

(60 pts) Approx. 4 days

The final part of our unit has you tackling the autonomous challenges of this year’s FTC Competition. There are two (2) very challenging “hard” challenges in this year’s robotics game. You and your team need to solve the simple challenge first (that won’t be too hard), and then need to agree upon which hard challenge you will be working on. Brainstorm, troubleshoot, and work hard to get your robot successfully completing the hard challenges!

1. **Planning Notes** – You’ll start by watching the short *Challenge Summary* video, as well as the *FTC Game* video. Take a page of notes on what your autonomous challenge options are (there are only 3), and brainstorm different ways you might solve them.
2. **Complete Simple Challenge** – The simple autonomous challenge needs to be solved by all teams. It’s pretty straight-forward:
 - a. **SIMPLE CHALLENGE:** Make your robot start touching the side of the playing field wall, then drive and park over your team’s taped line on the floor.
3. **Planning Notes** – You and your team now have to tackle one of the hard challenges. This will be the toughest part of this entire unit. Choose the hard challenge you want to work on, then create a complete *design brief* of that challenge in your engineering notebook. As you continue to work on your robot, fill out this page of notes and ideas in your engineering notebook so your process is recorded!
4. **Complete Hard Challenge** – There are two (2) hard challenges to choose from, and you and your team need to pick one (1) to work on and accomplish. A successful robot can do the challenge 5 times in a row!
 - a. **HARD CHALLENGE 1:** Drive to the initial Skystones and deliver one under the bridge to the scoring area
 - b. **HARD CHALLENGE 2:** Drive to the building platform and push it into the corner scoring area.
5. **Summary** – Write a full page summary in your engineering notebook that discusses what you did with your FTC robot. What was easy and what was challenging? What worked and what didn’t? How did you team tackle the different challenges?

Part 3: Tasks	10 points	8-6 points	5-0 points
 Plan/Program Simple Challenges	+ You took a full page of notes on the first simple challenge + You and your team planned and brainstormed solutions	- You did not write a full page of notes - Your notes do not fully document your process	- Your notes are missing
 Complete Simple Challenges	+ You programmed your robot to drive and park on the tape line. + It works 5 times in a row	- Your robot almost works - It was successful at least 3 times in a row	- Your program was only successful once or twice - Your program never really worked
 Plan/Program Hard Challenges	+ You took a full page of notes on the hard challenge + Your plan includes a design brief	- You did not write a full page of notes	- Your notes are missing
	20-16 points	15-10 points	9-0 points
 Complete Hard Challenge	+ You programmed your robot to complete one of the two hard challenges + It worked 5 times in a row	- Your robot almost works - It was successful at least 3 times in a row	- Your program was only successful once or twice - Your program never really worked
	10 points	8-6 points	5-0 points
 Write a 1-Page Summary	+ You wrote a full page summary of your work with the FTC robots + Your summary addressed all the prompts listed above	- Your summary is not a full page - Your summary does not address all parts	- Your summary is very lacking - Your summary is missing
 Achievement	Complete the OTHER Hard Challenge for Autonomous mode		

