



REGULATIONS OF THE ROBOT COMPETITION

"LABYRINTH. LEVEL 1"

Age of participants: Level 1: 9-12 years.

Team: 1-2 people.

Robots: autonomous robots.

Equipment used: no restrictions.

Programming language: no restrictions.

Description of the task: The autonomous robot, assembled by the participants of the competition, must navigate the path from the starting area of the labyrinth, passing through colored sections in a certain sequence in the minimum time, and then return to the start/finish zone. The color sequence of the sections is chosen by lottery 60 minutes before the quarantine.

1. Requirements for the robot

1.1. The use of any parts, including those made by yourself, is permitted in the design of the robot.

1.2. The maximum size of the robot is 250×250×250 mm. During the attempt, the robot must not exceed the maximum allowed dimensions.

1.3. The robot must be autonomous.

1.4. The robot must be brought assembled on the day of the competition.

1.5. The program for passing the route is compiled on site on the day of the competition. It is forbidden to use programs written in advance. It is forbidden to use blanks of program code, including your own blocks and libraries.

1.6. The robot's weight is not limited.

1.7. The robot body must not damage the surface of the competition area in any way, otherwise the team may be removed from the competition and disqualified.

2. Requirements for the landfill

2.1. The field consists of a base with sides, with internal dimensions of 1200×2400 mm.

2.2. The labyrinth is made up of 300×300 mm sections of two types: with a wall and without a wall. The entire structure of the labyrinth is made up of 16 mm thick white laminated chipboard.

2.3. The walls of the labyrinth are 150 mm high and 16 mm thick.

2.4. The characteristics of each section of the landfill are indicated in Appendix No. 1.

3. Procedure for holding the competition

3.1. The competition is held in two runs. Each team makes one attempt in two runs. After the first attempt, the team quarantines the robot until all participants have completed the test. 30 minutes are given to prepare for the second attempt. The configuration of the testing ground is determined on the day of the event and remains unchanged throughout the day.

3.2. The team is given 1 hour to draw up the program.

3.3. Before the start of the competition, all participants hand over their robots to an area inaccessible to them (quarantine). If during the inspection a violation in the robot's design is found, the judge gives 3 minutes to correct the violation.

3.4. During the competition, participants may take robots only from the quarantine zone and only at the command of the judge.

3.5. The maximum time to complete the task is 3 minutes.

3.6. The team starts the competition at the judge's signal. The robot must be completely located in the "Start/Finish" starting zone. After the judge's command, one of the operators starts the robot.

3.7. After the start of the attempt, the robot must visit the colored zones in the order indicated by the judge and return to the Start/Finish zone.

3.8. The end of an attempt is recorded in one of the following cases:

3.8.1. At the moment the robot returns to the Start/Finish zone.

3.8.2. After 3 minutes from the start of the attempt.

3.8.3. The participant prematurely interrupted the attempt by saying the word "Stop".

3.8.4. The participant touched the robot.

3.8.5. If the robot is unable to continue the competition and/or the robot loses motor activity for 5 seconds (determined by the judge).

3.8.6. When the robot tries to get into another section through the wall.

4. Counting points and determining winners

4.1 The team with the highest number of points will be declared the winner.

4.2. The attempt with the maximum number of points is counted.

4.3. If the teams score the same number of points, the team that spends the least amount of time on completing the task is declared the winner.

4.4. Passing the colored section is counted if the robot's projection is completely in the section zone, the robot stops for 1 second and plays a sound signal.

4.5. The finish is counted if the robot's projection is completely in the finish zone and the robot stops on its own.

4.6. Accrual of points:

Criterion	Points
The robot visited the colored section according to the ordinal number assigned during the draw (for each section)	10
The robot visited the colored section without observing the ordinal numbers assigned during the draw (for each section)	5
The robot returned to the Start/Finish zone (the finish is counted if the points for the previous points are non-zero)	15

4.7. Example of scoring:

Sequence number of the label	Sequence by lot	Race result	Accrual of points
1	Red	Red	10
2	Green	Yellow	5
3	Blue	Blue	10
4	Yellow	Green	5
-	Finish	Finish	15
Total			45

5. Permissible simplifications when conducting selection stages

No restrictions on the overall dimensions of the robot.

Landfill characteristics

1. An example of the placement of marks in a maze.

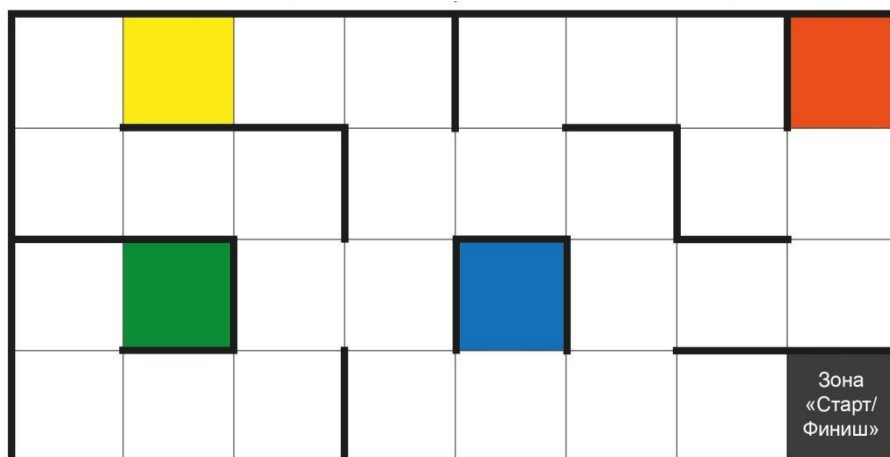


Fig. 1. Example of a polygon configuration

2. Dimensions of the landfill.

No	Name	Material	Color	Size	Quantity
1.	Field base	Chipboard	White	2440×1220 mm	1 pc.
2.	Field side, long	Chipboard	White	2440×150×16 mm	2 pcs.
3.	Field side, short	Chipboard	White	1188×150×16 mm	2 pcs.
4.	Section with wall	Chipboard	White	300×300×150 mm Thickness – 16 mm	22 pcs.
5.	Section without wall	Chipboard	White	300×300 Thickness – 16 mm	8 pcs.
6.	Section "Base Camp"	Chipboard, self-adhesive film	White, green	300×300×150 mm Thickness – 16 mm	1 pc.
7.	End section	Chipboard, self-adhesive film	White, red	300×300×150 mm Thickness – 16 mm	1 pc.

3. The internal size of the polygon is a field of 1200x2400 mm, limited by sides.

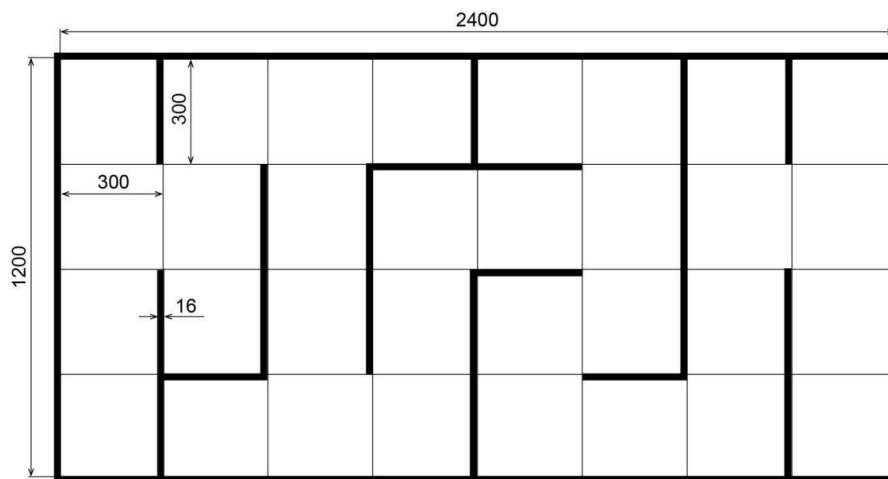


Fig. 2. **Internal dimensions of the polygon**

4. The labyrinth trajectory is made up of double and single sections with dimensions of $300 \times 300 \times 150$ mm and 300×300 mm, respectively.

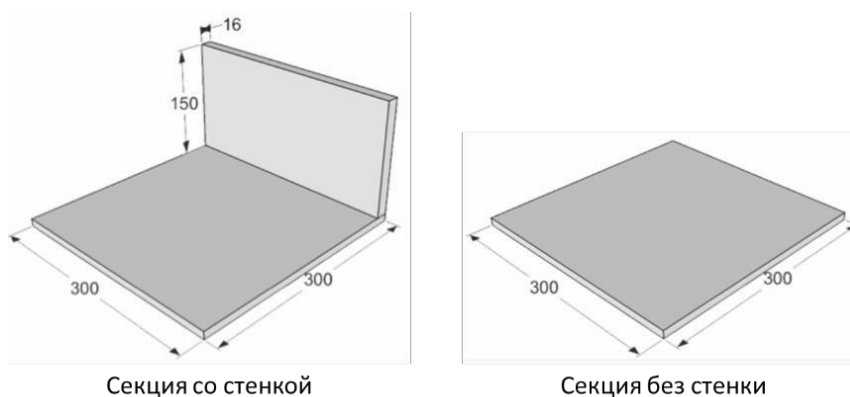


Fig. 3. **Double and single sections of the polygon**

5. The starting and finishing area (“Base Camp”) is marked in black.

Appendix No. 2

Recommendations for judges

1. Designate a dedicated assistant referee to monitor the use of routines during preparation for a try.
2. The refereeing staff prepares 3 options for the configuration of the training ground and the order of visiting the colored marks.
3. On the day of the competition, one of the prepared options is randomly selected.

Appendix No. 3

Recommendations for organizers

1. Each team is provided with a work space (table, 2 chairs).
2. The field is placed in a place accessible to spectators.
3. Team leaders are not allowed to participate in the competition.