



District 9 4-H Roundup Robotics Challenge Rules



CONTEST OVERVIEW

The Robotics Challenge is designed as a blind challenge, meaning the contest theme, challenges, layout and items used will not be revealed until the morning of the contest. Teams will build and program a robot of their own design from scratch that can accomplish various game challenges.

PARTICIPANT RULES

These rules have been revised for District 9 Roundup and will supersede the rules/guidelines that are used for state contest. District 9 Roundup rules are very similar, but there are a few variations.

Note: *These rules may be modified to accommodate the needs of a county/district level contest. Therefore, be sure to obtain the current year's rules for your county/district event.*

1. **Participation.** Participants must be 4-H members currently enrolled in a Texas 4-H and Youth Development county program and actively participating in the robotics project.
2. **Age Divisions.** Age divisions are determined by a participant's grade as of September 1 of the current 4-H year.
 - Junior: Grades 3, 4, and 5
 - Intermediate: Grades 6, 7, and 8
 - Senior: Grades 9, 10, 11, and 12
3. **Invitational.** This is an invitational contest (at Texas 4-H State Roundup), which means that it is open to all intermediate and senior 4-H members. There is currently no qualifying robotics contest at any of the lower levels of competition.
4. **Members per team.** A team will contest of at least three (3) and no more than five (5) members.
5. **Teams per County.** There is no limit on the number of teams per county.
6. **Equipment.** Each team must supply their own equipment for the challenge. Each team may only bring the supplies listed below. Equipment will be checked by contest officials as teams check in for the contest. Any extra equipment or item

that does not meet specifications will be returned to the team coach. All Lego pieces must be fully disassembled when checking in. No pre-assembled robots, arms, etc. allowed. No infrared beacons (remote) or sensors allowed. Only sensors included in the Lego Mindstorm kit are allowed.

1	Lego® Mindstorm® NXT or EV3
Unlimited	Backup rechargeable batteries or sets of AA batteries
1 or 2	Laptop computer or tablet with programming software (Lego® or non- Lego® is acceptable)
1	Power strip (3-prong, grounded)*
1	25 ft. (max) extension cord (3 prong, grounded)*
1	Plastic container or cardboard box for transporting robot to and from game area
	Pencils and notepad with blank paper (for design and note-taking purposes)
1	Ruler or tape measure

* No two prong extension or power strip plugs allowed. Computer power cords are allowed to be two-pronged.

7. **Bluetooth Connectivity.** Bluetooth connections can be made and utilized during the programming phase. It is not allowed during the competition phase while the robot is on the playing field.
8. **Minimum Construction Skills and Proficiency.** Competitors must be capable of designing and building a functioning Lego Mindstorm robot that includes the use of:
 - Motors
 - Light/color sensor
 - Touch sensor
 - Ultrasonic sensor
 - Levers, arms, claws, etc.
 - Incorporating non-Lego parts into robot design and/or function
9. **Minimum Programming Skills and Proficiency.** Competitors must be capable of programming a Lego Mindstorm robot in order for the robot to:
 - Move
 - Turn
 - Maneuver attachments effectively
 - Use sensors appropriately and effectively
10. **Awards.** An awards ceremony will be held at the end of the day to announce the winners of each contest.

11. **Participants with disabilities.** Any competitor who requires auxiliary aids or special accommodations must contact the District 9 4-H Office at least two weeks before the competition.

RULES OF PLAY

1. Teams will report to the designated location for check-in.
2. An orientation will be provided for all participants where officials will review the challenge, rules, and scoring. Team captains will draw to determine match order.
3. Each team will be directed to a team pit (table and chairs). Each pit will have access to electricity to power laptops and robot batteries.
4. Each team will have 3 hours to design, build, program, and test their robot. A test/practice field will be available.
5. If time permits, teams are allowed to make alterations to their robot design and/or program between matches. Teams must report immediately to the staging area and playing field when called.
6. The robot must perform challenges autonomously.
7. Only registered contestants and contest officials will be allowed in the pit Robot Challenge areas.
8. Only two team members are allowed at the Robot Challenge match table during competition. Team members may switch between matches.
9. Teams that experience equipment malfunction(s) may not replace the part with supplies from another team or outside of the contest area (from leaders, volunteers, county Extension agents or contest officials). Instead, team members must work together and be creative in completing preparation without the malfunctioning equipment.
10. Depending on the challenges, contest officials may provide non-Lego items that must be incorporated into the function of the robot and/or serve as part of a challenge.
11. Depending on the challenges, additional points may be awarded for use of sensors.
12. Coaches will be permitted to meet with their team for a 10-minute time period prior to Build Time. This time should be used to help team members develop a plan and foster positive youth development.
13. No cell phones or other types of communication devices are allowed in the pit or contest areas. Exceptions include the approved items listed in the Participant Rules. During Build Time and Robot Challenge, contestants are not allowed to communicate with spectators (including coaches and parents).

14. A match will range between 1 and 3 minutes in length, depending upon the challenges designed for competition. The specific time limit will be announced during the Challenge Release. Contest officials will make periodic announcements regarding time remaining in Build Time and Robot Challenges.
15. Teams will have two preliminary matches in which to earn points. The sum score of the two matches will determine teams that qualify for the finals. The top 3 teams in each age division will advance to the final match.
16. Finals will consist of two additional matches. The two scores from the final round will be added to the preliminary scores. Finalist teams will be ranked based on their total scores. Judges' results and decisions are final.
17. Tie-breaker procedures will be announced during the Challenge Release.