

Referee Guide & Quiz

The Referee Role

Tournament day is an inspiring experience, where you'll see firsthand the incredible creativity and talent of *FIRST*® LEGO® League Challenge teams. As a referee, you'll play an important role—you'll be the welcoming face at the Robot Game table, a fair and knowledgeable referee that ensures accurate scoring, and a role model they'll remember long after the event.

This guide and the accompanying quiz will help you prepare for your role and for an exciting event day.

All **bolded** resources listed in this guide can be found on the [BIOGLOW™ Season Resources](#) page or [Challenge Event Volunteer Resources](#) page.

The Goal of the Teams

Teams will try to have their robot score as many points as possible by solving the missions of the **BIOGLOW™** Robot Game. Only the highest robot game match score of all a team's separate 2.5-minute matches counts.

The Robot Game allows teams to demonstrate how well their robot design and programs perform. 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.

Before the Event:

- ☐ **Complete all required training:** The online training modules and videos will help you prepare for your role. Your head referee may also provide event-specific guidance or schedule a live training session before the robot game matches begin.
- ☐ **Watch the missions video:** The **Robot Game Missions Video** explains the points scored for each mission. There is a referee version of this video which provides additional training.
- ☐ **Study the Robot Game Rulebook:** The **Robot Game Rulebook** contains important information on how to set up and reset the field for each match; missions and scoring details; and the rules that apply before, during, and after a match. By knowing the Robot Game, your actions and judgment calls will be consistent with the expectations of the teams and other referees. It's important to read and know the rules, but your head referee is there to help you if you have any questions.
- ☐ **Check for updates:** **Challenge Updates** are posted on the [Season Resources](#) page as the season progresses, so be sure to review the updates for any mission or rule changes prior to your event. Your head referee should also inform you of any changes on event day.
- ☐ **Take the referee quiz:** On or before tournament day, the **Referee Quiz** at the end of this guide is a useful way to practice your referee decision-making. If any 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 role of a referee is to inspire and motivate the teams, as well as score their matches fairly.
- ☐ Remember to bring your enthusiasm, your *Gracious Professionalism*, and maybe even a silly hat, and you're sure to have a fantastic time.

During the Event

You will referee one team at a time at one competition table, while another team competes on the opposite side with their own referee. For each match, you will:

- ☐ **Reset and inspect the field to ensure all models are in their setup positions.**
- ☐ **Greet the team and put them at ease.**
- ☐ **Perform the team equipment inspection.**
- ☐ **Check the team is in position.** Team members must divide into two groups and position one group at each side of the field (left and right). Teams may never have more than two technicians at a single home area, but technician(s) on the same side may swap at any time.
- ☐ **Check the team is ready for the start of the match, then get into position.** Stand along the bottom edge of the field, in the center, where the technicians and field are visible. Leave room for the technicians to interrupt the robot, if needed.
- ☐ **The match begins when you hear “3, 2, 1, GO!”**
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 using their hands, you should stop them. (*Rule #13*)

Example 2: If there are three technicians at one home area, have one step away. (*Rule #11*)
- ☐ **Determine where things go after they are moved.**
Example 1: If a robot is interrupted and it is in contact with a mission model that was obtained after it was launched, this object should be given to the referee for the remainder of the match. (*Rule #15*)

Example 2: If the robot drops a mission model or equipment outside of home, it stays as is. (*Rule #17*)
- ☐ **Make judgment calls.** Every tournament presents referees with situations which might be 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.
- ☐ **When calls are close, teams should be given the benefit of the doubt.** Be consistent with your calls and make all teams feel successful on their big day, regardless of the points they score.
- ☐ **The match ends when the buzzer sounds.** Ensure the team stops the robot from completing additional missions after the end-of-match is signaled.
- ☐ **Work with the team to score the match.** Most scoring will be based on what is visible at the end of the match. Use an official **Scoresheet** to record the match results before anyone touches or resets the field. Consult a head referee if you are stuck or need help with scoring the missions.
- ☐ **Evaluate how well the team displayed *Gracious Professionalism* at the match.** It is left to the referee's discretion whether to fill in the *Gracious Professionalism* score before or after the team's signature but remember a kind conversation can go a long way in helping teams to grow.
Assume that all teams start the match with **ACCOMPLISHED** *Gracious Professionalism*, scoring 3 points. If team members treat each other, another team or the referees disrespectfully, this may indicate their Core Values are **DEVELOPING** and could score 2. In contrast, teams who demonstrate extra special sportsmanship and support or work especially well together, may qualify for an **EXCEEDS**, scoring 4 points.
Consider using the practice matches as examples to ensure the *Gracious Professionalism* scores are consistent across the tables at the event.
- ☐ **Once the scoresheet is complete, send it to the scorekeeper or submit in the Event Hub.**
- ☐ **Congratulate the team on their match and have them pack up their equipment.** Be sure to encourage them, even if the match did not go as expected. All teams should feel successful when they leave the Robot Game.
- ☐ **Once the team has left, reset the field for the next match and repeat this list.**

Referee Quiz

This quiz presents realistic scenarios you may encounter as a referee. Use it to practice your decision-making and check your knowledge of the **Robot Game Rulebook**.

We suggest that you complete all the questions before checking the answers.

1. After inspection, where can a team store their equipment during the match?
2. Can the robot be launched by the technician putting a finger in front of a color sensor?
3. The technician is ready to launch, but a wire is clearly extending past the left edge of the mat. What do you do?
4. There are two color sensors present in each of three separate attachments, making a total of six sensors. Is this allowed?
5. A team arrives with their own seed pod that is identical to the mission model on the field. They explain that they want to use it to complete Mission 14: Seeds of Renewal instead of retrieving the field model. Is this allowed?
6. During inspection, a team presents a single LEGO brick that is clearly not from Bag 20. They identify it as their keystone species for Mission 13: Keystone Species. Is this allowed?
7. The match has just ended and the drone in Mission 01 is clearly raised. While the referee is preparing to score, the team accidentally bumps the table and the drone falls back onto the mat. Does the drone still score as raised?
8. The technicians say the robot failed a mission due to debris under the mat. There is indeed debris there. What do you do?
9. During the match, a technician accidentally drops a piece of equipment onto the field. Should you allow the team to retrieve it?
10. During a break, a volunteer approaches you to let you know that the team at your table next round was observed being disrespectful to another team in the hallway. How should you handle this?
11. During a match, you observe a team going above and beyond to help another team and you plan to award them and EXCEEDS Gracious Professionalism score. Should you explain your reasoning to the team?
12. While scoring Mission 03: Flip the Rock, the research flag is down and the rock is in its original starting position. You do not remember seeing the team flip the rock, and you are unsure whether the flag was reset after the previous team. The team states that they completed the mission. How should this mission be scored?
13. You learn that a team used a different robot in match 2 than in match 1. Is this allowed?
14. The robot is moving very slowly, pushing a model into a target area for a mission. Just as the robot pushes the model into the area, the team interrupts the robot by hand to prevent it from going too far. Is this allowed?
15. Building on question 15, the team then says that their robot will not do any other missions and so they should not lose a precision token. Is this true?
16. While the robot is operating out on the field, the technician is preparing a separate attachment in home. Is this allowed?
17. The robot is still partly in the launch area when it deploys an attachment to autonomously lower the root cover in Mission 11. Is this allowed?
18. While scoring Mission 06: Leafcutter Frenzy, the team explains that because they never attempted the mission and all four leaf fragments remain contained within the nest, they should receive the full 40 points. Are they correct?
19. A team's strategy for Mission 01 is to raise the drone and place a piece of equipment underneath it so it remains raised at the end of the match. Does the drone score for being raised?
20. Is it ever a good idea to mark scores before the match is over?

Answer Key

Remember, this quiz is a training tool. Refer to the **Robot Game Rulebook**, **Robot Game Missions Video**, and **Challenge Updates** as sources of authority for scoring matches.

Additional practice scenarios are discussed in the **Referee Scenarios Video**.

1. Everything a team brings to the match must stay on the table or in the hands of the technicians at the table. Equipment stored on the table may extend past the left and right walls only, as needed (*Rule #9*). Equipment cannot be handed to the team members not at the table. If a team used a cart or bin to bring equipment to the field, these cannot be used during the match.
2. Yes (Glossary, Launch).
3. Wires are equipment and all equipment must fit completely in the launch area to *launch* (*Rule #14*). Have the technicians tuck the wire into the robot so that it is inside the launch area before letting them launch their robot.
4. Yes. There are no quantity limits on allowed sensors (*Rule #3*).
5. No. Teams may not bring duplicate or additional mission models. During inspection, ask the team to remove the duplicate seed pod and leave it with a coach or team member away from the competition table for the duration of the match. (*Rule #7*)
6. Yes. There is no requirement that the keystone species be made from a specific LEGO brick(s) or from Bag 20. Teams may use the pieces from Bag 20, but they are not required to do so. As long as the model meets the equipment requirements, is presented during inspection, and is clearly identified as the team's keystone species, it is allowed.
7. Yes. The drone was visibly in the raised position at the end of the match, so the scoring condition was met. Changes that occur after the match has ended do not affect the score. (*Rule #22*)
8. This is an example of a field preparation issue. If in your judgment there is a reasonable chance the robot would have otherwise completed the mission, score the mission a success (*Rules, Important Section*). If possible, clean the debris out during the next break in the schedule. In some instances, a re-run of the match may be the best option. It is up to the head referee or event organizers to decide whether to offer the team a re-run of the match.
9. While the rules state that technicians are not allowed to touch anything outside of Home except to interrupt the robot (*Rule #13*), this situation was clearly an accident. If the technician can retrieve the object without disturbing anything else on the field, you should allow it. Use your judgment to ensure fairness and minimize disruption to the match.
10. We never like to see this, but unfortunately, on rare occasions, it does occur. Remember that the Robot Game will showcase how teams embody the *FIRST®* Core Values and express *Gracious Professionalism®*. Since the behavior didn't occur during the match, it shouldn't impact the *Gracious Professionalism* score you award. However, you should inform your Head Referee or Judge Advisor so they can take this into account when allocating awards, if necessary. The Head Referee may kindly remind the team that *Gracious Professionalism* matters everywhere at the event—not just at the table.
11. Yes! While it is not required to show the team their *Gracious Professionalism* score, it is allowed. Your positive feedback will help teams understand the impact of their actions and reinforce the Core Values we want to observe.
12. Award the points. The visible scoring condition was met at the end of the match, and there is uncertainty about how the condition occurred. When a referee cannot determine otherwise, the team should receive the benefit of the doubt. (*Rules – Important Section*).
13. Yes. Equipment limits are assessed at each match, independent of other matches. The team can bring a different robot to each match, as long as they meet the equipment requirements for that match.

14. No. They cannot stop the robot by hand to strategically cause a scoring condition (*Rule #16*). Refer to Rule #15 to determine what happens to the mission model.
15. 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 (*Rule #15*).
16. Yes. Technicians are encouraged to prepare for the next robot launch while the robot is out in the field. Note that since the equipment and/or mission model is separate from the robot and in home, touching it does not qualify as an interruption (*Rule #12*).
17. Yes. While Technician's may not directly interact with anything outside of Home, the robot is allowed to touch things outside home if done autonomously after launch. Remember that if a detail isn't mentioned, it doesn't matter and, in this case, no rule requires the robot to be completely outside of Launch to earn points (*Rules – Important Section*).
18. No. The mission requires both that the ant is touching the nest and that the leaf fragments are contained. Since the team did not attempt the mission, the ant is not touching the nest. Because all required scoring conditions were not met, the mission does not score.
19. No. Mission 01 includes the No Equipment constraint, which states that a mission model cannot score if it is touching equipment at the end of the match. Because the drone is supported by or touching team equipment when the match ends, it does not score for being raised.
20. Sometimes. Most scoring conditions must be visible at the end of the match; because of this, you should record the scores at the end of the match together with the team, as things may change during the 2:30 match time. That said on rare occasions, a mission requires an action, or a method, be observed during the match
(*example: Mission 04 - Lucky Leaves blue text*). We do recommend that you record successful actions or methods as soon as you see them. Equipment Inspection is another exception, which should always be recorded before the match begins.