REGULATIONS OF THE COMPETITION
"TENGE ALU"

Age of participants: 11-14 years.

Team: 1-2 people.

Robots: autonomous robots.

Equipment used: no restrictions.

Programming language: no restrictions.

Description of the task: The robot must lift and throw into the corridor as many TENGE AS POSSIBLE in the least amount of time.

Changes in the 2024 regulation:

2.5. The corridor for dropping THE TENGE is located to the left of the robot's movement line and is limited by 20x20 mm beams. The corridor width is 430 mm.

5 rings on the field, in the center of each circle cubes are placed - TENGE. Each ring has an internal diameter of 80 mm, an external diameter of 100 mm and a height of 8 mm.

1. Requirements for robots

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

1.2. The maximum width of the robot is 250 mm, length – 250 mm, height – 350 mm at the time of the robot's start.

1.3. During the competition, robots may change size after launch.

1.4 The robot must be autonomous.

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

1.6. The robot's weight is not limited.

1.7. The robot must be equipped with a special device for capturing and throwing TENGE.

1.8. 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 is a white banner measuring 1200×2400 mm (Appendix No. 1).

2.2. The color of the following line is black, the line width is 25 mm.

2.3. The starting area and the finishing area are 25x25 cm squares, within which the robot must be located entirely at the start and finish.

2.4. There is a colored, pale red zone on the field; the robot's projection must not go beyond this zone during the competition.

2.5. The corridor for dropping THE TENGE is located to the left of the robot's movement line and is limited by 20x20 mm beams. The corridor width is 43 0 mm.

5 rings on the field, in the center of each circle cubes are placed - TENGE. Each ring has an internal diameter of 80 mm, an external diameter of 100 mm and a height of 8 mm.

2.7. TENGGE are cubes assembled from standard LEGO parts: beams for 3 modules (the color of the beams is not regulated) and long pins. (Appendix No. 1)

3. Procedure for holding the competition

3.1. Before the start of the competition, the team is given 1 hour to debug and test the robot.

3.2. Before the start of the attempts, 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 eliminate the violation.

3.3. If it is impossible to correct the robot, the team is not allowed to attempt.

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 2 minutes.

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

3.7 The robot's goal is to capture and throw all the cubes into the drop corridor. The robot's projection must remain in the colored zone during the entire attempt.

3.8. The throwing of TENGE must be carried out strictly one cube at a time; if the robot throws several TENGE in one throw, only one TENGE is counted.

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

    3.9.1. The robot stopped in the " FINISH " zone.

    3.9.2. After 2 minutes from the start of the attempt.

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

    3.9.4. The participant touched the robot.

    3.9.5. If the robot is unable to continue the competition and/or the robot loses motor activity for 20 seconds (determined by the judge).

    3.9.6. The robot left the colored zone with its projection.

3.10. 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.

4. Counting points and determining winners

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

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

4.3. In case of a tie in points in the best attempt, the winner is determined by the highest points in the less successful attempt.

4.4. If teams score the same number of points in two attempts, the team that spends the least time on completing the task is declared the winner.

4.5. Accrual of points:

Criterion	Points
TENGGE is assembled - the cube touches the corridor (the block is not part of the corridor)	12
TENG is shifted - no part of the cube is inside the circle (the line is part of the circle)	2
Robot has finished – the robot's projection is completely in the finish zone, awarded if the points for other criteria are non-zero	5

5. Permissible simplifications when conducting selection stages

5.1. No restrictions on the overall dimensions of the robot.
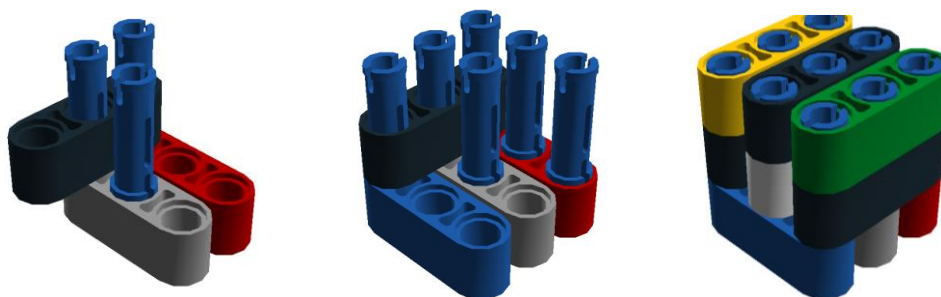
Polygon and game elements

Fig. 1. **Polygon**

Fig. 2. **The order of assembling the cube**

Appendix No. 2

Recommendations for judges

1. Time is recorded in the training ground area using a timer.

2. If the robot's projection leaves the colored zone, the judge must stop the attempt.

3. If the attempt was interrupted by agreement with the judge or by the judge himself, the points scored by the team are recorded in the protocol and the maximum time of 2 minutes is recorded.

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.