Engineering Notebook

2018/19 Season

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Students: Ben Baron, Emma Barborak, Klaus Curde, Lucas D'Angelo, Brandon Morris, Justin Stanek, JR Stephenson, Will Stigliano, Jon Wareham, Kyle Wareham, Peter Wood.

Mentors: Coach Dave Tomko, Assistant Coach Jennifer Barborak, Assistant Coach Rick Barborak

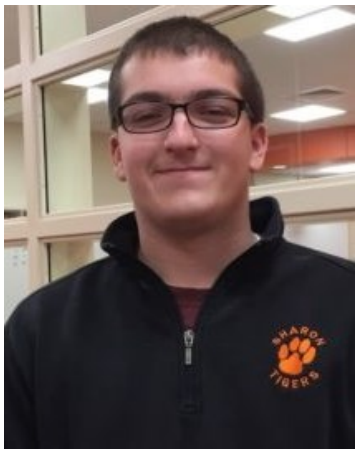
Student Bios:

I am Ben Baron, a senior at Sharon High School. I participated in FLL for 5 years before moving on to assist with the start up of the high school FTC team. I was the team captain during the first season of FTC. I enjoy designing and building, and I have experience with 3D printing and CAD. I also participate on the varsity soccer team and am the kicker for the varsity football team. I plan to attend college majoring in pre-med.

Hi! I'm Emma Barborak and I am a sophomore at Sharon High School. This is my first year on the high school team, though I spent last year in practices with the high school team and traveled to workshops, scrimmages and tournaments with the team. I was on the FLL team for 5 years. On the FTC team, I work with the media team, enjoy website building, social media and I do participate in building the robot. I am also on the varsity tennis team, in the marching band, and enjoy archery and the musicals. I hope to attend college in theater and movie set design specializing in the use of robotics.

I am Klaus Curde, a senior at Sharon High School. I never participated in the robotics program prior to helping to start up the High School FTC team last year. I was brought on to the high school team mid-way through the season last year because I had extensive knowledge with computer programming and the team needed help with Java. I am in FTC because I love to write code and work with robots. Writing code for a robot allows me to see my programming work in the real-world practices, like working as part of a team. I plan to attend college to become a software engineer at a respectable company. I dream of starting my own tech company.

I am Lucas D'Angelo. I joined the robotics team to express my creativity in a different way and to do what I love - problem solving. In all, I was on the FLL robotics team for a total of five years and this is my first year on the FTC team. The First programs have helped me succeed as an academic student. These programs have also bettered me as a person and they taught me valuable life lessons that I will be able to use in my future. When I graduate, I want to go into the broad field of engineering. I am still deciding whether that be computer or mechanical engineering. I am currently involved in the Marching, Pep, Concert, and Jazz Bands. Along with those, I am a member of the soccer team. I am looking forward to a fantastic season with the Sharon High Robotics Team!



I am Brandon Morris, a senior at Sharon High School. I participated in FLL for 5 years prior to assisting with the start up of the FTC team last year. I am the lead programmer and I also assist with building. I enjoy teaching the sophomores the programming. I hope to attend Penn State Shenango and come back to the team next year as a mentor. I plan to major in computer science.

I'm Justin Stanek and I am a junior at Sharon High School. I had a great time participating in FLL for 5 years and I assisted with the start up of the FTC team at Sharon High School last year. I really enjoy engineering and building and I am very artistic. I am involved in many activities outside of robotics such as varsity soccer, varsity tennis, Tiger Kittens/Men of Note and the musicals.

I am JR Stephenson and I have been a member of the FLL team for two years. I enjoyed being on FLL for five years and assisted with the start up of the FTC team at Sharon High School. I enjoy engineering and building and I am one of the drivers for the team. I am also involved in the marching band, varsity soccer and I perform in Tiger Kittens Men of Note and the musicals.

I am Will Stigliano and this is my second year on the FTC team. I was in FLL for five years and helped to start the High School FTC team last year. I enjoy engineering and building and I am also one of the dirvers for the team. I am also on the soccer team and I perform in Tiger Kittens Men of Note and am the drumline captain for the marching band. I enjoy performing in the school musicals. I plan to attend college and major in engineering.

I'm Jon Wareham and I'm a rookie on the FTC this year. I was on FLL for 4 years where I was primarily a programmer, though, like everyone else on the team I did all other aspects of FLL. My love of programming followed me to FTC. I am also involved in other activities such as cross country, track and field and swimming. I plan to attend college after high school and major in software engineering.

I am Kyle Wareham, a rookie on the FTC team this year. I was on FLL for 4 years and my strong suit is engineering and building. I am excited to use the skills I learned in FLL to help create the robot for competitions this year. I am also involved in other activities such as swimming, track and filed and cross country. Future plans include attending college and going into engineering or teaching.

I am in FTC because it is a good step up from what I learned in FLL. I enjoyed FLL but wanted more of a challenge. Also I enjoy building things and engineering. When I graduate I want to go to college at Carnegie Mellon University. I hope to study biomedical engineering. I was on FLL for 5 years. This is my first year on FTC. I am in many other activities such as student council, soccer, swimming, tennis, marching band, and pep band.

Mentors: Coach Dave Tomko, Assistant Coach Jennifer Barborak, Assistant Coach Rick Barborak

Mentor Bios:

Mr. Dave Tomko is the head coach overseeing all the robotics teams at Sharon Schools, four FLL teams and one FTC team. Mr. Tomko also teaches 6th grade at Case Avenue Elementary. He is credited with the introduction of robotics in Sharon Schools, even succeeding in working robotics into the sixth grade science curriculum. Coach Tomko has a Masters in Education and holds his principals certificate.

Mrs. Jennifer Barborak (Coach Jen) has been coaching the FTC team at Sharon Schools since its inception in 2018. Coach Jen is a registered nurse, employed by UPMC Horizon Community Health Foundation as a grant writer and program manager. She holds a BS in Environmental Science, having managed the laboratory for and Environmental Engineering firm. She also holds a MA in non-profit program management and evaluation and grant writing. Coach Jen oversees the media and fundraising as well as the building, engineering and programming. "I am so excited to watch the students grow in their skill level and how they become more confident in their abilities each season. It's a credit to these students that we even have a high school team."

Mr. Rick Barborak (Coach Rick) has been coaching the FTC team at Sharon Schools since its inception in 2018. Coach Rick is a registered nurse, employed by Olympus International as a sales representative in the endoscopy division and holds a BS in Nursing. Coach Rick enjoys overseeing the team members who are engineering and building and has been learning the programming. He is proud to be a part of history at Sharon High School and commends the students for their hard work in not only starting the program, but keeping it going.

Team Summary

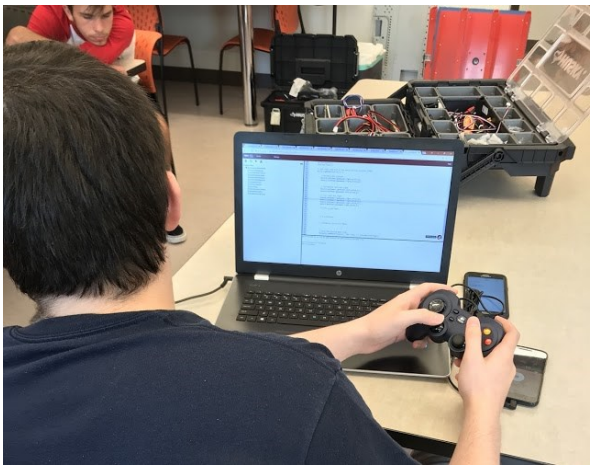
We are team 12792, the Sharon High Robotics team. We were a rookie team during the 2017/18 season. As a rookie team we attended workshops in the Pittsburgh area, attended a scrimmage and competed in a qualifying tournament in Emmaus, PA. We learned a lot through the participation in those events and we feel we can build upon that experience to excel this year. As a rookie team, we had 6 members: 5 juniors and 1 sophomore. We are excited that all of last years members are back this year.

This year, our team consists of 11 members: 5 seniors, 1 junior and 5 sophomores. We added our first female member this year, though she traveled with us all year last year. This year, we attended a scrimmage in Pittsburgh where we were able to get great advice on our Engineering Journal. You will notice that the first half of this journal is not very well-written and does not contain the material it needed to. After the scrimmage, we applied what we learned to this journal. Each year we improve and add something new to our season. Aside from improvements in our engineering journal, we are getting more involved in the fundraising and we set up a webpage, Instagram and YouTube Channel so we can conduct better community outreach.

Our team members are well-rounded, participating in not only robotics but on sports teams, academic teams and in community activities. It makes it difficult to have practices where everyone can attend so we split up our practices, each of us attending when we can.

7.12.18

10am - 2pm



Build/Programming Teams:

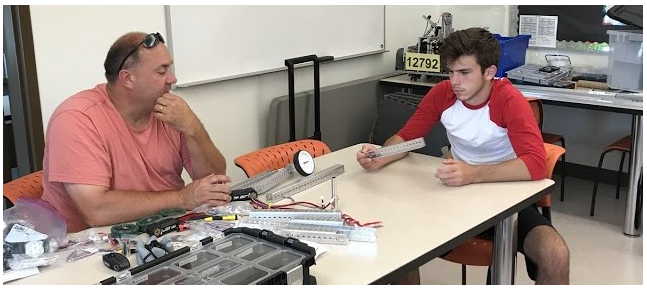
Present: Will, Klaus, Brandon, Justin, JR, Ben, Lucas, Jon, Kyle, Coach Jen, Coach Rick

Tasks:

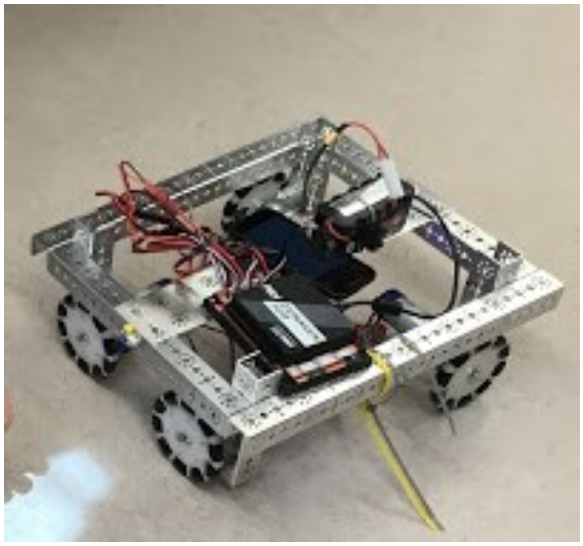
1) Improve last season's robot to run it during Meet the Tigers
2) Replace the current wheels with Omni-wheels
3) Configure the new phones

Summary:

We received our new Tetrix start-up kit with new phones and new controllers. We started our pushbot concept with our 2 new Tetrix Tourquenado motors in the rear and 2 Rev motors in the front, all using Omni wheels. We simply reversed the 2 and 3 motors rotation direction to make the robot go straight. We also used our new cell phones and uploaded a rudimentary config file onto them.



Media Team:



Present: Emma, Peter

Tasks:

1) Establish a website name
2) Research host sites and website building sites
3) Set up group chat among media team

We discussed establishing a website name and came up with SharonPennRobotics.org. We talked with Mr. Bill Dodd by speaker phone. He owns a website build and design and media company called MudHut Studios. He advised us to look at several different website hosting sites and settle on one that will give us experience with web building. We researched our host and website builder sites and decided to use Dreamhost to host the website because it was inexpensive and seemed to have good customer service. We also decided to use WordPress for the web building because coach Jen is familiar with it and because Mr. Dodd can help us if we get stuck. We set up a group chat amongst the media team to further analyze our options.

Signature _____

6.25.18 - MudHut Studios

5:15 - 7:00

Media Team:

Present: Justin, Peter and Emma

Coach Jen, Coach Rick and Coach Tomko

Summary:

The media team took a field trip to MudHut Studios to meet Mr. Bill Dodd and learn about how to start a webpage, how to use social media to conduct our community outreach and how to market the team to possibly increase sponsorships.

Mr. Dodd challenged us to think about how we want our webpage to look. What different pages do we want? How do we want the pages laid out. What pictures do we want? He explained the different aspects of we design and offered advice as to hosting companies we could research and web build pages we could use.

Coach Jen has worked with Mr. Dodd on web pages for her job and he offered to assist with the web design for free.

Next steps:

1) Determine hosting and web build
2) Determine if we want our website to stand alone or if we want it hosted within the school website
3) Determine photos
4) Put together page designs and content

7.14.18 NASA - John H. Glenn Research Center at Lewis Field

9:30am - 2:30

Field trip to NASA in Cleveland.

Present: Emma, Lucas, Peter, Kyle, Jon

Summary:

The coaches organized a trip for us to Lewis Field in Cleveland to tour the John H. Glenn Research Center. This branch of NASA specialized in aeronautics and has the laboratory for engine development and research. It contains the zero gravity research chamber and a large vacuum chamber. They produce the designs for jet engines and the liquid hydrogen rocket engines.

We toured the facility and got to see some things that are not open to the general public. The most fun part of the tour was participating in the virtual reality lab where we got to "walk on Mars", navigate a submarine on Saturn's moon, float through the international space station, and do a virtual reality inspection of NASA'a airplanes and rockets. They had thermal imaging glasses that were really cool and a build an object and test it in the wind resistance simulator.

What we learned:

This was a great learning experience. Especially interesting to us was looking at the rover and participating in the walk on Mars where you could see the Mars Rover. Looking at the rover through the virtual reality glasses allowed us to see some of the construction and we hope to use some of the design in our robot this year once we find out what the mission is.

We also found out that we could have NASA items on loan for our FLL tournament that our school will host in October.

7.26.18

10am - 2pm

Programming Team:

Present: Lucas, Brandon

Absent: Klaus

Tasks:

1) Improve the movement of the robot

Summary:

The robot is not moving smoothly. After looking at all the motors and wheels, it was determined that the jerking movement may be due to programming. The programming team improved the robots basic movement, by mapping the controller to the eight directions to improve movement and efficiency while driving. It can now move forward, backward, and diagonally. It can also rotate left and right. We achieved this by altering the axis and set powers through controller mapping.

Build Team:

Present: Lucas, Jon, Kyle

Tasks:

1) Tighten the motors, wheels and frame and prepare the robot for driving on the grass.

Summary:

Everything was tightened on the robot and we took it out the playground to see if it runs on the grass. Though it does move on the grass, it does not move well and the frame drags on the ground.

7.26.18 - Page 2

To do next practice:

Raise the frame so that the robot does not drag in the ground. Try different wheels.

Media Team:

Present Emma, Peter, Justin

Tasks:

1) Finish setting up our domain and install Word-Press
2) Create a Cluster site to share photos for the media team to use on the website

Summary:

Today we called Mr. Dodd and had him on speaker phone. He talked us through setting up our domain which is sharonhspennrobotics.org. He also talked us through how to install WordPress and we played around in the program so we know how to use it. Registered with WordPress and registered each member of the media team as authors of the site. Created a media team Cluster site and uploaded initial photos.

Goals for next practice:

- further develop site
- Start social medias
- Have Mr. Dodd come and oversee further site building
- Think of logos and home screen

Signature _____

8.1.18

10am - 2pm

Present: Lucas, Jon, Kyle, Brandon, Emma, Coach Jen, Mr. Dodd

Tasks:

1) Add the servo to wave the flag into the programming
2) Raise the wheels
3) Review the programming to make sure all the motors are programmed correctly

Summary:

Today the programming team revamped the program to make sure that all of the motors work correctly. We added the servo program to wave the flag into the program to make sure it works as well.

The build team added a second frame to the robot, which let us move the wheels up a tiny bit. This gives the robot a higher clearance. We rotated the motors so that the wires were pointed up. This prevents the wires from getting caught in the wheels. Lastly, we attached the servo motor to the robot. The wheels are still not appropriate for the grass

Goals for next practice:

1) Coach Jen is going to go to Tractor Supply Company and purchase lawn mower wheels for us to put on the robot just for Meet the Tigers. We will screw the new wheels on to the wheels that are currently on the robot.
2) Will possibly need to change programming for new wheels
3) Final touches for showcasing the robot at Meet the Tigers night.

Media Team:

Tasks:

1) Work with Mr. Dodd to finish setting up the website.
2) Set up an Instagram account for the robotics team

Signature _____

8.1.18 - Page 2

Summary:

Today, Mr. Dodd came and helped to add pictures to the website. Mr. Dodd showed me (Emma) how to find the plug ins. I inserted the plugin and created the contact form which contains a verification that proves that it's not a robot contacting us. I also set up our Instagram account and made our first post.

Goals for next time:

1) Gather photos of the team and robot and send them to Mr. Dodd to get them professionally and properly sized.
2) Work on profiles for team members for on the website.
3) Work on the text for the different pages of our website.
4) Work on a YouTube channel for our robotics videos.

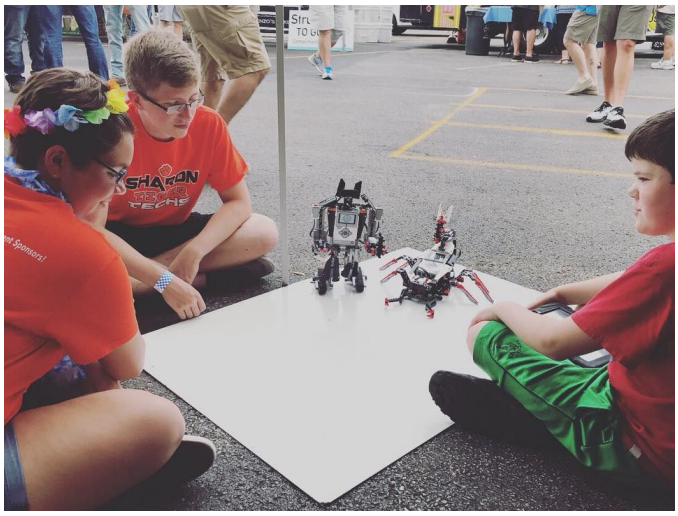
Signature _____

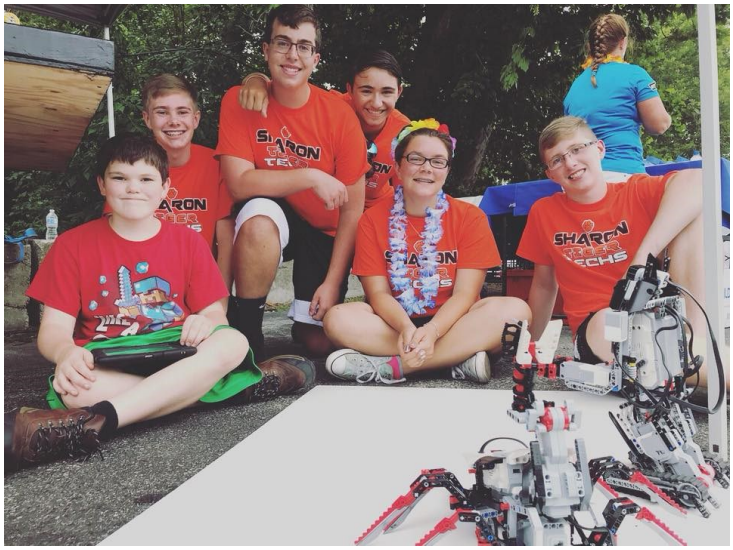
8.2.18 - Meszaros Family Foundation Festival

5:00pm - 8:00pm

Present: Lucas, Jon, Kyle, Peter, Emma

Team members who were aging out of FLL and were accepted ont the High School Team participated in community outreach with the FLL teams at the Meszaros Family Foundation's Fund Feast. The Meszaros Family Foundation proudly supports the Sharon Schools Robotics Teams financially each year. FTC team members worked together with FLL team members to bring "Robo Art" to the Foundation's annual fundraiser. About 400 people attended the fundraiser. Approximately 100 people stopped by the robotics booth to see the robo art and more than 30 took home a piece of robo art from the event. The FLL and FTC programs are highlighted each year at this fundraiser.





8.10.18

1pm - 4pm

Programming/Build:

Present: Jr, Will, Ben, Kyle, Jon, Lucas

Absent: Brandon, Klaus

Tasks:

1) Put the new wheels on the robot
2) Final preparation for Meet the Tigers

Summary:

Today we put on the new "off-road" wheels for Meet the Tigers by screwing them directly on to the wheels that were on the robot. The wheels that coach Jen bought at Tractor Supply Company worked well and raised the robot off the ground enough so that the frame doesn't drag. Because the wheels are for a lawnmower, they are meant to run on the grass. It was difficult to ensure the wheels were screwed on exactly in the same place on each of the four wheels. The wheels are slightly off balance, but the robot runs well. We added the battery mount, tweaked the motor mounts, adjusted the arm and added an attachment to the servo that waves the Sharon Tiger flag, programmed the wheels, test drove the robot, and put street signs with our team number on the sides.

Media Team:

Present: Emma, Peter, Justin

Tasks:

1) Add descriptions for team members
2) Add the robot hall of fame

Summary:

Today we updated our website. We updated the robotic tigers page and added descriptions for some of the team members. We also made the robot hall of fame and student hall of fame. Justin also designed our shirt logo (right).

Signature _____

8.22.18 - MEET THE TIGERS

5:30 - 6:45

Present: Ben, Brandon, Will, Justin, JR, Emma, Peter, Lucas, Kyle, Jon

Absent: Klaus

Meet the Tigers is a presentation in our football stadium so the community can meet the fall sports teams. Coach Jen insisted that the robotics team should be added to the line up and the school district agreed to put us in the line up for the second year in a row. The event draws about 300 community members. Coach Jen talked a little bit about the FTC program and introduced our team members. We drove the robot down the field and had it waving a Sharon Tiger flag. The crowd loved the robot and was amazed with our accomplishments.

Members of our team are also in the following fall sports, tennis, soccer, swimming, football and marching band. You will see that some of us actually had our uniforms on for the other teams we are on. We are a well-rounded group of students.

Signature _____

8.30.18 - End of Summer Carnival Sharon High Stadium

5:00 - 7:30

Present: Emma, Peter, Lucas

Team members brought the high school robot to the End of Summer Carnival that is held each year by the Sharon Recreation Commission in Tiger Stadium. The students drove the robot around and let young children control the robot. About 150 children attend the carnival. Approximately 30 children inquired about the robot and about the robotics programs at Sharon Schools. The FLL teams were also present with their robo art and many children were walking around the carnival with designs drawn by the robots. Our FTC members helped the FLL teams with their robo art also. Coach Jen assisted with the concession stand on behalf of the FTC coaches.

This community outreach, though brief, heavily impact the students in our community. It opens their minds to the possibility of participating in STEM programs at their school. Because these are students that are too young to participate in FTC, we do not know how many signed up to be a part of FLL teams from the carnival.

Signature _____

9.1.18

10am - 12noon

Programming Team:

Present: Klaus, Brandon

Tasks:

1) update the color sensor

Summary:

The Programming team successfully updated the color sensor, successfully added a touch sensor, and reprogrammed the wheels.

Build team:

Present: Will, Kyle, Jon, Lucas

Tasks:

1) remove the wheels from Meet the Tigers

Summary:

The build team removed the lawn mower wheels and put the Omni wheels back on. Because we only have 1 set of omni wheels, we ordered a second set of wheels so we can try doubling them up and make the robot move in a zero-turn fashion.

Next time, we would like to build an arm, add the wheels if they are delivered, attempt obsolete joystick movement, and add color and one touch sensor to where they are supposed to be.

Media Team:

Present: Emma

Absent: Peter, Justin

Today I worked on our website. I wrote the biographies of several of the team members and added pictures to it.

Signature _____

9.8.18 The Reveal of Rover Ruckus

11:30am - 1:30pm

Rover Rukus Kickoff

Present: Will, Lucas, Emma, Klaus, Brandon, Peter, Coach Tomko, Coach Jen, Coach Rick

Today we watched the reveal of the Rover Ruckus challenge. We were surprised to see the portion in which we have to hang our robot at the beginning and again at the end. We started brainstorming ideas for a system to lift the robot up. Also, we're looking into what wheels to use on the field.

Coach Jen wrote the point possibilities on the white board and we started to decide what parts of the mission we want to attempt and what parts we don't want to attempt.

We decided we will not attempt to use the camera and knock off the ball or cube in autonomous.

We want to attempt:

Autonomous - Latch on and lower, drop the marker in the safe zone, get to the crater

Driver controlled - We definitely want to try to get into the crater. We are considering a lift to get the balls into the lander and some sort of sorter to allow us to only pick up two items at a time and possibly sort out balls from cubes.

Summary:

Because we had some time, we reformatted our robot by swapping out 4 large bars for smaller ones. Instead of a rectangle, the robot is now a square.

Also, we changed the positioning of the hub. Instead of resting horizontally on top of the robot, it now hangs vertically on the inner back of the robot. This is accomplished via metal plates as anchor points.

Our length/width is 16.5 inches. This will allow for attachments that might take us closer to the 18" maximum size.

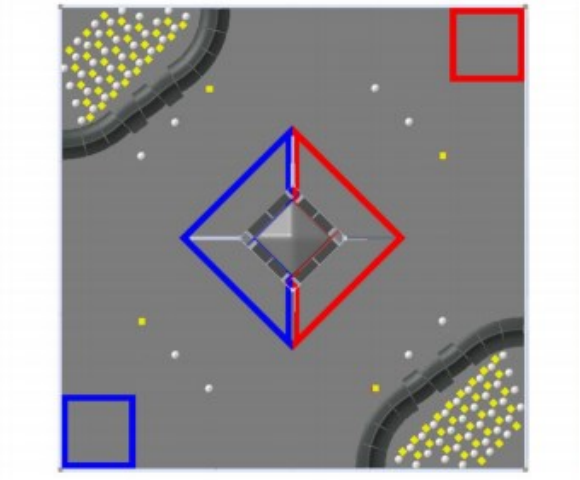


Figure 1.3-2 – Overhead view of the *Playing Field*

1.7 Scoring Summary

The following table shows the possible *Scoring* achievements and their point values. The table is a quick reference guide and not a substitute for a thorough understanding of the game manual.

Scoring Achievement	*Autonomous* Points	*Driver-Controlled* Points	*End Game* Points**	Reference
Robot				
- *Landing*	30	-	-	1.5.2 - 1
- *Claiming*	15	-	-	1.5.2 - 2
- *Parking*	10	-	-	1.5.2 - 3
- *Sampling*	25	-	-	1.5.2 - 4
- *Latching*	-	-	50	1.5.4 - 1
- *Robot In Crater*	-	-	15	1.5.4 - 2
- *Robot Completely In Crater*	-	-	25	1.5.4 - 3
Mineral				
- Any *Mineral in Depot*	2	2	2	1.5.3 - 1
- *Gold in Gold Cargo Hold*	5	5	5	1.5.3 - 2
- *Silver in Silver Cargo Hold*	5	5	5	1.5.3 - 3
- *Gold in Silver Cargo Hold*	0	0	0	1.5.3 - 4
- *Silver in Gold Cargo Hold*	0	0	0	1.5.3 - 4

** - The *End Game* occurs during the last thirty-seconds of the *Driver-Controlled* Period.

Signature _____

9.10.18

3:15pm - 4:15pm

Present: Will, Lucas, Emma, Klaus, Brandon, Peter, Jon, Kyle, Coach Jen, Coach Rick

Summary:

Today we dismantled parts of last years robot so we have extra motors, servos and the number plates. We also talked about the mission and discussed ways to latch on to the lander. We decided a gripper will not be strong enough. We will have to have some sort of a hook that we can take the robot into sideways and turn into the latch.

We also discussed the planning for our Festivus fundraiser. It will be held on December 15th this year. We will have to get the tickets printed within the next few weeks and get them out to all the team members. This will be a joint fundraiser between all of the robotics teams with the help of the parents. Will hold the Feats of Strength using Rock 'em Sock 'em Robots. We will also have an ugly sweater contest and an Elaine Dance-off.

We tossed around other ideas for fundraisers such as a cornhole tournament, a kick ball tournament and a spaghetti dinner. We will discuss these further after the first scrimmage.

Coach Jen told us that she visited the High School and they will have a small room for us in the STEM wing. We will be able to move our robotics practices and storage into the high school some time within the next few months.

Signature _____

9.13.18

3:15m - 4:15pm

Present: Emma, Peter, Lucas, Jon, Kyle, Brandon, Coach Jen

Summary:

Today we talked about the upcoming FLL tournament that our school is hosting on 10-27-18. Coach Jen asked us to consider setting up a table and have our robot running. We decided we could also bring the lander and maybe some parts and tools. If we have enough of our things, we could work on the robot while we are showcasing FIRST. We decided that it would be a great idea because then we could talk to people about what we are doing while we are doing it. If we have the laptop we can work on programming as well.

Items we will take:

Robot

Tool box tower

Extrusion pieces

Motors

Screws and nuts

Laptop computer

The lander

Balls and cubes

The crater

The banner

We decided we will not take the mat or the walls of the field because it is too hard to tear down and set up.

We also decided we should load up Coach Jen's van on Friday so that we can just meet her at the school on Saturday morning at 9am.

Signature _____

10.4.18

3:15 - 4:00

Present: Kyle, Jon, Lucas, Emma, Justin, Coach Jen

Today we were able to run the robot and determined that it is slow. The programmers are going to look at the programming during the next practice to see if there is anything they can do to speed it up.

The media team worked on the website today, adding more bios and pictures.

We developed a Questionnaire to take with us to the scrimmage. Our scouts will use the questionnaire when they go talk to other teams. At the top of the sheet is a place for the team name (the team we are talking to) and their number and where they are from.

Questions include:

What can the robot do?

What is the strategy during game play?

Is the robot reliable?

What does it accomplish in autonomous mode?

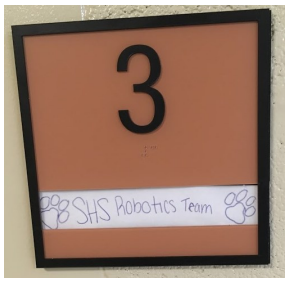
Are there multiple programs for autonomous?

Then, there is a space for us to write how their robot compliments our robot.

This should help us because when the sheet comes out and we find out who we are paired with, we can pull their sheets and see what their robot does and what their autonomous does. This will give our drivers and coach an idea of what else to talk to the team about before they run a match together.

Signature _____

10.12.18 - Move In Day! New Robotics Lab



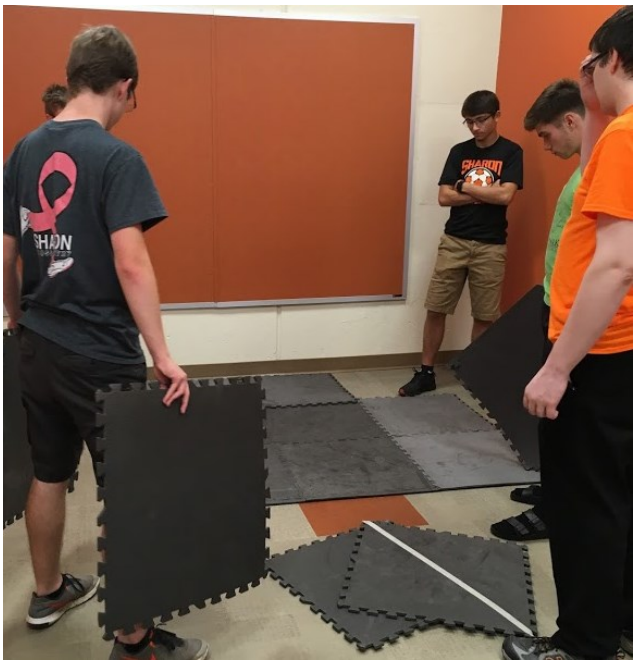
3:00pm - 4:00pm

Members Present: Brandon, Will, JR, Kyle, Jon, Emma, Ben, Peter, Lucas, Coach Jen

Today, finally moved the High School Robotics Team out of Case Avenue Elementary and into the High School. The new lab in the high school will allow us to leave our quarter-field set up all the time and we can leave our robot and supplies out without worrying about them being moved or broken by younger kids.

In our new lab we have two dry erase boards and a cork board, plus two bar height work benches on wheels and 8 stools. They also gave us a cabinet to keep tools and supplies in.

We moved everything into the new lab and set up the playing field. Tomorrow will be our first practice in our new lab.



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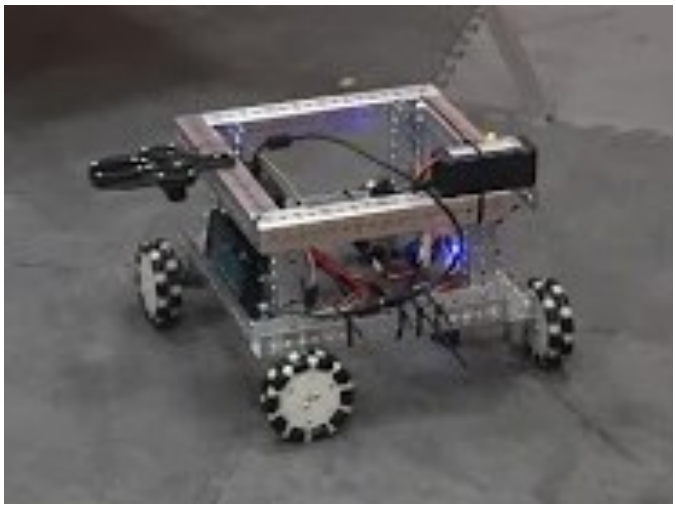
10.13.18 - First Practice in Our New Room

2:00pm - 4:00pm



Members Present: Brandon, Will, Kyle, Jon, Emma, Ben, Coach Jen, Coach Rick

Build Team: Today we added an extra layer of wheels on each motor. We also tested a claw to hold the robot up off of the lander. Finally, we started the construction of a ball holder attachment, this was based off of a tennis ball hopper.

Members Present: Brandon

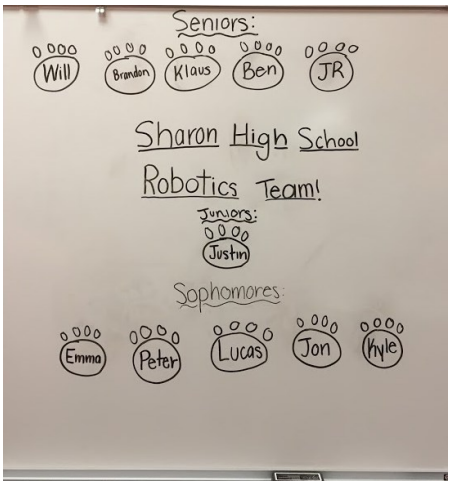
Absent: Klaus

Programming Team: We adjusted the program and added a servo to the TeleOP program.

Present: Emma

Absent: Peter, Justin

Media Team: Today we posted on Instagram. We also updated our website. We added pictures to our Meet the Robotic Tigers page. We also posted about our new room on our blog.



Signature _____

10.18.18

3:15—5:30

Members Present: Brandon, Ben, Kyle, Jon, Emma, Lucas, Coach Jen, Coach Rick

Build Team: We changed to new omni wheels and mounted the hub and battery. The new motor was mounted and gearbox assembly was put together.

Programming Team: Created a new controller program for the new robot. We tested it and it was successful in moving the robot properly.

Media Team: Today we typed out some of our journal entries and added photos.

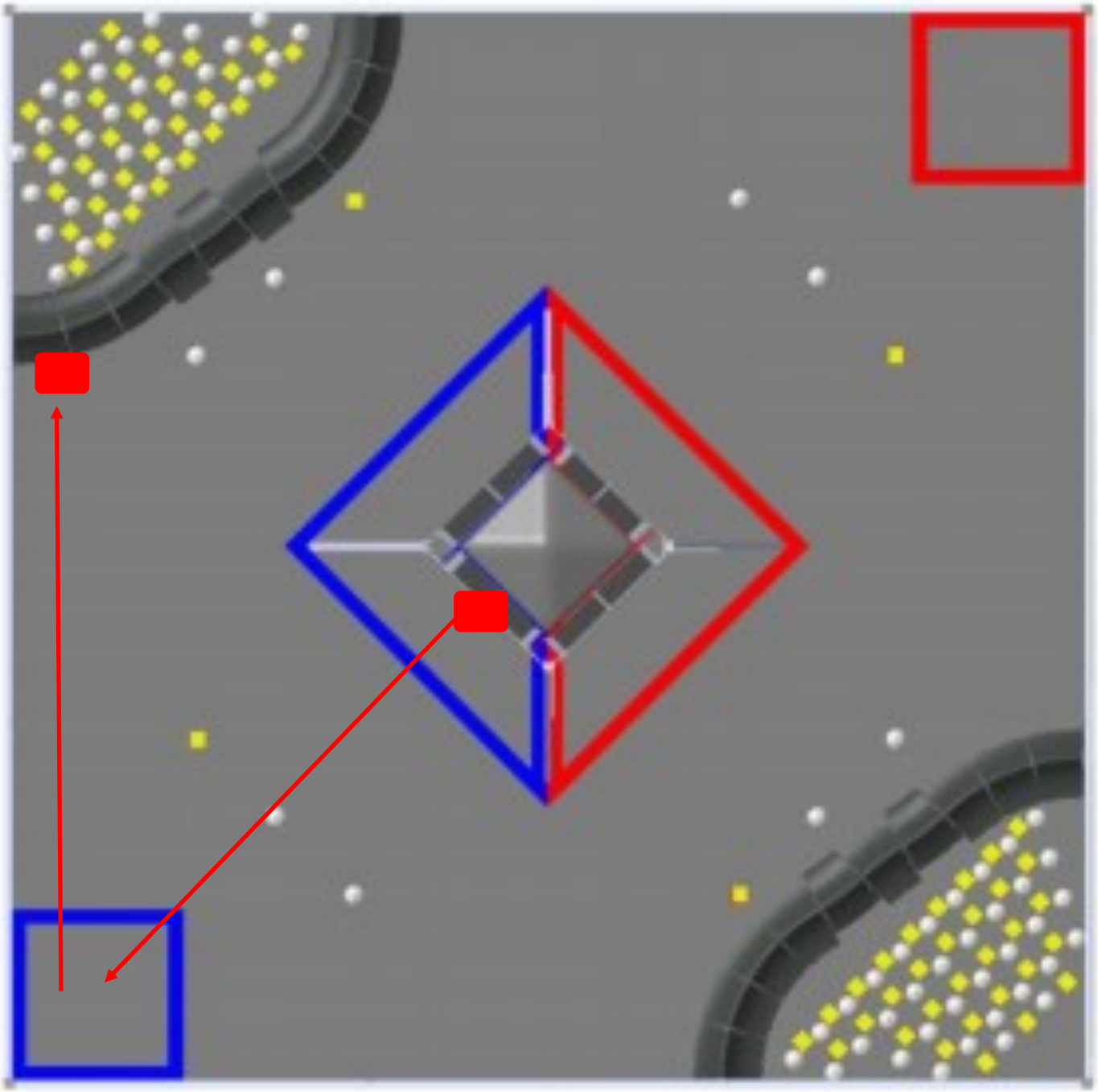
Everyone: Brainstormed what we want to accomplish for driver control mode. We definitely want to be able to pull the minerals out of the crater. We would like to be able to drive in and out of the crater. We hope to be able to latch on at the end and raise the robot off of the ground. We would like to develop a sorter to be able to sort blocks from balls and be able to place them into the lander somehow.

Signature _____

10.18.18 - Page 2

Autonomous - 55 Points

Robot will be latched on to lander, raised over 4” from ground. Will lower itself and drive straight forward, drop the token in the corner (it will most likely knock off the wrong item, but we are willing to take that penalty to secure the corner.



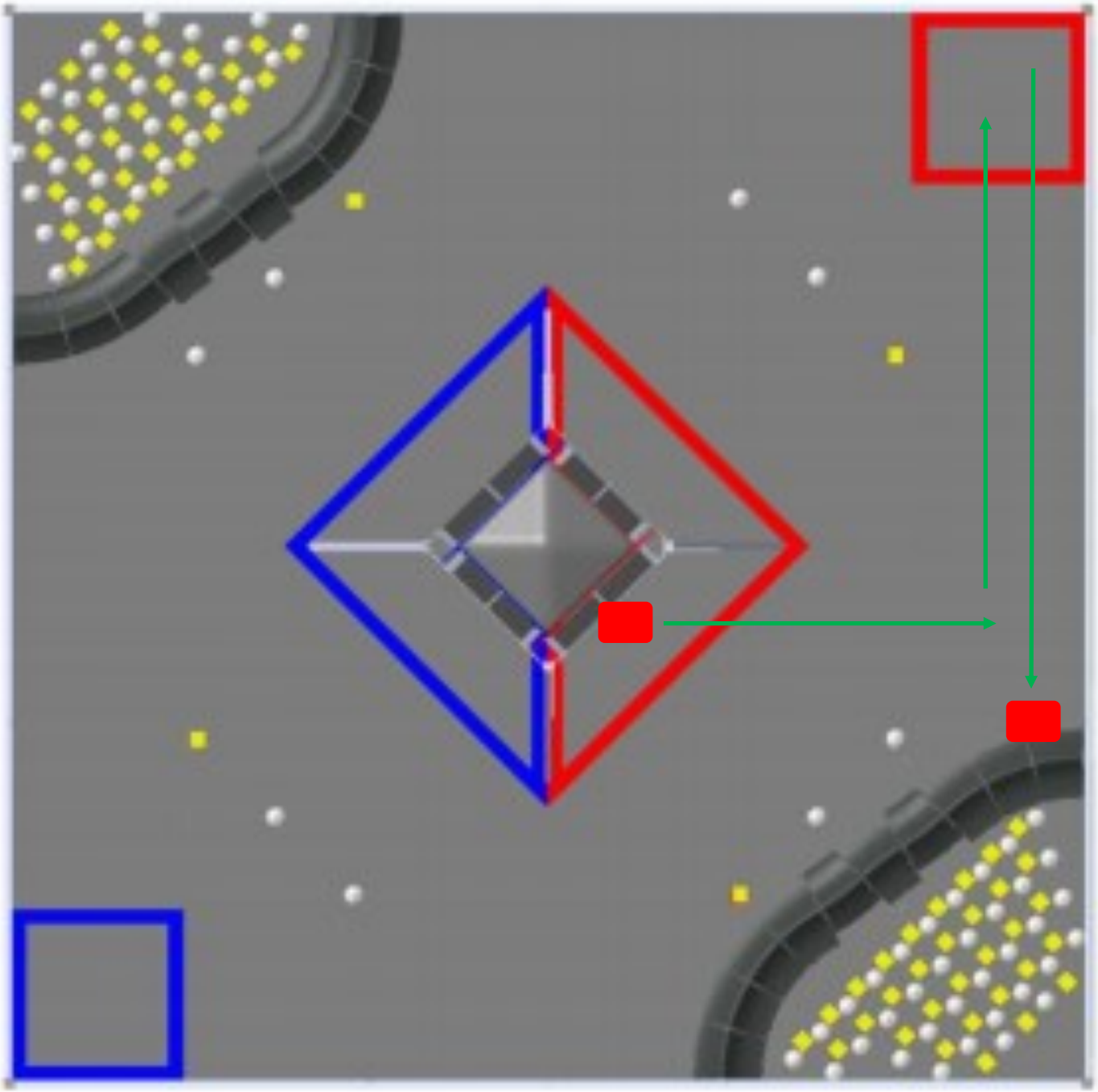
Robot will turn right, drive to crater and will stop just over the edge of the crater to get points for being in the crater.

Signature _____

10.18.18 - Page 3

Autonomous - 55 Points

Robot will be latched on to lander, raised over 4” from ground. Will lower itself and drive straight forward. It will turn left and miss the markers, driving to the right of them, and end up in the corner where it will drop the marker.



Robot will drive backwards to crater and will stop just over the edge of the crater to get points for being in the crater.

Signature _____

10.25.18

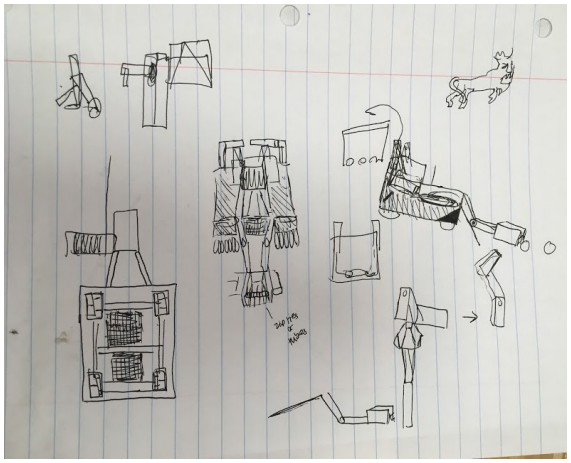
3:15—5:30

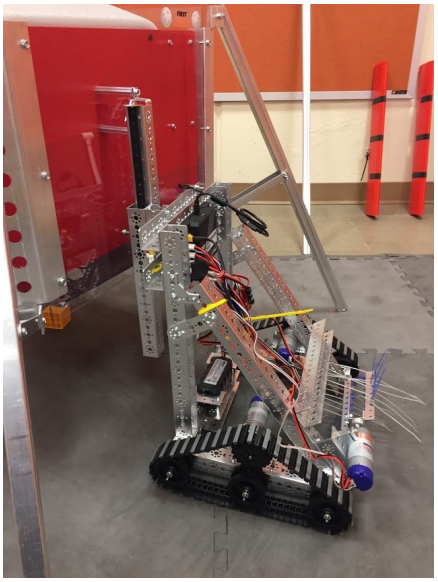
Members Present: Klaus, Will, Justin, Emma, Brandon, JR, Ben, Peter, Lucas, Coach Jen

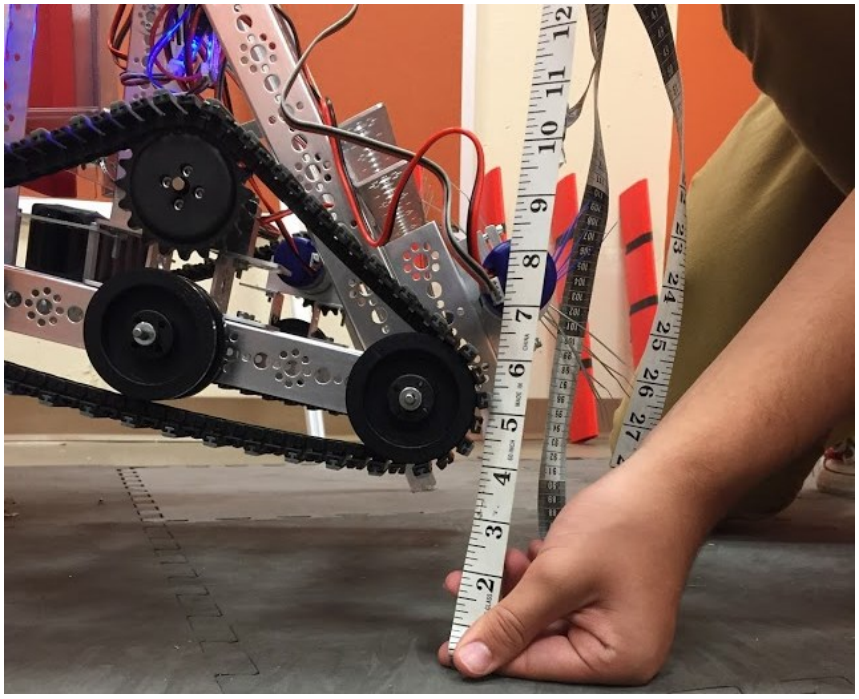
Build Team: Looked arm to latch on and lower robot from lander. Robot not lifted far enough off the ground. Will try to lower the latch more. The hook to latch on was slippery and the robot slipped off a few times. Will research other hook ideas. Tested the tank drive for latching back onto the lander during driver controlled period. Difficult to maneuver, but doable. We ended up using zip ties for the brush, but they ended up being a little too flimsy. Other items we spoke about using consisted of: Pool Noodle, Garden Rake, Tupperware Container, Plexiglass Box. We also switched to a tank drive for our robot. Started the sweeper design. Sweeper is too low but it works. We need to find a way to properly implement it into our robot design.

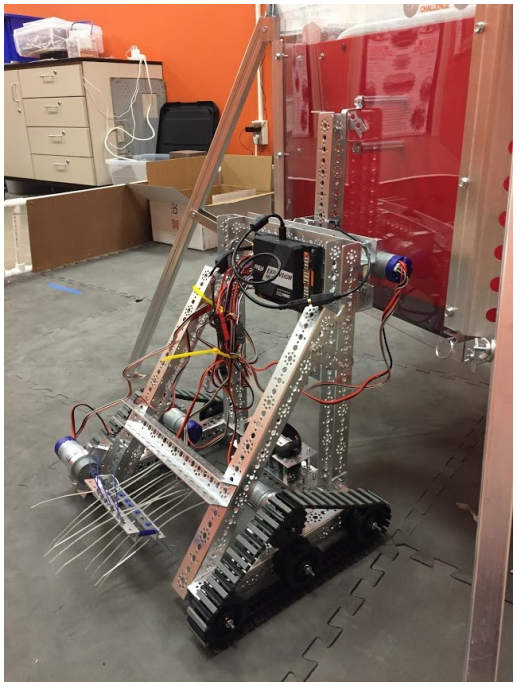
Programming Team: Worked on autonomous program to lower the robot from the latch. Also programmed the motor for the sweeper attachment.

Media Team: No work today.









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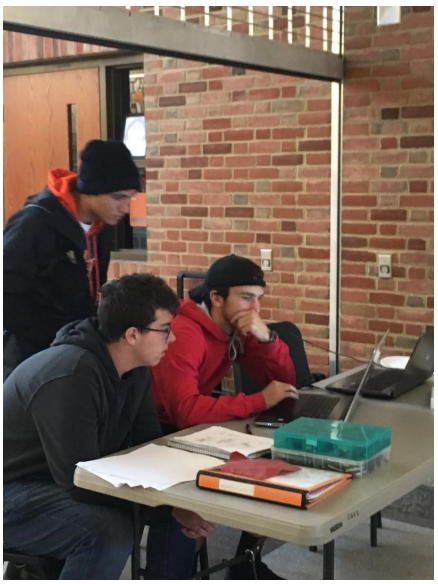
10.27.18 - Showcased Robot at FLL Tournament

Present: Ben, Justin, Emma, Peter, Lucas, Coach Jen, Coach Rick

Today we showcased FTC and our robot at an FLL tournament held at the Case Avenue Elementary school. Fourteen teams participated in the tournament and FLL teams and their families stopped by our table to ask questions about FTC and about our team. While we were there, the build team worked on the construction of a lift and the media team worked on typing out the journal entries. We built a crude pushbot on the spot so people could see us at work and we drove it around the school halls. We gained interest in our team and many onlookers asked us questions about our team and what we did. Our State Representative, Mark Longietti stopped by to wish us luck this season and to see how our robot was coming along. He has been very supportive of our school's teams.

A family from a nearby school district stopped by to ask about how we got the team started and seek advice on starting an FTC team at their school. Coach Jen talked to them at length about the process and offered assistance from our team when they are ready to get started.

We also mentored the FLL teams that were competing at the tournament. Sharon School teams asked for advice on attachments and speed for their robots. High School team members watched their robots perform and provided advice on possible changes.



Signature _____

10.30.18

Build Team:

Members Present: Will, JR, Peter, Lucas, Coach Jen

Absent: Jon, Kyle

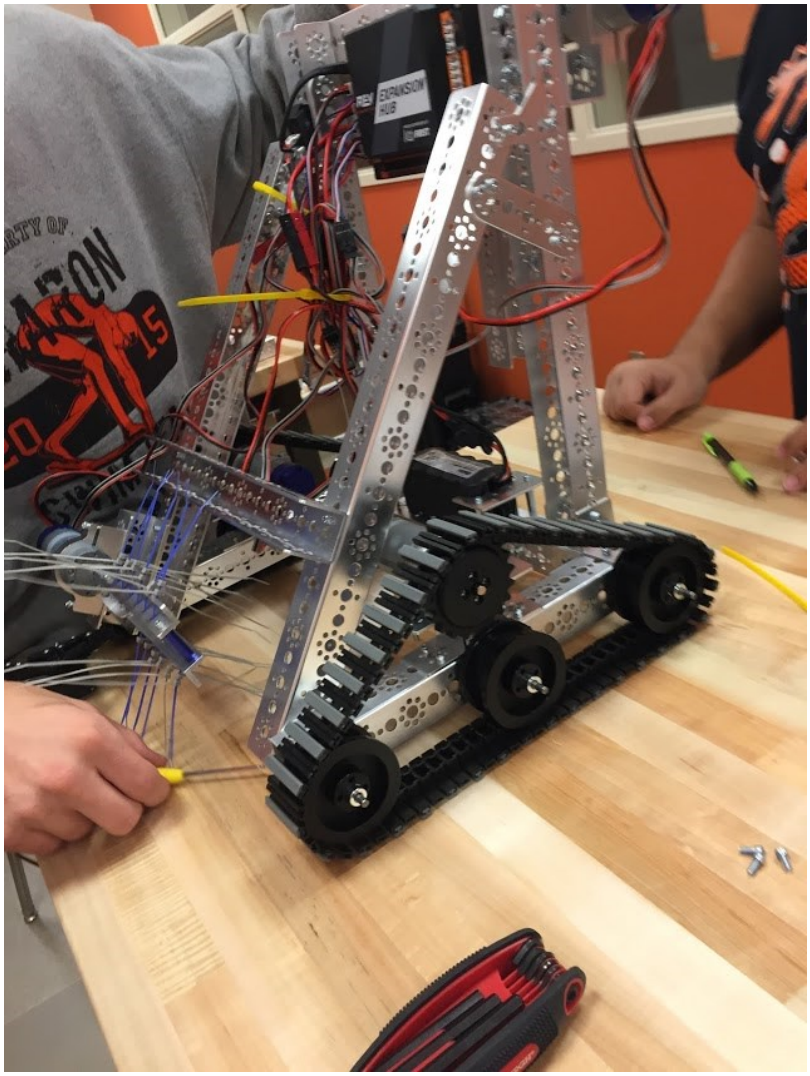
We found that our robot is slightly tall to fit within the 18 by 18 inch constraints so we ended up rebuilding the frame. We kept as much as we could the same and are nearing completion of the “new” frame. We have not been able to test the new tank tread setup on the robot yet.

Media Team:

Present: Emma, Peter

Absent: Justin

Today we typed out our journal and took more pictures and videos. We added them to our cluster account so we can later add them to our journal and webpage.



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10.31.18

During school

Present: JR, Will

Summary:

We practiced driving the robot together for about 1/2 hour. We practiced moving blocks and balls, latching on the lander and lifting the robot off the ground.

The support brace was wobbly, so we tightened everything. The front motor needed mounted with more support so we did that also.

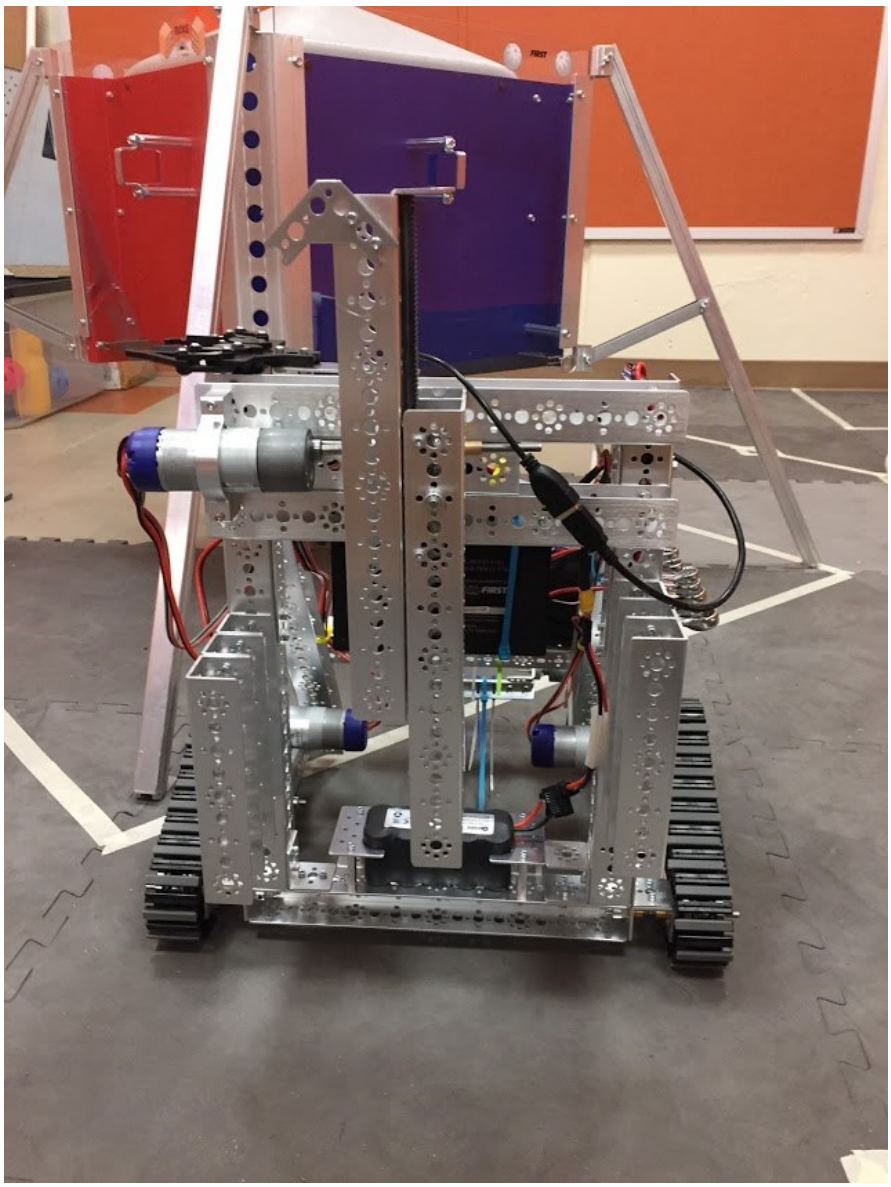
Signature _____

11.1.18

During school

Present: Will, JR, Emma

The media team took pictures an posted them to cluster to later post on our website, Instagram, and add to our journal. The build team raised the mounting part of the lift and added a servo. The hook we are using (below) works well.



Signature _____

11.2.18

In school

Present: Ben, Will, JR, Brandon, Klaus

Rerouted wiring to clean up look of robot

-brainstormed ideas for lift in center of robot

-straightened rear of frame

-need to remount braces

3:15 - 5:15 Practice

Present: Peter, Kyle, Emma, Jon, Brandon, Ben

Programming: started autonomous by creating first few movements

Media: typed out journal entries up to date. Took pictures.

Build: Today we modified the internal structure by increasing the size of the worm gear to increase the power the motor can provide. We also disassembled a bunch of old parts that were laying around from previous prototypes and sorted the pieces, putting them away. We continued to print “12792” labels and label our tools, large pieces and parts boxes.

Signature _____

11.3.18

9:00am - 12noon

Present: Brandon, Lucas, Emma, Will & Peter, Coach Jen, Coach Rick

Programming:

Autonomous for crater side of lander is almost completed for the first scrimmage. The code needs adjusted slightly once all the mechanical changes have been made to the robot. Adjusted the teleop code to improve robot performance.

Build Team:

We added stabilizers to the robot to help keep it stabilized while it is coming down from the lander. Coach Jen went to Kraynaks and purchased a large plastic tiger for us to use as our marker. We started using it and found a grabber that will hold onto it while the robot is lowered. The robot keeps tipping over backwards, so we widened the wheel base on the tank treads and added a wrench set temporarily to the front of the robot to see if we can balance the weight more. The robot still has a very hard time getting into and out of the crater. Will brought a suitcase scale so we can weigh the robot. The robot currently weighs 18 pounds and fits into the 18" square maximum start size.

Goals for next practice:

1) Add the flagpole holder
2) Add the switch plate
3) Work on a lift and a basket that will only hold two items
4) Final prep for the scrimmage

Signature _____

11.6.18

3:15—4:15

Present: Emma, Peter, coach Jen

We continued to label everything with our team number. We also started organizing our tools and got a list together of things we still need to get ready. Coach Jen worked on getting the paperwork together for the scrimmage while we added some photos and bios to the website.

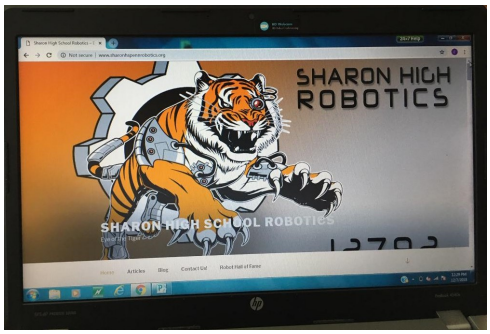
We practiced hooking up the phones to the robot, turning on everything and driving the robot together.

Because the members here are on the media team we discussed strategies for outreach through social media. We hope to:

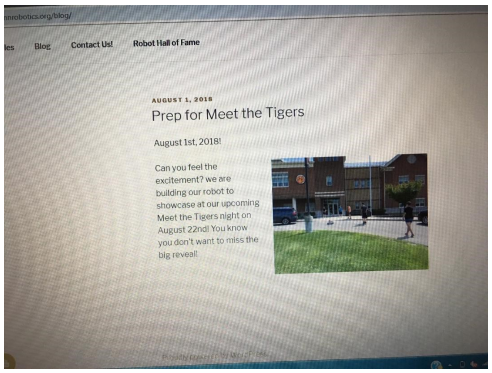
1) Start a "Tiger Talk" on YouTube where we will demonstrate different parts of our robot and talk about how they work. We will start filming for this after our first tournament.
2) We would like to develop a site on our webpage for tips and news
3) We will get the FIRST promotional videos placed on our YouTube Channel

We do not have our YouTube channel set up yet. We do have an Instagram account and we have been posting pictures and videos to it. We are starting to pick up a few followers from other teams. Our robotics facebook page is shared by all the teams, FLL and FTC. We cannot post to the facebook page, but Coach Jen is able to and she posts the posts we write for us. We mainly use face-book as a way to connect with our parents and friends of the parents on the team.

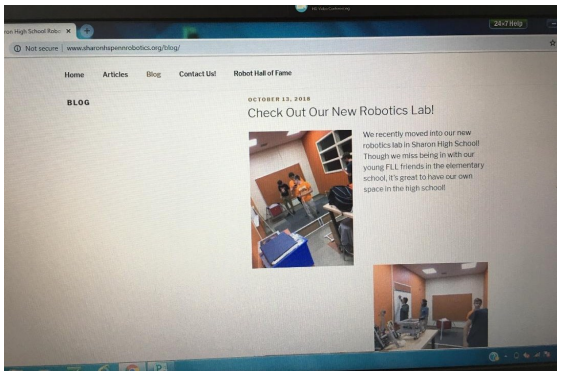
Our webpage is set up as follows:



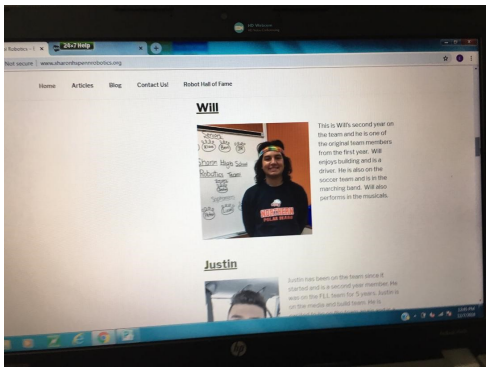
Homepage



Blog page



Blog page



Intros of our team members

Signature _____

11.7.18

In School:

Present: Will, JR

Tested the autonomous several times. Programmers need to shorten the distance the robot travels toward the crater. It ran up over the crater and tipped over backwards several times. It comes down off the lander in pretty much exactly the same spot every time, so the autonomous works pretty well otherwise.

We worked on a conveyor belt system for the center of the robot that will lift the balls and cubes. We will have to remove it for the scrimmage.

3:15 - 5:00

Present: Peter, Lucas, Jon, Kyle, Emma, Ben, Brandon, Coach Jen, Coach Rick

Summary:

Brandon and Lucas worked on the programming for the autonomous. We tried a few new hooks for hooking onto the lander. Coach Rick brought plastidip and we dipped a few pieces of metal into it to see if it would grip the lander better. It doesn't work very well. We also tried a long piece of extrusion, but it slips right out of the hook.

Coach Jen bought a plastic panda that seems to be closer to the size we need for our marker. It is easy for the gripper to grip and it falls into the right place every time. We decided to abandon the tiger and go with the panda for the scrimmage.

We temporarily took the sweeper off the front and started to build a lifting arm, but the height of it is too tall to start out, so we had to remove it and cut about two inches off the extrusion piece. Emma is constructing a basket out of plexiglass that will hold two items. This will go onto the end of the lift.

Signature _____

11.8.18

3pm - 7pm

Present: JR, Will, Peter, Emma, Lucas, Brandon, Ben, Kyle, Jon, Klaus

Because most of the team was present, Brandon and Klaus worked one on one with the sophomores, teaching them the basics of the programming.

Final Preparations for the scrimmage:

1) Put the team numbers on the sides of the robot
2) Straightened the switch plate and tightened it down
3) Added the gray rubber treads to the tank tread, tightened the treads
4) Added the flag pole mount
5) Calculated the speed and rotation for the tank treads

Wheel r = 3.8cm 150cm/6s 2 treads + space = 1.7cm

C = 7.6 =25cm/s

C=23.9 =250mm/s

=0.25mm/ms

We loaded everything we needed for the scrimmage into Coach Rick and Jen's van.

Signature _____

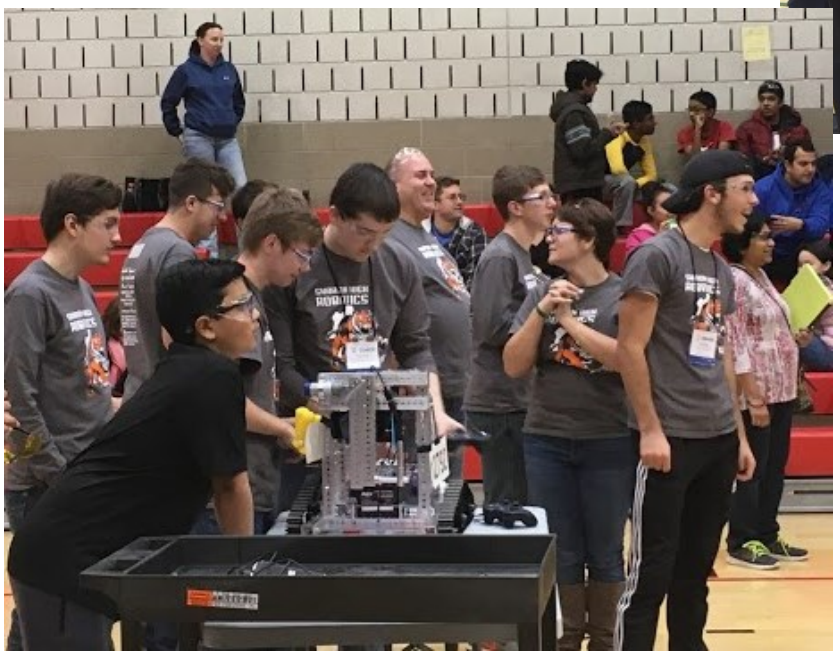
11.10.18—Peters Township Scrimmage

6:30—5:30

Present: Kyle, Jon, Emma, Peter, Will, Klaus, Brandon, Justin, Coach Jen, Coach Rick

Absent due to playoff football game: JR, Ben

Our first and only scrimmage of the year was at Peters Township School. We saw a loit of great robots and worked together well with several teams. Emma and Coach Jen developed a questionnaire for us to take with us when we are scouting the other teams. We decided we need to add a mark up of the playing field to the questionnaire so that we can have our partner draw out where their robot goes during autonomous as one of the teams told us they didn't do anything in autonomous but they did and we ended up running into them, almost knocking our robot over.



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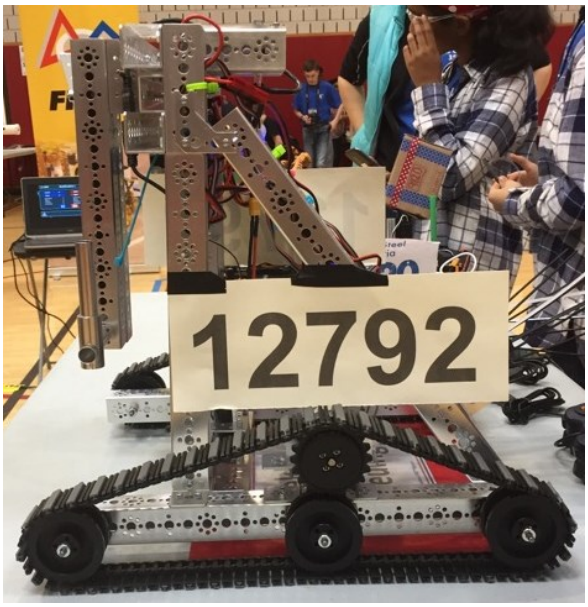
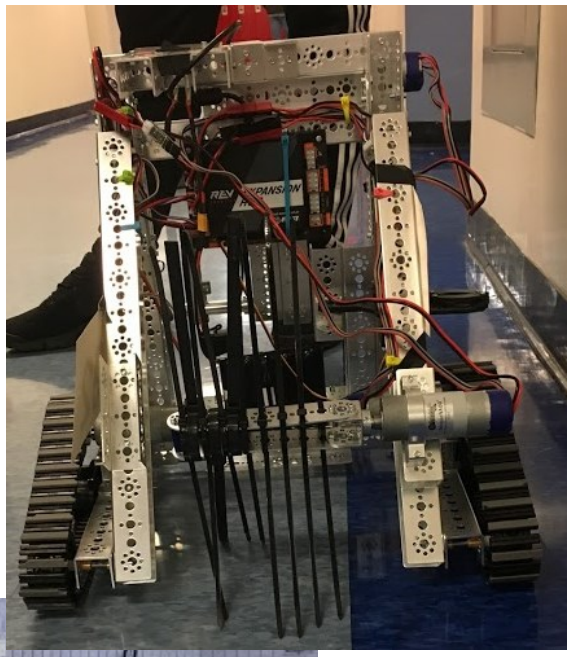
11.10.18—Page 2

6:30—5:30

We made some minor changes to our autonomous programming to shorten the distance the robot traveled toward the crater. The robot performed well and as long as we are paired with someone who places the marker we scored very well. Our strategy was to place our marker and then gather up as many balls and cubes as we can into the safe zone. At the end we tried to latch onto the lander. We accomplished this twice, but a few times, we were not able to maneuver the robot quickly enough to latch on. The tank treads did not work well either. We tipped over once. Despite all the problems, we came in first place at the scrimmage.





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11.10.18—page 3

6:30—5:30

The part of the scrimmage that helped us the most was listening to the judges who judge the engineering notebook and the presentations. Notes: The formal presentation should be about 5 minutes long and should highlight things that we feel are unique about our team or our robot. There is usually then 10 minutes of questions from the judges. Every person on the team should speak at least once. Highlight young members and female members. Make sure you have your safety glasses on. Everything about your robot desing and your brainstorming should be written in your notebook. How did you define your strategy? When did you design? What are your measurements? All your outreach should be in the engineering journal and if you have a measurement for impact on your community. Mentoring should also be in there. Use Facebook, a webpage and Instagram as outreach. Share your ideas, document this in the notebook. Document your sponsors and how you got your sponsors. Make your presentation stick for the judges. The notebook will be reviewed after you leave the room, so have your logo on front of it. You are convincing 9 people with your notebook and one or two with your presentation and your notebook. Everyone on the team should know everything about the robot in general.

Have a table of contents and highlight or tab the important sections. Make sure it is organized.

The judges looked at our notebook from last year and gave us the following advice: Our notebook is missing the how and why. What did we do is in there, but there should be steps as to how we did it and why we did it. Measurements, pictures, drawings, what we learned, what we accomplished, what we changed after evaluating. Thank you judges for your advice!

During the scrimmage, we tried to be helpful to other teams in need. We noticed a team that was trying to practice but didn't have a ball or block with them. We loaned them one of each of ours. The team next to us borrowed one of our rack and pinion sets to get them through the scrimmage. They returned it after the scrimmage. They were curious to see how strong it was and we think they were going to go purchase one. We also loaned our tools to the team across from us when they needed to make major, fast repairs on their robot between rounds and we helped a team with their programming when they needed to make changes to their autonomous program. We made a lot of new friends.

Signature _____

11.13.18—Post Scrimmage Brainstorming

3:00—5:00

IMPORTANT NOTE: The engineering notebook from this point forward will reflect the knowledge we gained from the judges at the scrimmage. We were not sure if it was appropriate to go back and make changes to the notebook from prior to the scrimmage, so we left that section alone. We hope that when you are judging this notebook you will glance between the previous notebook pages and then look at the notebook from this point forward and see what we learned and how we applied that knowledge to improve our documentation.

Present: Emma, Brandon, Lucas, Peter, Jon, Kyle, Klaus, Justin, Coach Jen

Absent: Ben, JR, Will

Summary:

We discussed the scrimmage.

1) Tank treads were not beneficial. They are slow, difficult to maneuver and we could not get into and out of the crater.

Action: We are going to remove the tank treads and go back to either a mecanum wheel or omni-wheels doubled up. We cannot get into the crater with the omni-wheels, so we will develop an arm that will reach into the crater and pull the objects out onto the playing field.

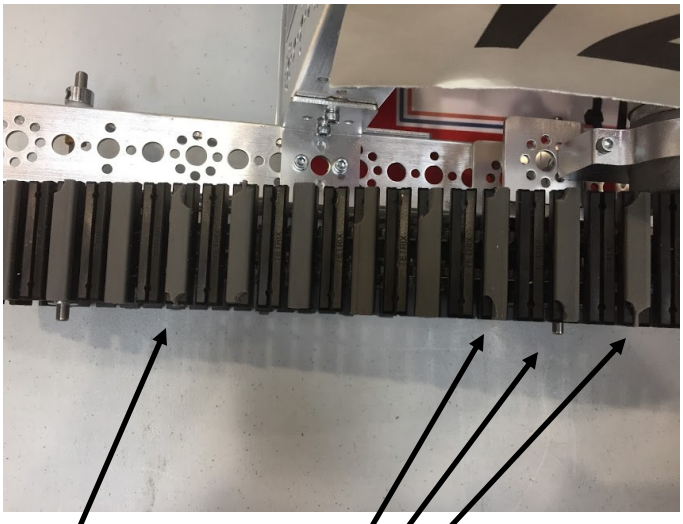
2) We might go back to a square design if the triangle design keeps tipping over.

Action: We think that maybe once the tank treads are removed, the robot will not tip over as easily. If it does still tip over, we are going to go back to a square design.

3) We need to develop a way to pick up the balls and cubes and put them into the lander.

Action: Justin is going to draw a design that may bend at a center joint without a motor and will fold up and lift the balls and cubes into the lander.

4) We really need to change the way we are documenting in our journal. We will definitely take the judges feedback and use it to improve the documentation of our practices.



Tank treads got chewed up easily.

Signature _____

11.15.18

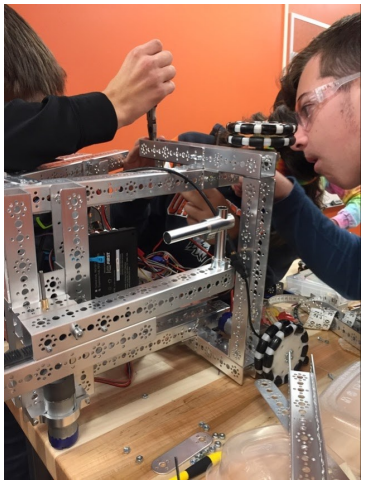
3:15 - 5:30

Present: Brandon, Peter, Klye, Lucas, Jon, Emma, Coach Jen

Building Tasks:

1) Remove tank treads and drive train.
2) Reshape robot frame to accommodate omni-wheel design we started with
3) Attach motors and omni-wheels
4) Begin to label all our tools and bins with our team number in prep for our tournament.

Summary:



We took off the tank treads because they were inefficient and the rubber on the treads got destroyed every time we entered the crater. We have ruled out tank treads entirely from our strategy because the robot cannot get into the crater with the tank tread. Also, the tank tread seems to slow the robot down and we cannot easily maneuver the robot, especially during end-game when we are trying to latch onto the lander.

We started to replace the tank treads with the original design. Removed the tank drive wheels and re-configured the frame to accommodate the omni-wheels.

We doubled up on the omni-wheels to allow for a zero-turn drive. Lucas determined that the motors we are using are a high torque motor, but not high speed. He and coach Jen looked up new motors that are high speed and Coach Jen ordered them. They should be here in a few days. Coach Jen brought her label maker and we labeled tools, large items and boxes with our team number for the upcoming tournament.

Goals for Next Practice:

1) Design an arm that can reach into the crater and pull out blocks and balls.
2) Finish the omni-wheel installation
3) If new motors arrive, install them
4) If we have time, build a lift to allow us to put the balls and blocks into the lander.

Programming:

Nothing changed as far as programming so the programmers were assisting with the build.

Goals for next practice:

1) Add into the autonomous programming a way for the robot to sense the crater and stop once it touches it so that it doesn't drive into the crater, or worse yet tip over.

Signature _____

11.30.18

3:15 - 5:00

Present: Brandon, Peter, Klye, Lucas, Jon, Emma, Ben, Will, Coach Jen

Building Tasks:

1) Replace old motors with new, faster motors
2) Finish installing the omni-wheels

Summary:

We replaced the old torquenado motors with the new NeveRest 60 Gearmotors. We found that the new motors were slightly smaller in diameter so we wrapped them in two layers of duct tape so we could tighten them into the mounts. Coach Rick ordered new motor mounts that should work with the new motors. They should be here in three days.

We finished installing the omni-wheels. They are doubled up to allow for zero turn. The robot is extremely fast now. Motor 3 was not spinning as fast as the other three motors, so Brandon reprogrammed the motor. All four motors are working exactly the same now. The robot is easy to maneuver now and runs on a zero-turn concept. The autonomous mission did not work as well with the new motors because the motors are too fast. The robot jerks a little to the side when it starts off and throws off its trajectory slightly. The autonomous mission is not working consistently now.

Goals for Next Practice:

1) Design an arm that can reach into the crater and pull out blocks and balls.
2) If we have time, build a lift to allow us to put the balls and blocks into the lander.

Programming:

Brandon reprogrammed one of the new motors. Brandon started working on changing the autonomous to accommodate the speed of the new motors. Brandon will see if Klaus can come to one of the next practices to help with the programming.

Media:

We went through our web page and edited text. We also started to create a video that we can put on YouTube when we get the YouTube channel set up. It is extremely time consuming to do anything media related in the room because the internet connection is very slow.

Signature _____

12.3.18—In School / After School Practices

In School 12:00 - 1:00

Present: Ben

Building Tasks:

1) Build a lift

Summary:

Built a conveyor belt lift that will lift the balls and cubes up to the crater. Attached the lift to the robot with two screws for easy removal. The lift made the robot too wide (22" wide) and too tall (20" tall).

Goals for Next Practice:

1) Design an arm that can reach into the crater and pull out blocks and balls
2) Run the autonomous and tweak it as necessary

After School: 2:00 - 5:00

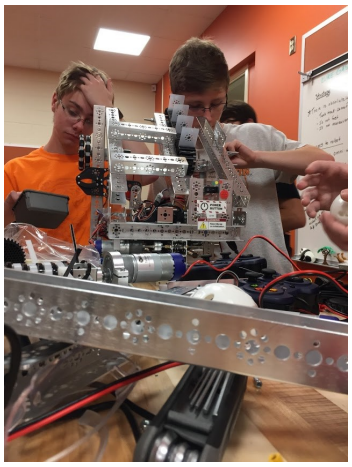
Present: Justin, Brandon, Klaus, Ben, JR, Will, Kyle, Jon, Emma, Coach Jen

Building tasks:

1) Remove the lift because it is too big
2) Build an arm that will reach into the crater and pull out the balls and cubes

Summary:

We removed the conveyor belt lift because it made the robot too wide (22") and too tall (20"). The conveyor belt concept is interesting, but it requires a lot of extra pieces to keep the objects that are being moved in the belt in location. We did not even bother attaching a motor to the belt because it was simply too big. Justin started construction of an arm. He is trying to develop an arm that does not need a motor in the middle of it. His idea is the arm will hinge open and will flip closed based on gravity related to the angle the arm is extended.



Signature _____

12.4.18

2:00 - 5:00

Present: Brandon, Peter, Kyle, Lucas, Jon, Justin, Emma, Ben, Will, Coach Jen, Coach Rick

Building Tasks:

1) Attach the new arm

Summary:

We attached the motor on the front of the robot so we can attach the arm when it is built. The function of the arm will be to reach into the crater and pull balls and cubes out of the crater onto the playing field.

We also raised the back lift because the robot could not get itself off of the lander in autonomous. Will retry the autonomous at the next practice.

Goals for Next Practice:

1) Finish the design an arm that can reach into the crater and pull out blocks and balls.
2) Run the autonomous and teak it as necessary

Programming:

There was no programming to be done today so the programmers and media team assisted with the build of the robot.

Media:

The media team took pictures and videos of the robot.

We also added a map of the playing field to the back of our scout sheet so that we can have the team draw the path their robot takes during autonomous. We decided this was a good idea because at the scrimmage, one of the teams we were paired with said they did not have an autonomous mission and their robot just dropped off the lander and sat. In reality it moved and then stopped, right in our path. It almost tipped our robot over. So, at the upcoming tournament, when the scouts go out to the different teams, they can have the team draw the path of their robot on the field so that our drivers know exactly where the other teams robot will go during autonomous. Coach Jen three-hole punched the sheets for us so that we can put them in a binder at the tournament and not lose them.

Signature _____

12.5.18

2:00 - 5:15

Present: Brandon, Klaus, Peter, Kyle, Lucas, Jon, Emma, Ben, Will, Coach Jen, Coach Rick

Build Team:

Tasks

1) Add and arm in front that extends into the crater and pulls blocks out
2) Re-attach the sweeper arm to the front of the robot
3) Fix lift on back of the robot—it is skipping

Summary

We added an arm onto the front left brace using a servo. Because the servo wasn't strong enough, we decided to switch it to a torquenado motor. Attached to the motor is an arm that pivots up and down. Halfway down the arm is a REV motor, connected to a worm gear that uses a rack and pinion system to telescope the arm out about 8 more inches. The entire arm gives us a 27" reach. At the end of the arm is an aluminum plate that is the width of two balls or blocks. This system allows us to pull blocks and balls out of the crater easily and quickly.

We placed the sweeper back onto the front of the robot. The sweeper consists of a torquenado motor with an extrusion piece attached to the end of it so that when the motor spins, the extrusion piece spins with it. The extrusion piece has multiple zip ties attached to it, reaching out in two directions. When the motor spins, the zip ties act as a sweeper brush does, sweeping the balls and cubes into the inside of the robot. We cordoned off a portion of the inside of the robot to keep the balls and cubes from moving from side to side or into the back of the robot. When we want the pieces out of the robot, we reverse the brush rotation and it brushes the pieces out from under the robot into the safe zone.

The gearbox on the lift in the back of the robot was skipping. The set screw had come out of the inner gear. We had to completely remove the lift and reconfigure it, replacing the set screw as well. The lift now functions well, lifting and holding the robot off the ground for extended periods of time and lowering the robot gently. The robot now weighs 22# and still fits within the 18" square box to start.

Programming team:

Tasks

1) add arm movement ability to teleop program

Summary:

We added the arm movement and extension to the teleop program and tested it. The program allows for

12.5.18 - Page 2

Controller B to run the arm. Using the right stick, pushing up moves the arm out and pulling back moves the arm to telescope in.

Next practice we need to work on programming the up and down movement of the arm.

Media team

Coach Jen and Mr. Dodd worked remotely together to update the front page of our website to have a picture of our robotic tiger and our team number.

We went into our webpage and added a page that contains our Robot Hall of Fame. We added our first robot "Old Dependable," placing a picture of it and a description of everything it accomplished.

We also added our Instagram link and our YouTube Channel link.

Signature _____

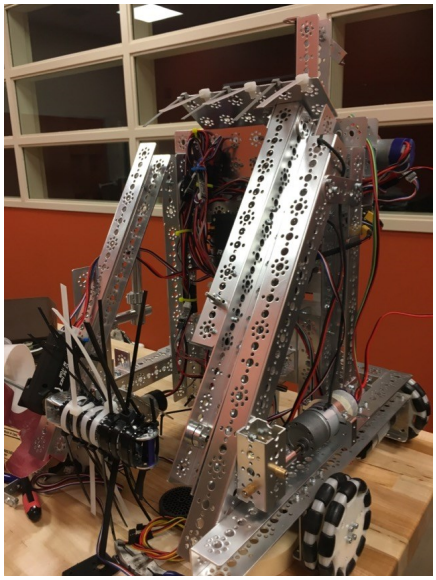
12.6.18

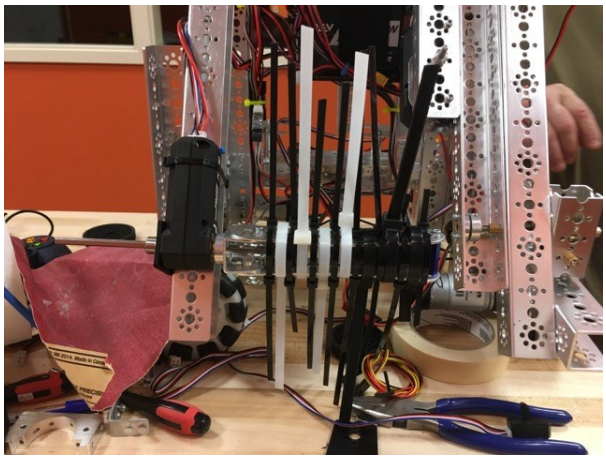
3:00 - 5:30

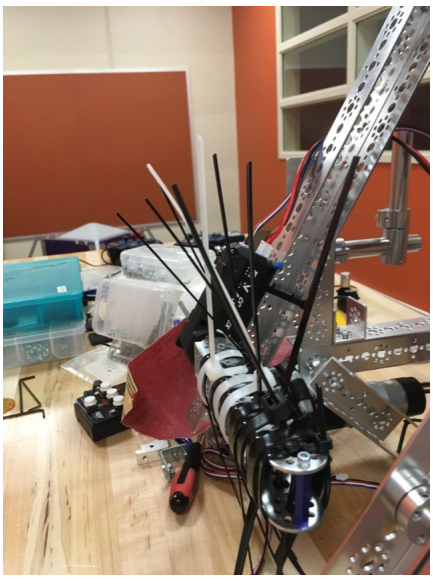
Present: Ben, Brandon, Emma, Peter, Lucas, Jon, Kyle, Coach Jen, Coach Rick

Build Team Summary:

The arm was not strong enough to pull the pieces out of the crater when fully extended. We also had difficulty lifting the arm up. We removed the arm and added worm gears to increase the torque. This allows the arm to be placed down and lifted back up by the motor when fully extended. The arm extension includes a rack and pinion. The tip of the arm includes a plate that serves as a scraper. At the end of the scraper, we added zip ties to be able to move the balls and cubes a little more easily and without doing any damage to the playing field or crater. We decided to leave the brush on the front of the robot for this tournament.







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Programming:

-We started work on the autonomous mission for the left side of the lander. The program will move the robot out of the lander and into the safe zone on the other side of the map on our team's side. The autonomous is planned to just set the robot down from the lander, go to the safe zone and drop the totem into it to claim the space. The robot then rushes back to the crater and parks on the outside of the crater zone. At the moment, we do have around 14 seconds left to spare on the autonomous, which we may use to scan and collect the gold block on the strip in front of the crater for points, however that is not our center focus on the autonomous right now. We look to create a program for the other starting point on the lander so that we can have it before the tournament, so we can be flexible with whichever side our teammate wishes to start on.

Signature _____

12.8.18 - West Central PA Eastern Qualifier

5:00am - 8:30pm

Present: Brandon, Klaus, Peter, Kyle, Lucas, Jon, Justin, Emma, Ben, Will, JR, Coach Jen, Coach Rick

It was a long day! We left the school at 5:00am and just barely got to Johnstown in time for team check in. After setting up our pit, we quickly passed all inspections and immediately went to work with our autonomous programming. We went in for our judges interview and felt we did really well. We don't like to rehearse anything beforehand, just go in and talk and it paid off for us. The judges came back around a few times to ask us more questions. We were paired with 5 different teams and did fairly well. Though we did not place within the top four robots and were not chosen to move on by another team, we felt good about our robot and saw some really great ideas for improvements. We also met some really great teams and have some members we can contact with questions. We also found that teams pass out items at the tournaments, so for the next tournament we are going to develop some items to pass out ourselves. We were very excited to win the control award! Overall, we are happy with our overall performance at this tournament and can't wait to make improvements to our robot for our last tournament coming up in January.

Signature _____

12.12.18

3:00 - 5:00

Present: Ben, Brandon, Emma, Peter, Lucas, Jon, Kyle, Klaus, Will, Justin, Coach Jen, Coach Rick

Post-Tournament Discussion:

Coach Jen asked us what we learned from the tournament.

1) We need to do a better job talking to the other teams. The scouts did a good job of talking with the teams initially, but we didn't do a good job of going back and talking to the teams we were paired with prior to getting up to the field with them. We also did not do a good job of going to the teams that were in the finals and letting them know how our robot would help their robot. We think we may have been chosen as a partner had we done a better job promoting ourselves.
2) We need to be watching the robots that are competing if we are not doing anything. That will give us the opportunity to see whose designs we would like to replicate and give us the ability to talk to them and find out how they built and programmed it.
3) We decided we need to have the robot ready at least 10 days ahead of the tournament so that the programmers have the time to perfect their programming and so that drivers have time to practice together.
4) We want to give the opportunity to the sophomores that want to drive, to drive at least once during the tournament. This will give us the opportunity to pass along the knowledge we have collected from two years of scrimmages and tournaments. We would like to decide who the steady drive partners will be and we want to get the coach for the drive team more involved with directing the drivers. We also want to determine who the most skilled drivers are by having timed matches in our practice room. The team that scores the most points will be the drive team to drive in the most critical matches of the tournaments.
5) We decided to add the following questions to the scout form: How many points does your robot score in autonomous to our scout form. We also decided to add "Do you get balls and cubes into the lander?" and "Do you separate them?" also "How often does it work?" and "Does it work all the time?"
6) We think at the next tournament we will ask other teams if they have any tips for beginning teams and we will put them on our website. We also need a handout of some sort. Justin will design a keychain and we will see if the school's wood shop can cut and etch 50-100 them and also send the drawing to the eCenter to see if they can 3D print 200 of them. We will also have a business card with our Instagram and webpage on it to hand out to teams.
7) Klaus and Brandon asked that we not make any huge changes to the robot during tournaments because even changing the weight of the robot slightly can change the programming.

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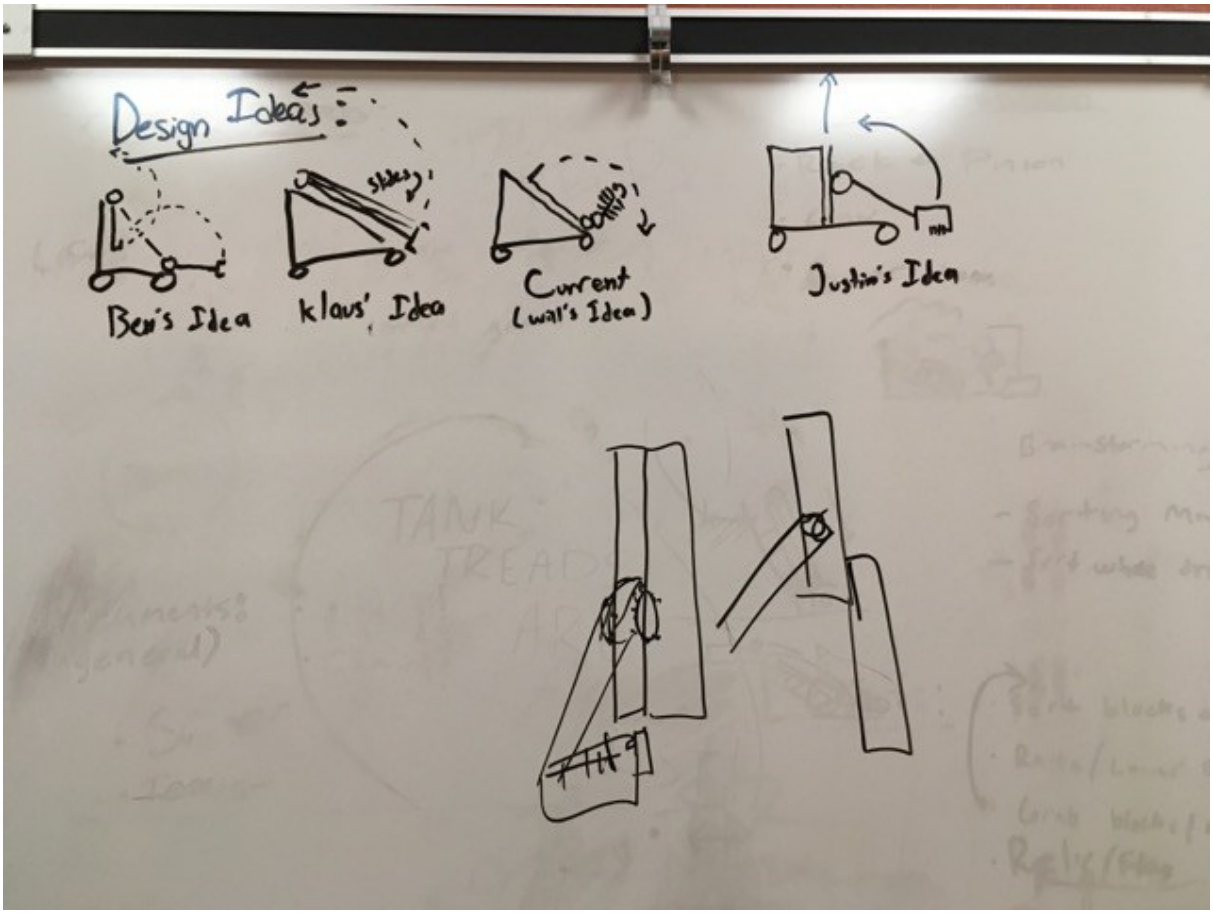
12.12.18—Page 2

Future Tasks:

1) Get everyone on the same page with the building of the robot so we can all work on the robot when we are here separately. Have the robot built by 1/10/19.
2) Media team is going to meet separately, Saturday at 1:30pm at Panera. We will have three laptops and good WiFi connection so that we can work on the website, create a YouTube video and do some Instagram posts. Coach Jen will be there with us.
3) Programming team will work on being able to knock off the cube. They will also work on having two autonomous programs so that we can run autonomous from either side of the lander.

Engineering:

We removed two motors: the rake extender and the motor that moves the rake on a point so we can get a better look at the robot. Ben, Will, Justin and Klaus all came up with ideas to get the balls and cubes into the lander. They each went over their idea with the team and drew a rendering on the white board. The team is going to vote on the design they feel will work the best and we will begin construction tomorrow.



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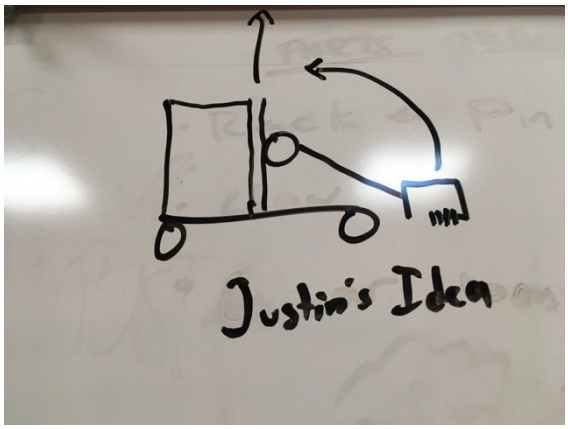
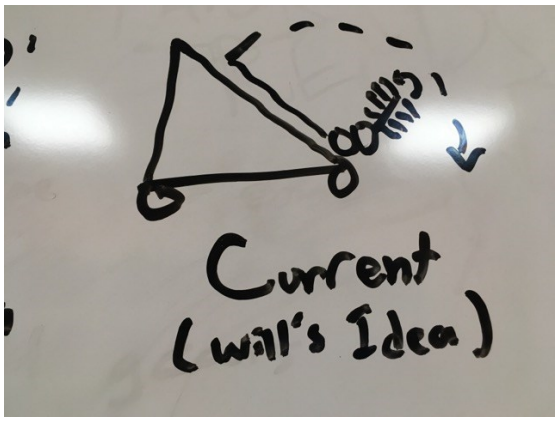
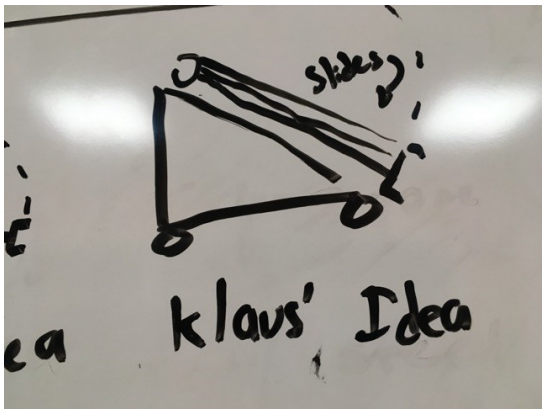


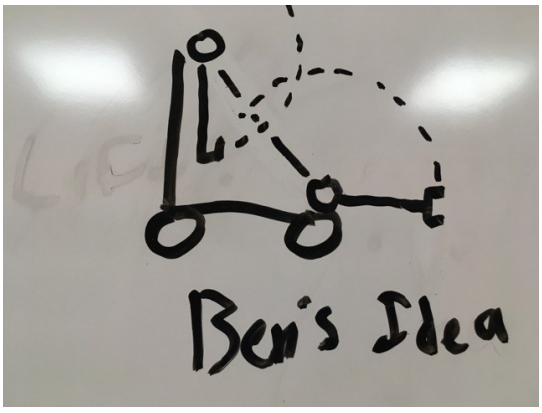
Justin's idea includes a long arm that can extend into the crater. At the end of the arm is a cage with a rotating brush on the end of it that will sweep the balls or cubes into the cage. The arm will pivot at the top of the robot, where it is attached to a lifting bar. This bar can lift the arm higher and the long arm will pivot over the robot, dropping the balls or cubes into the lander.



Will's idea is to keep the robot similar to what it is now, perfect the arm and the brush. Perfect the autonomous. Paired with a robot that can lift the balls and cubes and also claims the corner of the field, we could potentially score a lot of points.



Klaus's idea is similar to Justin's idea. The arm will telescope out. Instead of a brush with a cage at the end of the arm, he suggests a grabber. The grabber would be controlled by a servo that would open and close the grabber.



Ben's idea is to have a grabber on the front that would bring the balls back into a box that would then raise up and over the robot into the landers.

Signature _____

12.12.18—Page 4

Programming: We discussed different programming methods, such as programming the arm to do all its motions the same every time by hitting a button. Hitting the button once would start the motion, hitting the button again would stop it and hitting the button again would reverse it. We can't do much now with programming because we don't have a final robot yet. We are glad that we will have a few days to ourselves for programming after the robot is built.

Media: We will meet on Saturday to meet, just the media team. We are meeting at 1:30 at Panera. We will have three computers there so that each of us can work on something. The WiFi is good at Panera so we won't have the problem we have at the school with the connection being bad.

Media Tasks:

1) Update the website with the new pictures and the bios that we wrote for our engineering journal.
2) Add the coaches to the website.
3) Add a page for tips about building, programming and design.
4) Link our site to the FTC site and to other sites.
5) Develop a YouTube video that shows our runs at the tournament.
6) Develop some facebook posts and some Instagram posts.
7) Add a link to the Rover Ruckus video to our webpage.

Signature _____

12.13.18

3:00 - 5:00

Present: Ben, Brandon, Emma, Peter, Lucas, Jon, Kyle, Coach Jen, Coach Rick

Build team:

Today we removed the remnants of our arm. We brainstormed on the board about what new arm system we should use. The arm system to be chosen was a single extending arm with worm gear and rack and pinion. The worm gear used was a 4:1 ratio and allowed us to obtain immense amounts of torque from the TorqueNado motor. The arm will be capable of grabbing balls or cubes from the crater using a cage and grabber, then it will flip backward behind the robot and allow us to deposit them into the lander. Along with working on the arm, we slightly adjusted the frame of our robot and gave more room within the center area of our robot.

We tried a few different baskets:

This basket was made of plexiglass and was hot glue gunned together. We attached it briefly but it was way too heavy and the balls kept falling out of it too early. We did put some dabs of hot glue on the edge to try to keep the balls in, but it wasn't a good design.

This basket was made from coat hangers. It was lighter but was floppy and difficult to attach. It held the balls OK, but they did not stay in it very well and fell out too soon when we went to dump.

This basket is made from composite plastic, like the surround from a shower but flexible. We are able to cut it with an exacto knife and coach Barborak helped us use pop rivots to hold this together. It may be slightly large.

Programming Team: No programming changes were made for today. We will have to change the programming for the new arm when it is completed.

Media Team: We looked up different teams on Instagram and followed as many local teams as we

Signature _____

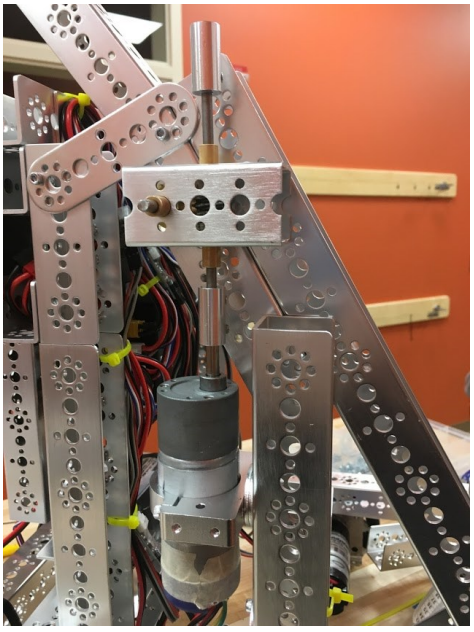
12.18.18

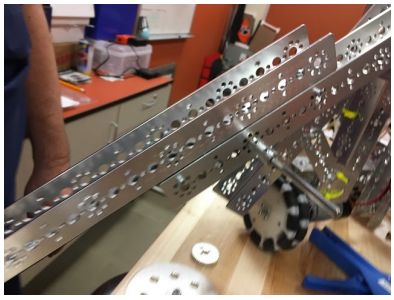
3:00 - 4:30

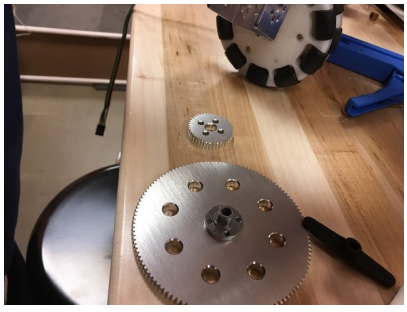
Present: Ben, Brandon, Emma, Peter, Lucas, Jon, Kyle, Coach Jen, Coach Rick

Build team:

Today the build team worked on the arm and accompanying worm gear and motor. We noticed that the arm was too low to clear the 18x18x18 inch requirements so we decided to take the easiest method of fixing it. We simply moved the motor up in positioning and this allowed us to clear the 29 inch lander and subsequently the 18x18x18 inch requirements. We now have to address the issue of the servo attaching to the arm and allowing us to actuate it properly. This will require a unique mounting system and we can work on this at the next practice. In all we ended up securing the motor and worm gear using the screws and an assortment of zip ties. Our plan would be to use a bigger gear on the servo and using a smaller gear on the shaft for the actuation of the arm.







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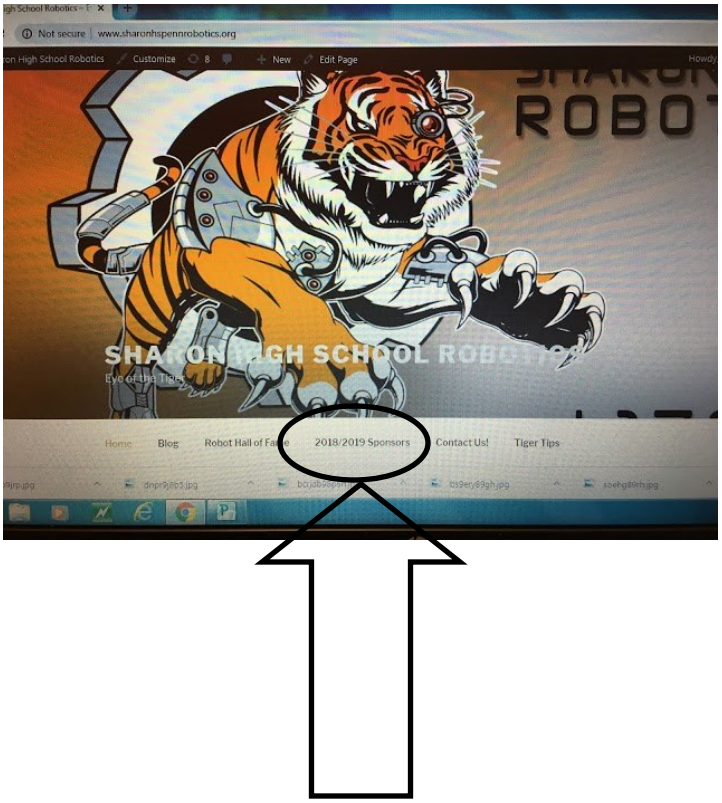
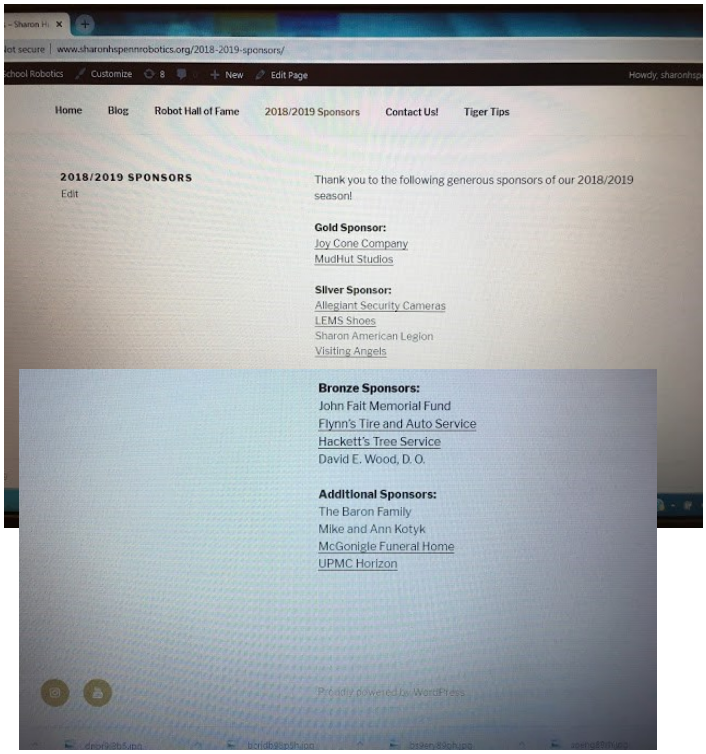
12.18.18—Page 2

Programming Team: No programming changes were made for today. We will have to change the programming for the new arm when it is completed.

Media Team: Today we added a sponsors page to our website and added the sponsors to it. The sponsors that had websites, we linked their website to their name on the sponsor list. We added the FTC logo to our home page and linked it to the FTC website. We also posted on our Instagram.





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12.19.18

3:00 - 4:30

Present: Ben, Brandon, Will, John, Kyle, Emma, Coach Jen, Coach Rick

Build team:

Today we are still working on the arm. Coach Rick cut the shafts to the length we needed and we put them back in place. We are now working on a way to mount the servo that extends the arm. It's difficult to mount because the motor is getting in the way of the basket that the balls and cubes will be swept into. We are looking at mounting gears so we can put the motor higher up out of the way of the box, but we have to reverse the rack and pinion. We are finding it difficult to build something that will fit within the size limitations.

Media team:

We typed out the pages in the engineering journal that needed done and added pictures. We merged the videos from our runs at the tournament and Brandon is going to put music over it for now, until we can do a voice over.

Media Team:

Signature _____

12.20.18

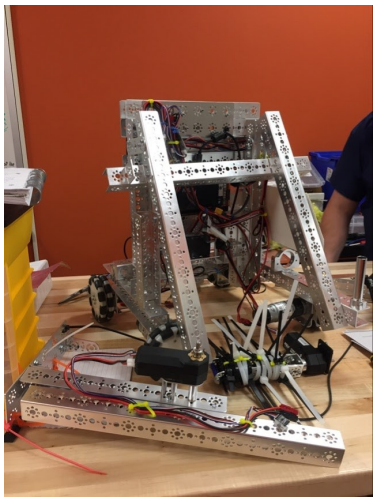
3:00 - 4:30

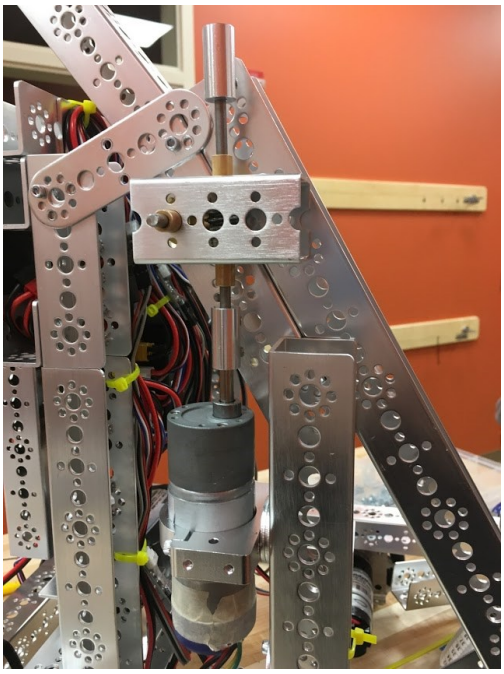
Present: Emma, Lucas, Coach Rick, Coach Jen

Build team:

Today we reversed the rack and pinion. We also moved the motor so it is out of the way. We can't try the arm because it needs programmed.

Media team: We now have 84 followers on Instagram. We sent the business card that Justin designed to Sharon Commercial Printing to see if they can print them for us and how much it will cost. Coach Jen started teaching us a little bit about grant writing. She also helped us start to put together a sponsorship form so we can start to solicit sponsors for our 2019/20 season.





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12.21.18

2:00 - 3:30

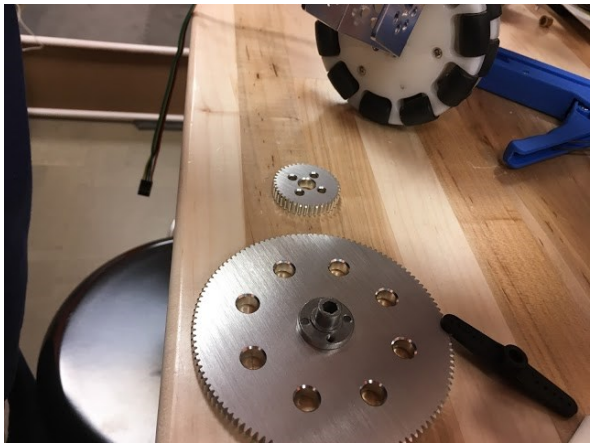
Present: Emma, Brandon, Ben, Coach Rick, Coach Jen

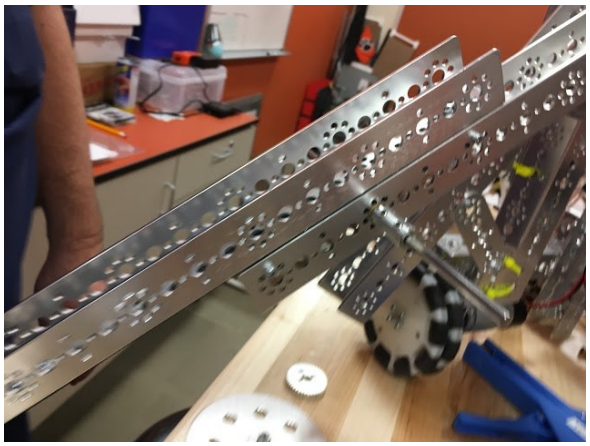
Build team: No one from build team was present.

Programming team: We adjusted the teleop so the controller now moves a servo. We needed to do this because the build team was trying to put a brush made of zip ties on the end of the basket to collect the balls. The brush will pick up balls but not cubes. This might be a good way to help us sort, only being able to pick up one type of item. We also left a suggestion for the build team: that by placing gears on the arm, will allow for the conversion of the servo to Hex and the gear will make the arm move up and down faster.

Media team: Today coach Jen helped us to apply online for a grant from McCune Foundation for the 2019/20 season. We submitted the letter of inquiry and asked for $13,700 for parts, marketing materials and registration fees for tournaments. We also developed our budget for the 2019/20 season so we could include it with the full blown application should our letter be accepted.

We were notified today that Sheetz gave a $250 sponsorship to our team for the 2019/20 season.





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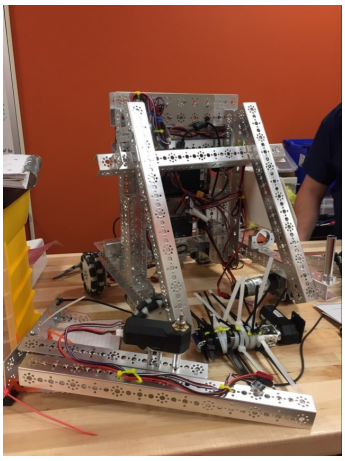
12.27.18

10:00—12:00

Present: Emma, Peter, Will, Coach Rick, Coach Jen

Build team:

Today we added a brush onto the extended arm attachment. The brush is made out of zip ties connected to a shaft. We did this to collect the silver and gold in our basket. Speaking of baskets, we tried two basket designs today. One design was made out of coat hangers. The problem with this is that when the arm went up, the basket fell. This design was hard to secure. Another design we had was made out of the bottom of a Tropicana bottle. This design worked better than the coat hanger design but it is a little flimsy. We made a basket out of a plastic shower wall surround material and it seems to work better to put the silver and gold into the lander. The brush design is slow and flimsy. We created a list of items for our next practice. These include items such as zip ties, L brackets, and shaft connector. This will keep us organized and on track for the next practice.



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1.4.19

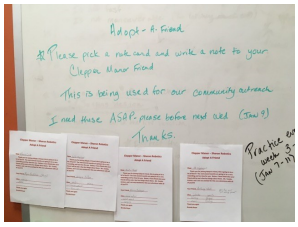
3:00 - 5:30

Present: Emma, Peter, Lucas, Jon, Kyle, Brandon, Ben, Coach Rick, Coach Jen

Build team:

Today we added a new basket on the arm that is made out of a plastic composite and is slightly smaller than the one we were using. This basket is sturdier than the previous baskets, which were too flimsy and had to be replaced. We changed the nuts on the robot as well. We got new, sturdier nuts that have a rubberized middle so the nut won't jiggle loose. The nuts were replaced so that they don't fall off the robot during the competition. Our goal for next week is to continue and finish replacing all the nuts on the robot.

Community Outreach:



We are doing Adopt A Friend at a local nursing home, Clepper Manor that is right next to the school. Each team member was assigned a 'friend' by the nursing home activities director from the nursing home. We wrote letters to each of our friends, introducing ourselves and telling them a little bit about ourselves. We told them our hobbies and interests and other things about ourselves that we might have in common. We will eventually visit our friends to meet them and show them our robot as well.

Media Team:

Today we took pictures to document the changes to the robot. We also posted on our Instagram about our practice. We are still working on uploading our YouTube video. We picked up our business card handouts from Sharon Commercial Printing. The eCenter at LindenPointe has been 3D printing keychains that Justin designed. They will have about 150 of them ready for us by the Friday of our tournament.

Programming Team: -Adjusted the program to incorporate the extra arm servos into the preexisting program due to our extensions and the basket being added to the arm. Will help the drivers learn the new controls in an upcoming practice.

Signature _____

1.7.19

3:00 - 5:30

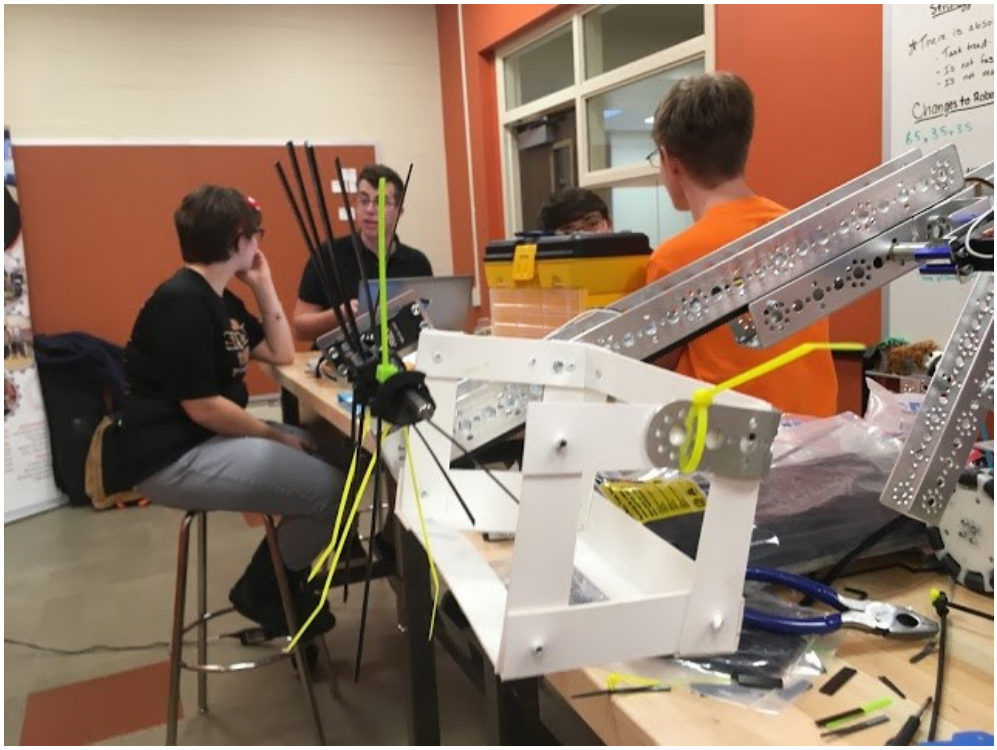
Present: Emma, Lucas, Brandon, Jon, Coach Jen, Coach Rick

Build team:

We realized that because we added a new basket made from composite plastic, the robot was too big and no longer fit inside the allowed 18 inches. The servo that runs the sweeper of zip ties made the arm too long by two inches. To begin getting the robot to fit inside the limit, we had to move the basket and sweeper two holes up the arm. That way, the brushes on the sweeper and the whole basket will be inside the 18” size limits.

Media Team:

Today, we hit 100 followers on Instagram! We made a post about it– go check it out! We also documented the build team’s work by taking pictures and uploading them to cluster for us to use later. We use the pictures on our cluster for all of our social medias and even our website.



Signature _____

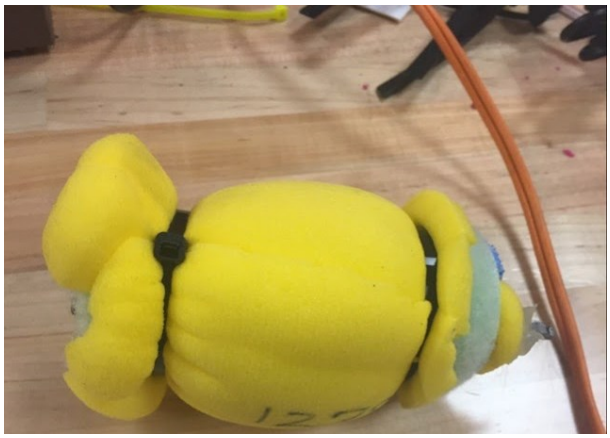
1.8.19

3:00 - 5:30

Present: Emma, Lucas, Jon, JR, Justin, Coach Jen

Build team:

We moved the basket. We also made the basket smaller by cutting it down a half inch from the width and a half inch from the height, the basket now measures 3.5” (H) x 3.75” (W) x 6.5 “ (L). We made it sturdier by adding a metal bar to the back that wraps partially around the sides. The basket is made from a thick plastic that is used for a bathroom wall. It’s sturdy, but shapeable and easy to cut with an Exacto knife. We poked two holes in it on the side so we could attach it to the arm using screws. We added a gear to the side of the box as a spacer so that the basket misses the nut on the arm—it was catching on the nut as we extended and retracted the arm.



Once we had the basket and motors in place, we ended up having to trim the ends of the zip ties on the brush because they were too long. Once we trimmed the end of the zip ties, they started catching the balls and flinging them outside the box. We are going to experiment with different types of sweeper items. We had a sponge type of paint roller in the room so we cut it up and tried it. If we layer it twice, it seemed to work better than the zip ties. We brainstormed other ideas and coach Jen is going to purchase some items for us to try tomorrow. We asked her to buy a large sponge, a loofah, make up sponges, a paint roller and kitchen sponges.

Media Team:

We are still working on uploading our YouTube video. There have been some complications because the MacBook that we use isn't letting us upload our video directly to YouTube. We checked our Instagram and made a post. We now have 102 followers. We also took pictures of the team working on the robot and of the changes that were made.

Programming Team:

Signature _____

1.9.19

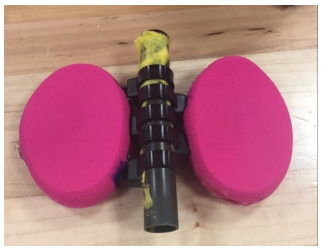
3:00 - 5:30

Present: Klaus, Brandon, Emma, Lucas, Coach Jen

Programming Team:

We worked on trying to get a toggle for the loofah sucker in the teleop program. This was because it was unnecessarily difficult for the drivers to concentrate on holding down the button while simultaneously doing other tasks. We did not succeed, however we did come a lot closer to understanding how we would implement it and should be able to soon enough. We replaced four of our old mats with new ones that are the same as the ones used at the tournament. This was to make our autonomous programming consistent with the environment of the competition.

Media Team: We got the YouTube video uploaded between our practices. We now have 104 followers on Instagram. We also have 4 YouTube subscribers. We took pictures and videos to further document the changes made to the robot and programming.



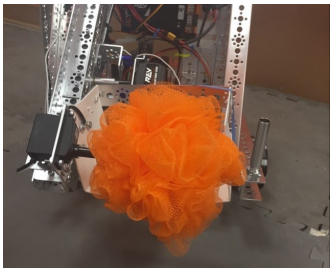
Build Team: Today we designed different grabbers. They consisted of:

#1 Two makeup sponges attached to a shaft with zip ties. We had to use the hot glue gun to stiffen the sponges. This ended up not working well because the sponge wasn't firm enough to pull the balls and cubes into the box.

#2 Paint rollers—we used the small sponge-like paint rollers and cut them off their base, layering them 3 deep. This worked somewhat for the balls, not at all for the cubes.

#3 Sponges—We tried regular kitchen sponges wrapped around a shaft. This had no grip at all.

#4 The loofah—This was the winning design. The loofah grips the balls quickly and the cubes. We are going to stick with the loofah. We dipped the shaft into a rubber coater, let it dry and then zip tied the loofah in place. We named it the loofah sucker.



Signature _____

1.10.19

3:00 - 5:30

Present: Klaus, Brandon, Emma, Coach Jen, Coach Rick

Programming Team:

We decided to have the loofa sucker be controlled by the left and right triggers. This is because we could not finish the toggle that we worked on yesterday, so in the interest of time we will attempt it later. We also adjusted the autonomous programs, after switching out for newer mats that would give us more grip. The first program, and the main one we use for the competitions works well, and it runs semi-smoothly. There are some tweaks needed, as well as how we need to figure out how to prevent the lift from lifting up during autonomous on it's own. The autonomous programs are the only things on the programming side we really need, as the controller works well, but we would like to improve it to run on it's own.

Media Team: We now have 107 followers on Instagram.

Signature _____

1.11.19

3:00 - 5:30

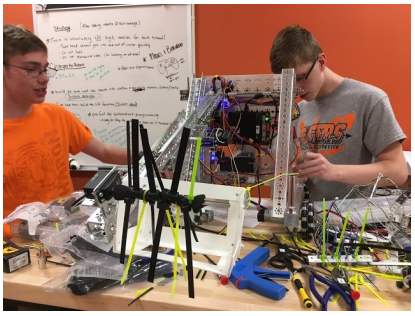
Present: Peter, Lucas, Jon, Emma, Coach Jen, Coach Rick

Build team:

We tightened everything. We also attached the loofah sucker to the robot and used a hot glue gun to reinforce it. We took some close up pictures of our worm gear assembly and our rack and pinion for our arm extension. We thought some of them might be cool to use in our Instagram posts.

Drivers:

Jon and Lucas practiced driving together for 1/2 hour with Peter acting as drive coach. Emma and Jon also practiced driving together for over 1/2 hour.



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1.14.19

3:00 - 5:30

Present: Lucas, Jon, Kyle, Ben, Brandon, Will, Emma, Brandon, Coach Jen, Coach Rick

Programming:

We made sure that the driver programs fit the best with each driver pair. Swapping around axis on the joy-sticks for both controllers allowed for each driver to be more comfortable with their driving, and we will continue to get all the drivers' layouts set. We still have more people to confirm how they want their controller layouts set.

Drivers:

Ben and Will practiced driving together for about 15 minutes. They are satisfied with the controls. Emma and Lucas practiced driving together since Jon and Kyle had to leave for a swim meet.

Team:

Lucas and Emma made the robotics buttons that we will pass out at the tournament.

Signature _____

1.15.19

3:00 - 5:30

Present: Jon, Kyle, Brandon, Emma, Coach Jen

Programming:

Working on the autonomous programming.

Drivers:

Will, JR and Ben practiced driving together during the school day. Emma and Jon practiced driving together with Kyle acting as the drive coach. While driving, the right rear wheel fell off.

We took the wheel and pulled it apart, we sanded the flat portion of the axel and reattached the wheel making sure the set screw was tightened onto the flat portion of the shaft. We drove the robot again and the wheel seems to be staying on fine now.

Team:

Emma and Peter continued to make the robotics buttons that we will pass out at the tournament.

Signature _____

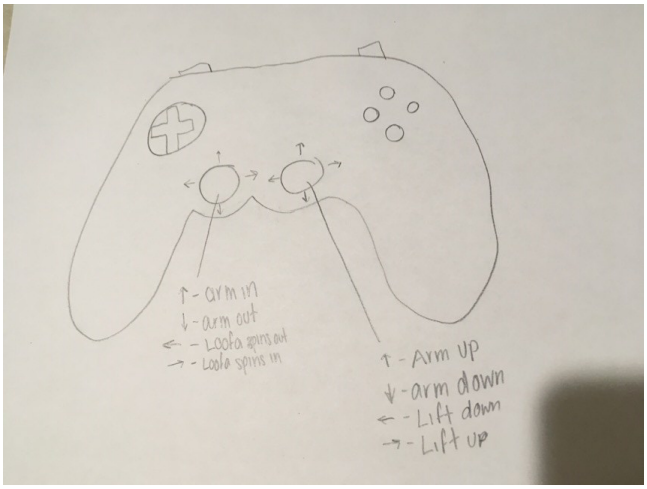
1.16.19

3:00 - 5:30

Present: Brandon, Will, Ben, Emma, Coach Jen

Programming:

Working on the autonomous programming. Emma asked if the rear lift that lifts the robot could be controlled with the d-pad. Brandon is not able to figure out how to program the d-pad, so the control for the lift is currently on the same joystick as the up and down for the arm. Currently the controls are as follows:



Media Team:

Emma continued to make the robotics buttons that we will pass out at the tournament.

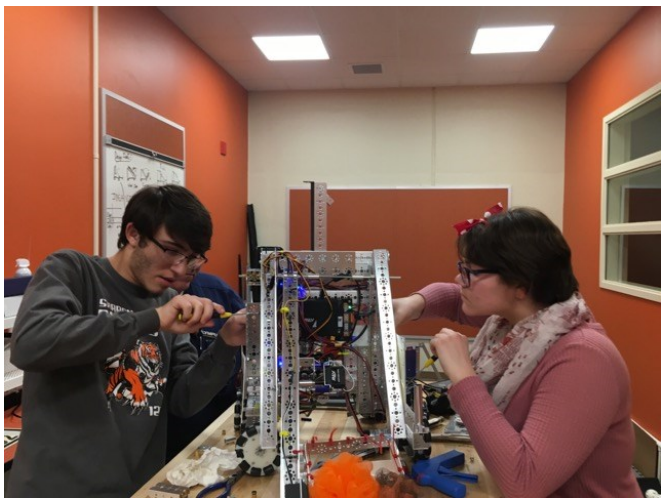
Signature _____

1.17.19

3:00 - 5:30

Present: Emma, Lucas, Will, JR, Coach Jen, Coach Rick

Drivers: Will and JR practiced together for about 15 minutes until JR had to leave. Then Will and Emma practiced for about 25 minutes. Will controlled the drive and Emma controlled the loofah sucker and the arm. Lucas took the worm gears that just came and built a replacement box in case we need to replace the worm gears quickly during the tournament. While the robot was driving, the same back wheel fell off. We took the base that the wheel motor is attached to and moved it out about 1/4" so that more of the shaft sticks out, allowing us to secure the wheel to more of the shaft. We will be sure to tighten everything in between drives at the tournament. We also found that the arm was starting to get floppy. We removed the arm and found that one of the shaft collars was worn out and the set screw was not set onto the flat portion of the shaft anymore. We had to remove the entire arm and pound out the shaft. We reconstructed almost the entire arm The worm gears we are currently using are a 4:1, we would like something that would go even faster, but we don't have time to order anything else.



Our marker that we will drop in our corner to secure the space.

Signature _____

1.18.19

3:00 - 4:00

Present: Emma, Lucas, Will, JR, Ben, Brandon, Klaus, Jon, Kyle, Peter, Coach Jen, Coach Rick

We loaded everything up into the van for the tournament. We are leaving here tomorrow morning at 6:00am to get to Upper Saint Claire by 7:45am. There is a winter storm coming and it is supposed to hit our home area hard in the late afternoon tomorrow. We will be able to stay for the whole tournament.

Update: tournament was cancelled due to the storm.

Signature _____

1.23.19—Robotics Open House

6:45—9:00

Present: Emma, Lucas, Peter, Jon, Kyle, Brandon, Will, Coach Jen

Tonight, the two Case Avenue FLL teams and our high school FTC team showcased our teams to the community at our annual open house. We gave a 15 minute presentation with each of us contributing to the presentation and drove the robot. People from the community were excited to see our robot and came up to us after the presentation to see the robot in action. We also presented certificates to our sponsors.

Signature _____

2.4.19—Practice

3:00—4:30

Present: Emma, Lucas, Peter, Jon, Kyle, Brandon, Klaus, Coach Jen & Coach Rick

Programming: Brandon revised the timing and the distances traveled by the robot for the autonomous mission. The robot now lowers itself, turns to the left, continues to the corner, drops the team marker into the corner, then drives straight backwards to park on the crater.

Build team: The rack and pinion were stripped, so we took apart the arm and replaced it. We also replaced the set screw in the worm gear.

General: Coach Jen announced that the tournament was rescheduled for Sunday, 2/24/19. We will leave the Case Ave lot at 6am. We also got a practice schedule for the month of February.

Signature _____

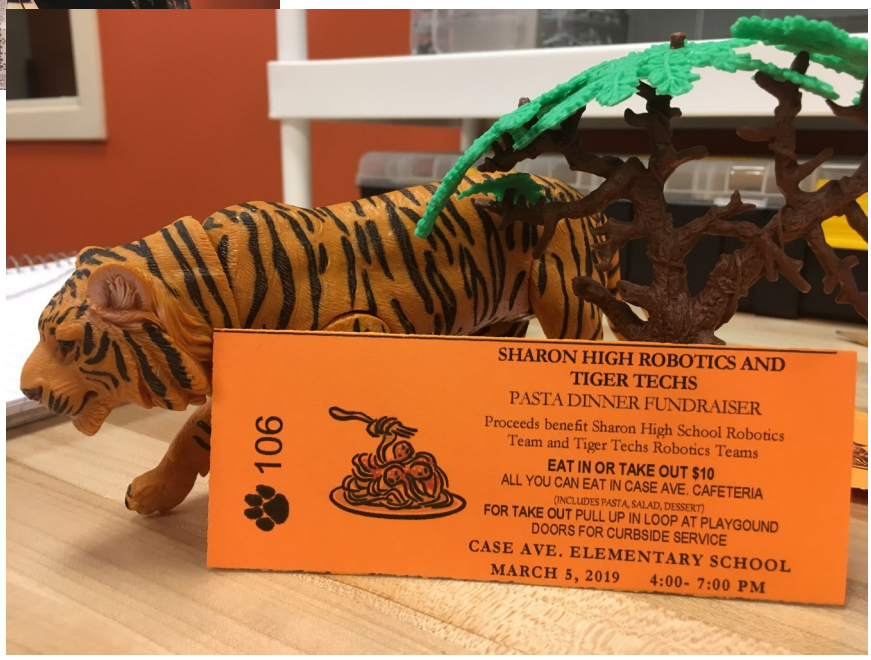
2.6.19—Practice

3:00—4:30

Present: Emma, Lucas, Will, JR, Coach Jen & Coach Rick

Build team: Will came up with an idea that would eliminate the need for the worm gear. Will, JR and Lucas dismantled the arm and took off the worm gears. They used a new motor configuration to attach the motor directly to the shaft to lift the arm. Next practice we will try to change out the worm gear on the lift on the rear with a new set.

Media: We announced our Spaghetti Dinner Fundraiser on Instagram and Facebook.



Signature _____

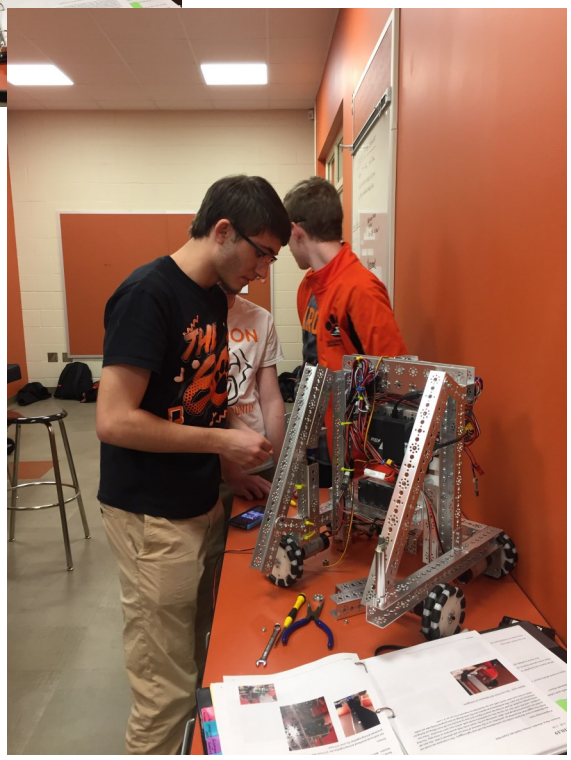
2.8.19—Practice

3:00—4:30

Present: Emma, Lucas, Peter, Jon, Kyle, Brandon, Klaus, Ben Coach Jen & Coach Rick

Programming: We researched VuForia and transformation matrices. We are going to try to switch to Android Studio because we want to get the libraries that VuForia SDK provides.

Build team: We replaced the worm gear and the respective arms that it was connected to. The design we attempted to replace the worm gear with was faulty, as there were no locks to keep the arm from drifting down.



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2.9.19—Robot Demo at Home & Garden Show

3:00—4:30

Present: Emma, Jon, Kyle, Lucas, Coach Jen & Coach Rick

We gave a presentation about our robot and the season to about 40 spectators at the Home and Garden Show at the Avalon at Buhl in Hermitage, PA. The demonstration lasted about 30 minutes. Emma handed out our business cards and we talked about our need for sponsors for next year. Emma went to each table set up at the show and talked to each vendor about sponsorship possibilities. We gave a second demonstration about 2 hours later at the end of the FLL demonstration. We also had our keychains and business cards set up at a table with the FLL teams and their robo-art.

Signature _____

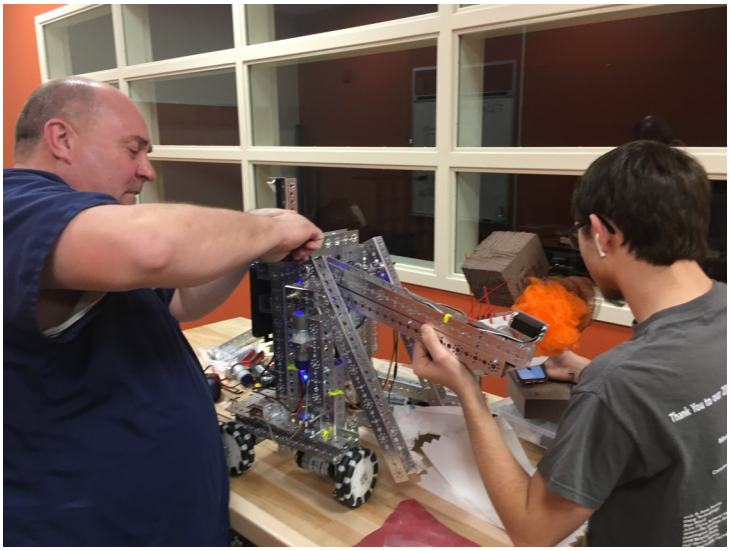
2.12.19—Practice

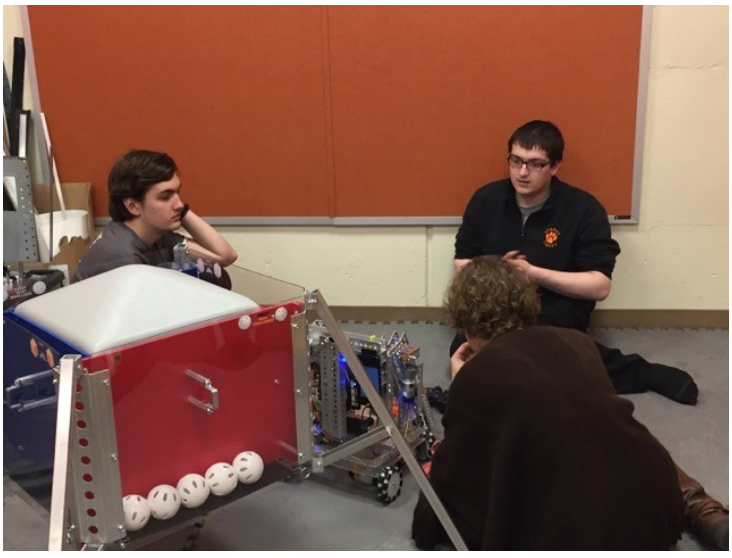
3:00—4:30

Present: Emma, Lucas, Brandon, Klaus & Coach Jen

Programming: We started to work on the other autonomous program for the opposite side of the lander. Progress halted by a dislodged set screw in the arm's worm gear motor.

Build Team: The robot took a beating at the Home & Garden Show. Several pieces fell off and we lost a few bolts and nuts. We reattached the A-frame on the non-arm side, being careful to line up the shaft and mount it straight. We also removed the set screw from the worm gear, removed the motor and checked the shaft. The set screw was not tightened down and the shaft was slightly damaged. We sanded the shaft and re-placed the motor. We put lock tight on the set screws for the worm gears and tightened them down. We also tightened the set screw in the rack and pinion set on the lift of the robot because it was stripped.





Signature _____

2.13.19—Practice

3:00—4:30

Present: Jon, Kyle, Peter & Coach Jen

Build Team: We moved the wires and secured them because they were being rubbed when the arm goes up and down. We cut all zip ties that were holding wires and started cleaning up our wiring, making sure to secure connections. We color coded the zip ties that hold the wire so that we now know by looking at the wire and zip ties where the wire goes. We also took pictures for the wire diagram.

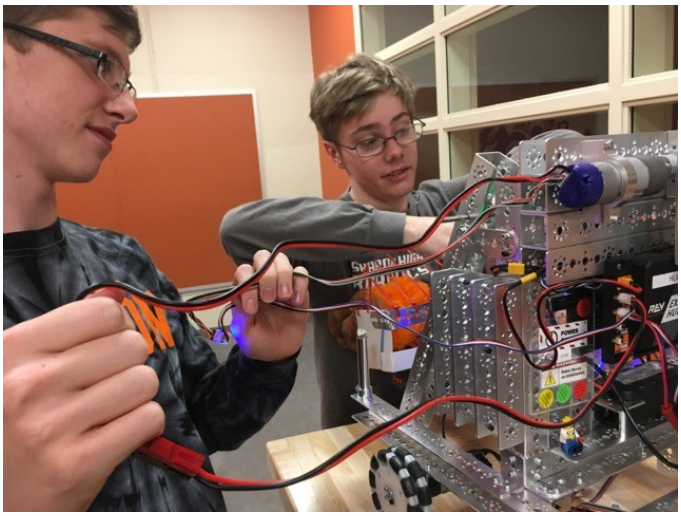
Wires secured with purple zip ties go from REV HUB 1 to each of the motors that run the four wheels.

Wires secured with red zip ties go from REV HUB 2 to the lift on the back of the robot.

Wires secured with green zip ties go from REV HUB 2 to the arm.

Wires secured with yellow zip ties go from REV HUB 1 to the servo that runs the arm extension and to the spinner on the front of the arm.

The full wire diagram can be found in the last tab in the engineering notebook.



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2.19.19—Practice

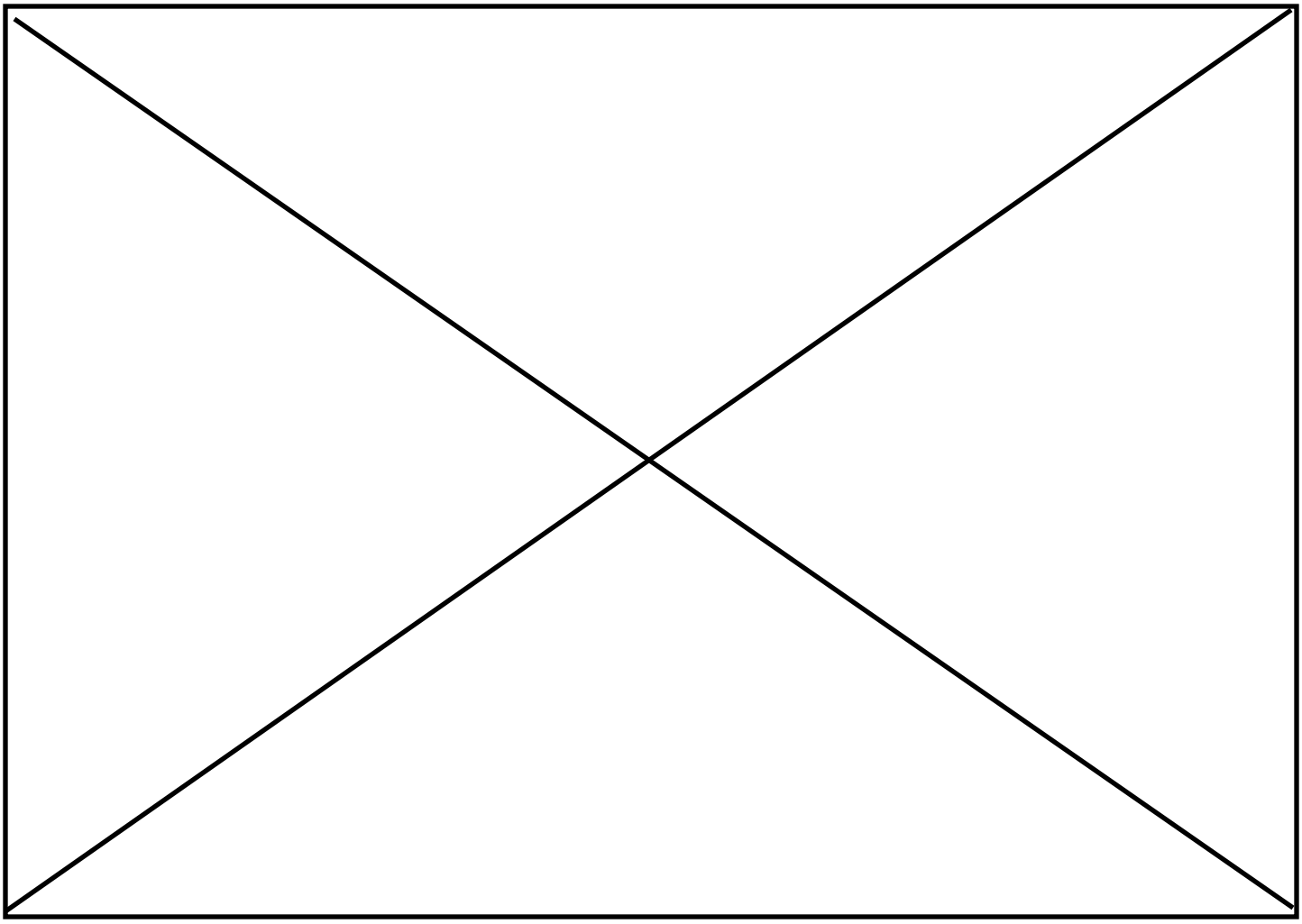
3:00—4:30

Present: Jon, Kyle, Emma, Peter, Lucas, Ben, Coach Rick & Coach Jen

Programming Team: Continued to work on the left side autonomous program for the upcoming tournament. Mainly adjusted distances and time that the autonomous would run on. Making progress getting it closer to perfection, however the timing is off on a few parts of the program. Will adjust at next practice.

Build Team: Built a second arm/worm gear set so that if we need to change it out quickly during a tournament, we can. Put thread-lock on the set screws for the worm gears. It sounds like something is hitting the frame. Checked the wheels- put thread-lock on and tightened the set screws in the wheels.

Worked on the wire diagram.



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2.20.19—Practice

3:00—4:30

Present: Jon, Kyle, Brandon, JR, Peter, Lucas, Coach Rick & Coach Jen

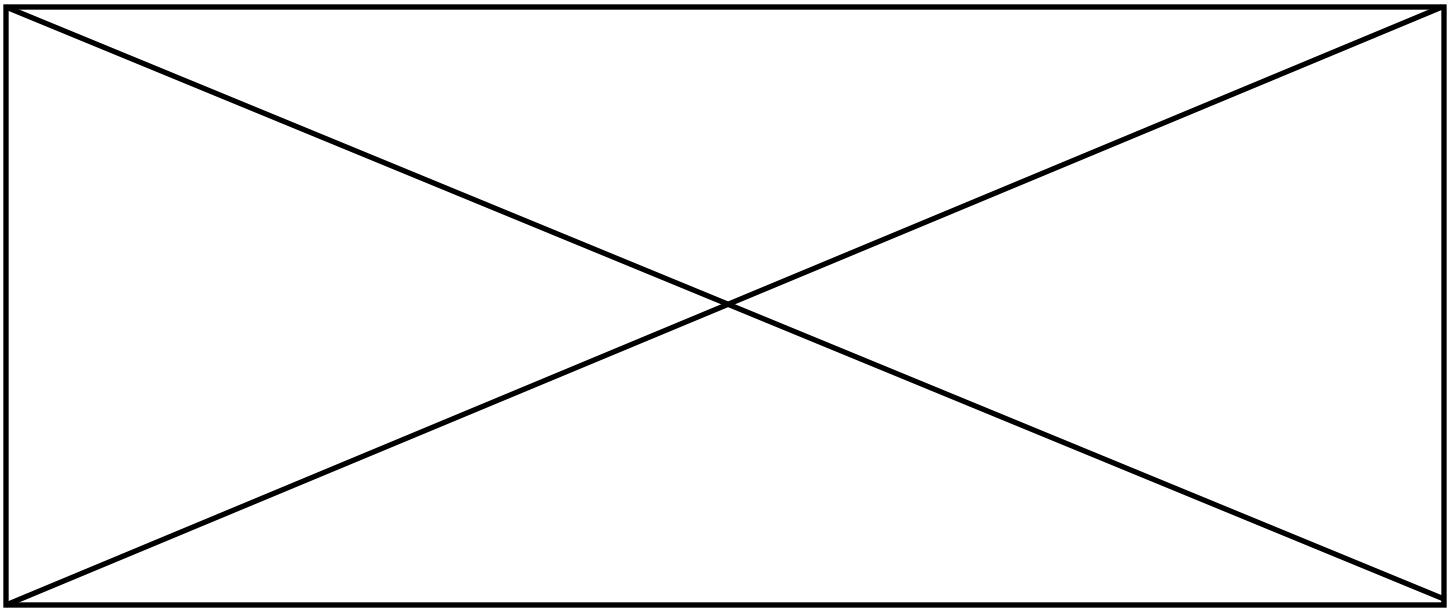
Programming Team: Continued to work on the left side autonomous program for the upcoming tournament. Started to work on the right side autonomous program with code taken from parts of our left autonomous. Both programs almost works as perfect as possible.

Build Team: We put a new rack and pinion on the lift and tightened everything.

Worked on the wire diagram.

Media Team: We printed off the list of teams registered for the tournament and completed the top information on a scouting form for each team. This will make our scouting process easier as we can divide the sheets up when we get to the tournament and each take a few and go to the teams we were given. Last time a few of us went to the same team because we didn't have the forms pre-filled.

We began packing up for the tournament.



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2.21.19—Practice

3:00—4:30

Present: Kyle, Brandon, Peter, Coach Rick & Coach Jen

Programming Team: Finalized the adjustments on both sides of the autonomous programs to work as well as possible, and provides consistent, successful results. We added a third program, the second option to the right side of the board, just in case we need to work around our alliance's robot considering the safe zone and the craters. The autonomous is finally completed for the tournament in a few days.

Build Team: We added the team numbers to the sides of the robot. We also completed the wire diagram and added it to the engineering journal.

Final robot measurements are

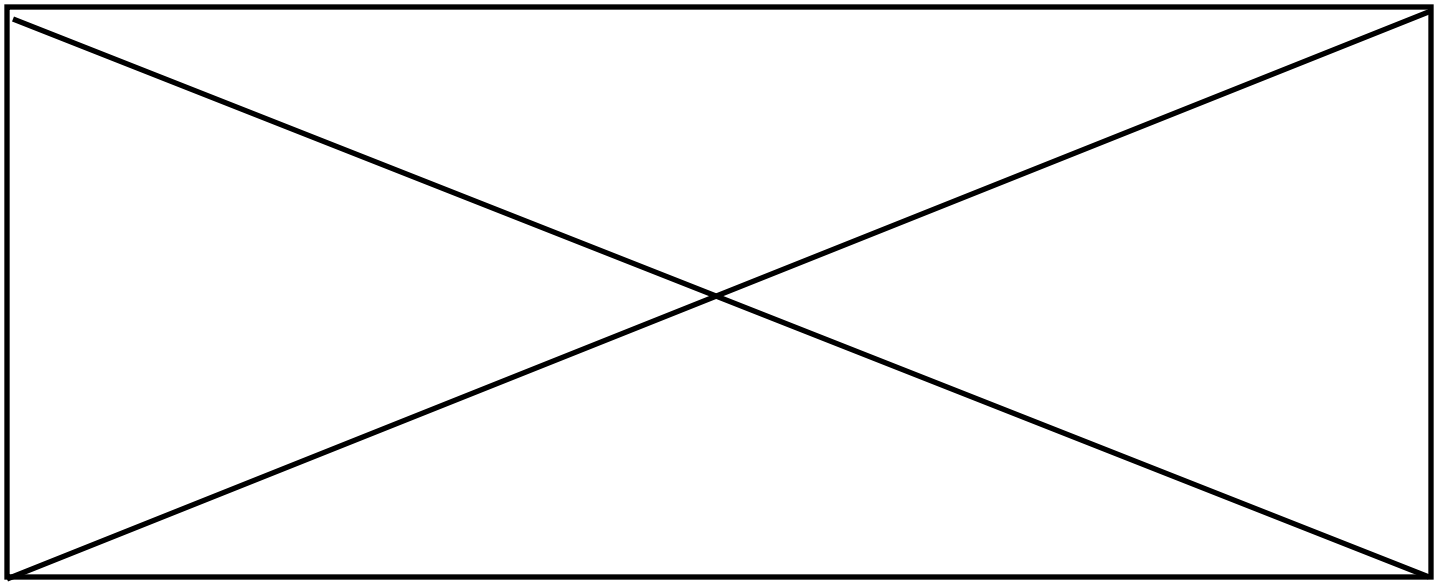
Height= 17 3/4"

Width= 17"

Depth= 17 3/4"

Weight= 20#

Today we packed up all the tools and extra parts in preparation for the tournament. Tomorrow we will practice driving and pack up the vans.



Signature _____

2.22.19—Practice

3:00—4:30

Present: Brandon, Ben, JR, Will, Peter, Lucas, Jon, Coach Rick & Coach Jen

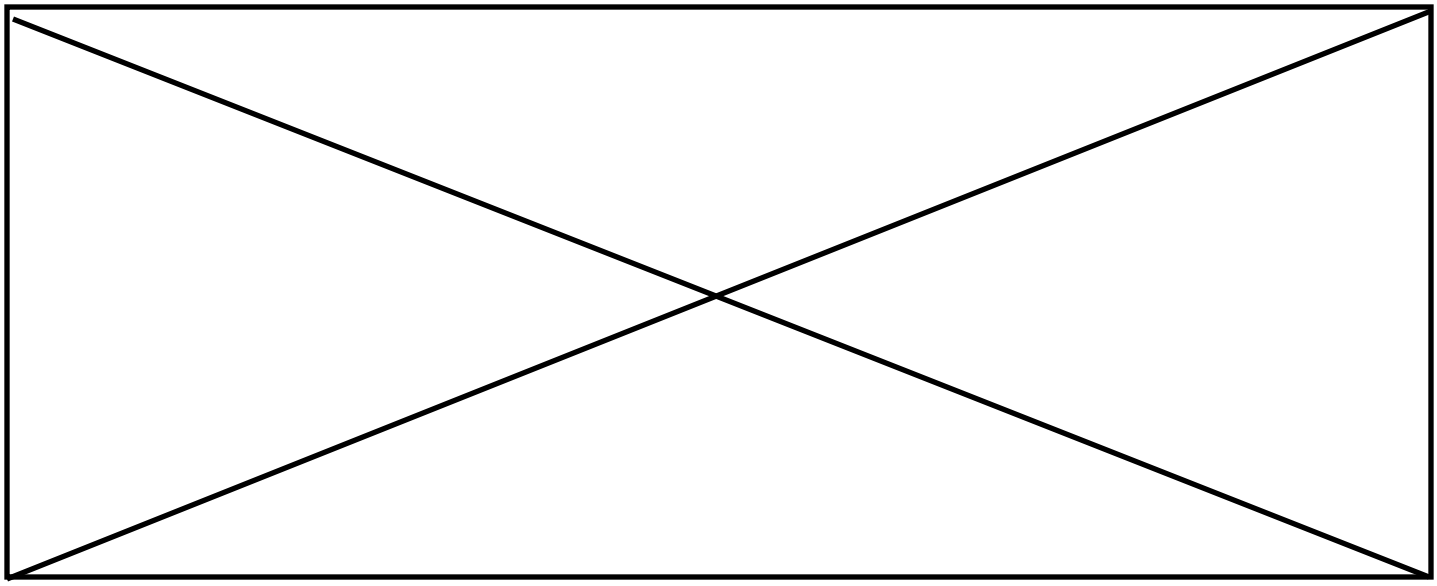
Programming Team: Printing out the programming for in the engineering journal.

Build Team: Tightened all set screws and screws for the wheels.

Media Team: We now have 121 followers on our Instagram. Our YouTube channel has 4 subscribers. We have 2 likes on our first video. On Facebook, many of our posts are reaching over 1,300 people. We have 310 people who like the Sharon Robotics Team page.

We all practiced driving the robot and running the arm and sweeper. The robot's autonomous is consistent and reliable. The arm seems to be working really well. We decided we do not want to practice tomorrow so that the arm is in good shape for the tournament.

We loaded up the van. We will leave the school Sunday at 6:00am to get to the tournament in time for the 7:45 check in.



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2.24.19—PA Southwest Qualifier

7:45am—5:30pm

Present: Brandon, Ben, JR, Will, Klaus, Peter, Lucas, Jon, Emma, Kyle, Coach Tomko, Coach Rick & Coach Jen

Today we participated in the Southwest PA Qualifier. We live-streamed all our matches on Instagram so that our friends, family and teachers could watch the competition. We placed 5th overall. In the finals, because the team in first place chose the second place team to be on their alliance, we moved up to being a team captain. The third place team, Girls of Steel, chose us to be on their alliance and we accepted. We ran with them the first round and we lost because their robot broke in the middle of the match. The last two, we ran with the Terabytes and we won one and lost one.

Though we did not win the robotics portion, we did win the Rockwell Collins Innovate Award. We also came in as runner-up to the Inspire Award which qualified us for the state tournament!

What we learned at the tournament:

We need a task sheet to pass out to teams letting them know what tasks we can complete and how many points we can score.

Our robot is in great shape for the state tournament. We are not going to change anything, just tighten anything that is loose. Our robot was very consistent in performance. Drivers could practice more together.

We need to shorten our presentation. We were over the 5 minutes.

We need to do a better job of scouting the other teams.

As soon as we find out who we are paired with, we should try to get them to come to the practice pits and run their autonomous with ours to be sure we will not interfere with each other.

Signature _____

2.27.19—Practice

3:00—4:30

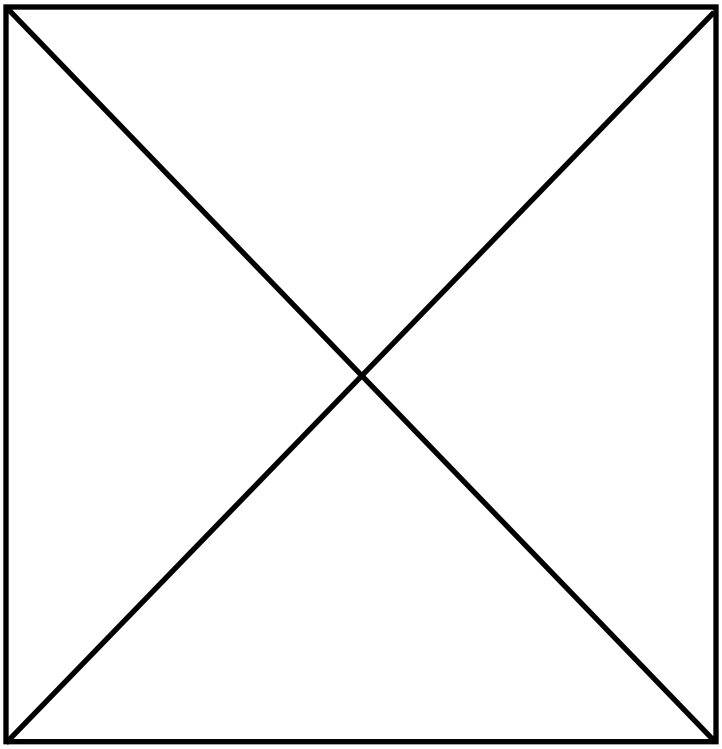
Present: Ben, Will, Brandon, Klaus, Justin, Peter, Lucas, Jon, Kyle, Emma & Coach Jen

Today The Herald photographer came to our room and took photos of us running the robot and working at the computer. They are going to run a story about our team qualifying for the State tournament. Hopefully it will be in the paper on Friday.

Coach Jen talked to us about the trip. We will leave Saturday morning around 7:15am. Arrive home Sunday around midnight. We can go into school late Monday, by 10:00am.

We designed and completed a task sheet (sample below) that has the picture of the tiger that is on our shirts on it and a picture of our robot. It lists what we can do in autonomous, tele-op and end-game and an average number of points we score. This is to hand out to teams. We also were able to pull the team list for the tournament and dump it into Excel so that we could merge it with our scout forms, saving us from having to write all the information at the top of the pages for 50 teams.

Coach Jen also passed out the agenda for the tournament, our judging and inspection times and the list of teams participating. We hope to be able to scout out a few of the teams before we get to the tournament.



Sharon High Robotics

Team 12792

Sharon, PA

Tasks our robot can complete:

Autonomous:

- Deploy from lander (30 pts)
- Deliver team marker (15 pts)
- Park within crater boundary (10 pts)

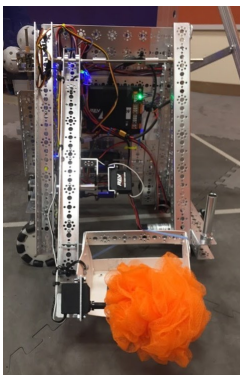
Tele-op:

- Score 8-10 cubes or balls into lander (40-50 points

End Game:

- Hang (50 pts)

Total on average: 145—155pts consistently



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2.28.19—Practice

3:00—4:30

Present: Emma, Will, Justin & Coach Jen

We found out that JR is sick and will not be coming to the tournament with us. JR is one of our drivers and he usually drives with Justin. We decided that Justin will drive with Emma, so Emma and Justin practiced driving together today. Will came and practiced driving with Justin also.

We created posters for on the lockers of the senior team members because that is what other sports teams do in our school. Today we hung the posters.

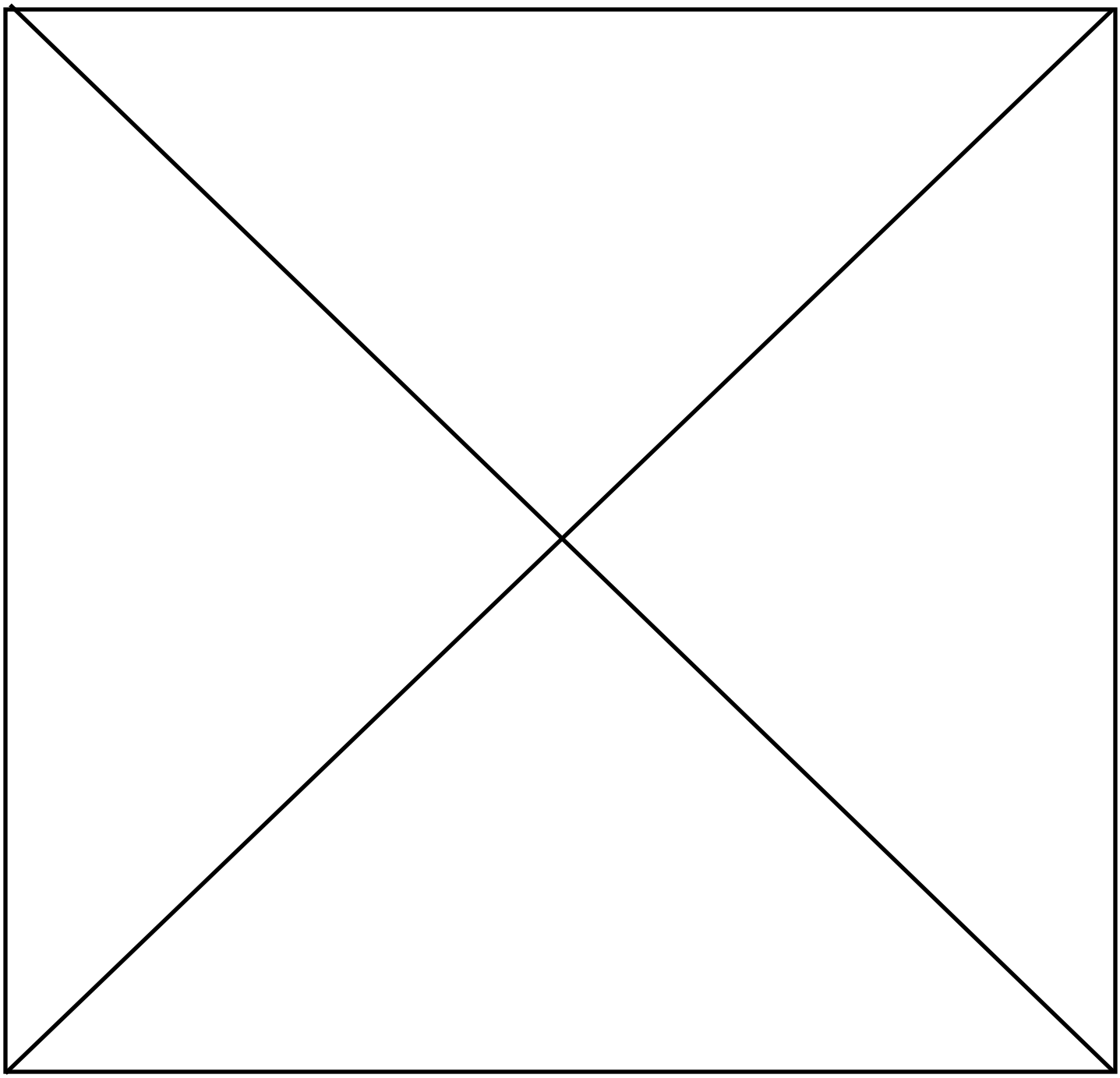
Signature _____

3.1.19—Practice

3:00—4:30

Present: Emma, Coach Jen & Coach Rick

We loaded the van for the tournament.



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