

SECTION G:
Referee Guide

Thank You

All volunteers are like gold, but the referee's role is extra-critical, and we thank you very much for stepping up. The referee needs the most preparation, needs constant focus for long hours, and can sometimes take some heat, but no one is better positioned to enjoy the children's experience than you.

G 1 The Goal

Our goal through the FLL tournament is for the children to have fun showcasing their efforts of the past 8 weeks or so (which feels like 3 months to a child). We want the tournament to be a positive experience that celebrates and reinforces all they enjoyed and learned about technology and humanity, and we want them to go out and spread this program. You as FLL referee will help us achieve this goal mostly through expert application of the rules, but once in a while, by knowing that the "correct" thing to do isn't always the RIGHT thing to do.

G 2 Referee Responsibilities

You are responsible for one team at a time on your side/half of an 8-foot square table. Another referee will oversee a team on the other side. Here is what your role entails...

Before the Tournament (*as far in advance as possible)

- Learn the main documents: Field Setup, Missions, Rules, and Q&A Rulings
- Practice

During the Tournament

- Inspect the Field
- Govern the Action
- Make Judgment Calls
- Record Performance

Before the Tournament

Learn the Main Documents

Knowing these documents in detail will enable you to apply their specifics the same way as teams do, the same way as other referees do, and the same way from match to match. Knowing them well will also allow you to operate with confidence, so you yourself can enjoy the children and your experience and come back year after year as an experienced pro.

Field Setup

You need to learn how the Field Mat and Mission Models are supposed to be arranged and prepared on the competition tables. Though you might not set fields up, you will need to be able to inspect and correct them. There are many details involved with the setup, but a single read through the instructions while looking at a field is usually all that's needed to get you ready.

Missions

The Missions describe the specific results required for points, and they put some constraints on how those results can be achieved. They are carefully worded to allow multiple solution paths and to allow what is not specifically restricted. Example: A mission might read “Use a robotic arm to empty the trash can.” In this case, it would not matter if the robotic arm reached in and grabbed the trash, or if the arm turned the can over. Either way, the can was emptied through the use of the arm. What would NOT score is if the robot simply ran over the can and it emptied in the process. The Missions are short and few, and easiest to understand and remember if you study them while looking at a field.

Rules

The Rules contain general definitions, requirements, constraints, procedures, and consequences. They exist to ensure fairness while maintaining the integrity of autonomous robotics. There are many more rules than missions, and they affect each other, so take extra time with them.

Q&A (Questions & Answers) Rulings

The Q&A is a critical list of clarifications and official decisions that supplement and sometimes override parts of the other main documents. The Q&A list grows as the season progresses. Study the Q&A last. Once you have mastered the other main documents, the Q&A can be understood and remembered easily. Download and read it during the week before your tournament, and check it one last time on that Friday after 3PM.

Practice

No amount of reading can substitute for actual practice.

Learn by Doing

FLL refereeing is a skill, and as with all skills, there is no substitute for practice in the pursuit of competence, much less excellence. For the best preparation possible, learn by doing. Try to arrange and referee a mini-practice tournament before your first real one. If you can't get children together for this, substitute adults. Also...

Run Through Some Matches Mentally

Make every effort to go through the main documents with another referee or imaginative person while looking at a field, and challenge each other on situational examples that you make up. Often the scenarios you invent will not occur, but you are training yourself to make rule-based decisions fluently.

Ask Questions

For questions you can't answer, or would just like confirmation on, please contact Scott Evans evans@usfirst.org --- and be sure to identify yourself as a referee.

During the Tournament

Inspect the Field

Your tournament will likely have a person designated to reset the field between matches, but if not, you will be doing it. Either way, you'll be inspecting the field setup, and the importance of perfection here cannot be overemphasized. Refer to the Field Setup instructions for exact placement of the field objects, and settle any differences you may have with the field resetter before the first match begins. Also, make it very clear to the field resetter that after each match, he or she is not to touch anything until you have recorded the team's performance and given the okay for a reset.

Govern the Action

During the match, you will watch the interaction between the team, the robot, and the field, to make sure that the specifics of the Missions, Rules, and Q&A are applied. Your three functions will be to:

Put the Children at Ease

For many of the children, the robot drivers in particular, going up to the table to stand and deliver after so much work, with such high hopes and expectations, and the pressure of cameras and hundreds of sets of eyes on them is extremely stressful. You can often see them shaking with nerves. Be sensitive to this, especially in Round 1 of the day. If you notice it, see what you can do to calm and reassure those children without throwing off their concentration. Wearing a silly hat helps. Joke a little. Kneel down to talk.

Allow or Not Allow Action

Example 1: If the team has three kids at the table, by the rules, you'll remind them one has to step away.

Example 2: If the kids start to work on their robot while it's in Base, by the rules, you'll do nothing.

Example 3: If the kids try to shine a flashlight at the robot, by the rules, you'll ask them to put it away.

Determine Where Objects Are Kept After They Are Moved

Example 1: By the rules, if a part falls off the robot, the team can get it back immediately, but if the robot shoots something away, they can't get it back until the end of the match.

Example 2: By the rules, if the robot carries an object away from Base and gets stuck out in the field with it, the team gets that object back for another try, but if the robot instead loses control of that object, the object stays in the field.

When the day is done, teams will be happy if they can at least pull off the kind of score they're used to in practice, and while there are many variables affecting the score, you must not be one of them. The vast majority of the time, you can

avoid influencing the scores through correct and consistent application of the specifics in the main documents, but the truth is, FLL Challenges are brand new every year, so they don't enjoy a long evolution---situations will develop which have never been dealt with before---and they will require judgment calls on your part.

Make Judgment Calls

For the most part, the team gets what the team earns, and you're just an observer. But in close calls, and in unique situations for which there is no official ruling, your ruling on the spot will be seen as a factor in at least one team's score. This is by far the toughest part of your job.

Take the Wording at Face Value

Just like the official rulings, your rulings must be based on the WORDING of the Missions, Rules, and Q&A entries. Please do not make rulings based on how a situation would be "in real life" or on what you feel was the "intent" of the wording unless you have nothing else to go on after a referee's conference. Because of the nature of robotics and competition, the various descriptions and measures of action and performance are written in plain language and in specific detail, so we need to respect the literal/exact wording of the materials as a contract whenever possible. Example 1: If a mission requires the robot to simply "get onto" a set of stairs, note that there is no requirement for the robot to "climb" the steps, so a strategy where the robot topples onto the top of the stairs would score. Example 2: If the robot were required to "carry" an object, "dragging" it would not score.

Remember: Fairness is Job #1, but it is not Goal #1

To be "fair" as an FLL referee is to be correct, exact, and consistent with details, and that's your job, but your GOAL is to help facilitate the children having a wonderful time on their big day. *In truth, situations arise when it is more important to make the RIGHT call than it is to make the correct call.* Note the difference:

Example 1: The team on your side got a perfect score of 400 in Round 1, and there's a huge crowd watching them this time. Here in Round 2, they're very close to completing the last mission, which would again give them a perfect score, *but the buzzer sounds right before the robot reaches its goal...* You shake your head "No," with a smile and clap for them, with your clipboard under your arm, as they pack up and regroup to fine-tune for Round 3. Of course you would have liked to call in their favor, but they missed the points, plain and simple. Good call.

Example 2: The team on your side averages 80 points in a tournament where the average score is 245. At the end of their last match, they are very

close to completing a mission they have never completed before, which would give them their personal best ---130--- *but the buzzer sounds right before the robot reaches its goal...* The whole team is looking at you... As you... Give them a thumbs up! They all jump up and down, hugging each other with happy tears as if they just won Olympic Gold!!! And their coaches and parents are SO proud!!! Good call.

Talk it Over

In any tough case, you are strongly advised to hold an immediate referee's conference before deciding, for the value as well as the legitimacy that it imparts. Even the harshest decisions are much more tolerable when a team sees their fate was carefully considered by a group, as opposed to one independent and possibly "wrong" referee. When a team is disappointed in Rounds 1 or 2, remind them that they can try again. This is the main reason we assess teams only on their BEST round's score.

Record Performance

All scores are determined at the end of the match, by the condition of the field at that time only. After the match, you will compare the positions and conditions of objects on the field with the scoring requirements, and mark up a quick form called a Ref Sheet (contact your tournament for ref sheets in advance). Ref Sheets serve as hard copy scoring backup, so be sure to write the team and round numbers at the top. Some entries require a yes/no answer, and some require you to count objects. You do NOT need to know or write the mission point values, or do any math. This part of your job should only take a minute or so after each match, but it must be done immediately after the match ends, and before anyone touches the table.

After the Ref Sheet is filled out, and you have gone over it with the team so they can see how their score came about, it is taken to the scorekeeper. The scorekeeper/computer takes care of the score; you do not need to do any math.

***Poorly prepared referees are less helpful than missing referees. Your tournament organizer and/or head referee should help you prepare, but the ultimate responsibility is yours, so be sure to get materials and information as soon as possible. Thanks again!**