

# ROBOTICS CONTEST

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**Description:** A team, consisting of two people, tests their robot programming skills by designing and programming Lego Mindstorm Robotics Kits to complete different challenges.

**Entries:** Contestants (team of two) will complete a series of challenges.

**State Awards:** First place individual will receive the choice of \$50 towards future county/state event, a State 4-H Contests Jacket, or registration for "State Contests Winners" Retreat.

Teams will design, build and program a robot that will complete the following tasks:

- **Move Objects:** Robot will need to move objects to a designated place on a challenge board. There will be 5 small objects ex. Lego bricks, or rocks. The target that the robot will place the objects in is at the largest approximately a 12 inch diameter. Two smaller circles inside the target will be designated. Points will be awarded based on the number of objects in each of the circles.
- **Retrieve Object:** Robot will retrieve an object and bring it back to start location. The object will be cylindrical in shape between approximately 3-6 inches; raised off the ground. Depending on the age level and object the challenge can be modified to require or not require that the robot pick up the object with no assistance from the competitor.
- **Multi-Task:** Robot will be required to complete at least a two part task to accomplish a task. The robot will travel an "L shaped" pathway with a standing object at the end. The robot will need to push the object over.

## General Rules

1. All robots must leave from Start Area, return depends on challenge
2. No programs ex. follow a line, are allowed either in electronic or hard copy form are allowed
3. One point touch penalty for a max of five times for every time contestant touches the robot without it being in the start area of the Challenge Area.
4. Design, build and program time will be 1 ½ hrs after the challenges revealed. All work will be stopped once the 1 ½ time limit has expired. Only teams currently involved in the Challenge Board Round may modify their robots or programs.

Maximum number of:

- 3 Motors
- 2 touch sensors
- 1 light sensor
- 1 rotation sensor
- no other sensors allowed

### **At the Challenge Board**

Youth will have three opportunities the Challenge Board. In each 5 minute opportunity youth will attempt to complete all 3 challenges on the board. Youth may change programs or robot attachments as needed within the 5 minutes. Points will be awarded in for each round, the highest point award of the three rounds will be used in ranking team placement.

### **Equipment**

Youth may choose to use the RCX or NXT robotics platforms. Contestants are required use the computers provided by the event staff. Youth may choose to bring their own robotics equipment. Please declare robotics kits needs ex. RCX, NXT etc. at the time of State Contest Registration.

No non Lego parts can be used on the robot.



# Robotics Contest

<b>RIBBON AWARDED</b> (circle one)  <b>BLUE</b> <b>RED</b> <b>WHITE</b>
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NAME \_\_\_\_\_

NAME \_\_\_\_\_

COUNTY \_\_\_\_\_

## Point Break Down

SUBJECT	POINTS POSSIBLE	SCORE	COMMENTS
Move Object: Points will be given based on the # of objects placed inside the target. <ul style="list-style-type: none"> <li>• 5 points for each object in the center</li> <li>• 3 points for each in the middle circle</li> <li>• 1 point each for the outer circle</li> </ul>	25		
Retrieve Object: Points will be divided up <ul style="list-style-type: none"> <li>• ex. 15 to pick up</li> <li>• ex. 15 to bring back etc.</li> </ul>	30		
Multi-Task: <ul style="list-style-type: none"> <li>• 15 points to navigate the passageway to object</li> <li>• 15 points for knocking the object over</li> <li>• 15 points for exiting through the passageway</li> </ul>	45		
<b>TOTAL POINTS</b>	<b>100</b>		