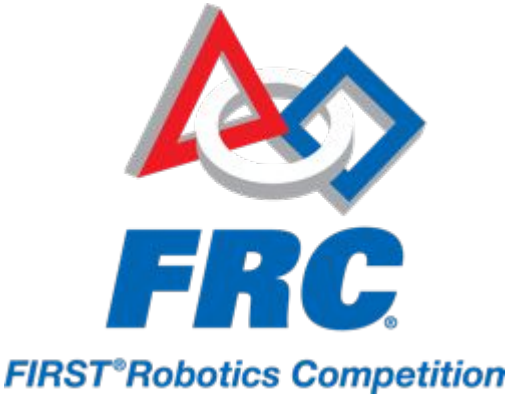
Lesson 3

Design

TO START OFF...

First, watch a game video provided by First Robotics

(the game is revealed the first saturday of the year!)



The game

When the game is revealed, take note of how much time you have, the robot parameters, and the layout of the field.

Know the RULES! The game manual is your friend

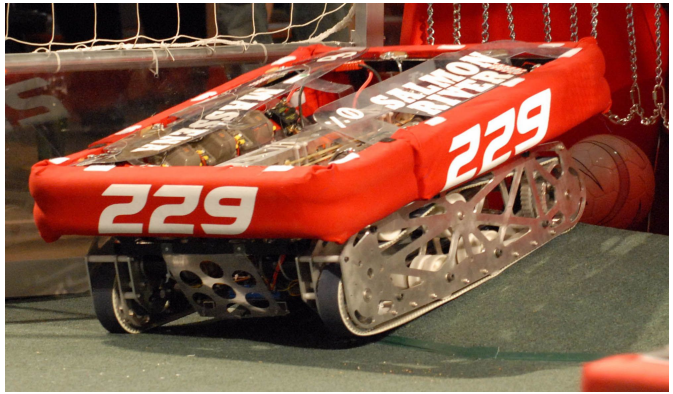
Let's talk strategy

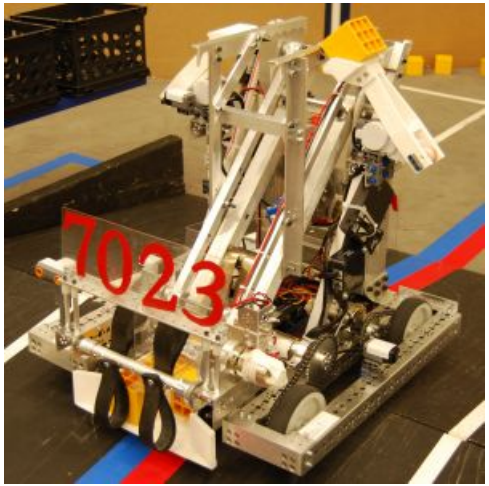
In order to create a strategy, you must analyze the game.

- Write down all ways to score and lose points
  - This will help in prioritizing mechanisms that will generate the most points.
- Note all constraints of playing the game. Examples:
  - How many game pieces are on the field?
  - Are there zones? How many robots in each zone?
  - Is there an endgame?

Next...

Start to brainstorm about the type of design you might want for the robot





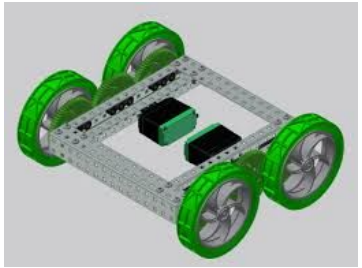
Things to keep in mind

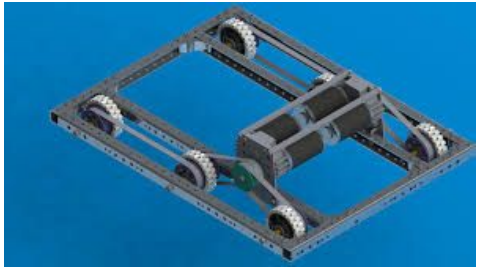
Drive Train

-What kind of chassis will be most effective?

Mechanism

- what motion will best accomplish your task? what objects do you need to move around? how do you need to move them?





THINGS TO KEEP IN MIND

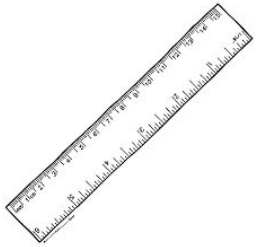
Size and Weight

- Refer to game manual for size and weight constraints.
- How will the mechanism alter the weight and dimensions of the robot? How will the chassis?

Efficiency

How much time will it take to build your design?
Will there be time for electronics, programming and practice?
How long will it take to order parts you don’t have?

ON DRAWING...



Draw your robot from all sides

- Front, back, top, bottom, and both sides
- Plan out chassis and mechanism separately
  - Think of connections at the same time
- Draw the robot and game pieces **to scale** to see how they fit

Include Detail

- Once you have a drawing of a simple scaled robot, start to break it down into smaller components.