BIOGLOW
FUTURE EDITION

FIRST LEGO LEAGUE

RULEBOOK

FIRST

LEGO education

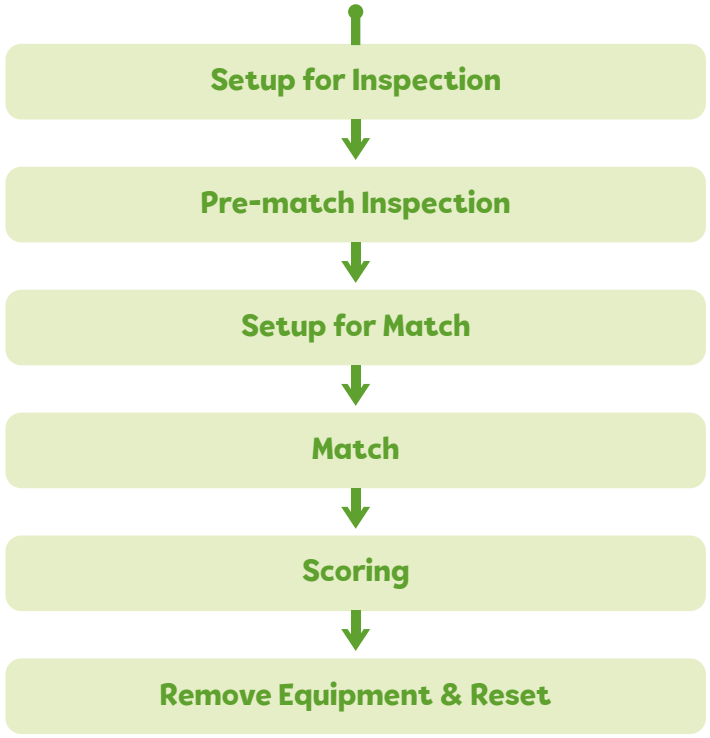
Core Principles

These principles guide all ruling and referee decisions:

- **Keep it Simple:** If something isn't mentioned in the rules or missions, it doesn't matter.
- **Benefit of the Doubt:** If a situation is too difficult or too close to call, the team gets the benefit of the doubt.
- **Official Sources:** Only the *FIRST*® LEGO® League-issued updates, videos, and game resources will be used to make decisions. Referees will combine these materials to arrive at the best possible call.
- **Game Updates:** If something changes or needs clarification, a Game Update will be published. Game Updates only apply to future events.
- **Final Decision:** The event head referee's decision is final.

Match & Scoring Overview

1. Match Format:



- Matches take place on official event tables.
- Matches begin with a countdown.
- Each match lasts 2:30.
- When time ends, all players must stop and put down their equipment right away.

2. Scoring:

- After each match, the referee reviews and records the results with the team.
- Scores are based on the final visible conditions on each team's side of the shared game field at the end of the match, unless stated otherwise. Any actions after time expires will not count.
- When something is required to be "in" an area, the lines and airspace above that area count as "in" unless stated otherwise.
- Once the team and referee agree, the score becomes official. If they disagree, the head referee makes the final call.
- At events, teams will play at least three official matches. The team's average score from all matches determines their game rank.

3. *Gracious Professionalism®*:

- Teams should demonstrate *FIRST®* Core Values while competing in the game.
- Be kind and respectful to everyone at all times. Behavior that conflicts with the Core Values may be considered interference and result in a penalty.
- Referees will record a *Gracious Professionalism®* score for each match. If a team does not show up for their match, they will score no points for *Gracious Professionalism®*.

4. LEGO® Bricks:

- Non-electric LEGO bricks may be used in any quantity, from any set.
- LEGO bricks must not be glued, painted, or modified in any way.
- LEGO string and tubing may be cut to length.
- Wind-up motors and pneumatics are not allowed.
- Extra game models are not allowed.

Equipment

The equipment a team brings to the match must meet the following rules:

5. Hardware:

Only the following may be used and must match these exact types and quantities:

2x color sensor

2x double motor

2x controller

2x single motor

See *'Role-Based Rules'* for hardware limits that apply to each role.

No other electronic hardware is allowed.

6. Connection Cards:

- 1 connection card for field hardware (required, any color)
- Up to 3 additional connection cards for team use during the match (optional, any color)

7. Devices:

- Up to 1 laptop or tablet device
- No charging cords or power banks at the field during the match
- No mouse or other electronic devices are allowed

Pre-Match Inspection & Setup

Before the match begins, teams must present their equipment for inspection and set up all items according to the following requirements.

8. Required Field Hardware:

Before the inspection, each team must provide the following LEGO® Education hardware (fully charged, no attachments) to operate the field:

- 1x double motor (grand tree model)
- 1x color sensor (young forest model)
- 1x single motor (hive model)
- 1x connection card (held by referee during match)
- The required field hardware counts toward the total usable equipment listed above.

- The color sensor embedded in the young forest model pairs with the single motor in the hive model on the opposite field using the required connection card. The referee holds this card during the match.

9. Starting Placement:

- The driving base and any connection cards used with the driving base or robotic tool start in the Technician Area.
- The team's laptop or tablet device, if applicable, and any connection card used with the grand tree start in the Specialist Area.
- All other equipment must start within its designated area and fit completely inside it. During inspection, equipment must not exceed 8 inches (203 mm) in height.
- Equipment must stay in the area it was inspected for the start of the match. Plan setup carefully. Nothing may be handed between players during the match.

Pre-Match Inspection & Setup

10. Setup Time:

- After inspection, teams will be given a short time to slot and pair hardware, adjust equipment within player areas, and prepare for the match to begin.
- Use this time to ask the referee any questions if needed.

11. Player Selection:

- Each team assigns one player to each role for the match: Driver, Operator, Technician, & Specialist.
- Players must stay within their designated areas at all times. Players may not switch with other team members once the match begins.
- All other team members must step back for the duration of the match.

12. Controller Use:

- Up to two controllers are allowed:
  - 1x Driver controller
  - 1x Specialist controller
- Functional attachments such as grips or guards are allowed but cannot act as tools for other game actions.
- Controllers will be inspected and monitored during the match.

13. Storage:

- After inspection, everything must stay on the field or in the hands of players. Teams will not be given additional storage space. Nothing can be stored on the floor during the match.
- Equipment may briefly extend past the field's edge during use, but it may not be positioned or held there for additional storage.

14. Universal Player Rules:

The following rules apply to all roles during the match.

- Players may not disassemble or modify any mission models, including 3M™ Dual Lock™ Reclosable Fastener.
- Players may not operate another player's tool, unless an exception is specifically mentioned.
- Players may only handle items that are completely inside their area (see Field Map) unless an exception is specifically mentioned.
- Items may only leave player areas using a tool. Nothing may be pushed, thrown, or passed by hand from one player to another.
- Referees have final authority. If a referee requests an item to be forfeited during the match, it must be handed over immediately.

Tip:

Each player's Role Card includes an example tool design. Use this design as a starting point, not a requirement. Teams should modify their tool design and code according to their strategy.

15. Driver Rules:

Driver tool: A controller and a driving base that includes a double motor.

- The driving base may be operated by the controller or may run autonomously.
- You may not handle any equipment or mission models, except for your controller. Drivers may not touch or modify the driving base at any time.

Courtesy Rule:

If the driving base is stuck, notify the referee. The Technician may return the driving base to the Technician Area, however,

- Items in possession of the driving base (carried) are given to the referee and removed from play.
- Items not in possession of the driving base (pushed) remain where they are.
- Strategic misuse of this courtesy rule may result in a penalty.

Tip: The driving base may be used to move the robotic tool outside of the Technician Area to complete missions.

16. Operator Rules:

Operator tool: Mechanical tool(s) constructed entirely of non-electric LEGO bricks.

- Only keystone species and resource tokens may leave your area.
- Your tool(s) must stay completely inside your area at all times.

Courtesy Rule:

- **Mangrove Roots:** The mangrove roots are included in your player area; however, you must use a tool to collect anything inside them. Once the species or resource is completely out of the tangle roots, you can handle it by hand.
- **Decorative Elements:** You can rotate the decorative elements, including the leaves and roots, on the Operator barrier to match your strategy, but cannot remove them.
- **Retrieval Zone:** Directly outside the Operator area is a retrieval zone, marked by a dotted line. You may retrieve keystone species and resource tokens by hand if they are at least partly inside this zone and bring them into the Operator area. You may not touch any other items in this zone.

17. Technician Rules:

Technician tool: A robotic tool that includes a single motor and a color sensor.

- The robotic tool must be controlled directly through motor input, triggered by a color sensor, or programmed to operate autonomously.
- Items may leave the Technician Area only by the robotic tool or the driving base.

Tip: The Technician can modify the driving base, including changing attachments, when it is completely inside their area.

18. Specialist Rules:

Specialist tool: A controller, the double motor embedded in the grand tree, and device (laptop or tablet) to run team programs.

- The double motor in the grand tree may be operated by the controller or may run autonomously.
- You may operate other player tools through a program running on your laptop or tablet device.
- You may not handle any equipment or mission models, except for your tool.

Courtesy Rule: If an item enters your area, wait for it to come to rest.

- **Tokens:** If keystone species or resources rest at least partly in your area, you may place them into the token recycler to send it back into the field.

- **Other Items:** If team equipment or game models rest at least partly in your area, you may either leave it where it is for your driving base to retrieve later (do not touch or move it - it must stay where it rests) **OR** hand it to the referee, who will remove it from play for the remainder of the match.

19. Stranded Equipment & Control:

- Stranded equipment that is no longer under a player's direct control and is resting on the field outside its intended area (even partly) remains as is unless it is moved through normal gameplay.

20. Interference:

- Teams may not use equipment or actions, including stranded equipment, in a way that blocks, restricts, redirects, or otherwise interferes with the other team's movement, access, or scoring in a negative way.
- If an interfering item includes hardware, it is returned to the Technician area; otherwise, the referee will remove it from play for the remainder of the match.
- Points gained by the interfering team as a direct result do not count.
- Points lost by the other team as a direct result are immediately restored.

21. Penalties:

- Each instance of interference by a team results in a penalty.
- The referee will verbally call out each interference when it occurs so teams are aware that an interference has been assessed and how many interferences they have received.
- Interference penalties escalate as follows:
  - **First penalty:** 10 points deducted from match score
  - **Second penalty:** 20 additional points deducted from match score
  - **Third penalty:** Match score is zero

22. Intent & Authority:

- Referees have final authority over intent, interference, penalties, and removal.
- If a situation is unclear, the affected team receives the benefit of the doubt.

Glossary

This glossary defines key terms used throughout the Rulebook and game materials. Teams should understand these definitions before competing.

Equipment	Equipment includes everything a team brings to the match. This includes the laptop or tablet device, LEGO® Education Computer Science & AI hardware, connection cards, tools, attachments, and bricks.
Game field	Often referred to as “the field,” is the combined playing area defined by border walls and made up of two half fields, joined and aligned together, using the designated alignment triangles. Together, they form a single shared environment where two teams compete side-by-side to complete missions during the match.
Game model	LEGO models placed on the field. Teams interact with game models in various ways to complete missions and earn points.
Half-field	A single practice setup utilizing one field mat. It is used by an individual team for building, testing, and practicing missions. The full competition field is created when two half fields are joined and aligned for match play between two teams.
Match	A 2:30 period during which teams complete as many missions as possible to earn points.
Mission	Tasks that can be completed for points. Teams may try missions in any order or combination.

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