alliance station.



Scoring:

- \* Each disc scored in a High goal = 5 points
- \* Each disc scored in a Low goal = 1 point
- \* Each Owned Roller = 10 points
- \* Each covered field tile = 3 points
- \* Winner of the Autonomous Bonus



Journal Entry: I need to remember the concept of how many field elements there are in the field. And also remember of how the scoring works and how much total points I've earned

project Field Overview and Scoring

designed by: Treon Johnson

witnessed by:

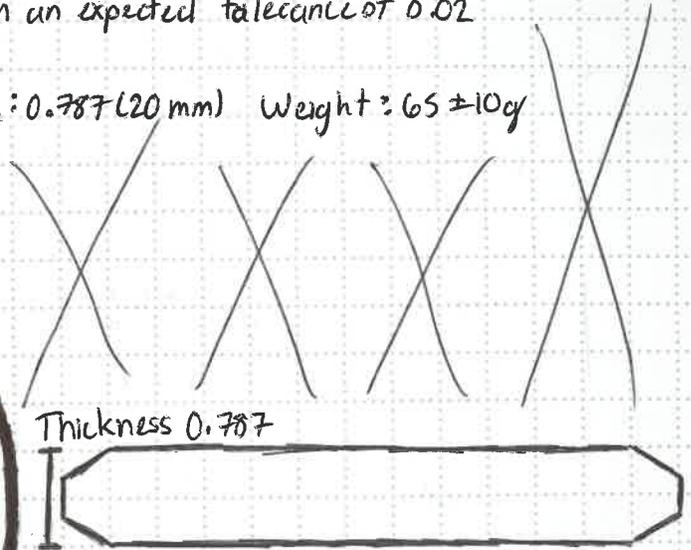
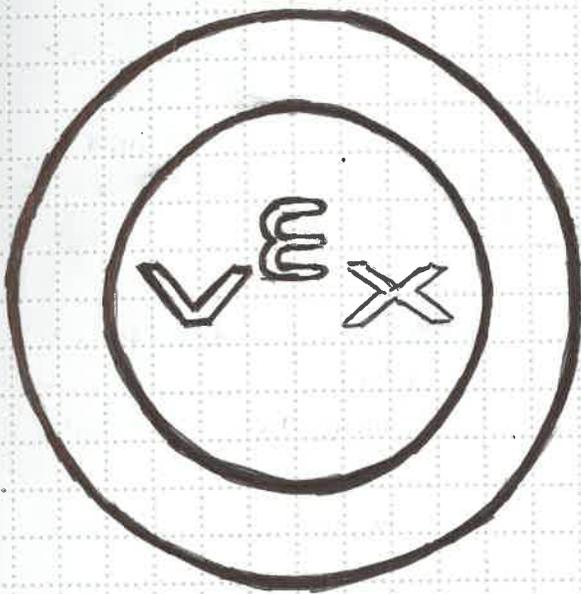
date: 6/27/2022

June 28, 2022

Game Specific Definitions

Discs - A yellow foam object that can be manipulated by robots. Discs have the following overall dimension with an expected tolerance of 0.02

Diameter: 5.512 (140mm) Thickness: 0.787 (20 mm) Weight: 65 ± 10g



Endgame - The final 10 seconds of the match

Goal - A place where robots can score discs.



High Goal - A basket-shaped field element where robots can score discs. The High goal is defined as the top and bottom colored plastic pieces, the chains and the vertical pipe assembly connecting the top and bottom together. The horizontal supporting structure and baskets used to attach this basket assembly to the field are not considered part of the high goal. The color of the high goal indicates which alliance receives points for discs scored in that high goal

Journal Entry: Remember the field elements info is important because you might need the weight size and thickness

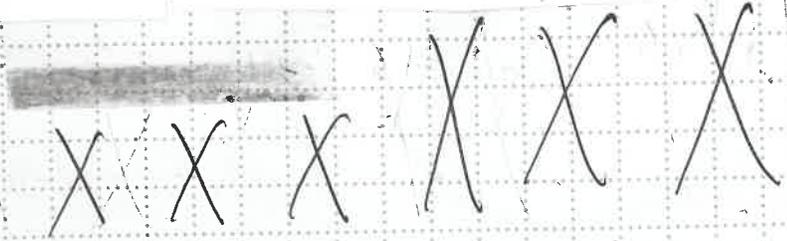
project Game-Specific Definition designed by Leon Johnson witnessed by

date: 6/28/2022

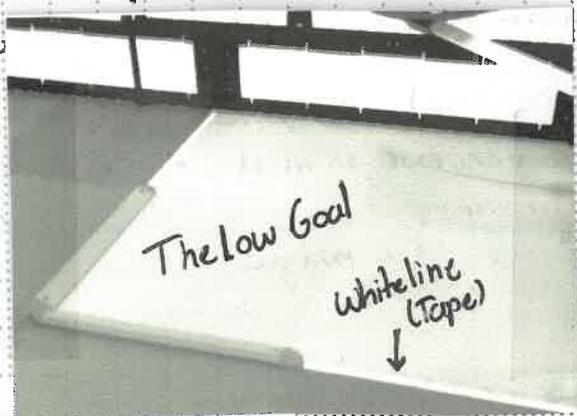


Baskets ↗

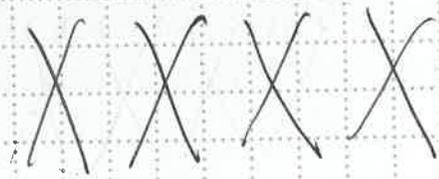
June 24, 2022



Low Goal - A region of the field where robots can score discs. The Low Goal is defined as the space in each corner of the field directly beneath each High goal, barrier. The white tape lines and barriers are considered parts of the Low goal, and the color of the barrier indicates, which alliance receives points for discs scored in that Lowgoal.



This is easier because if you shot the discs and miss, you have a chance to still get points.



Journal Entry: The low goals and high goals are most important to the game because you can score more points by shooting discs in or under the goals.

project Game Specific Definition

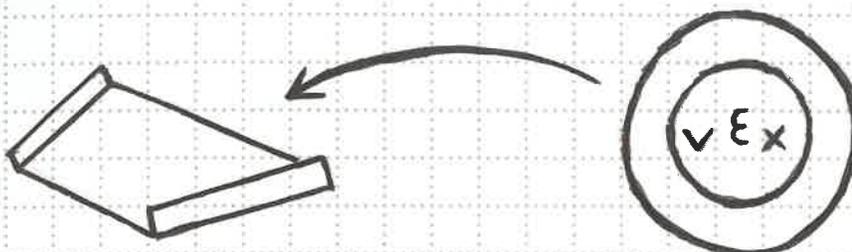
designed by: Treon Johnson

witnessed by:

date: 6/28-29/2022

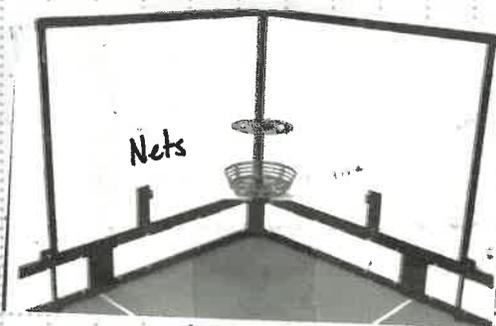
June 29, 2022

**Loaders** - A metal ramp, one per alliance, that can be used to introduce Match load discs.

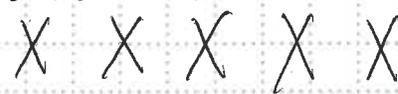


**Match load Discs** - One of the fourteen (14) discs, seven (7) per alliance, that begins the match in an alliance station and may be introduced during the match.

**Net** - One of two woven, nylon mesh structure located behind the high goals.



**Pointed A roller status** that can be used to score points



**Preloads** - The discs, two (2) per robot, placed prior to the start of each matches. If used preloads must be placed such that they satisfy the condition. If they are not used, they may be used as additional match load discs.

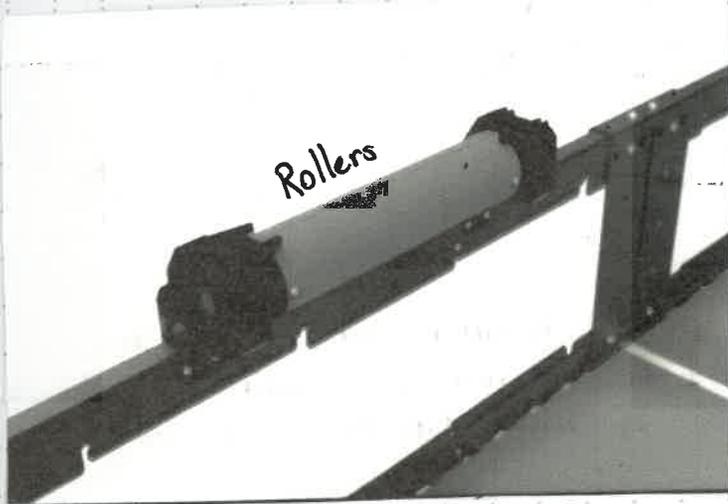
**Possessions** - A robot / discs status. A robot is considered to be in possession of a discs if the robot is carrying, holding, or controlling the movement of a discs such that if the robot changes direction, the discs will move with the robot. Therefore pushing / plowing discs is not considered possession, however, using concave portion of a robot to control the movement of discs is considered possession.

Journal Entry: New rules may effect this years game because I need to shoot the discs in to the basket, but if push the discs in the field thats not consider possession I have to remember this.

project Game Specific Definition designed by: Treon Johnson witnessed by: \_\_\_\_\_  
 date: 6/29/2022

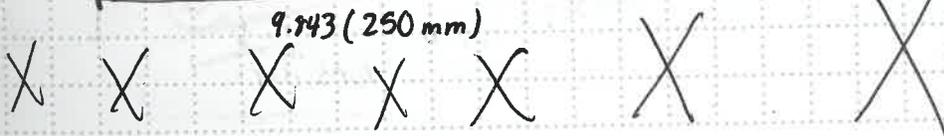
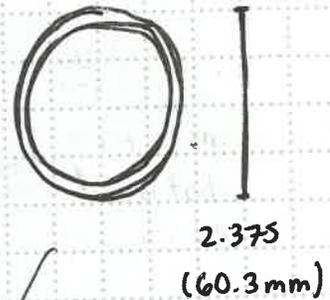
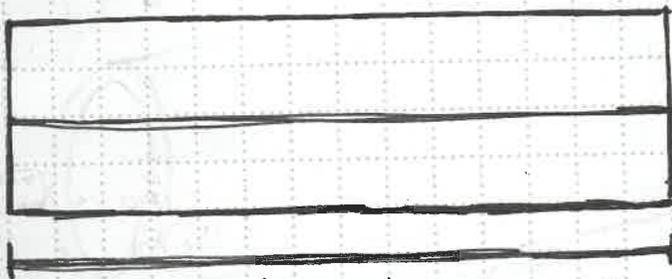
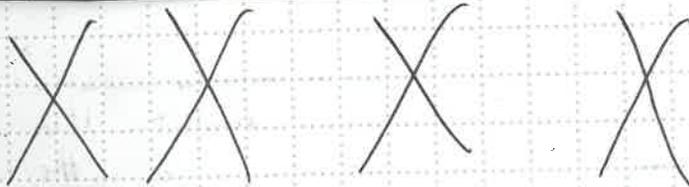
June 29, 2022

Rollers - One of four (4) field elements mounted to the field's perimeter that can be owned to score points. Each Roller has two pairs of pointers that, when viewed from above, indicate which alliance owns the roller. In head-to-head matches, rollers begin in a neutral position. Rollers are made of 2" nominal schedule 40 PVC pipe, and are 9.843 (250 mm) long and 2.375 (60.3 mm) in diameter.



Each owned rollers are worth 10 points, but when two colors are between, no points.

The color of the roller should be facing up right.

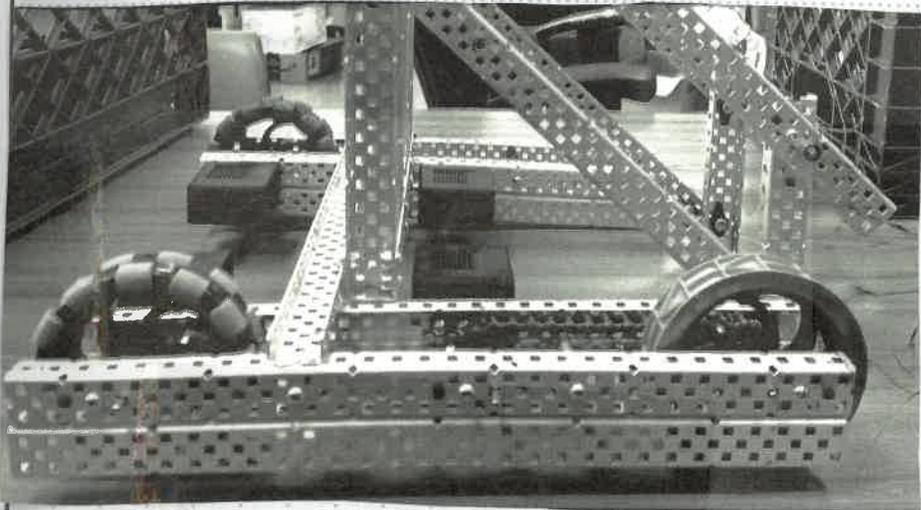


Journal Entry: The roller is one of the most important of the field because it scores alot and its hard to turn the roller.

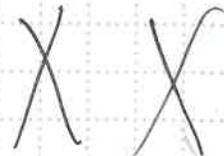
project Game Specific Definition designed by: Treon Johnson witnessed by: \_\_\_\_\_

date: 6/29/2022

June 29, 2022



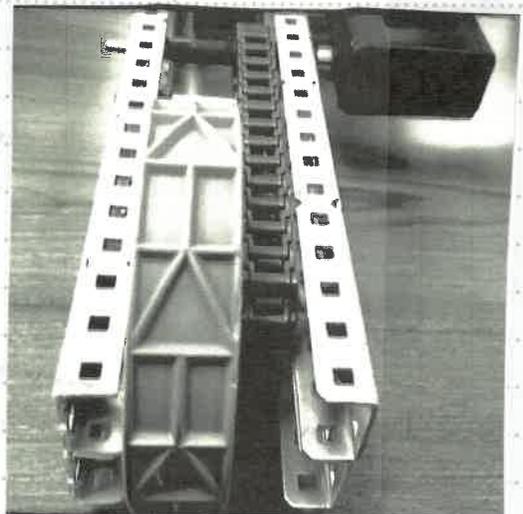
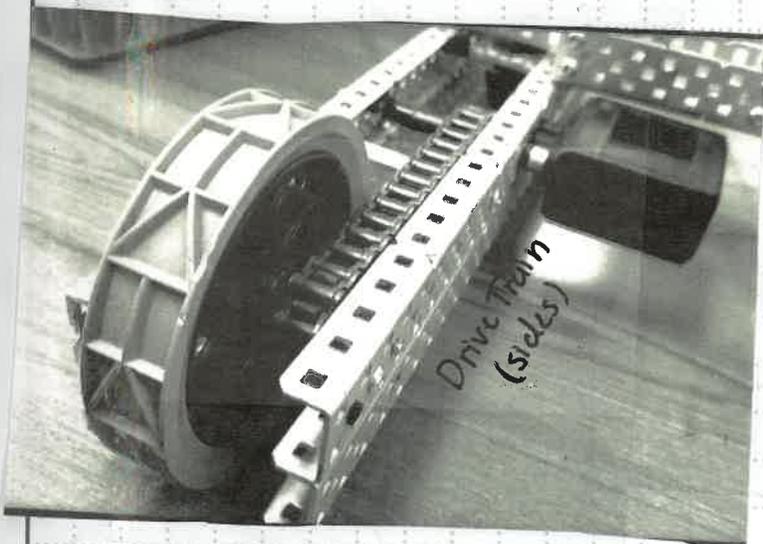
My old base I used, but keeping it is a good thing because I can start building on top of the base



My old base

After vex worlds, I've decided to keep the drive train because if I didn't, it's gonna be a hassle to build another one. I'm using a four (4) drive train so my robot can be faster and quicker. I'm also keeping the chain-n-bracket so the motors can be in the back.

Drive Train (Top)



Journal Entry - While keeping my old builds, I need to build a shooting mechanism to help shoot the discs

project Base and keeps

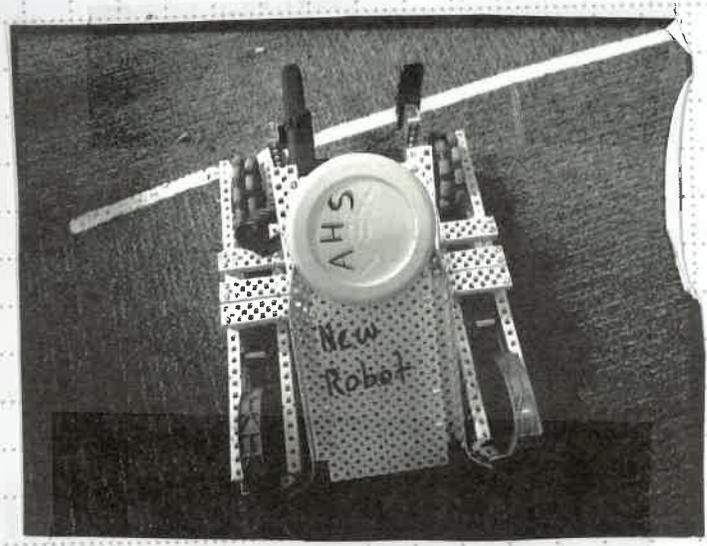
designed by: Treon Johnson

witnessed by:

date: 6/29/2022

June 29, 2022

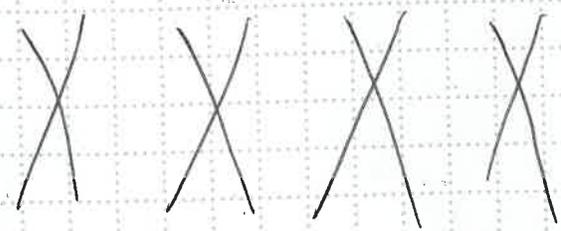
During the last day of school and during the summer, I've started rebuilding the base, but made the base shorter in width. Just made it shorter because I was testing to see if the need to be widen or shorten.



I've also build a tray pad like because I was testing to see if the tray / pad need to be remade so the discs can slide up the tray. The only limit of discs being held are 3.



Finished building the tray, but the only thing I needed was to build a fly wheel shooter mechanic to help launch or shoot the discs. So during the summer, I've started working on the fly wheel

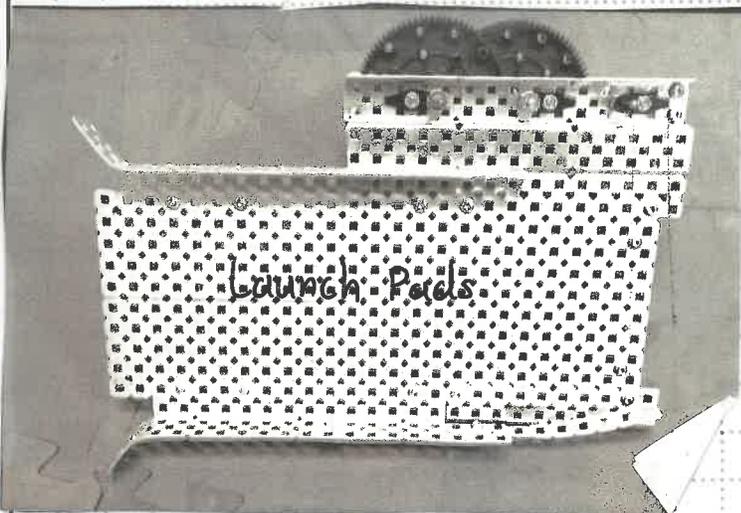


Journal Entry: The tray was kinda easy to make but the only thing was measuring the discs to see how wide the tray need to be.

project Tray / Pad designed by: Treon Johnson witnessed by: Nekoda Althor  
date: ~~6/29/2022~~

6/29/2022

June 30, 2022

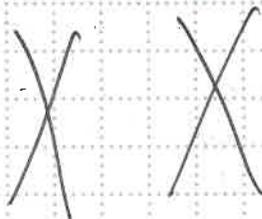


Today, I attached the fly-wheel to the tray. I was testing, looks like I need to add another compound gearing to the other side to see if it will go further



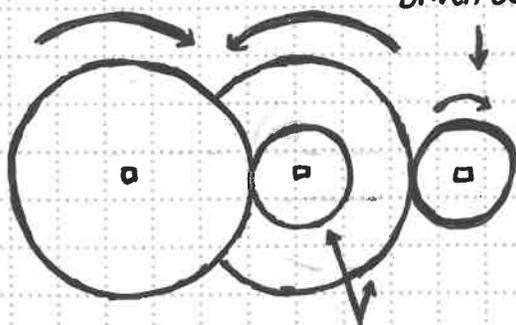
The compound gearing takes its time because I'm using a tire as a Fly wheel.

Compound Gear



Drive Gear

Driven Gear



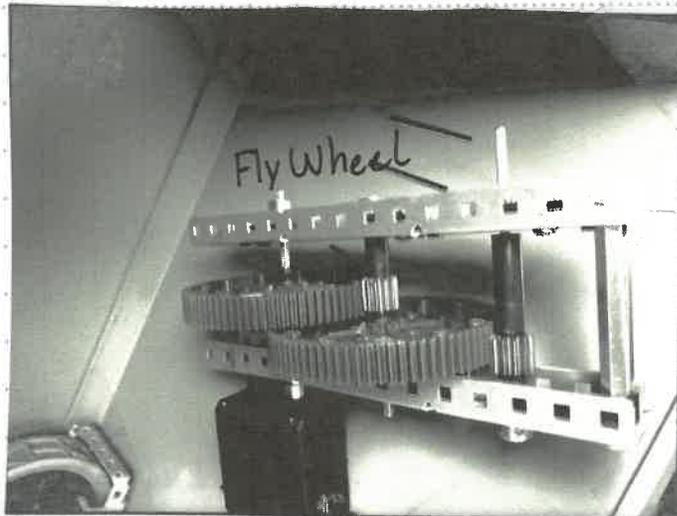
Linked by shared axle

Compound Gear Ratio

$$12:60 \times 12:60 = 1:5 \times 1:5 = 1:25$$

Torque =  $1/25x$

Speed =  $25x$



Using the bigger gears will make it faster but it does start slowly, so I made 2x more fly wheels and test it which one will start faster.

project Fly Wheel and Gearing designed by: Treon Johnson

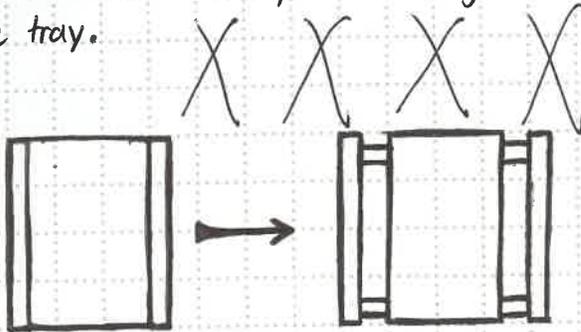
witnessed by: Nikita Alth...

date: 6/30/2022

July

~~July~~ 7, 2022Rebuilds and Compound Gear

During the summer, I upgrade the tray for the discs to carry and pull up because the tray was too tight, so I made a little space on each side of the tray.

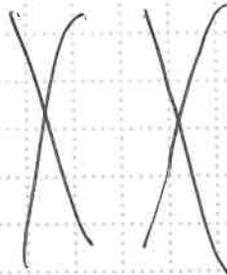
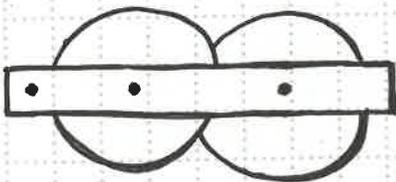


The tray was too tight for the discs to slide and release and carry. The discs are 140.0 mm, so I expand it about 150.0 mm so it can fit properly.

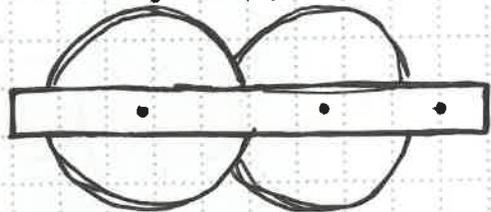


I also made ~~an~~ another compound gearing, but I used the medium gearings this time. When I test the big and medium gearing, the big gearing takes its time to speed up and the medium gearing starts to speed up a little faster.

Medium Gearing



Big Gearing



This starts up about:  
Time: 3.5 seconds  
Speed:  
Gearing:



This starts up about:  
Time: 5 second  
Speed:  
Gearing:

I need to figure out what the speed and the gear ratio.

project Rebuilds and Compound Gears designed by: Treon Johnson witnessed by: Adrian

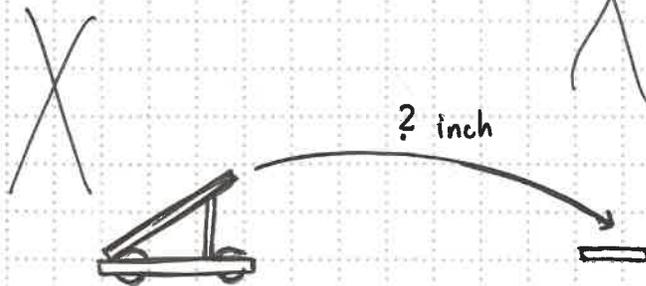
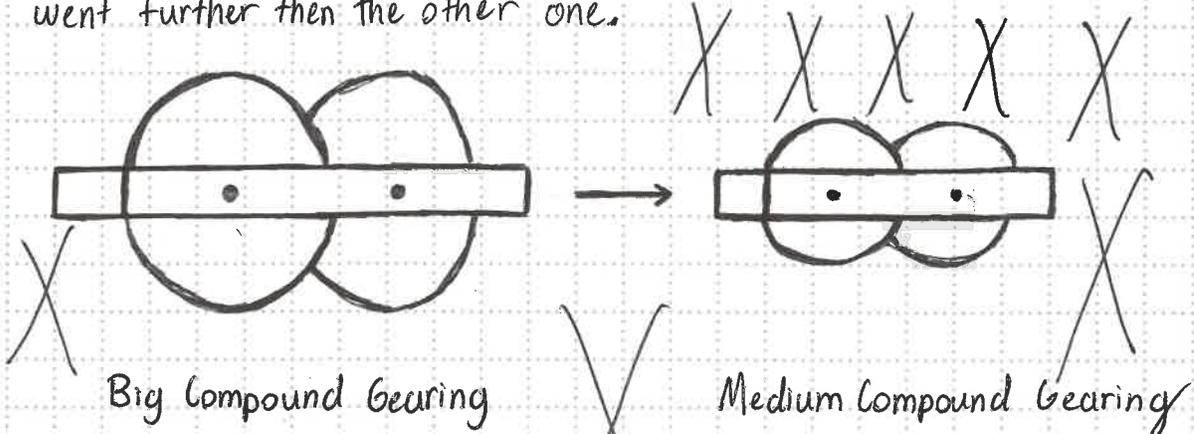
date: 7/7/22

July 14, 2022

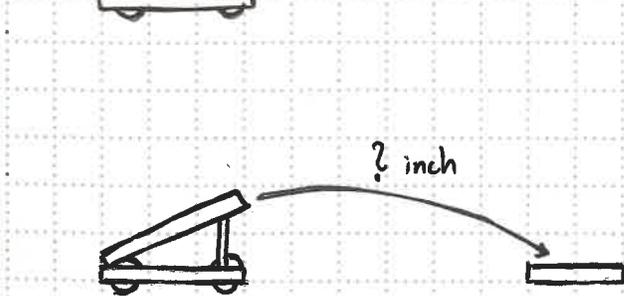
Compound Gearing

I attached the fly wheel to the tray and see how the robot will launch/toss the discs. I didn't get to measure how far the discs landed, but I know the discs didn't launch as far.

So what I did is replace the big compound gearing and added the medium compound gearing, but it did the same thing, but it went further then the other one.



I didn't get to measure how far the discs landed because I didn't think of measuring.



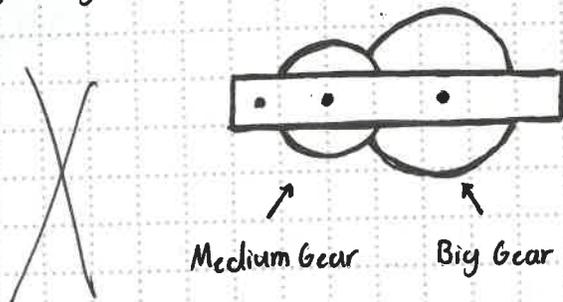
Testing different type of fly wheel... it did launch the discs but I didn't get to measure how far the discs launch...

project Compound Gearing designed by: Treon Johnson witnessed by: Adin R...  
 date: 7/14/22

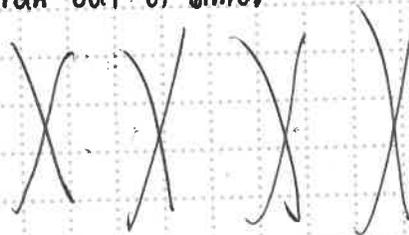
August 15/2022

New Fly wheel

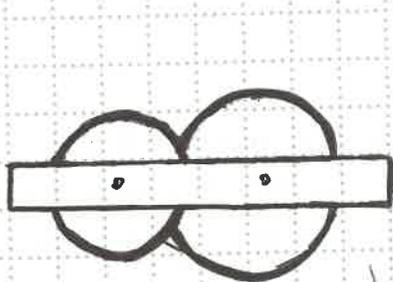
So today during my 6<sup>th</sup> hour, I wanted to try a different fly-wheel mechanic, so I rebuild a new fly wheel but using a medium and big gearing.



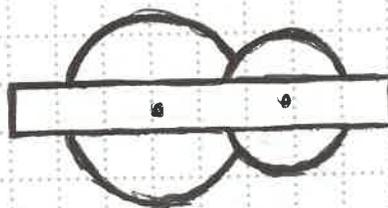
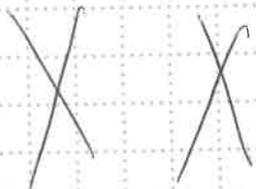
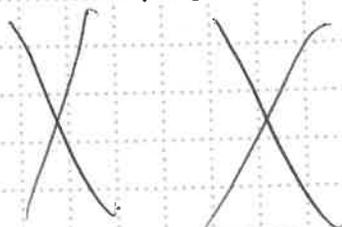
Didn't get to test it out because I ran out of time.



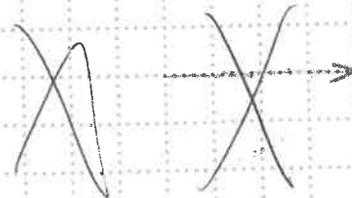
But what I did first was to try out the medium compound gearing again and see if it will go further, but again, it went the same inches.



36:60  
60/36 = 1.667



60:36  
36/60 = .6



making the third fly wheel with a 36 tooth gearing and a 60 tooth gearing. doing the math differently came out different.

project New Fly Wheel

designed by: Treon Johnson

witnessed by: [Signature]

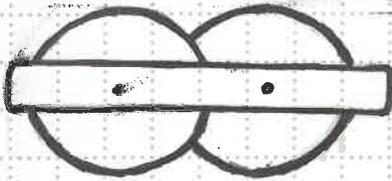
date: 8/15/2022

August 18, 2022

Different Fly wheel Builds

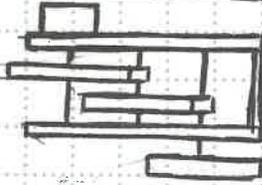
Picture / Photos

Compounded gear  
Build #1 : 60:60=1

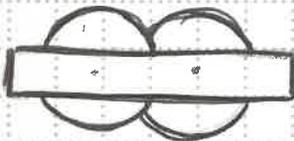


2x 60 tooth gearing

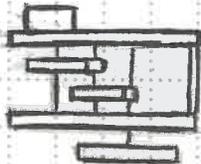
Side view



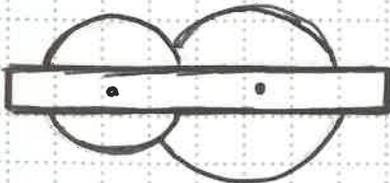
Build #2 36:36=1



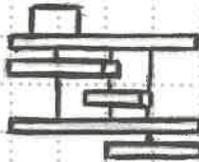
2x 36 tooth gearing



Build #3 36:60=1.667



1x 36 tooth gearing  
1x 60 tooth gearing



The fly wheels were different at least one of them started fast and the others starting slower.

project Different Flywheel Builds designed by: Treen Johnson

witnessed by: [Signature]

date: August 18, 2022

August 17 meeting log

Today I Elijah Alekay Join Treon's Team and I am going to be a programmer for his team. I have been in Robotics for 7 years. I am a Sophomore and my goal for this season would be to go to world again this year.

My New Partner Elijah Alekay will be my teammate/partner, he will be the programmer and coder for our team, a builder and a writer for the note book.

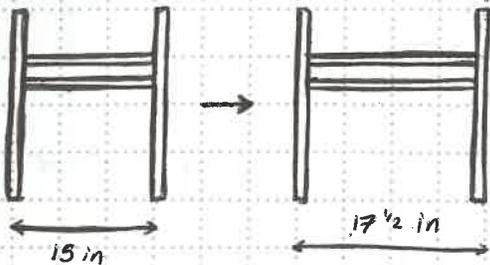
project New Partnerdesigned by: Treon & Elijahwitnessed by: 

date: .....

August 18, 2022

Meeting log

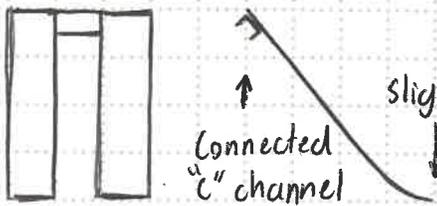
During my 6th hour, I started reorganizing robot and changing alot of stuff. I had to change the width because I figured it was too small, so I changed it to the original size I had it.



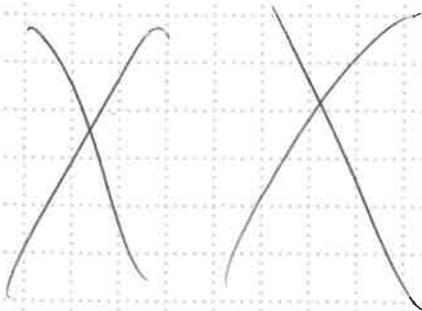
It's a good thing I extended the width because going with the smaller base would have been too tight.

Secondly, I started making the intake where the discs ~~can~~ can slide up and go into the fly-wheel.

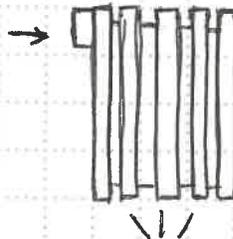
So I start making the Intake by using chain-sprockets and a metal ~~flat bed~~ flat bed.



After making the flat bed, I started making the top part where it can drag the discs to the fly-wheel.



Motor



Chain Sprocket

Adjusting the robot was good because the fly wheel and discs Intake were wide and large.

project flat Bed Build

designed by: Treon Johnson

witnessed by: *[Signature]*

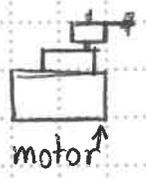
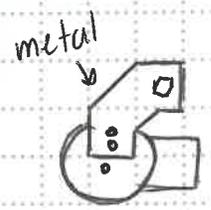
date: 8/18/2022

August 23, 2022

Simple machine

Today During School, I started building a little discs pusher to help push the discs to the fly-wheel. X X X X X

It was just a simple build, just needed a medium gear, metal piece, screws and bolts, and a motor X X X X X X

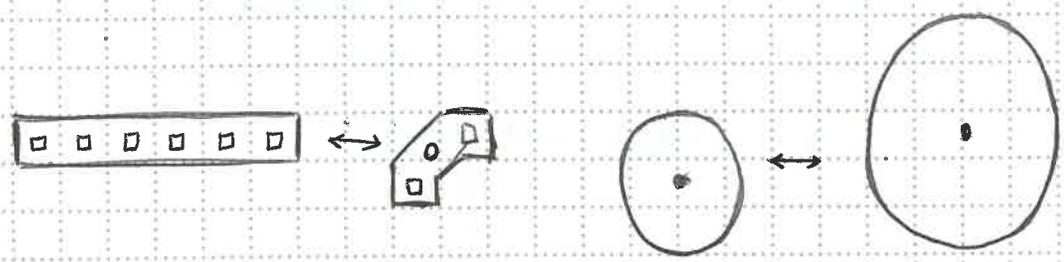


This was a test and here it manage to work. X X X X X X

I was gonna make it into a bigger gear and though it was too big. X X X X X X

Attaching it was difficult because I didn't want the metal bar hitting or touching the discs intake. X X X X X X X

I was gonna make the metal into a longer one and see if it will push the



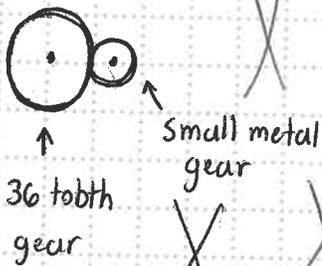
...keeping...the...measure...intact...because...you...might...need...the...right...measurements...you...might...accidentally...use...the...wrong...size...and...might...have...to...start...all...over...again...

project Simple machine designed by: Treon Johnson witnessed by: [Signature] date: August 23, 2022

September 9, 2022

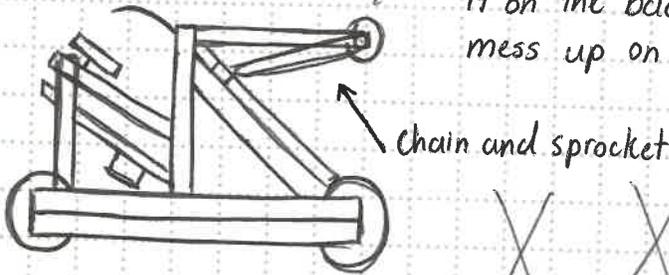
Roller and Gearing

My coach recommended me to do a 36 driving gear for the discs intake to see if will it go faster. So I tried it out and for sure it works.



Also I want to do a chain and sprocket for the Roller to turn the rollers.

So I built a roller machine on top of the robot and on front, didn't wanted to do it on the back because didn't want to mess up on the fly wheels.



Testing it, it wasn't enough power to turn the roller, so my coach recommended to just to use a motor to see if its more power to turn the roller. We don't have flex wheels yet so Im using smaller tires.

Journal Entry: I though attaching a chain n sprocket to the roller would turn the roller but it wasn't power ful enough so I wanted to try a small compound gearing, but it just made the roller spin faster.

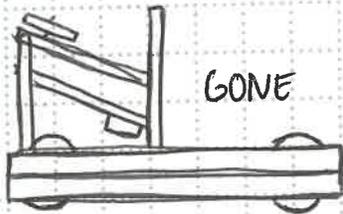
project Roller and Gearing designed by: Treon Johnson witnessed by: [Signature]

date: Sept 9, 2022

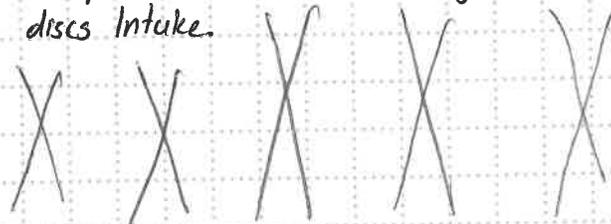
September 12, 2022

Discs Intake removable

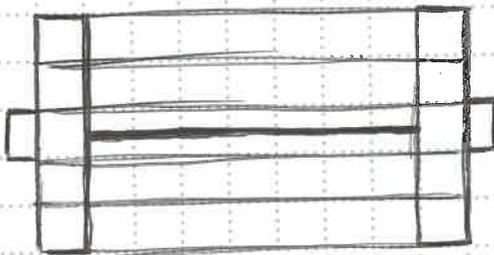
After noticing that the only way I can pick up the discs is by slamming the discs against the field walls. So the intake Imma build is by consisting chain n sprocket gears and rubber bands. So I took the whole front part apart and starting over



Imma start using plastic / ~~plexi~~ glass from the platforms from last year game for the discs intake.

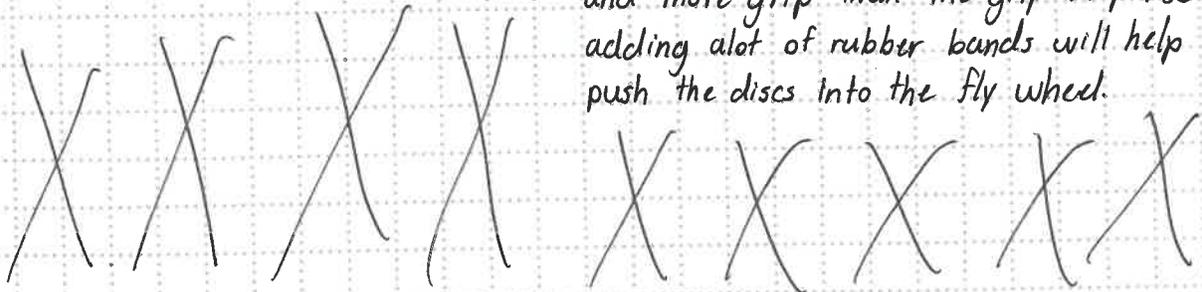


What Imma do is make a chain n sprocket with rubber bands wrapped at each side three(x3) times.



I still don't have flex wheels yet so I'm using rubber bands for now.

The rubber bands are more flexible and more grip than the grip flaps. so adding alot of rubber bands will help push the discs into the fly wheel.



Journal Entry: 1. did a combination of medium and large chain n sprocket gears. 2. each and a lot of rubber bands.

project New Discs Intake

designed by: Treon Johnson

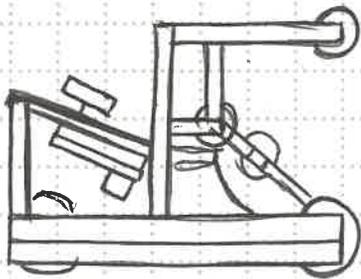
witnessed by: Awiz

date: Sept. 12, 2022

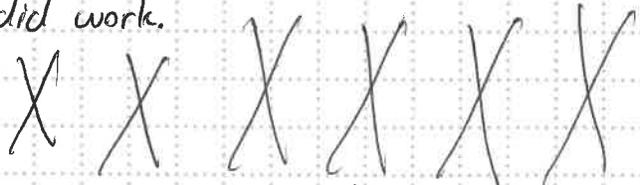
September 21, 2022

Adding More rubber bands / Pixie Glass

After adding 6-7 rubbers bands, I wasn't picking up the discs or wasn't grip enough. so I added more rubber bands and testing it, it did pick it up but its slow.



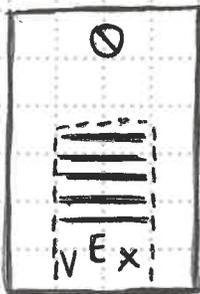
Noticing the discs gets stuck in the middle in the Intake, I moved the pixie glass a little further back and it did work.



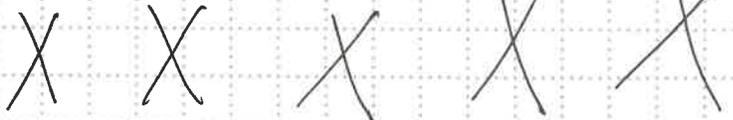
But I switched the gears to the larger sizes for the middle because I was using the medium sizes. Also this is my first time using pixie glass, so Im using it from last year game.



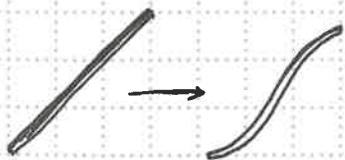
The ramp from last year game Tipping Point.



So I cut the pixie glass to the right size for the middle.



I decided to make the pixie glass curve because leaving it like straight down could cause alot of space and probably the gears would rub against the pixie glass.



Journal Entry: I wanted to use the pixie glass from last year's game because I never use pixie glass before.

project Rubber bands & Pixie Glass designed by: Treon Johnson

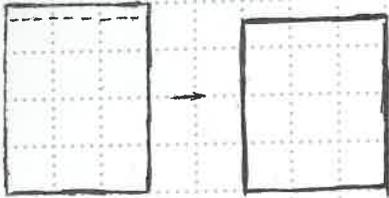
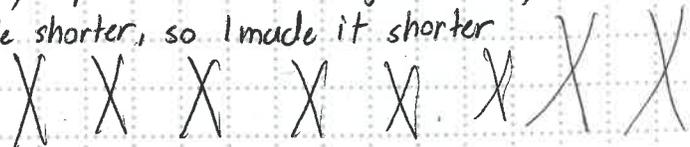
witnessed by: [Signature]

date: sept 21, 2022

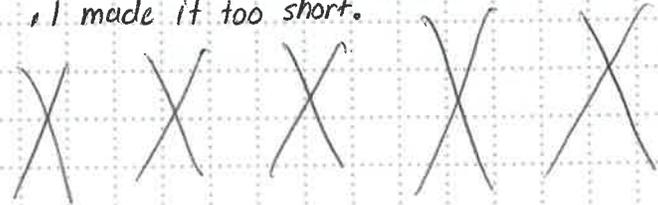
September 22, 2022

Problems

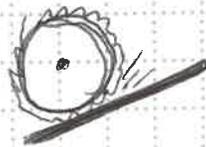
Noticing the discs won't go completely up the intake, I thought the only solution was to make the ~~plexiglass~~ glass a little shorter, so I made it shorter and it change the whole thing.



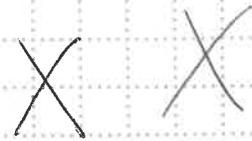
After cutting the ~~plexiglass~~ glass, I change the whole thing, I made it too short.



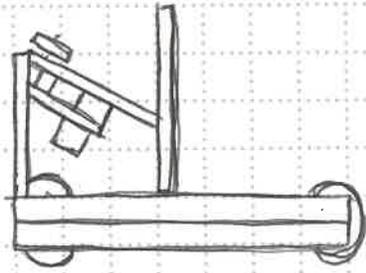
The other thing was the middle bigger gear was hitting / rubbing against the ~~plexiglass~~ glass. I don't want to damage the glass and the gears.



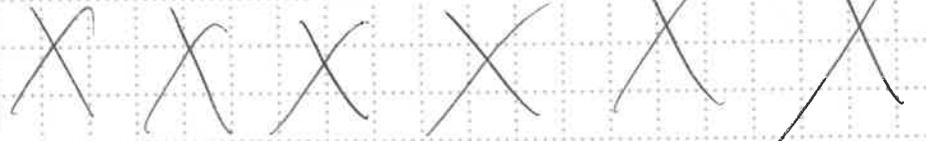
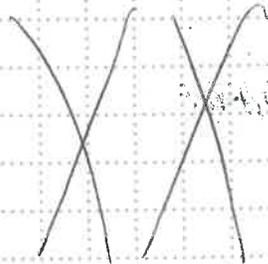
So what I wanted to do was to start over and take off the whole front part off and leave the back stay attached.



might damage the gear and ~~plexiglass~~ glass



I wanna to make the same discs intake from my first build and make it different



...I needed to start thinking of what the discs intake will look like and how its gonna work.

Project Problems and Solution

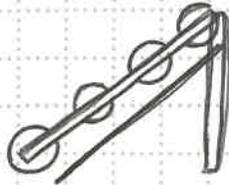
designed by: Treon Johnson

witnessed by: [Signature]

date: Sept 22, 2022

September 26, 2022

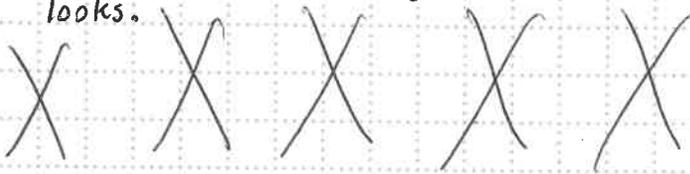
Starting over with the discs intake, I wanna try to do the same build I had the first time but using plexi glass.



But making the top build move freely so the discs won't get stuck.

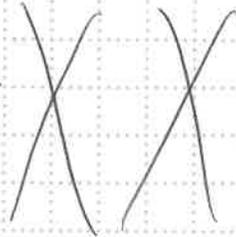
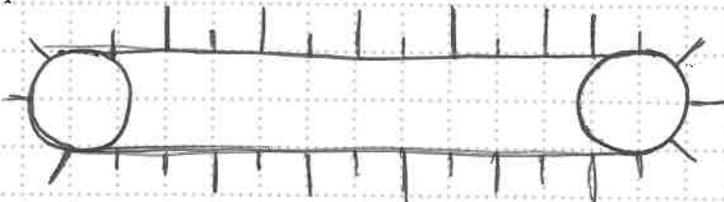


So I decided to change the layout and looks.

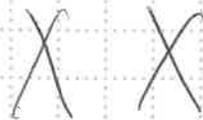


September 27, 2022

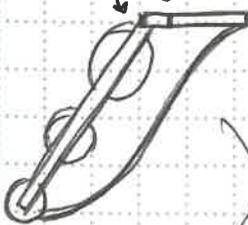
I wanted to try the chain with grip flaps, but only using one though.



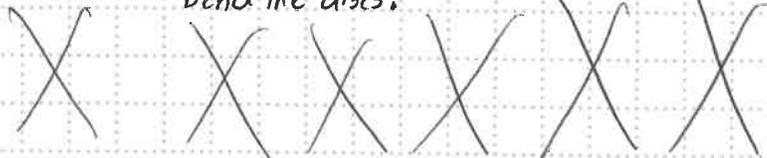
It wasn't enough to pick up the discs and not enough power to speed up. The way I want the discs intake was make it like my first build but using the plexi glass.



moving freely



Making the top build move freely might be best so the discs won't get stuck or bend the discs.



Journal Entry: I started off by making the plexi glass just straight down but making it curve a little may be useful because the discs can slide up more easily with chain n sprocket gears and rubber bands.

project Discs Intake

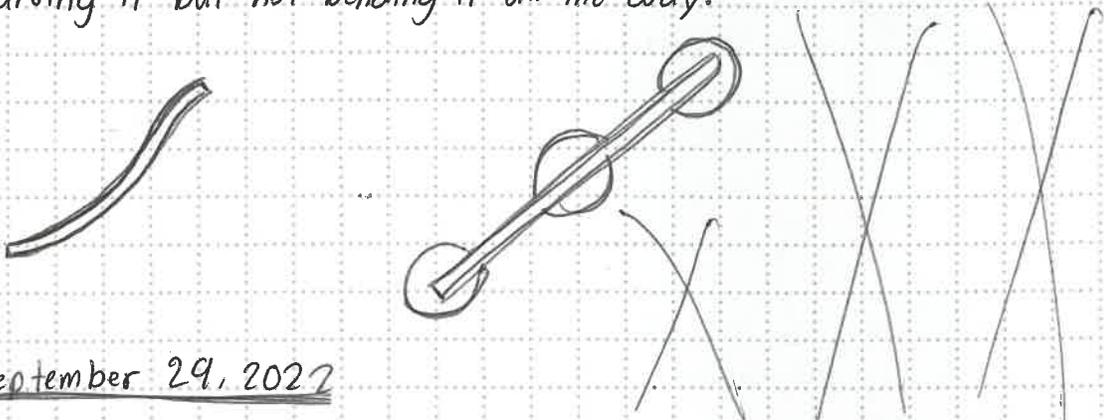
designed by: Treon Johnson

witnessed by: [Signature]

date: Sept 26, 2022

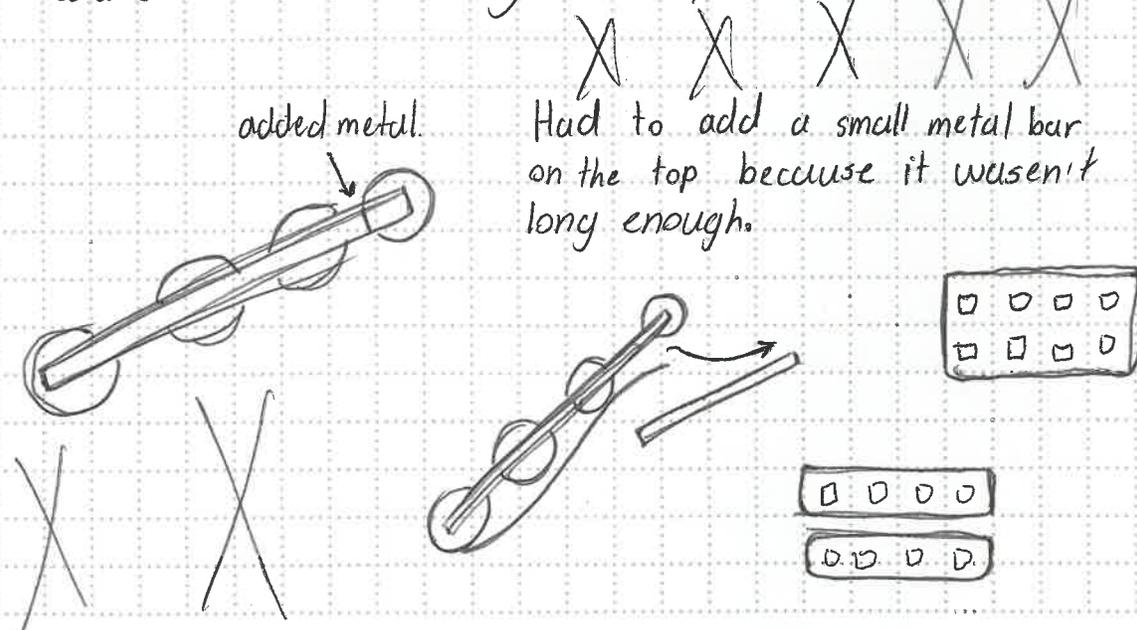
September 28, 2022

I added the plexi glass to the front and see if it will fit or if its the right size. Now I got to make the Intake with the right sizes and right pieces. So I started attaching the pixie glass and slightly curving it but not bending it all the way.



September 29, 2022

I almost got the Intake to work but gotta make changes like adding another gear with rubber bands on the very top because it wasn't sliding to the fly wheel



Had to add a small metal bar on the top because it wasn't long enough.

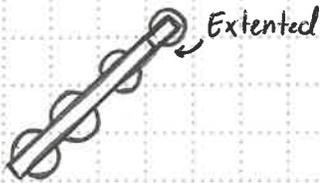
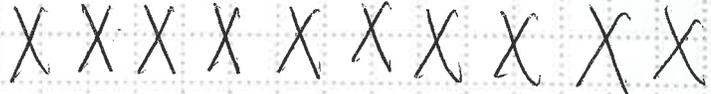
Journal Entry: Noticing the discs couldn't go into the discs so I added a small metal channel to add another medium chain sprocket gears.

project Intake designed by: Treon Johnson witnessed by: [Signature]  
 date: Sept 28, 2022

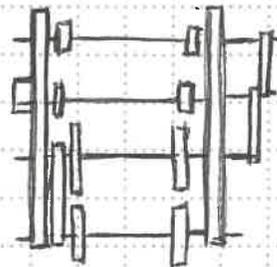
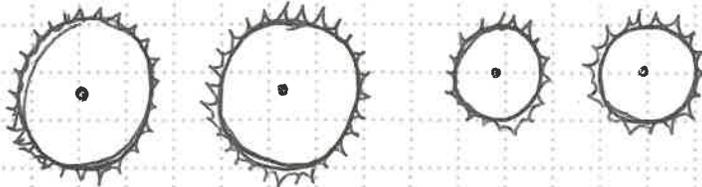
Sept 30, 2022

Meeting log

During the meeting, I attached the small metal and two (2) striped metal on to each side of the discs intake



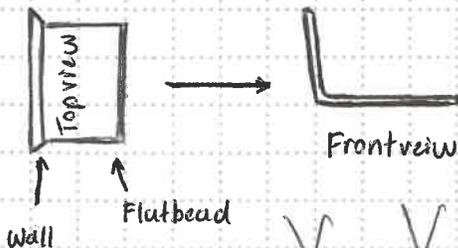
The tricky thing was trying to make gear not rub against the plate glass and finding the right gear sizes.



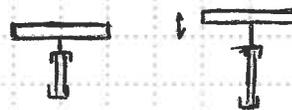
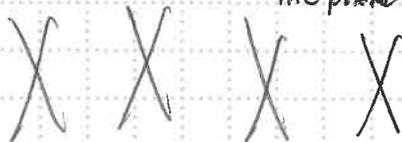
I'm using two (2) big sprocket and two (2) medium sprocket. I added the extra medium sprocket on the top because it's used to push the discs into the fly wheel. Using the chain-sprocket in three (3) separate places,



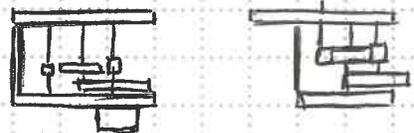
while having left over plate glass, I used the piece glass for the fly wheel.



It was the perfect fit and the right size, but the one thing was moving the wheel on the fly-wheel a little more up so it won't rub against the plate glass.



Measuring the robot again to see if its reaching the limit, but the bottom of the fly wheel bar was over the limit, so I cut off the extra piece off to make it the right size.



Journal Entry: Making a lot of changes to the robot will make it more advance because the more your robot is, the less difficulties you get.

project Meeting log

designed by: Trean Johnson

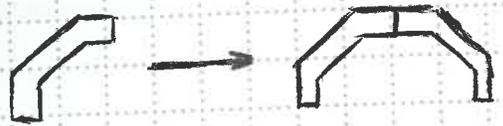
witnessed by: [Signature]

date: Sept. 30, 2022

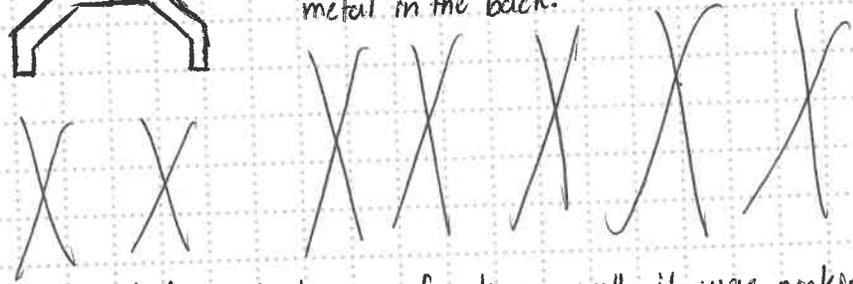
October 3, 2022

Fly-Wheel fixes

Noticing the little machine in back of the fly wheel wasn't pushing the discs way more forward, so I added another "C" metal bar in front, that was alot better than one

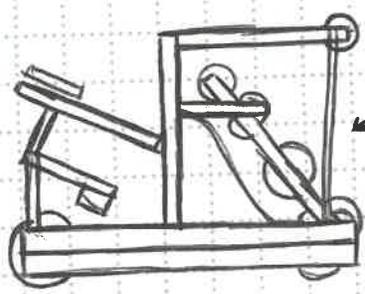


But gotta watch out about hitting the metal in the back.

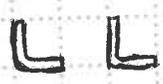
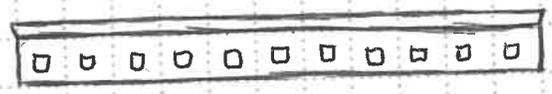


October 5, 2022

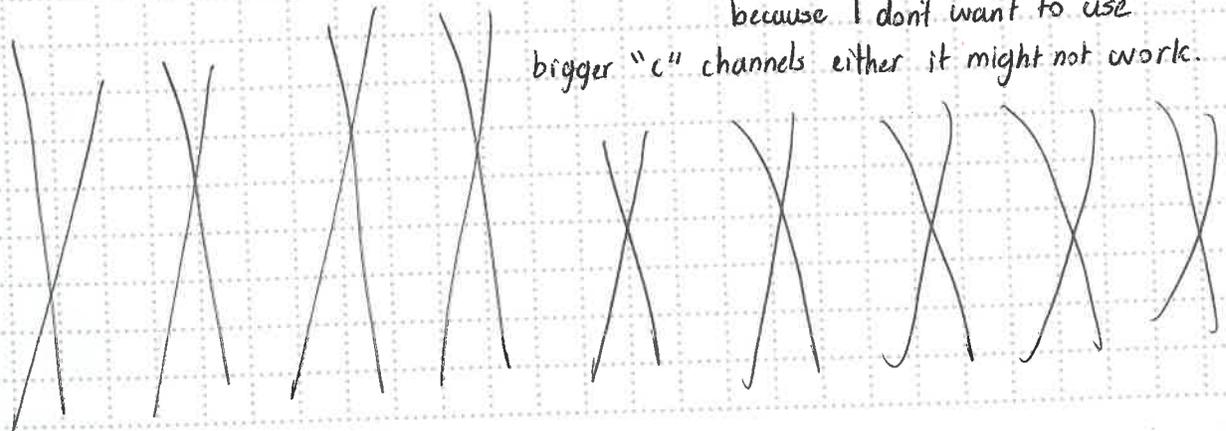
I was test driving the robot and it was functioning well, it was proking up the discs, the fly wheel properly functioning, and adding the roller on front of the robot.



I had to move the motor more to the front stabilized because I wanted to build a stablizer for the roller.



Using two (2x) small "L" bars because I don't want to use bigger "c" channels either it might not work.



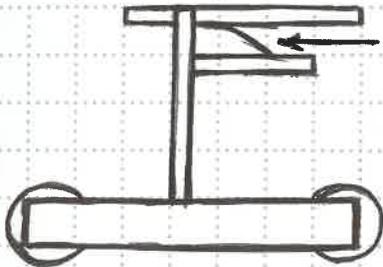
Journal Entry: The disc couldn't reach the fly wheel so adding another flat metal "c" and making standard parts for the rollers to hold it in place.

project Meeting log designed by: Treon Johnson witnessed by: Adrian R date: Oct 3, 2022

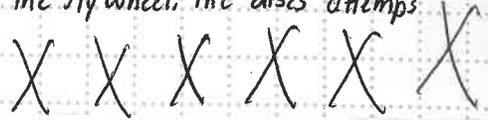
October 6, 2022

Meeting log

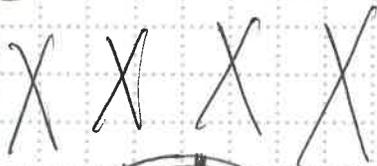
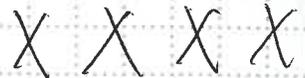
With almost done with my robot, I wanted to add one more Plexiglass on top of the robot because I didn't want the discs to launch from the flywheel, the discs attempt to roll back to the front or launch over the flywheel.



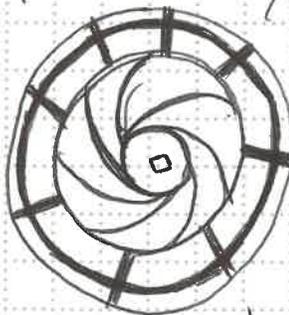
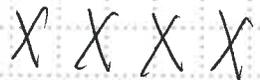
Plexiglass



This can help because the discs to not get launch the flywheel, and also the discs won't get pushed back into the front.

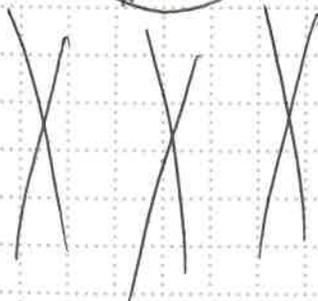
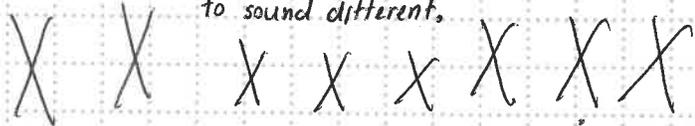


2 days ago, I notice the fly wheel sounded different, it didn't sound right, it sounded like a chainsaw. I did add multiple rubber bands on the flywheel/tire and zip ties to secure the rubber bands in place.



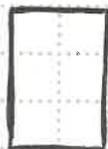
Rubber Bands  
Zip ties

Probably adding more rubber bands is probably the cause of the flywheel to sound different.

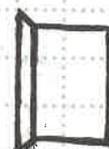
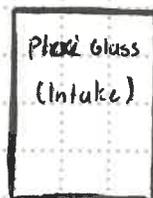


I'm using a total of 3 plexiglass, one for the intake, one for the fly wheel, and one for the top of the robot. The intake is the most important because its easy for the discs to slide up. The fly wheel is also important because it could be easier for the discs to slide out perfectly, and the top is to stop the discs from launching from the intake.

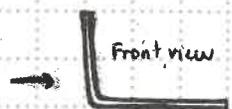
The plexiglass from the top was from my first discs intake.



Plexiglass



Top view



Front view  
Fly-Wheel

Journal Entry: I'm using a total of three (3) plexiglass, one for the intake, one for the top of the robot, and one for the fly wheel. I'm also using rubber bands for the fly wheel to help it spin faster and the discs could launch more easy.

project Meeting log designed by: Trean Johnson witnessed by: Rish Miller

date: Oct. 6, 2022

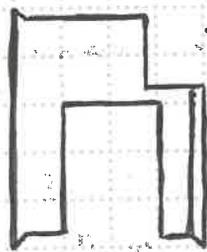
October 6, 2022

Pixie Glass

The pixie glass from the top was from my first Intake build, I accidentally made the pixie glass shorter and small, so I cut out another pixie glass but a longer size, and cutting out the sides of the pixie glass.



The Platform from Tipping point.

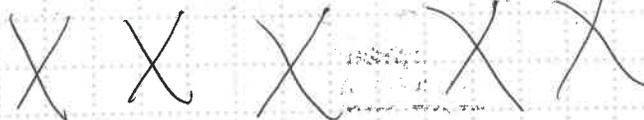


For the class Intake

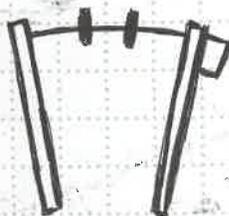
For the flywheel



old Intake.



On the first pixie glass, I had to trim off the sides of the pixie glass because I didn't want to stretch out the roller on the top of the robot. If I do then, the roller won't work as well.



The Roller Mechanism.

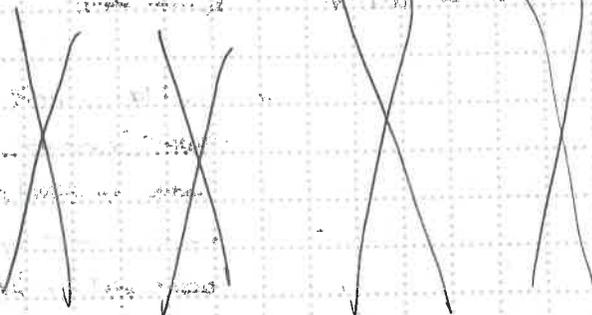
The way this looks may damage the motor or the metal bars. So I trim off the sides to make it fit and not make it too small. Just the right size.



original



Trimed



Journal Entry: This is my first time using any that's plastic on the robot. I'm trying not to use too much of it because there's a limit of how many of pixie glass on the robot.

project Pixie Glass

designed by: Treon Johnson

witnessed by:

Irish Miller

date: Oct 6, 2022

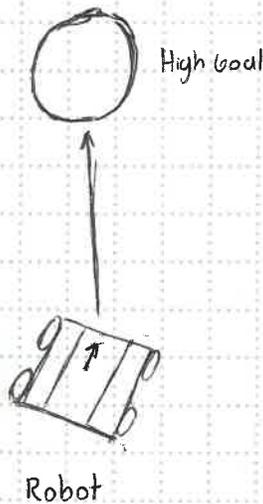
October 17, 2022

Field testing

So today, I was building the high goal because we gotten the field elements, so I started building one side of the high goal and left the nets out because building the high goal will be easier to first build.



After building the high goal, I tested out the fly wheel, it does shoot but its gotta be in a certain angle or certain direction.



The one thing I notice about the fly wheel is when the first disc is launched, it fly's far, the second disc, it flies further, and the third disc, the same from the first launch.

First launch



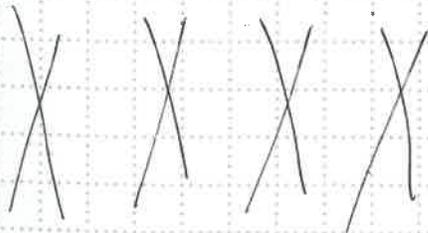
Second launch



Third launch



The third launch will either launch further or launch less further



The thing I might know is the change of speed of the rubber bands and zipties. And after so many discs are launch, the motor will start to slow down and doesn't catch enough speed. When this happens, I usually let the motor cool off because it heats up.

If the motor dies out on the fly wheel, its gonna be complicated to take the fly wheel apart to unresen the motor out and replace it.

project Fly wheel Testing

designed by: Treon Johnson

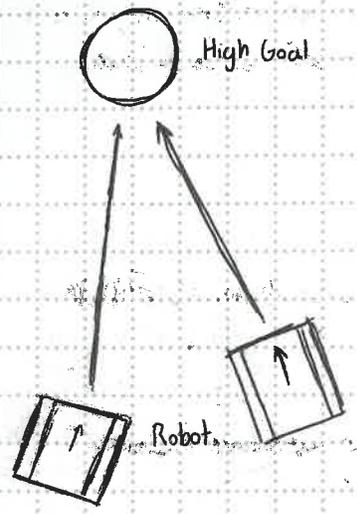
witnessed by: E. Sigman

date: 10/17/2022

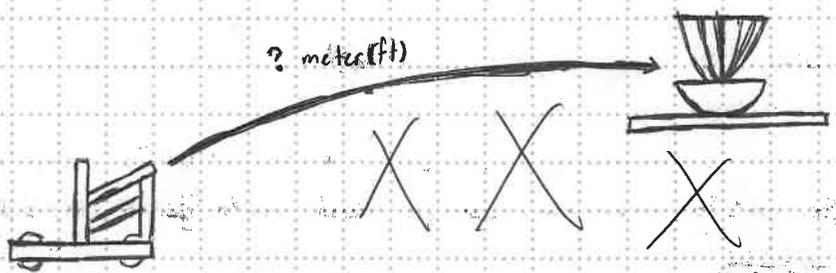
October 18, 2022

Shooting distance

After building the high goal, and the netting, I starting testing the distance of how long the discs shoot, the robot has to be in a certian angle.

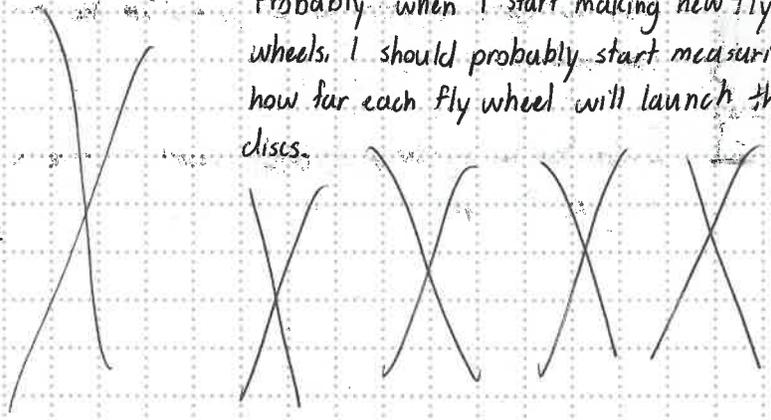


Either have to stay far away from the high goal to test and measure how long the discs is launch.



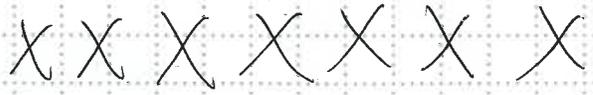
The direction of the robot of where the discs will be launch, either towards the right/left or facing forward.

Probably when I start making new fly-wheels, I should probably start measuring how far each fly wheel will launch the discs.



October 19, 2022

I wanted to do an experiment of removing the ~~plexi~~ glass from the fly wheel, and to see if the plexi glass is making the discs launch further.



After testing the process, it turns out the plexi glass make the discs slide out smoothly, and the fly wheel goes faster, and the discs launches about 96 1/2 inches (7-8 ft).

The fly wheel has the ability to launch the discs from under high goal to the other high goal and veritcally and horizontally.

Journal Entry: The fly wheel has to be pointing at a certian angle because it'll shoot to the left, so the robot has to be facing to the right a little.

project Shooting Distance

designed by: Treon Johnson

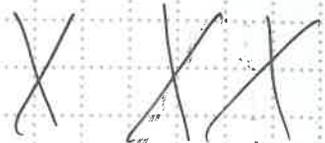
witnessed by: E. Sigman

date: 10/18/2022

October 20, 2022

Meeting Log

In today's meeting during lunch, we will be discussing about who's going to the competition in 4 weeks and who's robot is ready to compete. The only thing I need to work on is the coding and the End game. I was gonna use newmatix for the endgame because I'm using all eight (8) motors, but I don't think the newmatix will come in time.



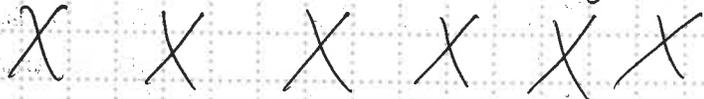
October 20, 2022

After school meeting log

During afterschool, I started taking off the Intake to make the plate glass more better, like adding side walls so the discs won't go off the sides.



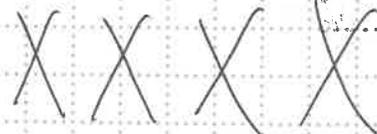
This will help the discs to not go out on the sides and not letting the discs slide back out.



I decided to make plate glass shorter because the discs won't go all the way up, it's gets stuck in the middle of the Intake.

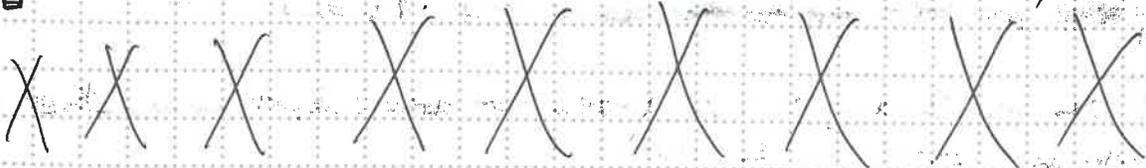


My partner Elijah calls the wall side barriers, its a combination of a long screw, spacers, and a gripped nut.



← Screw  
← Spacer  
← Gripped nut

The spacer in the middle helps the discs slide up the intake smoothly if it hits the side barriers, the spacer moves freely.



Journal Entry: Without the side barriers, the discs will just slide off the side and it will get stuck.

project

Meeting log

designed by:

Luan J

witnessed by:

E. Sganar

date:

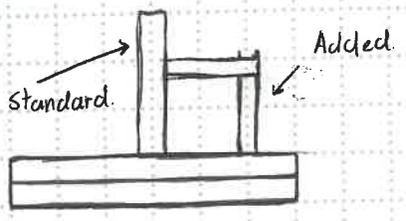
10.20.22

October 23, 2022

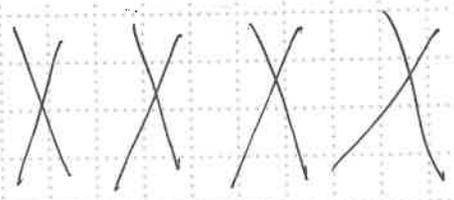
### Meeting log

24

Today, I was looking at my robot, I notice that the Intake was moving front and back and side to side, so I decide to add standard bars to keep it steady and not movable.

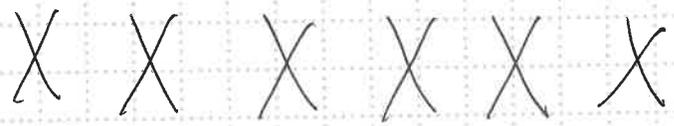


This will be extra sturdy because the Intake is just being held by 2 "C" channels, but not enough sturdy.



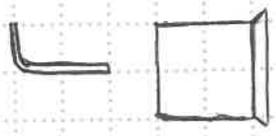
### Code

Today, I still can't figure out a code or I can't figure out how to write the code. I'm still trying to figure out c++ as my coach want me to get out of the building block code so I try to learn c++ which is taking a while. So no code yet but I want to hopefully have a code before our first tournament or have it by the ~~second~~ <sup>second</sup> one.

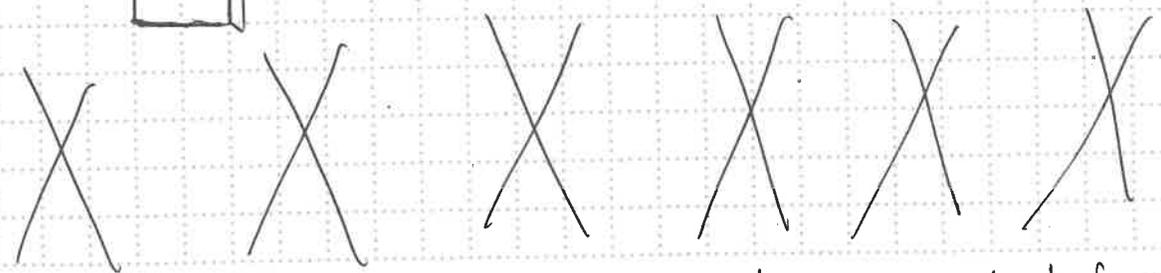


October 23, 2022

Testing out the fly wheel of why it launches side ways, I figure the ~~plastic~~ glass was too long on the sides



I probably need to cut off a little off so it could be easier to launch the disc straight into the basket with out



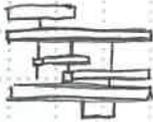
Journal Entry: I added 2 metal bars I never used before so I wanted to give them a try and here it holds the roller and fly wheel.

project Adjustments designed by: Kuan J witnessed by: E. Sigman  
date: 10/23/2022

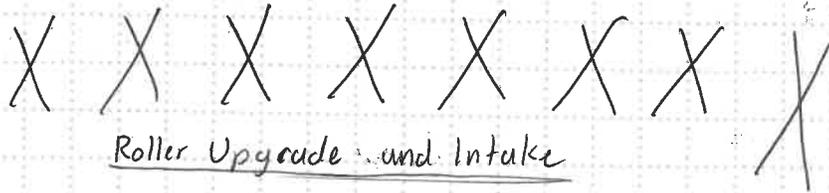
October 26, 2022

RPM

I wanted to see what the RPM is on the fly-wheel, so how speed it goes and the average speed is. measuring the speed is around 86-90 rpm. It stops around 86 mostly and changes to 90 if its high.



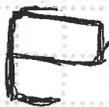
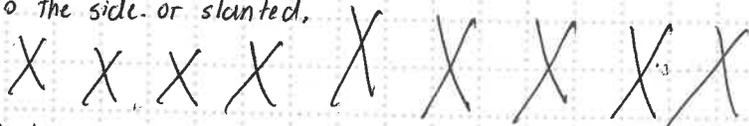
I wanted to see if the fly wheel was tighten or too loose, but its was find because it makes a weird noise when the fly wheel starts spinning up.



October 27, 2022

Roller Upgrade and Intake

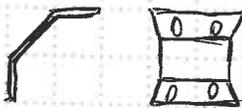
Realising the roller doesn't look right on the robot because the motor was kinda off of place, kinda bent to the side or slanted,



slanted

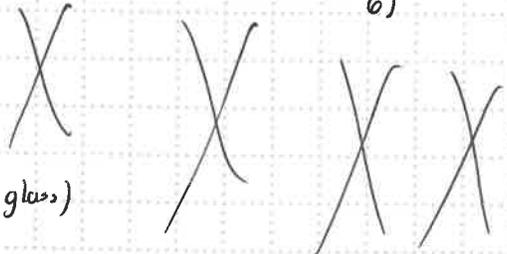
It left like this, it could break or even damage the motor, which I don't want to happen.

So I started modifying the roller by remodeling it to look better. So leaving the top on and added a metal bar across on top of the intake to make it more stable. I never added these pieces before.



So I wanted to try these out and worked out pretty good. (I only used 6)

The Intake wasn't working good as last time, so by removing a gear with rubber band and making the pixie cut a circle at the tip of the fly wheel.



(New Intake)



(Cut plexiglass)

Journal Entry: The RPM on the fly wheel was too fast because compound gearing, I trimmed the top of the plexiglass because discs would get caught on the top of the plexiglass.

project RPM / Roller Upgrade Intake

designed by: *thelon j*

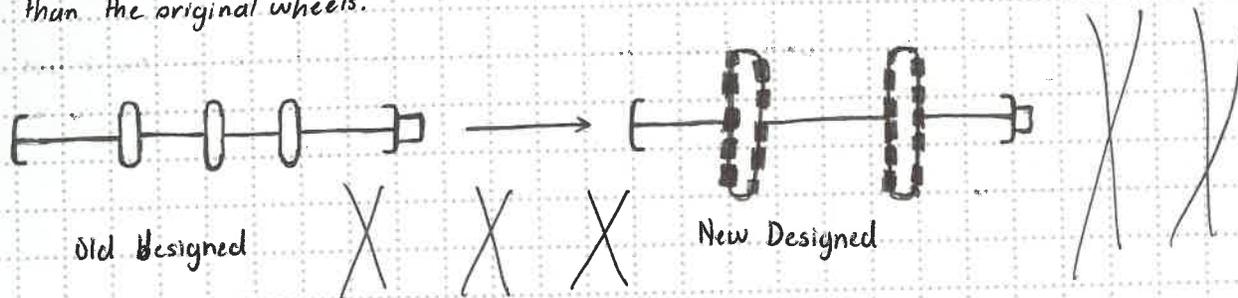
witnessed by: *E. Sigman*

date: *October 26 2022*

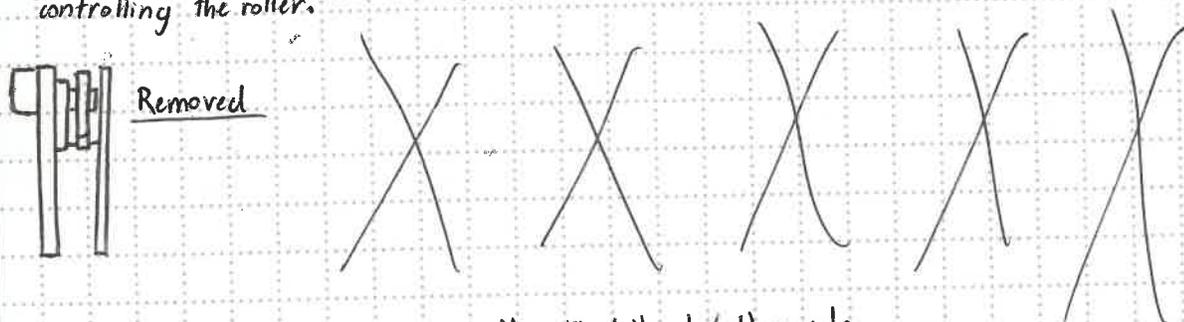
October 31, 2022

Roller Re-Upgrade

During test driving my robot, I wanna try switching out the small wheels from the roller to omi-wheel, why, is because the mini wheel on the Omi-wheels are more gripper than the original wheels.



I though omi wheels will work with a medium and small gearing will work, but it wasn't enough power to turn the roller, so I have to change the gearing with just the motor controlling the roller.



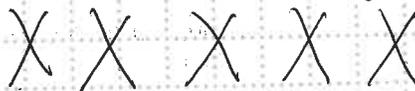
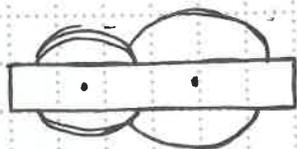
November 1, 2022

New Fly Wheel / Upgrade.

Making a new fly wheel and testing it out is very important, so making another fly wheel but with thinner gearing and see how it works out.

But using the same gearing sizes:  $36:60 = 166$

The shooting range for this fly wheel is from the barrier to the high goal.



Using the same thing as the fly wheel from before, Rubber bands and zip ties.

Journal Entry: On the roller, I feel like using the smaller wheels would work better because its more grit than the other wheels.

project Roller / Fly Wheel

designed by: Trean Johnson

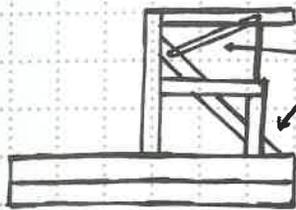
witnessed by: E. S. S. S. S.

date: Oct 31, 2022

November 2, 2022

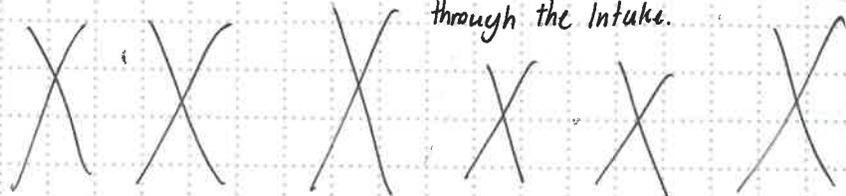
Intake/Rubber bands

I didn't want the discs Intake move freely, because the discs will be stuck in the middle, so what I decided to do is to hold down the Intake with rubber bands.



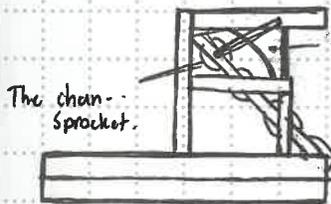
Holds it down on each side.  
Force being pushed down.

So if the discs goes into the Intake, it will be pushed down and go all through the Intake.



November 3, 2022

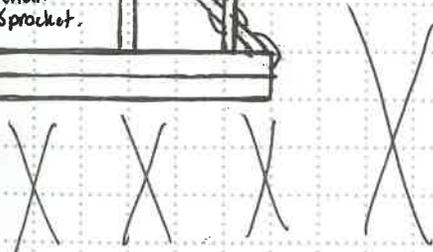
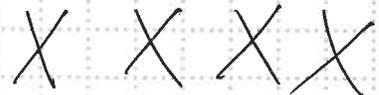
During the meeting, I added back the third plexi glass because the discs was still coming out from the front, and also added back the other medium chain and sprocket because the discs wasnt going into the fly wheel.



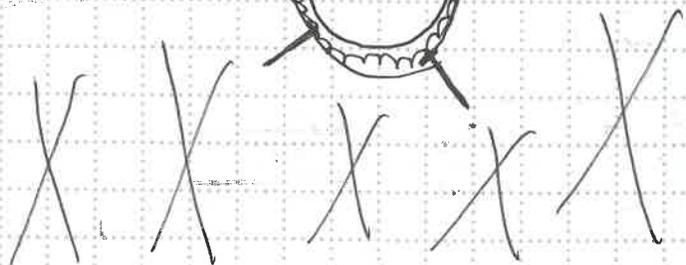
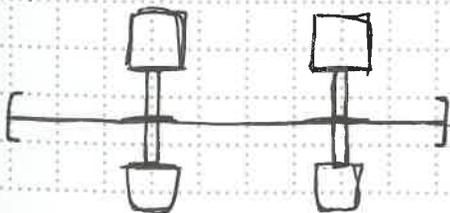
The Plexi Glass

The chain-sprocket.

I had to put the plexi glass back on because the discs will not go all the way through the fly wheel, in stead, it will stay at the top of the Intake and the rubber band would launch it back to the front.



When I added back the chain and sprocket gears, I want to added chain and medium grips so it could pull the discs into the fly wheel.



Journal Entry: The rubber bands on the Intake, will help push the discs down and be pulled up the intake.

project Intake

designed by: Treon Johnson

witnessed by: L. S. S. S.

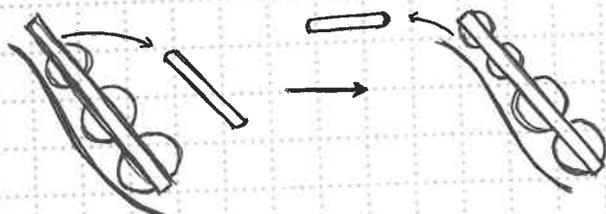
date: Nov. 3, 2022

November 7, 2022

New RPM Statis

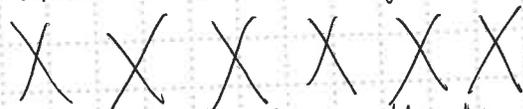
Today, I was looking at the rpm on the new fly wheel compare to the other fly wheel. The old fly wheel rpm was 86-90, the new fly wheel was going 96-100.

I had to add on the 4th chain and sprocket at the top because the discs would get caught and roll out to the front.

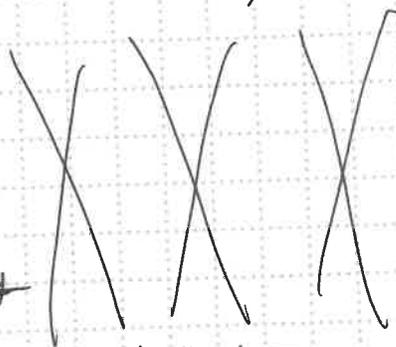


Old Intake

Added chain + sprocket



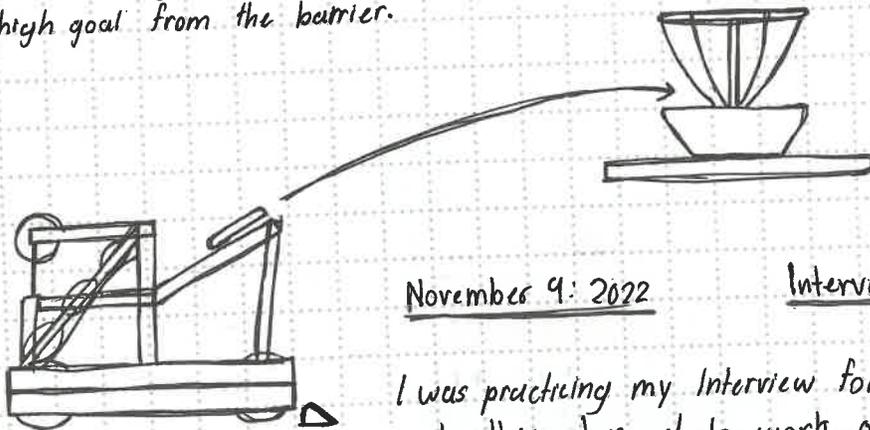
This time, I only added 2 rubber bands because I think it was enough to push the discs into the fly wheel.



November 8, 2022

Driving Shooting

Just driving the robot and shooting the discs into the ~~high~~ high goal from the barrier.



November 9, 2022

Interview

I was practicing my Interview for the competition, the only thing I need to work on is my speed, try not to look down, and don't fiddled with my glass.

Journal Entry: That fourth (4th) sprocket gear was added to the top because the discs would just come out to the top and the motor on the fly wheel would burn out so I have to what 30-1 min for the motor to cool down.

project Meeting log

designed by: Treon Johnson

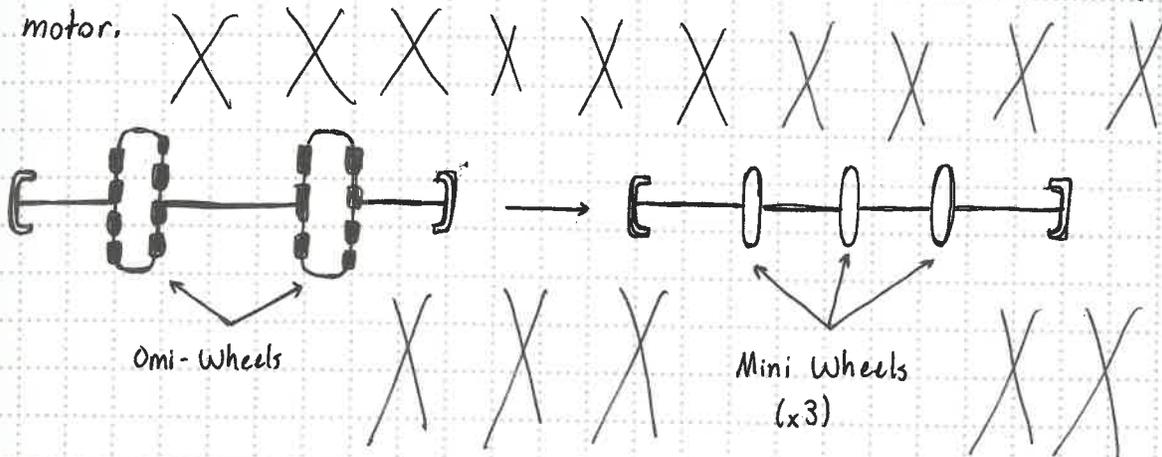
witnessed by: E. Sigman

date: Nov. 8, 2022

November 14, 2022

Roller Changes

Today, I wanted to change the wheels and the motor on the roller because I thought the omi-wheel would work, but wasn't grippy enough, so I decided to add back the three (3) mini wheels and add a new motor.



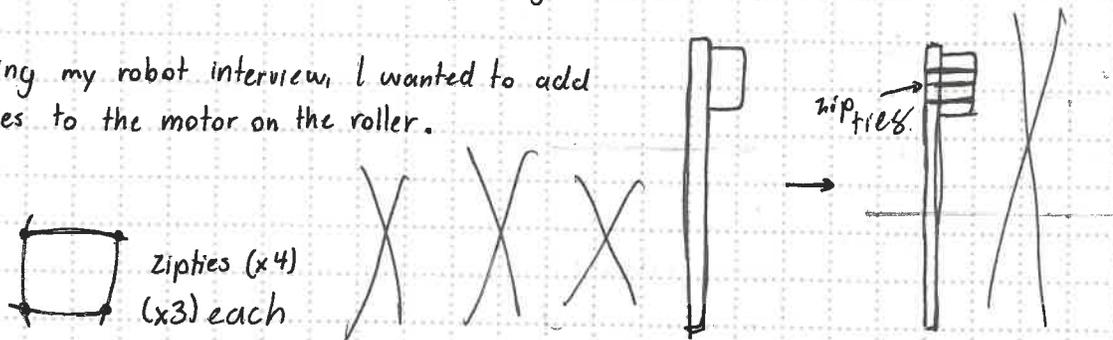
I decided to change the motor because it wasn't enough power to turn the roller, so changing it to a new one will probably be more powerful.

November 15, 2022

Meeting log

I was practicing my Interviewing Skill. still a little bad at it, so the coach made us switch rolls and see how it'll work out, surprisingly, we all pitch in help each other and took turns speaking.

During my robot interview, I wanted to add zipties to the motor on the roller.

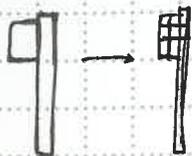


Journal Entry: I added zip ties because this will help keep the motor down and won't move around. I change the roller from the omi-wheel to the smaller wheels.

November 16, 2022

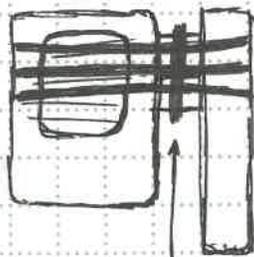
Zip ties.

After taking apart the field, I added more zip ties to the motors that controls the discs Intake



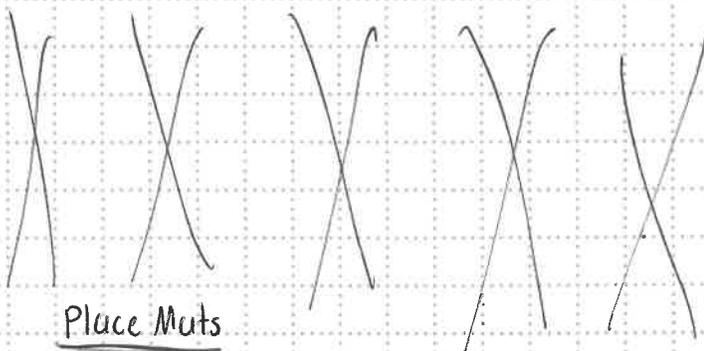
This will help keep the motor stay put and hopefully the motor doesn't break of the Intake.

I also added 2 more zipties to the motor on the roller, that connects the three (3) zip ties to gether.



added zip tie

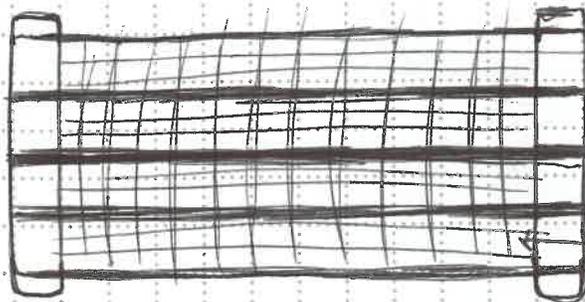
I added a strip of place mats on the fly wheel



Place Mats

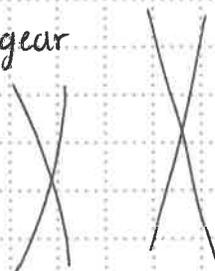
November 17, 2022

Today, I added place mats for the discs Intake to help it pick up the disc more faster and without driving it against the field walls.



Chain n Sprocket gear  
Rubber Bands

Place mats.



Journal Entry: I got some place mats so I can use them on the Intake because the rubber bands wouldn't move around alot and the rubber bands weren't grip enough.

project Meeting log

designed by: Treon Johnson

witnessed by:

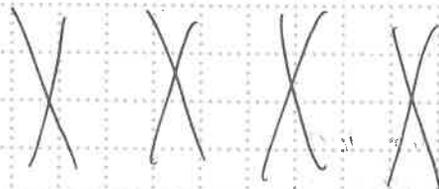
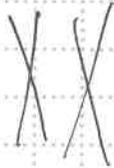
date: 11/16/2022

December 5, 2022Clean Up

After the competition and cleaning up the tournament, I wanted to take a break from build and driving, so I started cleaning the robotics lab because after removing the field and the wooden frame from underneath it, it was all trashy.

So I started organizing the pieces and parts into there own places and trying to clean up as much as I can.

I was also told to take apart any robots that are not being used or using it for the competition.

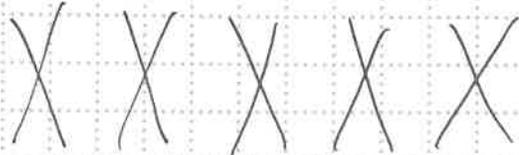
December 6, 2022Clean Up

I continued cleaning the lab, but some of the parts were from old robotics motors, batteries and wirings.



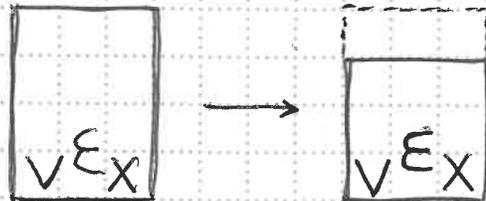
And there was alot of other piece that they weren't being use alot, so I stored them just in case we need them.

8

December 7, 2022Building

Today, I started working on my robot, first, I started working on the discs Intake because it was having problems during the tournament.

I started making the plexi glass shorter because it was long and the disc couldn't go into the fly wheel.



Journal Entry: Spending time cleaning the robotics lab because there was alot of parts, pieces, and other stuff lying around the room, so putting them back into the proper place they belong and make things easier.

project

Meeting log

designed by:

Treon Johnson

witnessed by:

M.H. Cltth

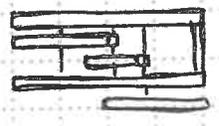
date:

12/5/2022

December 12, 2022

Thinking

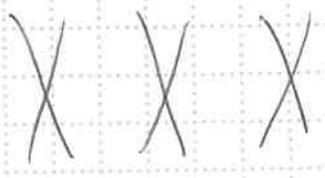
While I couldn't go into the robotics lab, I was planning of what my robot should look like. I was thinking about changing my fly wheel to my original one, my fourth one (the thicker gears)



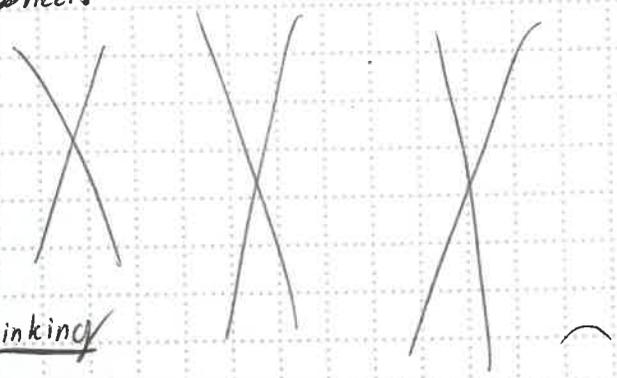
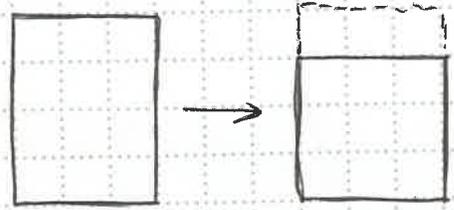
From December 8, I change the fly wheel to my original design and for some reason, it was slow, but launches the discs further than the thinner geared fly wheel.

December 13, 2022

Thinking



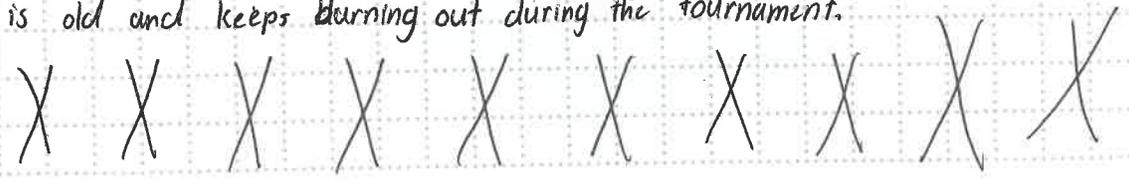
The robotics lab was still close because of the snow storm, the couch wasn't here, so I was thinking of making the plexi glass of the fly-wheel ~~because~~ shorter because its too long and the disc would get stuck in the tip of the fly wheel.



December 14, 2022

Thinking

Thinking about changing the motors on the robot, all eight (8) except the fly wheel because I change it during the competition because the motor is old and keeps burning out during the tournament.



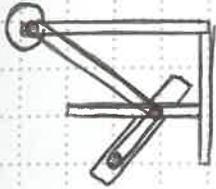
Journal Entry... I was planning on making the intake a little shorter because the intake was touching the ground and making contact on the floor.

project Thinking / Planning designed by: Treon Johnson witnessed by: Nick Cotto  
date: 12/12/2022

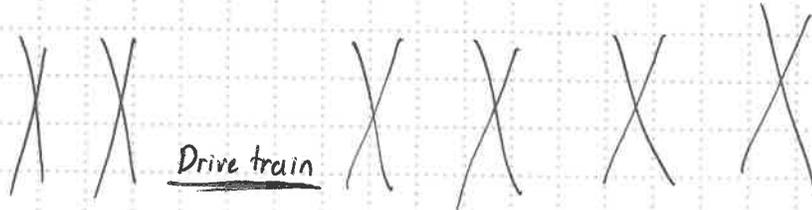
December 19, 2022

New Intake

I wanted to see if I change the plexi glass from the disc Intake from my first plexi glass, and I also save up one (1) motor from the roller, I made a chain & sprocket connecting it to the Intake.



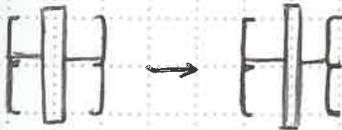
The extra motor is gonna for the end game, just one shooting in the front with something to launch with.



December 20, 2022

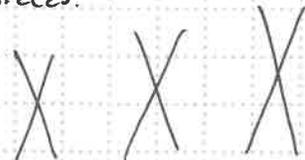
Drive train

What I did is taking apart the drivetrain and remaking it to make it better, I only did one side because most of the pieces are falling off or loose.



Reversed

This helps because it saves up on extra pieces and less pieces.



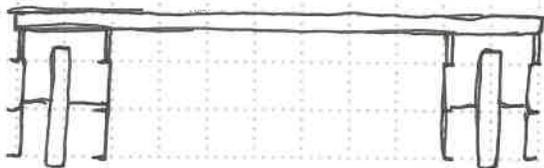
December 21, 2022

Drive Train (Other side)

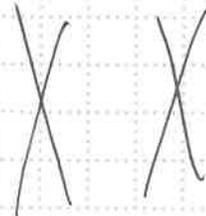
I started doing the same thing on the other side, but the opposite.



This way the bars can connect to the C channel on top of the drive



metal Bars



Journal Entry: I used up one motor from the roller so I can use the extra motor for the endgame. I took off the drive train and made it more stable because it was bending outwards.

project Meeting 10/1

designed by: Treon Johnson

witnessed by: [Signature]

date: 12/19/2022

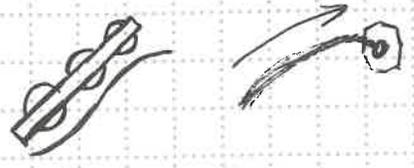
January 9, 2023

Meeting log

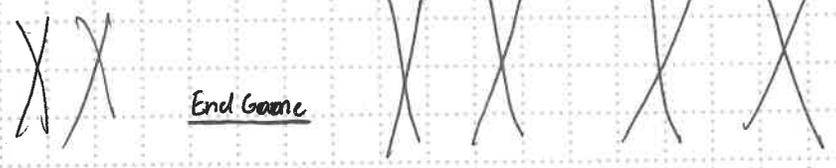
Today, We discussed about the next competition this Saturday. We also discuss about who all is gonna be there and how many teams will be competing.

We dont have many team for this tournament, I'm the only team in the robotics team.

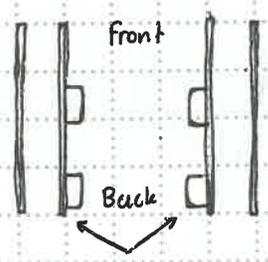
So in 5th (fifth) hour, I started working on the disc intake and the endgame. I need to make a sketch of how my end game is gonna look like and how it works.



January 10, 2023



~~the~~ With the motor I took off from the roller, I was told from my coach that I need to take off 2 motors from my drive train.



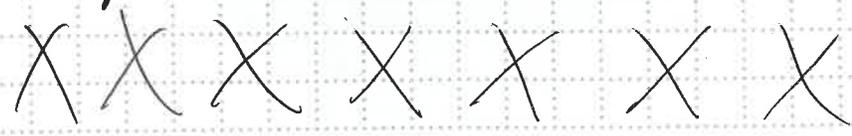
2 motors off

Problem: No end game mech  
Solution: Take 2 motors from my drive train to use them for the end game.

Problem 2: Losing 2 motors cause my robot to go slower  
Solution: change sprocket size to increase robot speed



Results: Removing the motors from the wheels will make the robot move slower, so removing the small chain-sprocket and switch it to the medium size.

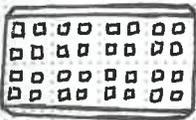
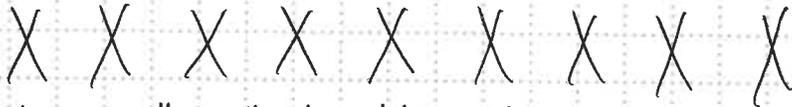


Journal Entry: I was told that I need to use 2 of my motors of my drive train because I wanted to have more launchers for the endgame.

January 11, 2023

End Game mech

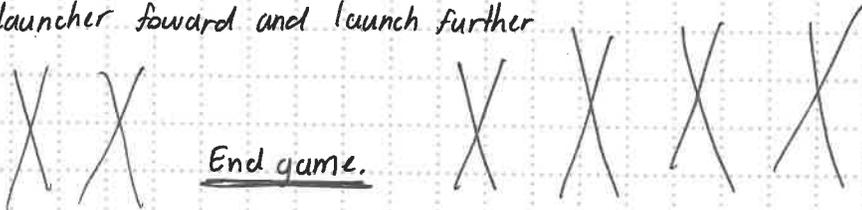
For the end game, I'm building a small launcher to attach to the sides of the robots, so I had to take off my licence plate off so I can attach it to the side,



I'm using these 4 hole metal bracket, 2 medium gears with one (2x) ~~one~~ shared, locking bolts, and screw and metal bars.



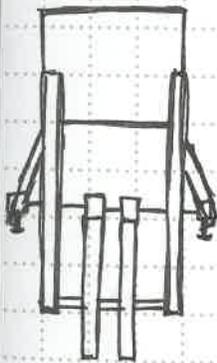
I'm also using rubber bands so the launcher is pulled all back, the rubberbands will help pull the launcher forward and launch further



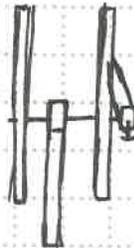
January 12, 2023

End game.

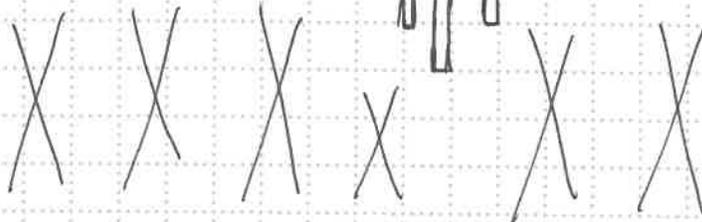
Instead of making one (1) Endgame, I made 2 (two) other endgame but with one having 2 (two) launchers and 1 (one) have 1 (one) launcher.



This end game will be able to launch 2 (two) strings in different directions



This end game will just shoot 1 (one) string on any direction.



I took a medium gear and trim off the teeth and only left two sides of the gear with teeth and trimmed



Journal Entry: I took apart my first launcher and made 2 other ones and see if they work or if they launch further.

project End Game

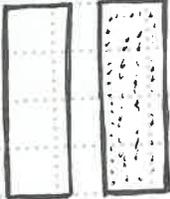
designed by: Treon Johnson

witnessed by: [Signature]

date: 1/11/2023

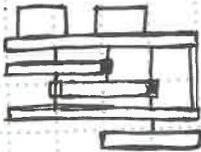
January 14, 2023Meeting log

I removed the Intre Intake of my robot and started building a new Intake with using longer and wider metal bars

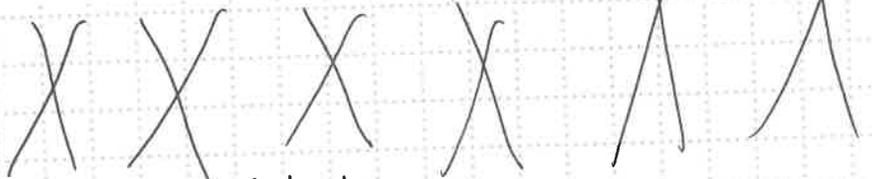


I was planning to put the Plexiglass on top because both. I dont want to ruin the disc, and it smooth when the disc goes up the Intake

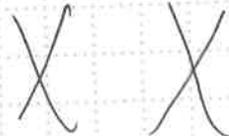
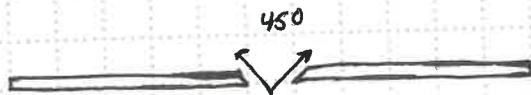
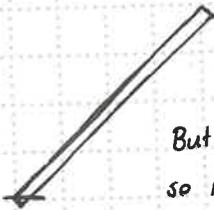
And I also removed my fly wheel that had one motor and swapped it a fly wheel that has 2 motors.



This way the fly wheel will spin faster.

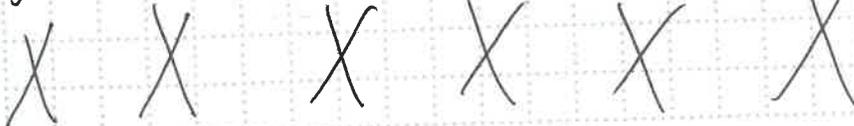
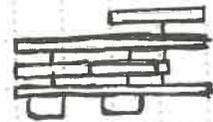
January 23, 2023Meeting Log

I started working on the disc Intake again, I wanted the metal bars be slanted downward, so it could pick up the disc.



But the only thing I needed to do is to cut abit off the bottom of the metal bars so it could touch the ground. so I cut the bottom off 45° angle.

Tasting out the fly wheel, it didn't go as fast so I changed it again and this time using (2) 36x36 tooth gears.



Journal Entry: I had to take apart my Intake because it wasn't working as fine as it did before, so building a new one will hopefully work better.

project

Meeting log

designed by:

Treon Johnson

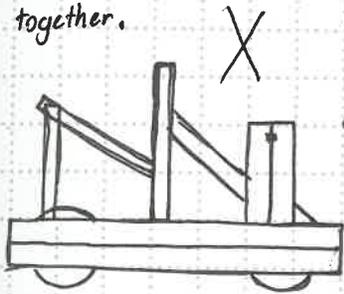
witnessed by:

Alidate: 1/19/2023

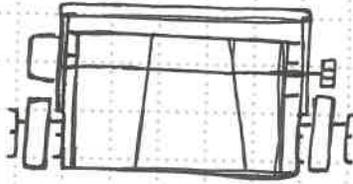
January 25, 2023

Meeting Log

Continue working on the Intake. I want to add 2 little bars on the side of the Intake and make them move freely, so I added 2 side barriers connecting both together.

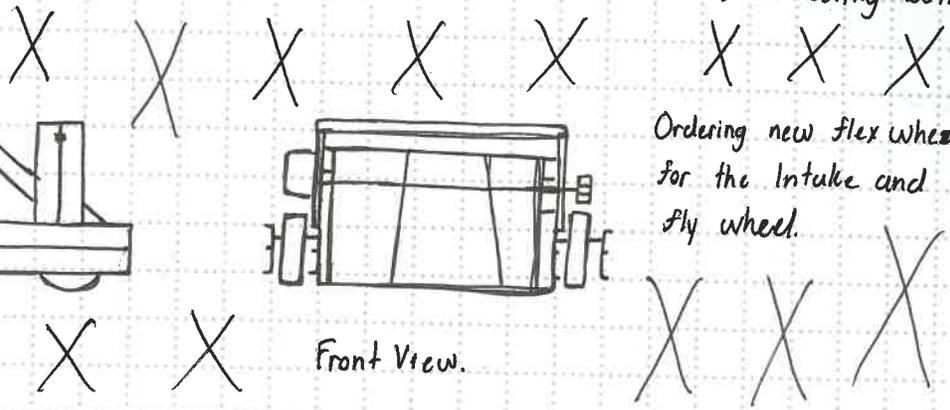


Side View



Front View.

Ordering new flex wheels for the Intake and fly wheel.

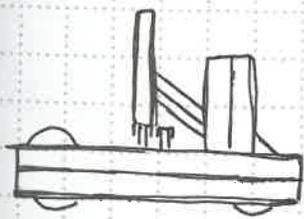


Added an extra motor to my fly-wheel, but it when slower like the other fly wheels.

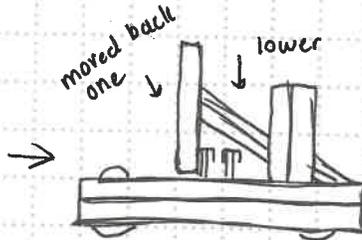
January 26, 2023

Meeting Log

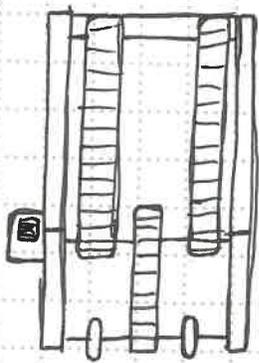
On the disc Intake, it was too steep, like it was straight up, so I moved the 2 metal bars back one and made the Intake a little down more.



High Intake



low Intake



I also us chain and sprocket gears with small and medium grips and put 2 small wheels in the front to act like flex wheels.

Journal Entry: The Intake was too high so I made it a little lower by moving 2 'c' channels back one and adding chain n sprocket and 2 small wheels to test it out.

project

Meeting Log

designed by: Trean Johnson

witnessed by: Nakh Cete

date: 1/25/2023

January 30, 2023

Meeting log

During my 5<sup>th</sup> hour class and after school, I continue working on the Intake and fly wheel. the fly wheel hasn't been finished yet, so I started working on the fly wheel tray/Pack.



I took the top of the fly wheel off and made it more better.

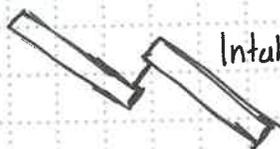
I also moved the 2 'C' channels from the robot that are holding the Intake and fly wheel to the original spot because the fly wheel is kinda standing straight up.



But I left the plexiglass on the fly wheel because its smooth when the discs shoots out. Then I attached the fly wheel pack to the Intake.

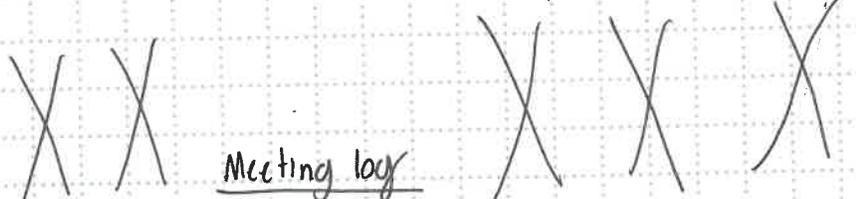


Flywheel



Intake.

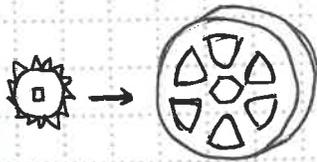
But I'm still attach metal bars to the fly wheel because if it move around or bend the tip of the Intake.



January 31, 2023

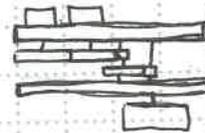
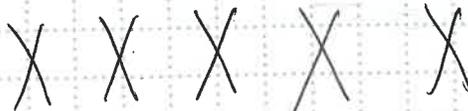
Meeting log

I finally receive new flex wheels for the discs Intake. but the other thing was it didn't come with the right pieces, so I had to improvise by putting metal gears in the flex wheels.



(10x)

I also work on a new fly wheel, with blue motor so it can spin faster



Journal Entry: I had to trimmed the bottom of the Plexiglass because I was rubbing against the floor mats in the field.

Fly wheel Gearing: 36:36:12:36:12

project meeting log

designed by: Treon Johnson

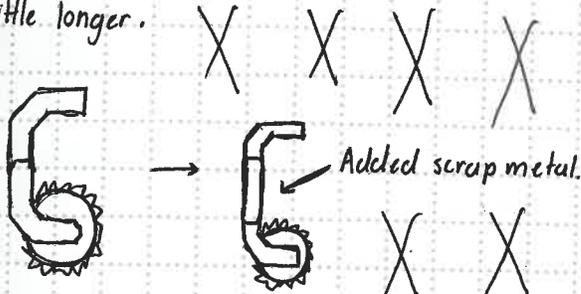
witnessed by: MSK Attie

date: 1/30/2023

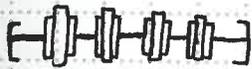
February 1, 2023

Meeting log

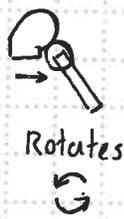
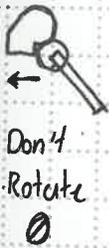
Today I started working on the fly wheel to get it attached to the robot. I also had to make the little metal piece that pushes the disc up to the fly wheel a little longer.



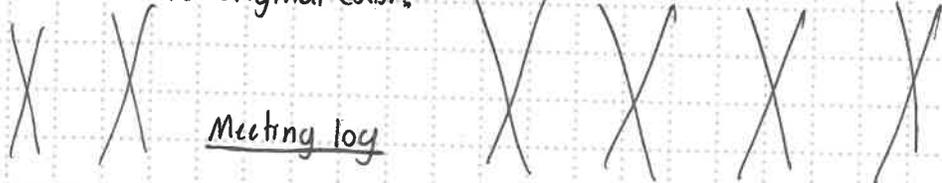
I came up with a new roller idea, I use the last 4 (four) flex wheel I had and made a Passive Roller.



This roller mech will go under the roller when ramming against the field wall and slowly roll back out to your color. But when going under, the flex wheels don't rotate, but going back out will rotate out. And gotta make the 2 "c" channels move freely so it couldn't have trouble going under the roller



If the roller goes back out not turning, it will go back to the original color.



February 2, 2023

Meeting log

While testing the fly wheel if it could launch in to the high goal, it wasn't shooting high enough, so instead of rejusting it, I switch back to my first fly wheel design.



Journal Entry: I don't know why the fly wheel isn't launching the discs in to the high goal. it could only shoot in to the low goal.

project Meeting log

designed by: Treon Johnson

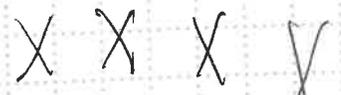
witnessed by: [Signature]

date: 2/1/2023

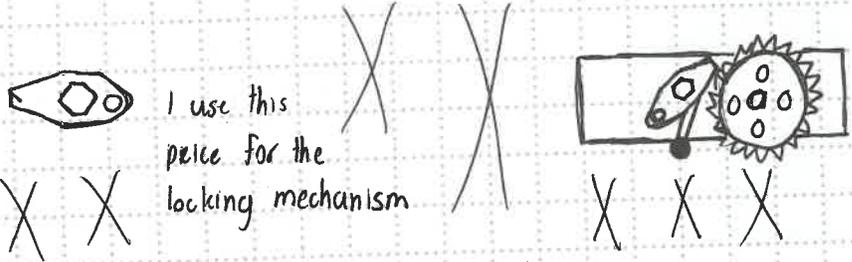
February 3, 2023

Meeting log

Today started working more on the Intake more because it wasn't picking up the discs right and it was touching the ground.



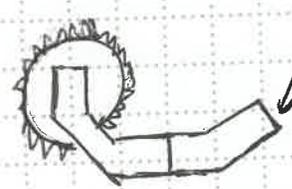
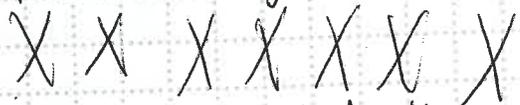
Also kept working on the roller mechanism to make it a ratchet roller.



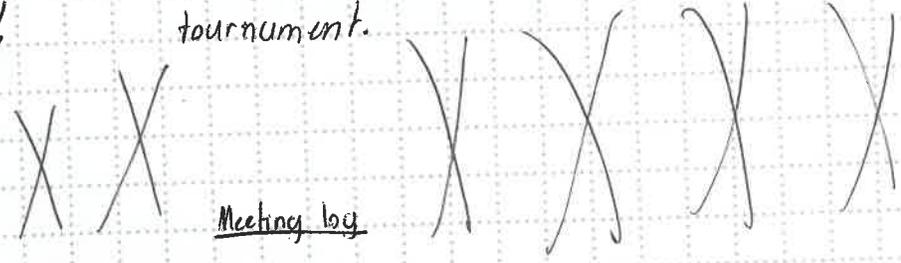
I use this piece for the locking mechanism

I use rubberbands for the piece that locking the gear because it couldn't move as much.

Also the fly wheel isn't launching the final discs, so I had to readjust the mechanism that helps push the discs up to the fly wheel.



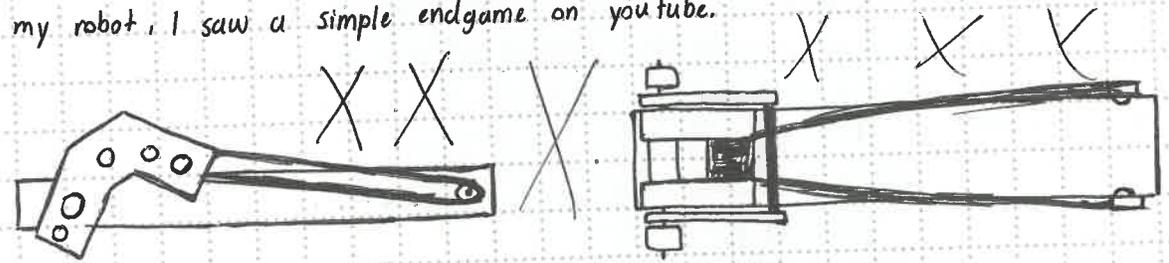
Added. This kinda works but I'mma use it for this tournament.



February 6, 2023

Meeting log

After my tournament, I was thinking of add an endgame with the one motor I have. So I looked up some ideas of different designs, and putting the endgame on top on my robot, I saw a simple endgame on youtube.



The passive roller worked really well while testing it, but the endgame most of them requires pistons so I need an endgame that can run on one motor.

project Meeting log

designed by Treon Johnson

witnessed by: [Signature]

date: 2.3.2023

February 7, 2023

Meeting log

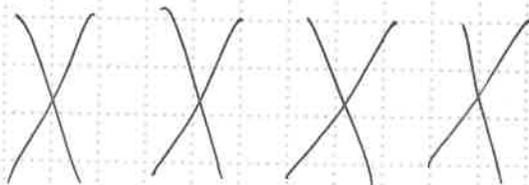
With the endgame I built, I decided to build two (2) more with the same design



(3x) My plan for this endgame is using ~~5~~ 3/4 inch screw nuts, so using 2 each per endgame, so I'm using 6 "3/4 inch nuts" in order to score more points during the end of the match.

Rubber bands will help launch the nuts across the field either forward, right or left, and it help of how much force is gonna launch.

I'ma release all three (3) on a single motor because I have one motor I saved up.



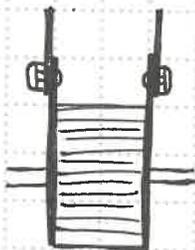
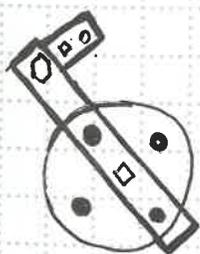
February 8, 2023

Meeting log

With the three (3) endgame launchers attached to the top of my robot, I made a small mechanism to help launch the 3/4 inch metal nuts.



it requires 6 "60 tooth gears", a five hole bar, and 3 hole bars, and 3 long screw and 6 small screws and 6 gripped locking nuts.



So I made 3 of these builds so it could all run one motor and hopefully it works, because I've been testing one ~~motor~~ gearing



Journal Entry: While testing the endgame it can only work on one end game and one motor so I decided to change the motor to the red cartage because it's much slower and stronger.

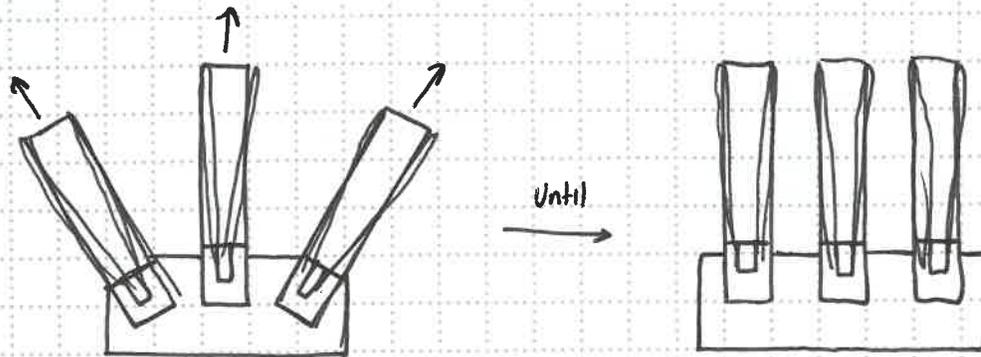
project Meeting log / Endgame designed by: Treon Johnson witnessed by: *Will Alt*

date: 2-7-2023

February 9, 2023

Meeting log

With the endgame coming along, I was planning to have one endgame facing forward and the other two (2) facing left and right.



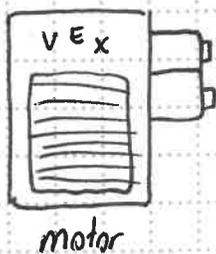
The one motor will not turn the endgame in the left and right position, so what I decided to do is make them both facing forward

February 13, 2023

Meeting log

While testing the endgame with one motor, I was using the wrong motor, the green motors were ment for driving, I was ment to use the red motors because its slower and stronger.

I was getting frustrated because this is a new thing and I nevered used pistons before.



or



Pistons

Journal Entry: It was a thoughtful decision because i can save up an extra motor and start working on a program.

project Meeting log

designed by: Treon Johnson

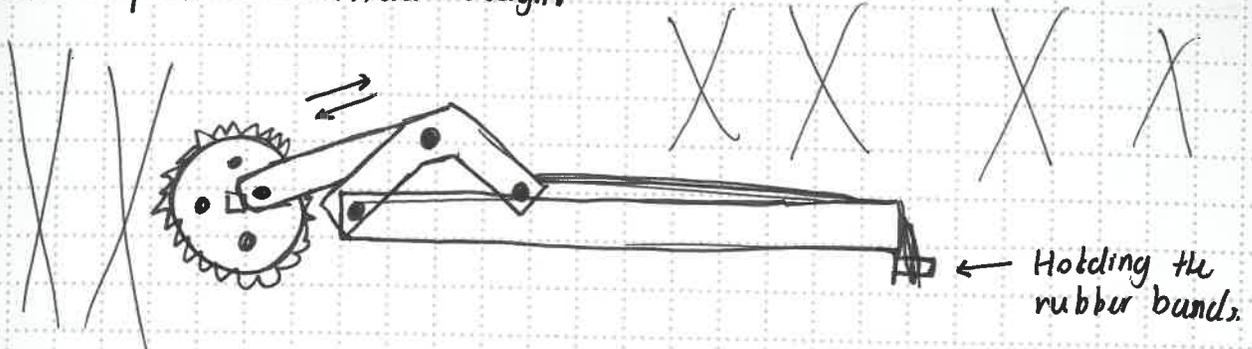
witnessed by: [Signature]

date: 2-9-2023

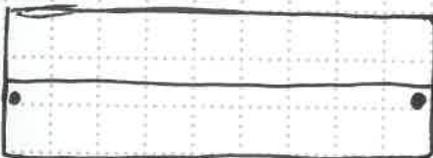
February 16, 2023

Meeting log

Today during after school, I continue working on the endgame, but I came up with a different design.



This design was very simple, well for one gear and a 1x5 metal plate, long screws and spacers. Its kinda like a train wheel I should say.



I also made 3 boxes to hold the strings and store the strings in during the match.



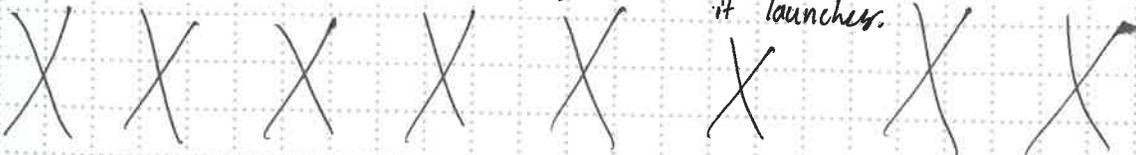
February 18, 2023

string

During my endgame process, the string I was using was yarn and it wasn't allowed because it wasn't the limit thickness, the thickness limit is  $\frac{3}{8}$  thick. So I had to change the yarn out and replace them with  $\frac{4}{8}$  string.



The only problem I have was the string would get tangled when its in the box or when it launches.



Journal Entry: I can finally shoot 2 endgames in the middle and one vertical endgame on each side. The yarn I used wasn't the right limit, so I use Braided Nylon Rope from Ace my couch bought.

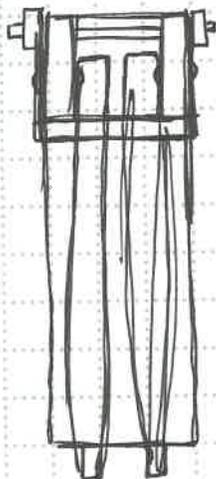
project Meeting log designed by: Theon Johnson witnessed by: [Signature]

date: 2-16-2023

February 27, 2023

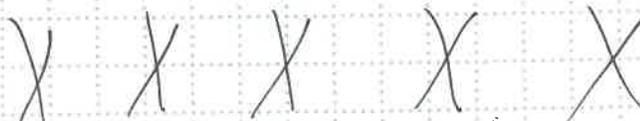
Meeting log

I wanted my middle endgame to shoot out two (2) strings just to cover more tiles, so my coach got me a 1x3x1 metal bar so it could hold (2)  $\frac{3}{4}$  nuts at the same time.



Its really hard to load two  $\frac{3}{4}$  at the same time because its launches when reloading both or one at a time

And also the verticle endgame also shoot when reloading because all 3 endgame are runned by one motor and the biggest stand off because it would be more stronger than the thin stands because they bend easily

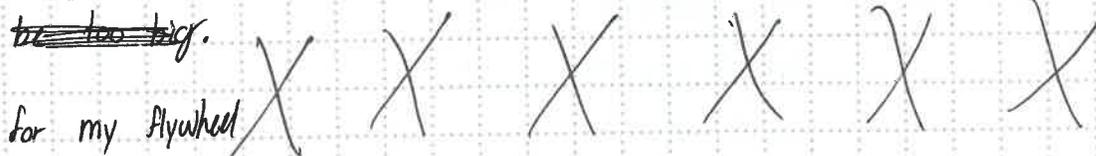


February 28-22023

Meeting log

My coach end up getting 2 inch flex wheels, ~~3 inch flex wheels~~, and 4 inch flex wheels because I need them for my disc intake, roller, and flywheel.

I had nothing to put inserts into the flex wheels, so I improvise by putting 12 tooth gearings in the 2 inch flex wheels and 36 tooth gearings in the 3 inch flex wheels. I didn't want to use the 4 inch wheels because ~~it might be too big~~.



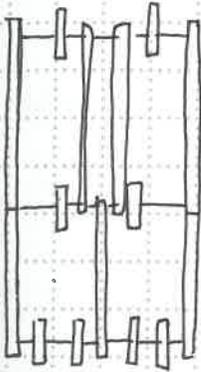
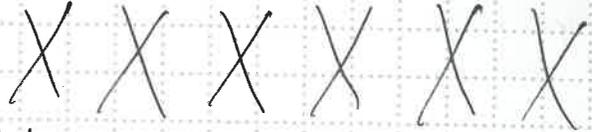
Journal Entry: My first time using flex wheels and I didn't have the items that goes with the flex wheels. I got 5 inch flex wheels but they are too big so Im only 2 inches and 4 inches.

project Meeting log designed by: Treon Johnson witnessed by: \_\_\_\_\_ date: 2-27-2023

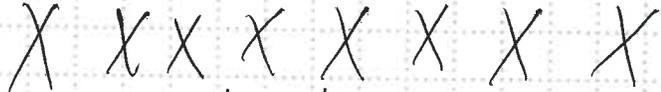
March 6 2023

Meeting log

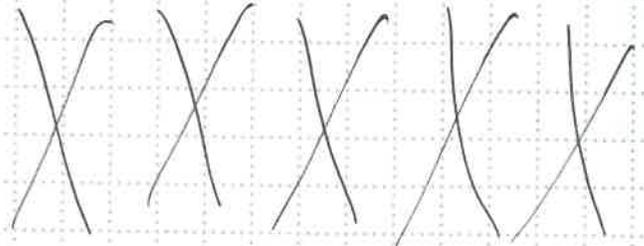
I started rebuilding the discs Intake by adding more flex wheels (2 inch flex wheels) the main problem I had was the disc would get stuck on the top on the Intake.



The Intake has a total of 8 (2 inch flex wheels) and replaced the fly wheel with a 3 inch flex wheel in stead of the tire.



The Intake is running a blue motor abed about 96-100 rpm with is recall fast.



March 7 2023

Meeting log

I had to change out my passive roller and the Indexer for an autonomous mode, so I remove the motor from the Indexer and took apart my passive roller so that motor can run the roller

Intake flex wheels : 0810 (1.625 OD x 1/2 Hex Bore, 30A)

also I added 4 more 2 inch flex wheel for my rollers so it can turn the roller on autonomous period.

Roller flex wheel : 2, (2 inch 30A) and 2, (2 inch 60A flex wheels)

RPM : 96-102



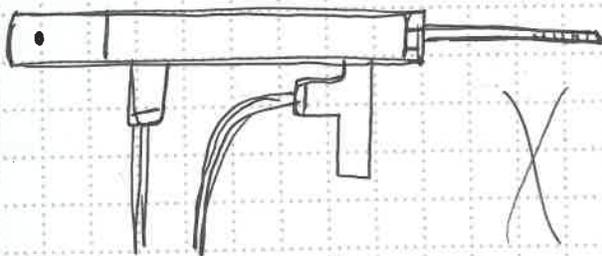
Journal Entry: It was really tough because the discs would get stuck on the tip of the Intake but doing alot of adjustments and finally got it to work.

project Meeting log designed by: Treon Johnson witnessed by: E. Sigman  
 date: 3-6-2023

March 8 - 2023

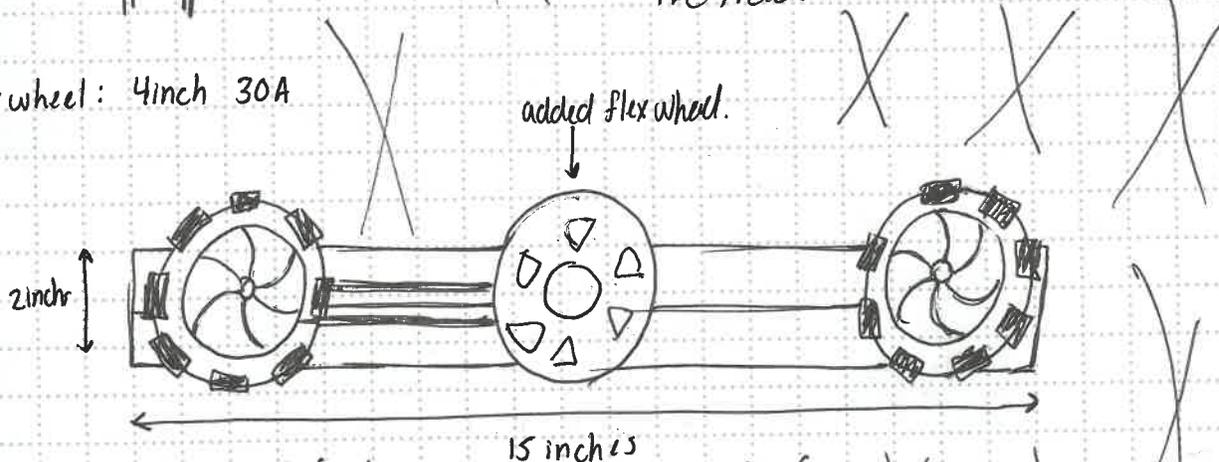
Meeting log

I starting ~~attaching~~ attaching the pneumatics to my robot and piston, and it was confusing on how to program the piston is work. and the only problem was the piston or the metal cylinder was leaking out air and we found out why, the rubber tubes wasn't inserted in all the in.



I also added 4 inch 30A flex wheel to my wheels because I'm using omni-wheels and I wanted to add it so when other robots push me, it won't move and delcets grips on the field.

Flex wheel: 4inch 30A



March 9, 2023

Meeting log

I did some changes to the fly wheel, I did a compound gearing of a ratio of : 60 : 12 : 36 : 12 and spins alot faster than the original gearing.

and the fly wheel is replaced with at 4inch flexwheel (USA Grey)

Journal Entry: The pneumatics were leaking out air... and found out that... the tubes wasn't properly inserted in... The drive chain was having trouble... because the chain 'n' sprocket.

project Meeting log

designed by: Treon Johnson

witnessed by: E. S. ...

date: 8-8-2023

Fly wheel Rpm = 100 - 140

Both Drive Train Rpm = 194 - 200

Roller = Chain and Sprocket gears (6 tooth to 12 tooth)



Drive Train = chain in sprockets and one motor (6 tooth to 6 tooth)



Fly wheel = Compound Gearing (80 tooth - 12 tooth - 36 tooth - 12 tooth)

Intake = chain n sprocket (2; 6 tooth - 3; 6 tooth - 2; 6 tooth)

Endgame = gears (36 tooth - 36 tooth - 36 tooth one stand off)

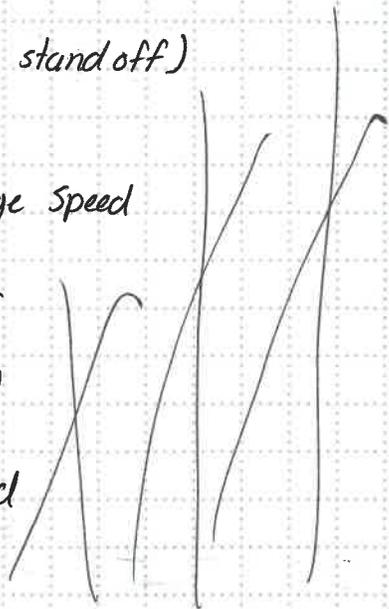
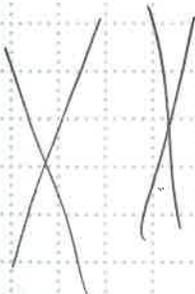
Color motors: Drive train = Green motors - Average Speed

Intake = Blue motor - Spins faster

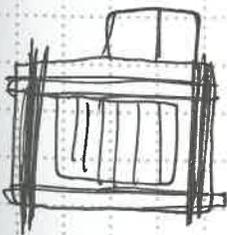
Endgame = Red motor - slower speed

Fly wheel = Green motor - Average Speed

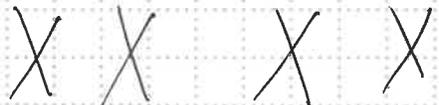
Roller = Green motor - Average speed



I put rubber bands and zip ties to all the motors in case of the motors coming apart and the zip ties hold the rubber bands in place.



This will prevent the motor from popping off during the matches and prevents from over heating.



Journal Entry: Finding out what the ratios, gearing, and motor cartage because its important to find how much ratios your using.

project meeting log

designed by: Treon Johnson

witnessed by: E. S. Johnson

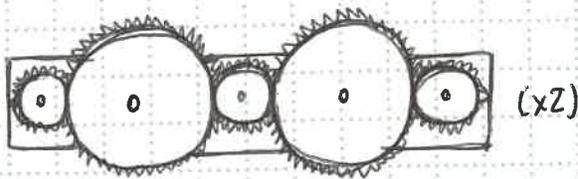
date: 3-9-2023

March 13, 2023

Meeting log

During my 6<sup>th</sup> hour class, I started removing the fly wheel, Intake, and endgame off my robot, and started rebuilding the drive train with gears and optional of 4-6 motor drive train.

Drive train Gearing : ~~(84:36:84:36:84)~~  $84:36 = .429$  gear ratio  
 $(36:84:36:84:36)$   $36:84 = 2.333$  gear ratio

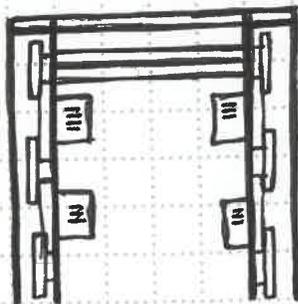


Each motor are controlled by the 84 tooth gear on each side of the drive train.

March 14, 2023

Meeting log

I started attaching the drive train to gether and make it sturdy so it couldn't bend out words



The motor that is controlling the 84 tooth gear is controlling the 36 tooth gears attached to omni-wheels (3) on each side

I nevered figured out the gearing or the rpm on the wheel because I nevered drove the robot yet.

project Meeting log

designed by: Treon Johnson

witnessed by:

date: 3/13/2023

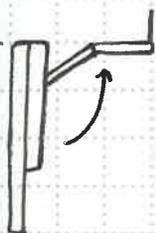
March 15, 2023

Meeting log

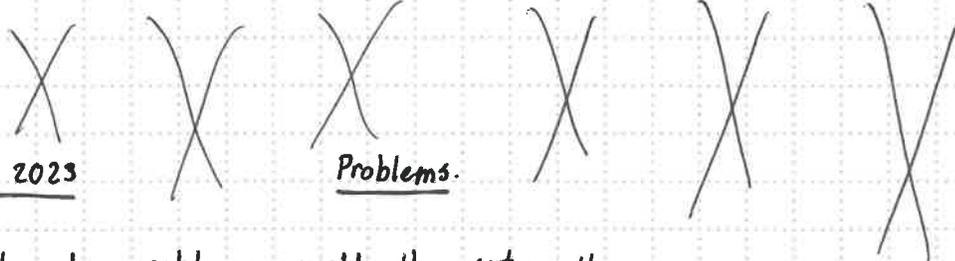
On my new robot, I wanted to make a robot with a catapult. so I started adding 2 "c" channels to the back of the robot and measuring the length and height.



I added a small c channel so it could hold the 2 channels in place so it couldn't move while I move the gearing in side, I also added 2 more "c" channels in front for a stopper of the catapult.



I measured of how long the catapult is and it couldn't hit the disc intake



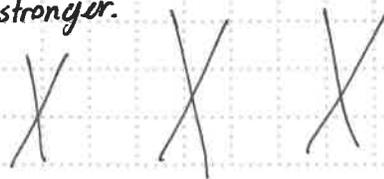
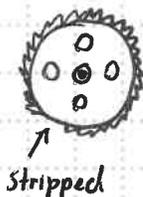
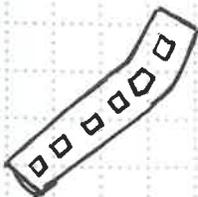
March 16, 2023

Problems.

I in countered problems with the catapult.

- 1) The 36 tooth gear stripped while shooting.
- 2) Rubber bands were being wore out.
- 3) Metal bars and shafts are bending.

I had to use steel metal because Aluminum were bending easily and steel was more stronger so I doubled layered the catapult so it could be more stronger.



project

Meeting log

designed by:

Treon Johnson

witnessed by:

date: 3/15/2023

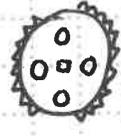
March 27, 2023

Meeting log

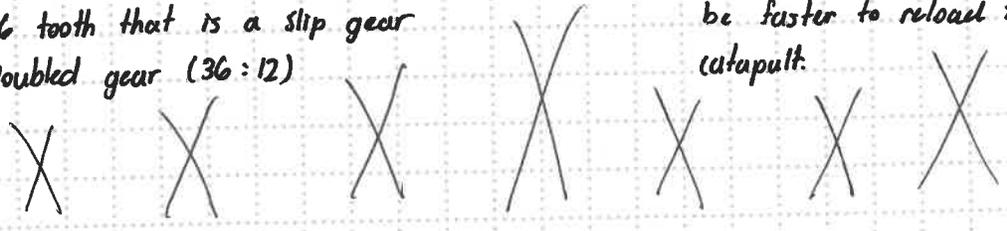
With the gearing on the catapult, I used a 12 tooth gear to a 36 tooth gear and to a 84 tooth gear.



- 84 tooth attach to the catapult
- 36 tooth that is a slip gear
- Doubled gear (36:12)

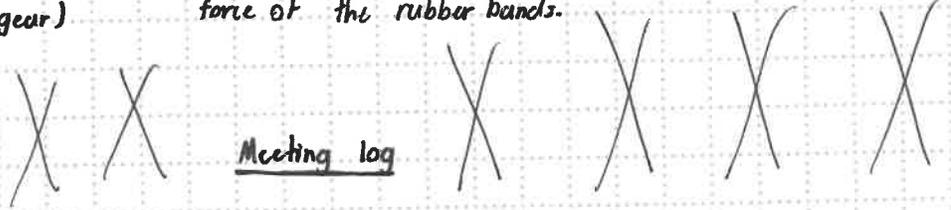


I made this slip on both sides so it could be faster to reload the catapult.



(36 tooth gear)  
(12 tooth gear)

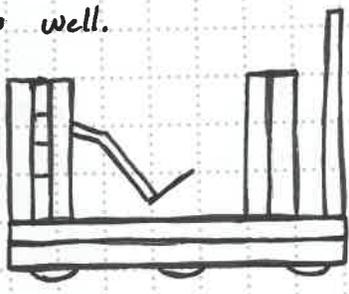
The reason I made the gears double layer was because one gears I was using stripped on me because the force of the rubber bands.



March 28, 2023

Meeting log

I started placing 4 "c" channels of where the intake will go and rollers as well.



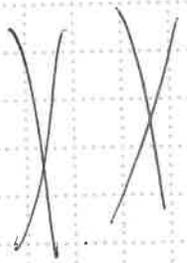
I have to make the intake not too steep because it won't pick up the disc.



Too steep



Right angle



I wanted to see if the plexiglass would work on its own without any metal bars under the plexiglass.

project Meeting log

designed by: Tyron Johnson

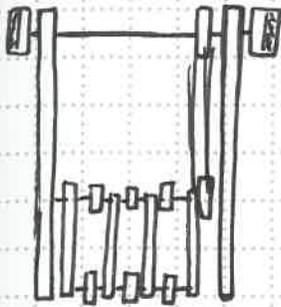
witnessed by:

date: 3.12.2023

March 29, 2023

Meeting log

I started attaching the rollers in front of the robot and try to connect it to the Intake

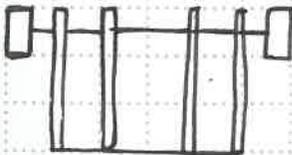


With the force of trying to turn the roller and controlling the Intake at the same time while using one motor, its gonna burn out.

X X X X X

So I decided to move the rollers on the back of the robot where the catapult is at.

X X X X X X



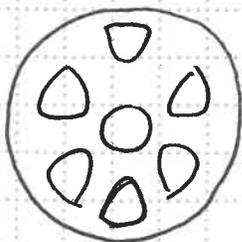
I will have one more extra motor for the end-game.

X X X

March 30, 2023

Meeting log

Since I had the 45 A 4 inch flex wheels, I decided to use it for the roller,



X X X X X X

(x2) it be more easier for the roller because it can reach the roller when the robot is on the ground.

X X X X X

project

Meeting log

designed by:

Treon Johnson

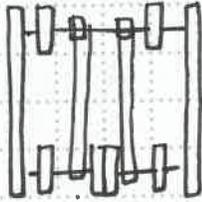
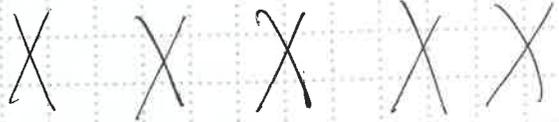
witnessed by:

date: 3-24-2023

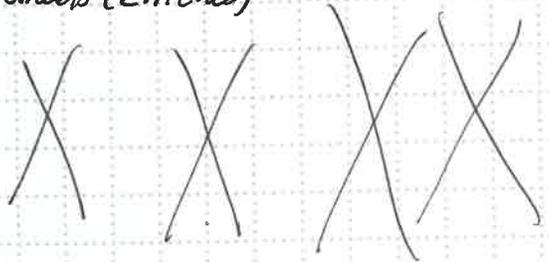
March 31, 2023

Meeting log

The Intake: I wanted to make the Intake shorter this time because the catapult will be near the ground, and make space of the catapult of when it launches.



This way it could save some 30A flex wheels (2 inches)



April 3, 2023

Meeting log

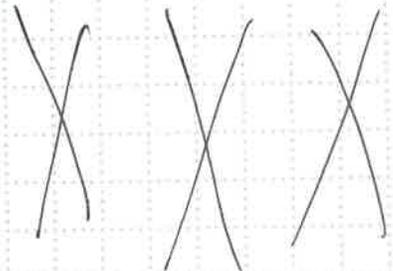
I made the catapult a little smaller/shorter so its not long enough where it could make contact on the ground.



longer



shorter



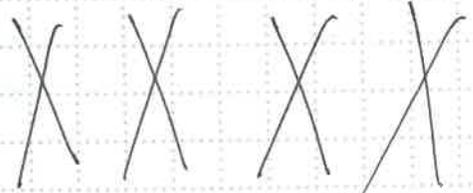
I also removed the Intake because it was too steep and it won't pick up the disc on its own, so I'm redoing the Intake and make it not too steep.



too steep.



right angle



project Meeting log

designed by: Treen Johnson

witnessed by:

date: 3-31-2023