KAGA PROGRAMMING CHALLENGE 2026

Robot Road Challenge

Competition Rules

1. Competition Overview

This programming competition challenges competitors to make a robot car drive autonomously along a course made from wooden boards and reach the finish without falling off. Competitors program the robot's travel distances, turning angles, motor speeds, and other settings, then repeatedly improve their programs based on the results of their runs.

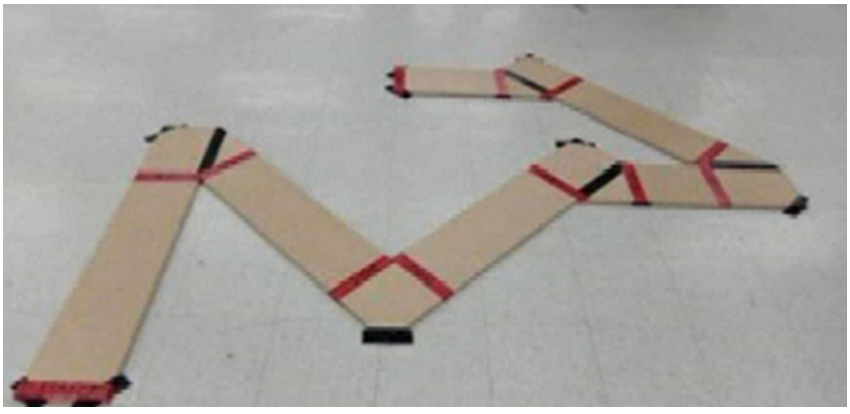
Competitors aim to achieve one of three ranks - Bronze, Silver, or Gold - based on the number of successful finishes and their run times.

2. Eligibility

- Elementary school students (using the flat course for elementary school students).
- Junior high school students (using a flat course that is longer than the elementary school course).

3. Course

- The course is made by joining boards that are 24 cm wide and approximately 2 cm high.
- The course consists of straight sections and several corners, with designated starting and finishing points.
- The elementary school course consists of four straight sections and three corners.
- The junior high school course consists of six straight sections and five corners.
- Boards come in three lengths: approximately 46 cm, 76 cm, and 134 cm.
- There are three types of corners: 45°, 90°, and 135°.
- The joints between sections of the course are secured with tape.



Example of a junior high school course

4. Robots and Check-In

Robots must comply with the following requirements.

Item	Requirement
Platform	No restrictions
Robot type	**Autonomous.** The robot must run automatically under program control. Remote control using a controller or other device is not permitted after the start. A computer or tablet may be used to trigger the start.
Build cost	Approximately JPY 100,000 or less
Size	65,030 cm^3 or less. The robot must not expand after it has been placed in the starting position.
Number of controllers	One
Sensor types	External sensors that detect the route or detect falls may not be used. Sensors that obtain information from within the robot, such as motor rotation sensors (encoders, etc.), may be used. **Examples of eligible robots** LEGO MINDSTORMS EV3, Kaga:bit-Drive, Daisen α-Xplorer
Motors	No restrictions on type or number

- Each team may use one robot in the competition.
- A spare robot may be used if the competition robot becomes unusable due to damage or another reason.
- Robots will be checked for compliance at the competition. A robot that does not meet the requirements may not be allowed to compete.
- Robots equipped with a gyro sensor (such as LEGO SPIKE or Sphero) are not eligible for this competition. Robots equipped with a gyro sensor must enter the "Robot Road Challenge Gyro," regardless of whether the sensor is used. If a team is found to have competed with a robot equipped with a gyro sensor, that team will be disqualified.

5. Rules and Scoring

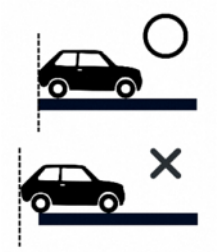
- Complete the course within the one-minute time limit.
- There is no limit to the number of scored attempts. The team's final score is the sum of its five highest scores.

5. Rules and Scoring (continued)

- Points are awarded each time the robot passes through a straight section or a corner.
- Within the time limit, competitors may restart from the starting position as many times as they wish.
- The attempt ends and the score is tallied if the robot falls off the course, can no longer continue moving, is touched, is judged unable to continue by the referee, or if the competitor declares that they give up.
- If the robot completes the course within one minute, the whole-number part of the time remaining in seconds is added as bonus points.
- Touching the side of the course is treated as falling off the course.

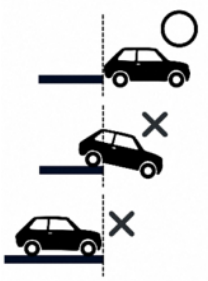
Starting position

To start, place the robot so that its rearmost point is aligned with the rear edge of the course. The robot's rearmost point means its farthest-back part, whether or not that part touches the ground.



Finish

Drive through the finish without stopping, continuing forward and falling off the end of the course. The finish does not count unless the robot's rearmost point has passed beyond the end of the course.



Circle = correct / valid. Cross = incorrect / not valid.

Scoring table

Division	1st straight	1st corner	2nd straight	2nd corner	3rd straight	3rd corner	4th straight	4th corner	5th straight	5th corner	6th straight
Elementary school	50	150	200	300	350	450	500 (Finish)	-	-	-	-
Junior high school	50	150	200	300	350	450	500	600	650	750	800 (Finish)

6. Rank Certification

Sum of the five highest scores

Rank	Elementary school	Junior high school
Bronze	2,000 points or more	3,200 points or more
Silver	2,300 points or more	3,600 points or more
Gold	2,600 points or more	4,000 points or more