2022 Season Game Rules

Teams compete together in a friendly game with the objective of clearing the field by removing all objects from the field. Each team competes in a three-foot diameter-ring, which is the inner white region bounded by a 4.5 inch black circle. All obstacles must be in the black circle or beyond to be considered cleared from the ring. While clearing the ring, the robot may enter the black circle but must not leave the black circle entirely. A robot may not re-enter the ring if it leaves entirely by going beyond the black circle.

PHILOSOPHY

The primary goal is for the students to be engaged, challenged, and have fun.

While we want to create an even and equitable playing field and experience, we need to understand that many of the students have varying levels of intellectual, physical and social disabilities. As such we need to be flexible and accommodating with the rules. When in doubt, err on the side of accommodation and grace.

CHANGES FOR THE 2022 SEASON

In addition to a new game objective, Unified Robotics will transition to using the LEGO® Education SPIKE™ Prime platform.

Teams may still use existing LEGO MINDSTORMS™ EV3 Kits if necessary for the 2022 season.

For Washington State teams: Special Olympics Washington (SOWA) and Unified Robotics can assist teams with LEGO kits and supplies as needed.

ROBOT RULES

The following robot rules are in place to offer a fun and fair competition among all teams, and attempt to best create equity among teams with different numbers of members, budgets, etc. At the competition, robots will be visually inspected to meet the basic motor and size restrictions. Our goal is to make sure all teams are able to play, with fairness in mind.

R1. Teams are allowed to create robots using parts from the LEGO kits, as long as the robot meets all other listed rules.

For teams using SPIKE Prime, maximum one Kit.
For teams using MINDSTORMS EV3, maximum one Core Kit plus one Expansion Kit.

- For MINDSTORMS EV3, the Core Kit is the Educational version, containing the Ultrasonic sensor (not the Infrared sensor)
- An Expansion Kit should only be used when a school or organization has multiple teams, and needs a few additional components for all teams to build.
- Decorations and other small pieces from other LEGO products are fine—have fun and make your robot your own! Decorations should not significantly change the size or mass of your robot.

R2. No more than two Large motors may be used for propulsion.

- A third large motor may be used for decoration, or added functionality. This does not include driving a wheel contacting the floor.

R3. No more than three Large motors per robot.

R4. When sitting in its playing position, the robot should fit within an 8.5” × 8.5” square throughout the match.

- Small/flexible parts that extend beyond the size parameter, such as axles or cables, are acceptable.

R5. The duration of the match and number of objects removed will be recorded by a second referee. This time will be used only for any necessary tie-breakers at the end of qualification play.

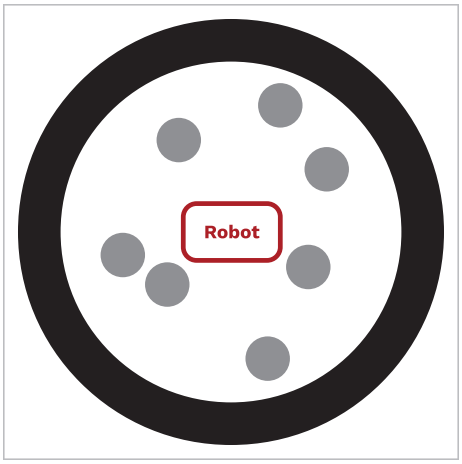
Acceptable Ultrasonic Sensors

SPIKE Prime Distance Sensor

MINDSTORMS EV3 Ultrasonic Sensor

The MINDSTORMS EV3 Infrared Sensor is not accepted.

MATCH SETUP AND START



S1. Robots start the match in the center of their own ring. Two fields will be side by side with one robot on each field.

S2. Each field will contain seven objects placed randomly inside the circle.

S3. Teams are given about one minute after being called to the field to arrive and begin setting up their robots. If a team does not report to the field within a reasonable amount of time, they forfeit the match.

S4. Teams are given sufficient time to select the program to run and get the robot menu to the 'ready to run' state, i.e. one more button push will start the robot.

S5. The field should be clear of any debris or unintended objects or markings. Students and spectators should be several feet from the field, to not interfere with the robot sensors.

S6. The teams indicate readiness to start the match by giving the Referee a thumbs-up signal.

S7. The Referee starts the match by counting down "3-2-1-GO!" When the Referee says "GO" the teams start their robots and immediately move at least three feet away from the field so that the robots do not detect and follow the students.

GAMEPLAY

G1. One the robot is started, teams are not allowed to touch their robot until requested by the Referee

G2. It is not unusual for a student to have difficulty starting their robot. This can be especially true for students with disabilities. If the team member is having a difficult time starting their robot, allow them to continue until they get the robot started. The Referee may need to assist. If in the process either robot starts to follow a person at the ring rather than search for objects to clear, stop the match, reset and restart.

G3. The match is over when one of the robots has pushed all of the objects in their ring outside of the inner circle. Objects can be touching the black circle or fully outside of the black circle. They must be entirely clear of the white inner field.

G4. During match play, the robot must remain inside the black circle. Part of the robot may extend past the black circle but the main part of the robot must remain inside. If at any point during the match a robot leaves the field entirely and is outside of the black circle, the robot may not re-enter the ring. The match play will continue until the other robot clears their field entirely or is also removed from play by leaving their field. If a robot leaves the field, the objects they cleared until that point will still count in this match.

G5. If the robot has long attachments, the Referee will make the judgment based on the main body part of the robot. The main part of the robot is typically the section housing and supporting the LEGO control module.

G6. Once the match is over because a robot has cleared all objects from their field, that robot will be declared the winner.

G7. The following information will be recorded by a second referee to be used as tie-breakers as needed at the end of qualification play: Number of objects cleared by each robot and duration of the match.

G8. In the case of a match ending due to both robots leaving their field and no longer being able to continue the match, the number of objects cleared by each team will be recorded. Team which removed the most objects before match play ended is the winner of that match.

TOURNAMENT RULES

The tournament is played in two parts. Part one is the Qualification rounds. These are random matches among all the robots (or all the robots in a given Division). Part two is the Elimination Rounds. This uses a bracket-based, winner advances model for the matches, until one Team remains, and is the tournament champion!

QUALIFYING ROUNDS

Depending on the total numbers of Teams in the event, Divisions may be used to ensure all Teams have the most matches possible, in a reasonable amount of time.

Here are some examples of tournament structure depending on the number of Teams participating:

Total Number of Teams	Number of Divisions	Number of Teams per Division	Number of Matches a Team will Play	Number of Teams Advancing
7-12	1	7-12	6-11	4 or 8
14-22	2 or 3	7-11	6-10	4 or 5 (plus Wildcard)
24-36	3 or 4	8-12	7-11	4 or 5 (plus Wildcard)

A match schedule will be created that randomly assigns Teams to play one another. Each Team will play against each other Team (or each other Team in their Division) at least once. Depending on the event timing, the schedule may be repeated for more matches!

Teams will earn Tournament Ranking Points—2 for a win, 1 for a tie, 0 for a loss—for each match played.

RANKING TEAMS

After the qualifying rounds, Teams will be ranked based on their Tournament Ranking Points and any necessary tie-breakers. For events with multiple Divisions, each Division will be ranked individually. If teams have the same number of Tournament Ranking Points, the following tie-breaker rules will determine the other. (This is true if two or more teams have the same number of Tournament Ranking Points.)

- The first tiebreaker is reviewing a previous match where the two same teams competed. If the teams played multiple matches against each other, use the results of all matches. The winning team of that previous match will be ranked higher.
- The second tiebreaker is the average win time. The team with the shortest average win time will be ranked higher.
- The third tiebreaker is the chronological wins order. This looks across all of the Qualification Matches, counting how many wins in a row a given team achieved. For instance, if one team had four match wins in a row while the other team had only three wins in a row, the team with four in a row would be ranked higher.
- The final tiebreaker is a coin flip, witnessed by members of both teams. The Head Referee will assign heads to one team, tails to the other, and flip a coin. The team that matches the visible coin face will be ranked higher.

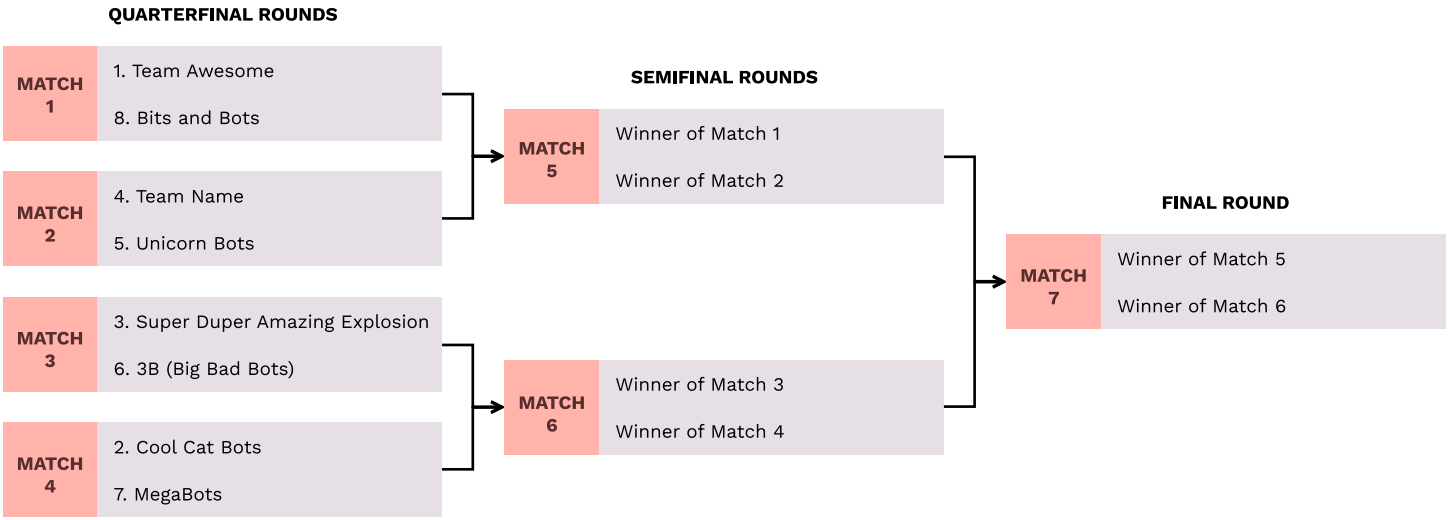
After ranking, a number of Teams (or Teams from each Division) will be placed into a bracket for the Elimination Rounds. The number of advancing Teams must be a multiple of 2 (4, 8, 16, or 32) for a complete bracket.

BUILDING THE BRACKET

The Eliminations bracket is built in such a manner that the highest ranked teams play the lowest ranked teams in the first level of the bracket. For events with multiple Divisions, the bracket should be built such that teams compete against teams from other Divisions.

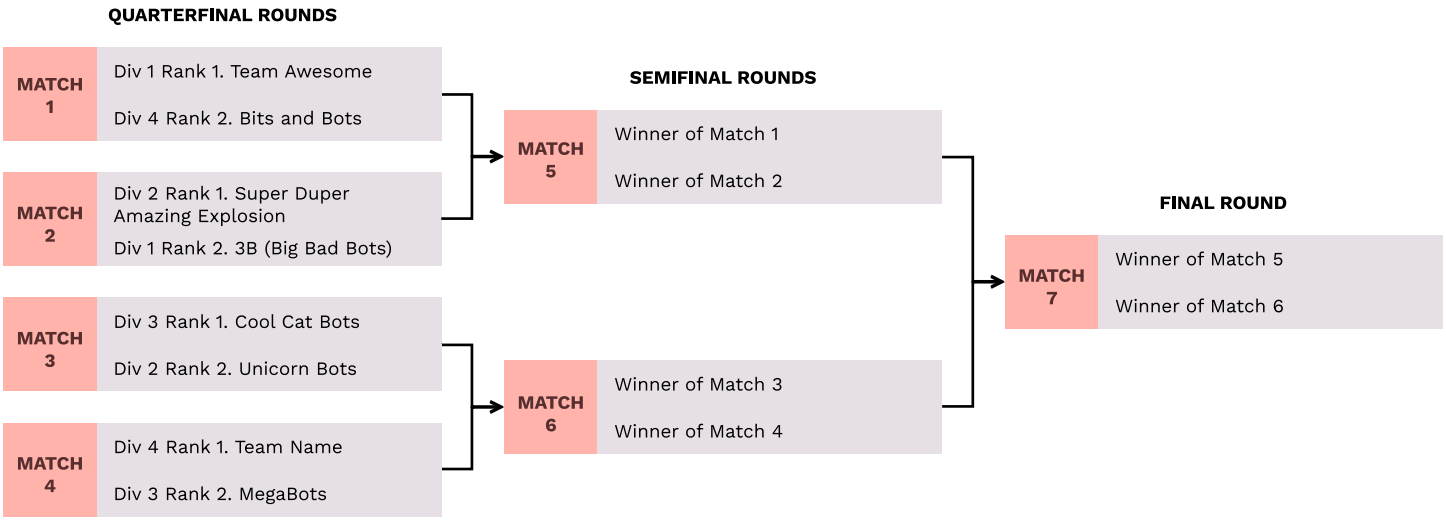
SINGLE DIVISION EXAMPLE

Ranking	
1. Team Awesome	5. Unicorn Bots
2. Cool Cat Bots	6. 3B (Big Bad Bots)
3. Super Duper Amazing Explosion	7. MegaBots
4. Team Name	8. Bits and Bots



MULTI DIVISION EXAMPLE

Division 1 Ranking	Division 2 Ranking	Division 3 Ranking	Division 4 Ranking
1. Team Awesome	1. Super Duper Amazing Explosion	1. Cool Cat Bots	1. Team Name
2. 3B (Big Bad Bots)	2. Unicorn Bots	2. MegaBots	2. Bits and Bots
3. Purple Mayhem	3. Frank and Frank	3. Gear Robotics	3. Schoolyard Bots



BUILDING THE BRACKET

Elimination rounds are played where Teams need to win 2 out of 3 plays, and the winner will advance to the next round. All rounds at the same level in the bracket are played before continuing onto the next level. (e.g. all quarterfinal matches are complete before starting semifinals.) The bracket will conclude with a finals match between the last two Teams, and the winner of this will be the Tournament Champions!