

RobotChallenge LEAGUE Challenge

Steel Melody Theme Competition Rules

Revised on November 28, 2024

Competition Theme: "Steel Clashes with Notes, Igniting a Sensory Feast! The 'Steel Melody' Music Festival is Here!"

This is no ordinary music festival—it's a sensory revolution! We've meticulously combined stunning stage design, electrifying atmosphere, immersive interactive experiences, and performances by top-tier musicians to deliver an unprecedented fusion of technology and art!

Prepare to ignite your passion and unleash your soul in the collision of steel and melody! The "Steel Melody" Music Festival awaits!

Festival Preparation

The festival team has meticulously planned to create an audiovisual spectacle. Infrastructure is ready, and robots are deployed to efficiently and precisely complete setup tasks.

≤ 9 years old

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.

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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. Props are scattered in the field. Zones include:

START Zone

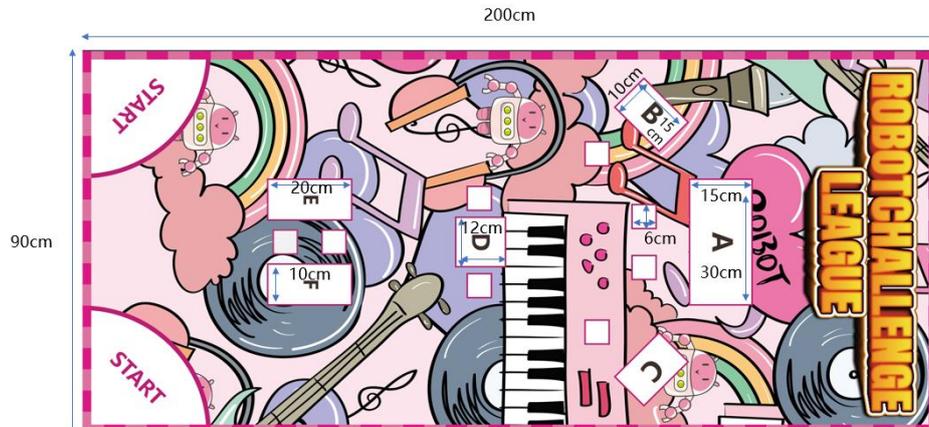
Stage Zone A

Audio Zones B & C

Secondary Stage Zone D

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 Breakdown

A. Place 2 props in Zone A.

B. Place 1 prop each in Zones B & C.

C. Place 1 prop in Zone D.

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- 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 3.3.2K.

3.3.2 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.
- K. Material moved from initial position but not in target zone: 3 points/item.
- L. No fallen parts during competition: 20 points.

3.3.3 Bonus Tasks

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

3.3.4 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. Start via sensor, button, or program module. Remote control is prohibited (violations result in disqualification).

4.4 Retry Rules

- A. Retry conditions:
 - a) Human contact with robot/props outside START Zone.

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- 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.

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"Festival Preparation" 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:		