

Referee Guide and Quiz

Thank you!

Thank you for volunteering and thank you for being awesome. Tournament day will be one of those days that is life-affirming – a day that will make you realize how amazing and talented our *FIRST*® LEGO® League Challenge teams are. Refereeing is an important job. You will be different things to the teams – the friendly face that greets them at the Robot Game table; the supportive, but fair and knowledgeable referee who will take scoring their robot match very seriously; and the role model they will remember long after the day is over. If you bring your sense of humor and maybe a silly hat, we're sure you'll enjoy the day.

The Goal of the Teams

Teams will try to have their robot score as many points as possible by solving the missions of the CARGO CONNECTSM game. Only their highest score of at least three separate 2.5-minute matches counts. The Robot Game allows teams to demonstrate how well their robot design and programs worked. The Robot Game will also showcase how the teams embody the *FIRST*® Core Values and express *Gracious Professionalism*® – the spirit of friendly competition unique to all *FIRST* programs.

Referee Role

There are two main parts to your role as referee. One is to regulate the action and fairness of the Robot Game during the tournament. You'll need to do some preparation to ensure you are equipped to do this job well. The second part of your job is to be a role model and ensure the teams have an amazing experience, regardless of how many points they score.

Before the Tournament

Your tournament organizer and/or head referee should help you prepare for your role.

Study the *Robot Game Rulebook*

By knowing the Robot Game, your actions and judgment calls will be consistent with the expectations of the teams and other referees. If you have questions during the event, your head referee is there to support you.

The [Robot Game Rulebook](#) contains:

Field Setup - Each field needs to be prepared before the first match. After that, only "resets" are needed between matches. You will be responsible for inspecting the field before every match.

Missions - The missions describe the specific match results required for points to be scored, and they put some constraints on how those points can be scored.

The missions are carefully worded to allow a variety of solutions. The CARGO CONNECT Robot Game Missions video is a helpful tool to demonstrate the points scored for each mission. There is a referee version of this video which provides excellent training. Make sure you watch it.

Rules - It's important to read and know the rules, but the head referee is there to help you if you have any questions. The rules are there to back up your decisions.

Challenge Updates

[Challenge Updates](#) are posted as the season progresses, so be sure to review them for any rule changes prior to your tournament. Your head referee should also tell you about any changes on tournament day.

Referee Quiz

On or before tournament day, the Referee Quiz is a useful way to practice your referee decision-making. If a few answers are not clear to you, don't worry - some situations require a thoughtful "best" answer, or a "benefit-of-the-doubt" call. Remember, the ultimate goal is always to inspire and motivate the teams, as well as score their matches consistently and fairly.

During the Tournament

You will referee one team at a time at a Robot Game competition table, while another team competes on the opposite side with their own referee.

Before the match, reset and inspect the field.

Put the team at ease.

Perform the team equipment inspection (Mission 00 and Rule R09).

Check the team is ready for the start of the match.
Only two team members, called technicians, are allowed at the competition table at a time.

The match begins when the emcee signals, “3, 2, 1, LEGO!”

During the match, watch the interaction between the team, the robot and the field.

Allow or do not allow action.

Example 1: If the team tries to reset a model outside home for “another try,” you would stop them. (Rule R12)

Example 2: If there are three team members at the table, you would have one step away. (Rule R8)

Determine where things go after they are moved.

Example 1: If a robot part breaks off, the team can have that part returned to them in home. (Rule R12)

Example 2: If the robot loses control of cargo outside home, the cargo is left as is in place. (Rule R19)

Make judgment calls.

Every tournament presents referees with situations which might seem difficult to rule on, but don’t worry. Follow the rules as they are written. If a detail isn’t mentioned, it doesn’t matter. Don’t forget Rule R25, which gives the team the benefit of the doubt when calls are close. Remember again, the goal is to be fair and motivating. Be consistent with details and facilitate the children to have a wonderful time on their big day.

Ensure the team stops attempting new missions at the end of the match.

Work together with the two team technicians to score the match.

Most of your scoring will be based on what is visible at the end of the match. Use a Robot Game scoresheet to record the match results. Do this before anyone touches or resets the field.

Consult a head referee if you are stuck or need help.

After you complete scoring for each match, evaluate how the team displayed *Gracious Professionalism*® during their time with you at the table.

Assume that all teams start with accomplished *Gracious Professionalism* scoring 3 points. If team members treat each other, another team or the referees disrespectfully, they may still need to develop their Core Values and could score a 2. In contrast, teams who demonstrate extra special kindness and support for each other may qualify for an Exceeds scoring 4 points. It is left to the referee’s discretion as to whether to fill *Gracious Professionalism* before or after the team’s signature.

Once the scoresheet is complete, send it to the score keeper.

Reset the field for the next match.

Head Referee Responsibilities

As your referee knowledge and skills advance, you may be asked to become a head referee in your region. Here are the high-level responsibilities of that role.

Before the Tournament

Recruit, communicate with, and train your referees. Send them the relevant items from the Referee Toolkit – the *Robot Game Rulebook*, the Referee Guide and Quiz, and the CARGO CONNECT Robot Game Missions video (including the referee training version).

Be sure to review any game-related Challenge Updates with your referees before the matches begin.

Perform quality assurance on all tournament Challenge Sets.

Ensure all mission models are built and setup correctly according to the Field Setup in the *Robot Game Rulebook*. Make sure no pieces are missing prior to the event. Check all competition and practice fields again the night or morning before the event.

Work with your tournament director to prepare referee shirts, clipboards, scoresheets, pens, and schedules for referees.

Answer game-related questions in your region, by a suitable method. If a question cannot be answered with confidence the robot game question flow chart below shows how it should be elevated.

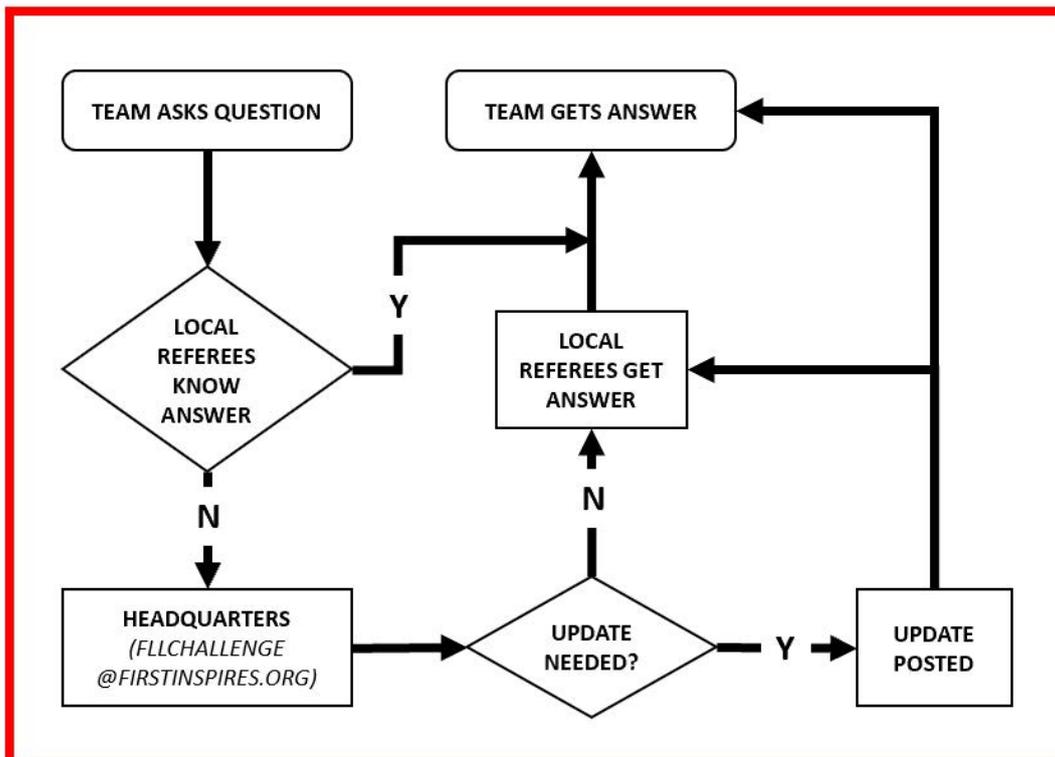
During Tournaments

Work with your tournament director, referees, emcee, scorekeeper and any event staff to keep things on schedule.

Report any [Participation Rules](#) concerns to your tournament director.

Support your referees in difficult decision-making situations.

Make final decisions when robot performance action or scoring is in dispute. If teams are tied for Robot Performance Awards, look at second- or third-highest scores to determine the winners.



Robot game question flow chart.

Referee Quiz

This “quiz” is **not** to test your knowledge. Use it to practice your decision-making in realistic tournament situations.

1. The technicians say the robot failed a mission due to debris under the mat. There is indeed debris there. What do you do?
2. A team puts a container on top of their innovation project and delivers it to the CARGO CONNECTSM circles. Does the container score?
3. A parent comes to you in match 3 and says the team thinks their match 2 score is inaccurate. What do you do?
4. The robot is operating out in the field, and the technician is preparing a separate attachment in home. Is this allowed?
5. The robot is moving very slowly, closing in on the accident-avoidance model, and just as the robot is knocking down the yellow panel, the team stops the robot by hand to stop it from knocking down the black panel. Is this allowed?
6. Building on question 5, the team then says that they no longer plan to attempt any other missions and so, they should not lose a precision token. Is this true?
7. Can the robot be launched by the technician putting a finger in front of a color sensor?
8. The robot is entering home but extends over the west border wall before crossing completely into home. The technician grabs the robot. Is this an interruption?
9. A critical wheel has popped off the robot in the center of the field with 45 seconds left in the match. The technician grabs the robot, but not the wheel. What do you do?
10. The robot is still in the launch area when it grabs the hinged container. Is this allowed?
11. Is it ever a good idea to mark scores before the match is over?
12. The technician is all ready to launch, but a wire is clearly extending past the west edge of the mat. What do you do?
13. The robot pushes the crane such that the container is raised off the cargo ship’s east deck. Upon return from another mission, the robot accidentally pushes the crane back into its starting position. Does this score?
14. You learn that a certain team used a different robot in match 2 than in match 1. Is this allowed?
15. There are two color sensors present in each of three separate attachments, making a total of six sensors. Is this allowed?
16. A technician removes the other field’s food package from their helicopter by hand. What do you do?
17. A team member away from the table is holding equipment. What do you do?
18. An aiming jig is pushed against the west border wall and clearly reaches into the launch area, where the robot is pressed against it, and the technician is holding the jig in place. Should you allow this launch?
19. The robot knocks down the black frame of the accident-avoidance model and then lifts it back up autonomously before the end of the match. Assuming all other conditions for the mission were met, would this score?
20. The match started at least 10 seconds ago, when you noticed a model hasn’t been reset. What do you do?

Answer Key

Remember, this quiz is a training tool. Refer to the official *Robot Game Rulebook*, which includes the rules, field setup and missions, and also check the Challenge Updates.

1. This is an example of a field preparation issue (Rule 25) and if in your judgment there is a chance the robot would have otherwise completed the mission, score the mission a success. If possible, after the match, clean the debris out during the next break in the schedule.
2. Yes. The container is allowed to touch equipment and there is no requirement that the container be touching the mat.
3. Refer the parent to the head referee, not the score keeper. The score keeper should not be distracted. The head referee should review the posted score against the answers marked on the scoresheet.
4. No problem. The technicians are encouraged to prepare for the next robot launch while the robot is out in the field. Further, since the equipment is separate from the robot and in home, touching it does not qualify as an interruption. (Rules 15 and 3)
5. No. They cannot stop the robot by hand to strategically cause a scoring condition (R15, bullet 3).
6. Yes. The team may stop the robot by hand if they are not attempting any other missions and they will not lose a precision token (R16). As in question 5, they cannot stop the robot by hand to strategically cause a scoring condition (R15, bullet 3). The team should not lose a precision token, but they will not earn the points for mission M06 either.
7. Yes. (Rule 14)
8. Yes, it is an interruption, and the referee takes a precision token since the robot is not completely in home. The robot is partly outside the west side of home (it extends over the wall) and also partly outside the east side of home (it crosses over the border of home). (Rule 12, bullet 5, and Rule 16, bullet 2).
9. Remind the technicians they can pick up broken robot parts by hand, no problem. (Rule 12, bullet 7, exception 2) If they cannot reach, consider carefully grabbing it for them.
10. Yes (Rule 23, bullet 2).
11. Sometimes. Scoring conditions must be visible at the end of the match; because of this, we strongly encourage you to wait to record your scores, as things may change during the 2.5 minute match time. That said, on rare occasions, a mission requires an action or a method be observed during the match. We do recommend that you record successful actions or methods as soon as you see them, so memory doesn't fail you.
12. Wires are equipment and the launch rules are clear (Rules 13 and 14). Have the technicians tuck the wire into the launch area before letting them launch their robot.
13. No. The scoring condition must be visible at the end of the match to score (R22).
14. No problem. Equipment limits are assessed in each match, independent of other matches. (Rule 1)
15. No problem. There are no quantity limits on sensors. (Rule 1)
16. Calmly ask the technician to put the food package back on the helicopter. If the team proceeds to use this food package on their field, it will not score. The other team will earn points for it being separated from their field per the interference rule. The two teams do not earn the shared points. Consider this when awarding *Gracious Professionalism*® points.
17. Remind the team member that the equipment needs to be kept in home. (Rule 12)
18. Yes. (Rule 13 and Rule 14, bullet 1). These rules restrict things "about to move." The jig in this case was not intended to move and is completely in home.
19. Yes. it would score as all mission requirements were visible at the end of the match (R22).
20. If you can reach it, quickly but carefully, reset it. If you don't get to it in time, apply the benefit-of-the-doubt rule if the robot would interact with the model during the match (Rule 25)