

Challenge

Introduction: By using equipment that meets the controller port requirements and programming, remote control and autonomous control of the robot are achieved to complete field object movement tasks.

≤ 9 years old

Rule revision v1-2025.9.15

Rules added to ROBOBOOM

1. Competition Field

Field dimensions: 0.9m × 2.0m (material: UV knife-coated fabric).



2. Robot Requirements

A. Participants must bring their own equipment and programming devices. Parts must be plastic building blocks. Recommended kits: LEGO® WeDo 2.0, LEGO® Spike 45345, VEX GO, Whale Smart, ICQ Bot, or equivalent.



B. Autonomous robots must be used (controller ports ≤4).

C. Pre-built robots and pre-programmed tasks are allowed; no on-site assembly or coding required.

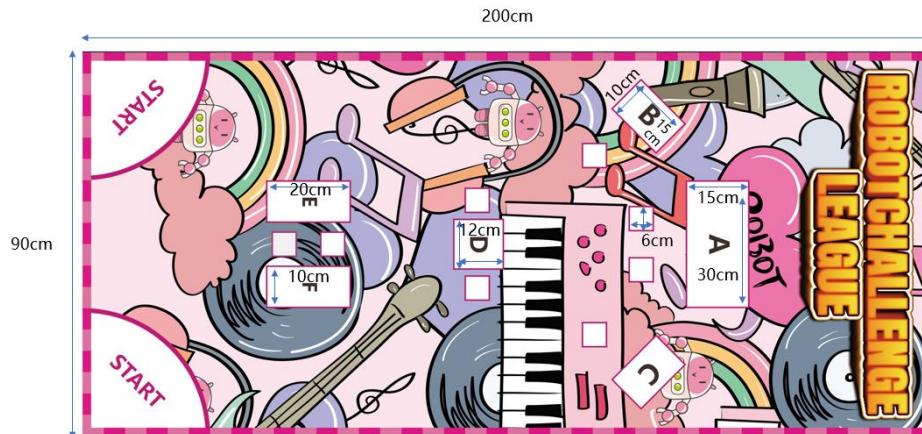
3. Competition Tasks

3.1 Task Overview

Robots must move props to designated zones.

3.2 Field Markings

- A. There are props piled up in the venue that need to be transported. The task area includes the START area, A, B, C, D, E, and F areas. Storage Zones E & F
- B. Initial prop positions are shown below:



- C. Props: 5×5×5cm EVA foam cubes (white).



3.3 Task Details

3.3.1 Task Types

- A. Remote-Controlled Tasks: Props in areas A, B, C, and D can be operated via remote control.
- B. Autonomous Tasks: Props in areas E and F require the use of an autonomous robot.
- C. Remote-Controlled Task Execution: The remote-controlled robot starts from the START zone. It may complete multiple remote-controlled tasks consecutively in one run or return to the START zone mid-process for adjustments before resuming tasks.
- D. Autonomous Task Execution: Autonomous tasks must be completed by the robot independently. Once the robot is manually activated in the START zone, the team must not contact any field props, the robot, or the remote controller until the robot autonomously returns to the starting zone. Adjustments may be made before the next launch.
- E. Task Sequence: There are no restrictions on the order of completing remote-controlled and autonomous tasks. Teams may decide the sequence freely and may intersperse the two types of tasks as needed.

3.3.2 Task Breakdown

- A. Place 2 props in Zone A.
- B. Place 1 prop each in Zones B & C.
- C. Place 1 prop in Zone D.
- D. Return 1 prop to any START Zone.
- E. Place 1 prop each in Zones E & F.
- F. Excess props are scored based on Rule 3.3.3K.

3.3.3 Scoring Criteria

- A. Material fully entering Zone A: 15 points/item.
- B. Material partially entering Zone A: 8 points/item.
- C. Material fully entering Zones B/C: 25 points/item.
- D. Material partially entering Zones B/C: 13 points/item.
- E. Material fully entering Zones E/F: 10 points/item.
- F. Material partially entering Zones E/F: 5 points/item.
- G. Material fully entering Zone D: 20 points/item.
- H. Material partially entering Zone D: 10 points/item.
- I. Material fully returning to START Zone: 30 points/item.
- J. Material partially returning to START Zone: 15 points/item.

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- K. Material moved from initial position but not in target zone: 3 points/item.
- L. No fallen parts during competition: 20 points.

3.3.4 Bonus Tasks

- A. Bonus tasks (announced before testing) completed: 30 points.
- B. Bonus tasks require on-site program adjustments based on prop positions.

3.3.5 Total Score

- A. Task score: 200 points max.
- B. Time bonus: 10% of total score (based on remaining seconds).
- C. Time bonus = (Remaining time ÷ Total time) × 20.
- D. Total score = Task score + Time bonus.

4. Competition Requirements

4.1 Time Limit

- A. 60 minutes for testing before competition.
- B. 5 minutes per round. Time ends immediately; judges tally scores.

4.2 Rounds

2 rounds per team.

4.3 Start of Competition

- A. Place robots in START Zone before whistle. Countdown: 3-2-1, whistle starts the round.
- B. The team can decide to prioritize remote control tasks or automatic tasks on their own.

4.4 Retry Rules

- A. Retry conditions:
 - a) Human contact with robot/props outside START Zone.
 - b) Robot fully exits field or malfunctions.
 - c) Robot cannot autonomously return to START Zone.
- B. Retry penalty: -5 points/retry.
- C. Field remains unchanged during retry. Retrieve robot to START Zone.
- D. Props carried during retry are invalidated and held by judges until round ends.
- E. Unlimited retries (with penalties). Time continues during retry.

4.5 End of Competition

- A. Time ends; scores tallied.
- B. Teams may finish early; time stops upon signal.

4.6 Rankings

- A. Best of two rounds determines ranking.
- B. Tiebreaker: Team with more remaining time in highest-scoring round wins.
- C. Further tiebreaker: Compare secondary scores and remaining times.

5. Notes

- A. Task order is flexible.
- B. Manually unload props and relaunch robot from START Zone.
- C. Multiple launches allowed if robot returns autonomously.
- D. If robot fails to start (stays in START Zone), adjust and relaunch (time continues).
- E. Final scores are calculated post-competition.

" Challenge" Scoring Sheet

Judge Items			Value	Points	Score
1	Material position (Each Material has only one score, determined by the final position)	Material fully entering Zone A	0 1 2	15	
		Material partially entering Zone A	0 1 2	8	
		Material fully entering Zones B/C	0 1 2	25	
		Material partially entering Zones B/C	0 1 2	13	
		Material fully entering Zones E/F	0 1 2	10	
		Material partially entering Zones E/F	0 1 2	5	
		Material fully entering Zone D	0 1 (N) (Y)	20	
		Material partially entering Zone D	0 1 (N) (Y)	10	
		Material fully returning to START Zone	0 1 (N) (Y)	30	
		Material partially returning to START Zone	0 1 (N) (Y)	15	
		Material moved from initial position but not in target zone	1 2 3 4 5 6 7 8	3	
2	Bonus tasks	Complete bonus tasks	0 1 (N) (Y)	30	
3	No fallen parts during competition		0 1 (N) (Y)	20	
4	Number of retries (retry penalty, 5 points per retry)			-5	
5	Time bonus = (Remaining time (seconds) ÷ Total time (seconds)) × 20 (10% of total score)				
			Total Score		
			Remaining Time:		