ENJOY AI 2026: Inventions Trail

Competition Rules

1. Competition Theme

Human wisdom has always pushed away the darkness of ignorance. The compass guided explorers through fog and across the open sea. Paper carried writing for a thousand years and kept knowledge alive. Gunpowder changed the balance of the world and lit the sparks of civilization. Movable-type printing helped culture spread far and wide. These inventions are the brilliant achievements created by the ancestors of China. The Great Wall standing watch, the pyramids rising toward the sky—their greatness still shines across thousands of years. In the 2026 season, young explorers will follow the path of history and uncover the creative secrets behind these wonders of civilization.

2. Competition Field and Environment

2.1 Competition field

The competition field is covered by a 216 × 120 cm map (see Fig. 1). The map is made of PU fabric or printed cloth, with black guide lines about 2.5 cm wide. The base is on the left side, with 30 × 30 cm in size. The map shown here is only an example. The actual field map used at the event may be different.

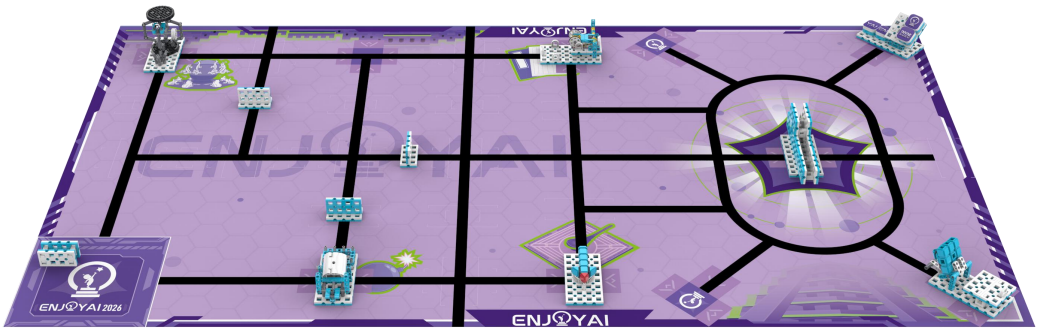

Fig.1 Competition field

2.2 Competition environment

The competition field has fixed edge frames. The field should be lighted with cool low-brightness light, and should be free from magnetic interference. The

actual competition environment may vary due to several uncertainties, such as surface textures or unevenness of the field, inconsistent lighting conditions, variations in the positioning of task models, and other field-related factors. Participants are not allowed to modify any field elements on site, especially the placement or fixation of the field and task models. We suggest that you take all these factors into account when designing your robots.

3. Tasks and Scoring

The tasks are set in fictional scenarios. Do not confuse them with real-life situations. Unless a task has special requirements written in the rules, teams may complete it in any way they choose.

3.1 Compass

3.1.1 A compass model is fixed in one of the task zones. At the start, the red pointer faces away from the yellow area (see Fig. 2).

3.1.2 Scoring: If the red pointer turns to face the yellow area (its vertical projection lines up with the yellow piece below), the team scores 50 points (see Fig. 3).

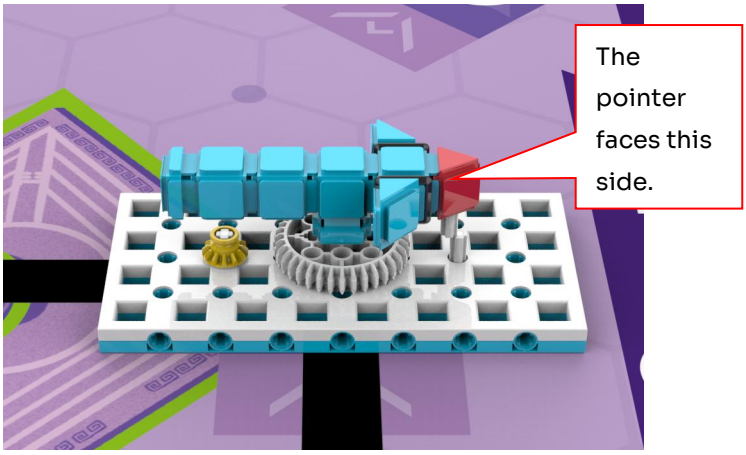

Fig.2 Initial state

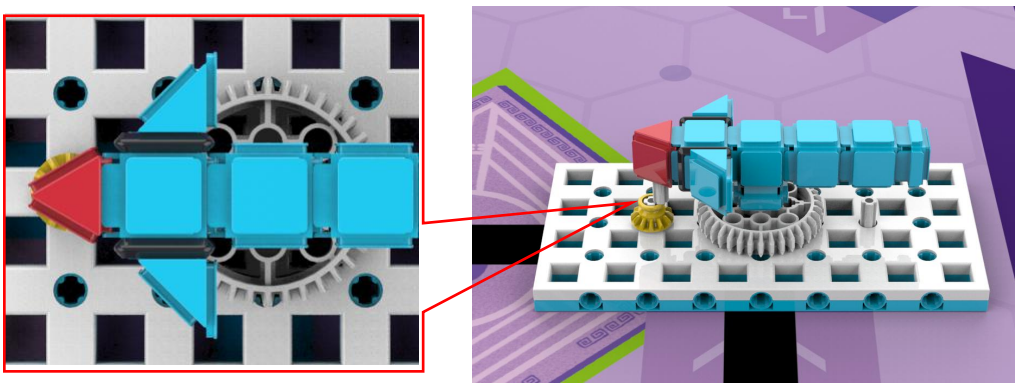

Fig.3 Final state

3.2 Paper Making

3.2.1 A paper-making model is fixed in one of the task zones. A sheet of paper (size: 7.8 × 4.0 cm) is placed on the upper board, and the handle stands upright (see Fig. 4).

3.2.2 Scoring: If the paper falls completely off the upper board and lands on the lower board, the team scores 60 points (see Fig. 5).

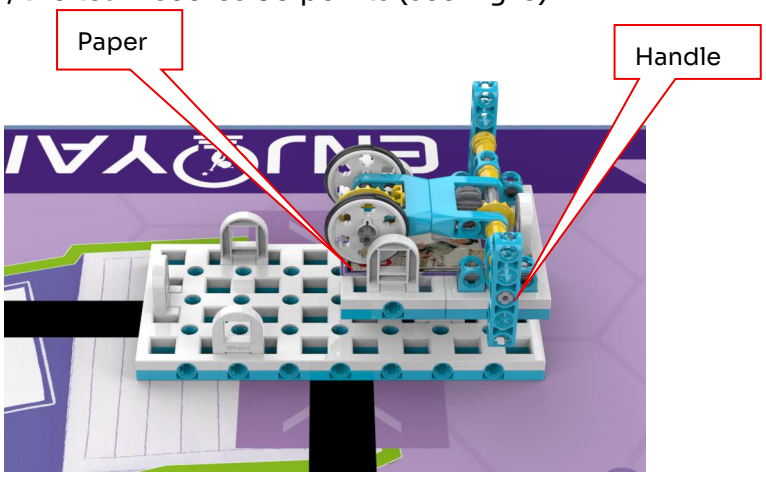

Fig.4 Initial state

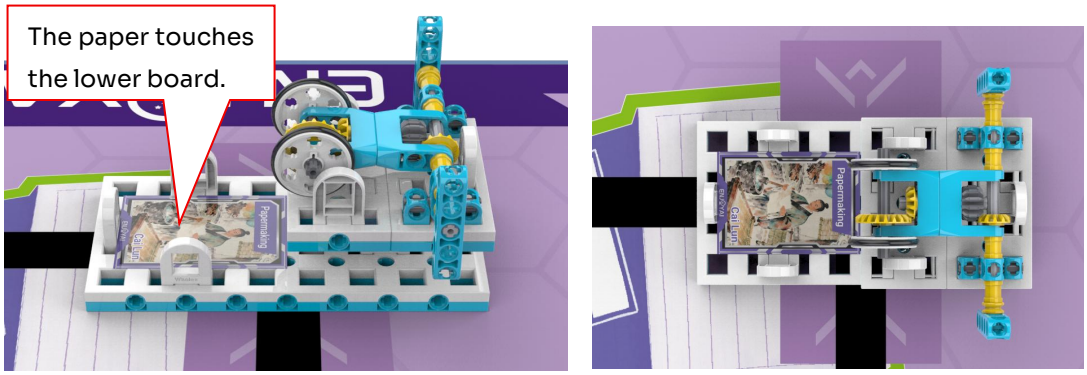

Fig.5 Final state

3.3 Gunpowder

3.3.1 A cannon model is fixed in one of the task zones. The lever stands upright, and the cannonball (diameter about 2.8 cm, made of EVA) is placed inside the barrel (see Fig. 6).

3.3.2 Scoring: If the cannonball lands completely inside the square frame and touches the baseboard, the team scores 40 points (see Fig. 7).

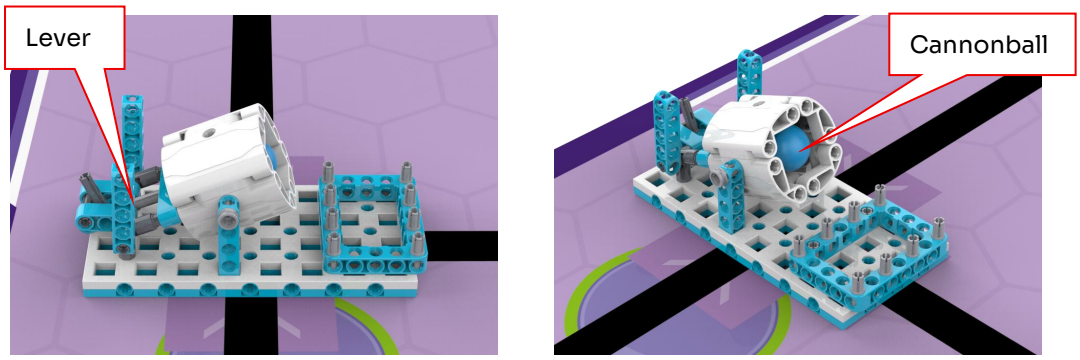

Fig.6 Initial state

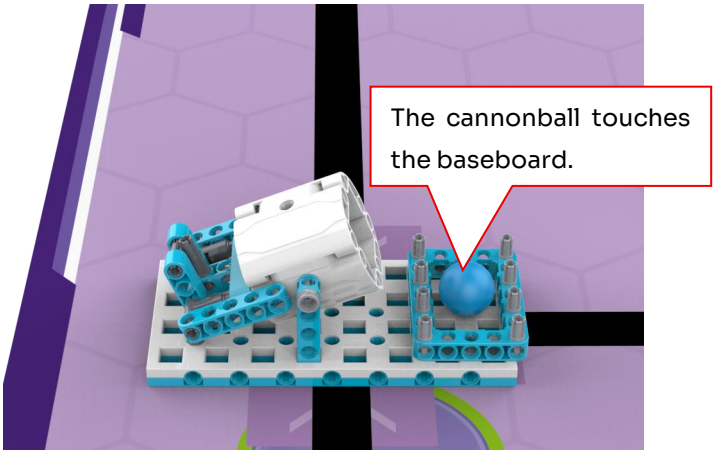

Fig.7 Final state

3.4 Movable-Type Printing

3.4.1 A movable-type printing model is set in one of the task zones. Two-character blocks are placed randomly on the lower board (their positions will be announced before debugging), as shown in Fig. 8.

3.4.2 Scoring: Place the "ENJ" block onto the upper magnetic position so that both magnets attach. Place the "YAI" block onto the lower magnetic position so that both magnets attach. Each correctly placed block scores 40 points (see Fig. 9).

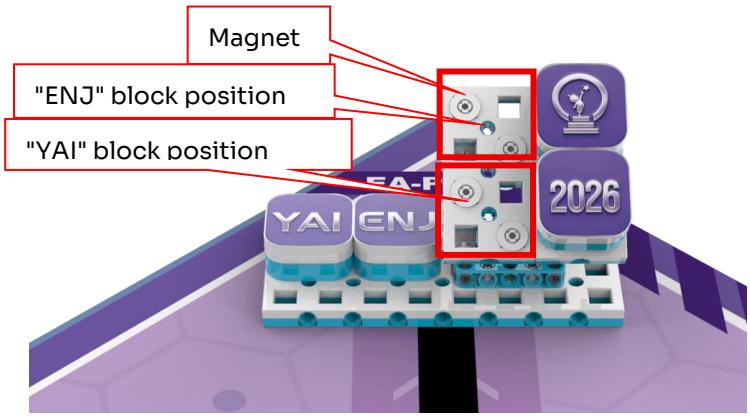

Fig.8 Initial state

Fig.9 Final state

3.5 Seismoscope

3.5.1 A seismoscope model is fixed in one of the task zones. A steel ball is placed on the upper part of the model (see Fig. 10).

3.5.2 Scoring: If the steel ball falls into the lower surrounding frame (without touching the baseboard or the field), the team scores 40 points (see Fig. 11).

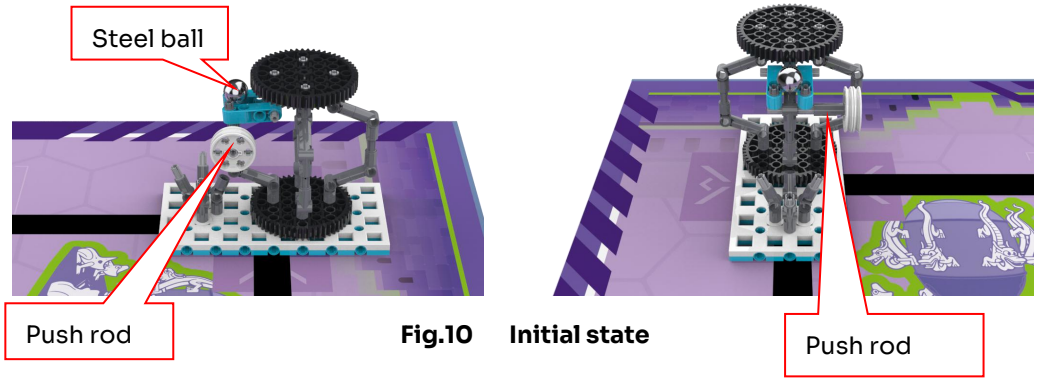

Fig.10 Initial state

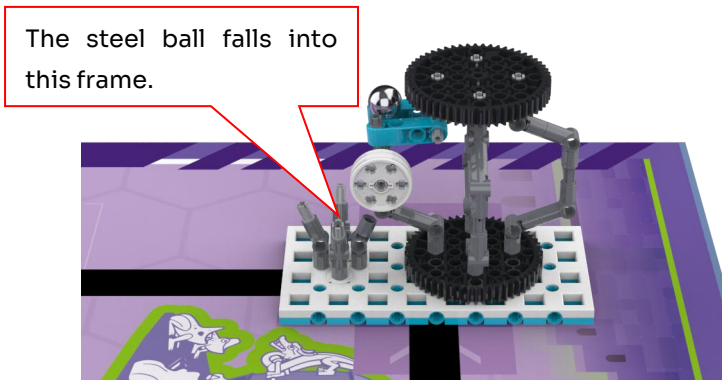

Fig.11 Final state

3.6 Pyramid

3.6.1 A pyramid model is fixed in one of the task zones (see Fig. 12).

3.6.2 Scoring: If the pyramid is placed on the second platform and its base touches only the second platform, the team scores 60 points (see Fig. 13).

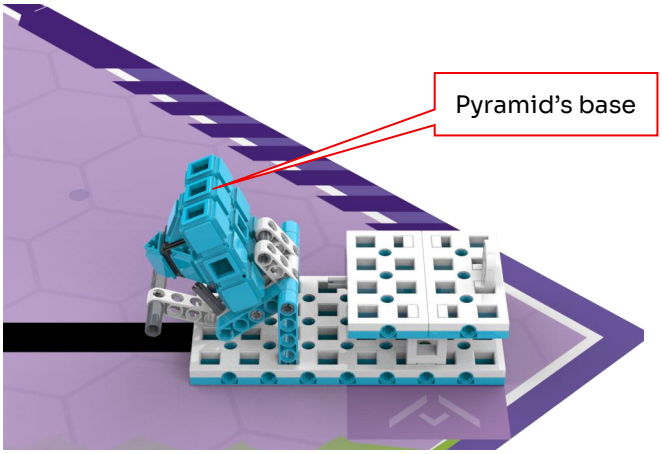

Fig.12 Initial state

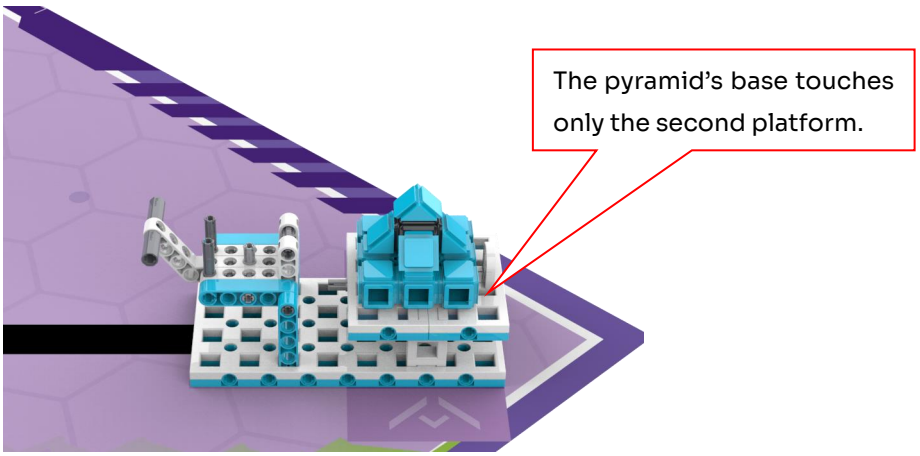

Fig.13 Final state

3.7 Great Wall

3.7.1 A Great Wall model is fixed in one of the task zones, and the building material is placed in the robot base (see Fig. 14).

3.7.2 Scoring: If the building material is placed on top of the Great Wall (touching only the Great Wall), the team scores 60 points (see Fig. 15).

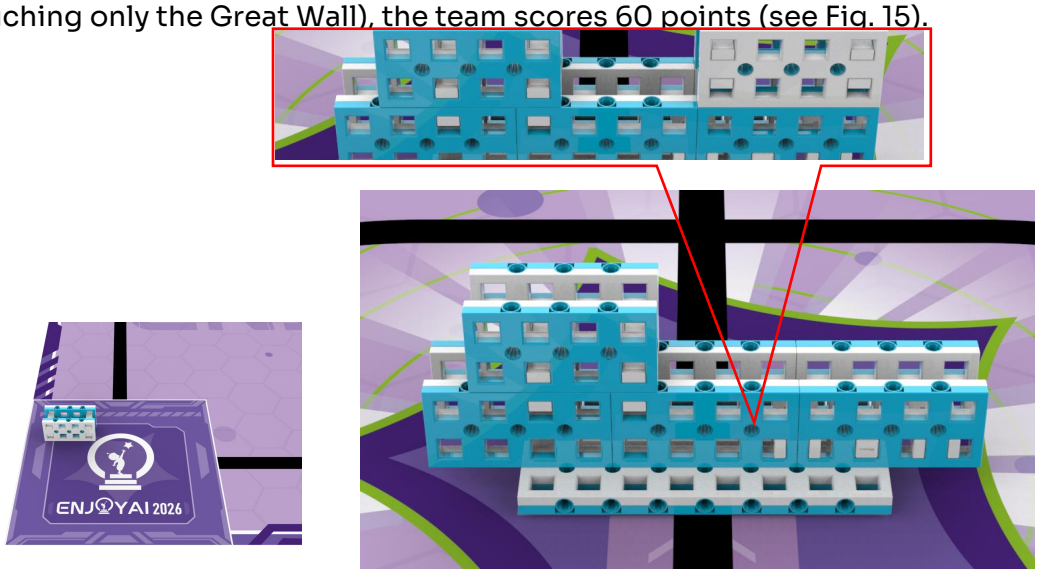

Fig.14 Initial state

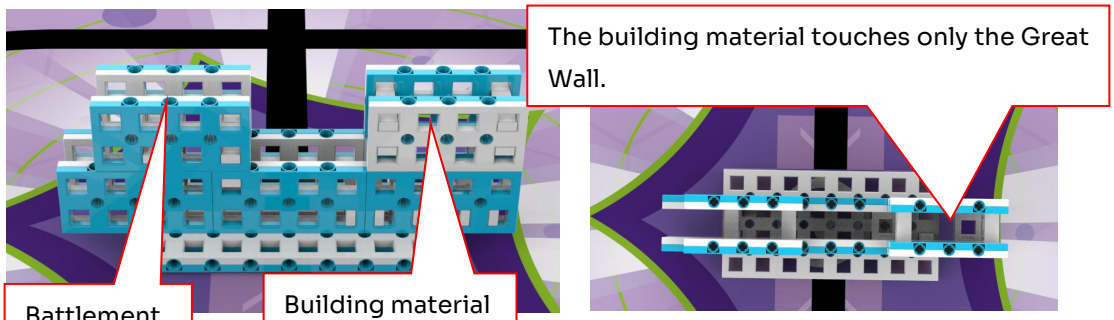

Fig.15 Final state

3.8 Bonus task

3.8.1 The bonus task is designed by the organizing committee. If it is included, rules will be revealed before debug.

3.9 Models and obstacles

3.9.1 The locations and orientations of the known task models and the bonus task model are not fixed. They will be announced before debugging. In the remaining task frames, random obstacles may appear. The shapes and positions of these obstacles will also be announced before debugging.

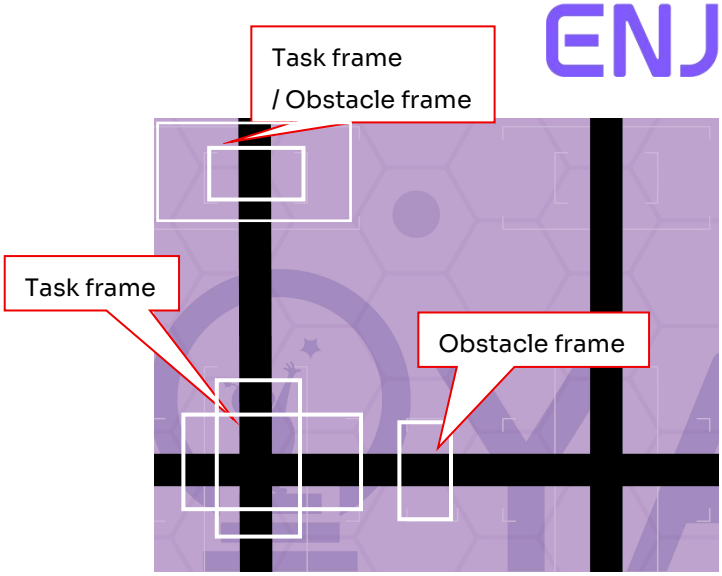

Fig.16 Task and obstacle location

4. Robot

4.1 Robot size: The robot cannot exceed 30 × 30 × 30 cm (L*W*H) before leaving the base. After that, parts of the robot can unfold or expand as needed.

4.2 Controller: You cannot change your controller during a single match, and its circuit board must not be exposed. You must use only one controller for each robot, and it must have at least 10 input/output (I/O) ports, not including motor or servo ports.

4.3 Actuators: Each robot may use no more than four motors in a match (servos are not allowed). One single-suction air pump system may also be used.

4.4 Sensor: No restriction on the types and number of sensors for each robot.

4.5 Structure: The robot must use plastic, snap-together building parts. 3D-printed pieces are not allowed, and you may not use rubber bands, zip ties, screws, glue, tape, or any other extra connecting materials.

4.6 Power supply: Each robot must use one built-in battery box. The battery voltage cannot exceed 9V, and you cannot use circuits to change the voltage.

4.7 Each team can use only one robot. You cannot share your robot with other teams.

5. Competition

5.1 Participating team

5.1.1 Each team must have two students and one coach. The students must still be enrolled in school as of June, 2026.

5.1.2 Participants should proactively deal with problems they may meet during the competition. They must respect and politely communicate with their teammates, opponents, volunteers, referees, and all those who contribute to the competition.

5.2 Competition format

5.2.1 The competition will be divided into three groups: elementary, middle, and high school.

5.2.2 There will be no separate preliminary or intermediate rounds. Every team will have an equal chance to compete, and every round will be scored.

5.2.3 The tasks to be completed will be clearly marked (including Bonus Tasks where applicable). The number of tasks and the placement of task models may differ between divisions.

5.2.4 Teams will be ranked by their total points of all rounds after the competition is completed.

5.2.5 The organizing committee may change the competition format based on the number of signed-up teams and the actual venue setup.

5.3 Procedure

5.3.1 Building and programming

5.3.1.1 You can code and debug your robot only in the allowed area of the competition field.

5.3.1.2 Teams can build their robots ahead of time. They must sign in before entering the preparation area. Referees will check all tools and parts to make sure that they can be used in the match. Students may bring pre-built robots into the preparation area.

5.3.1.3 If a team goes online, downloads files, or takes photos or videos of the field, their score for that round will be canceled.

5.3.1.4 Teams will have some time to test and adjust their robots before the match. After that, robots must be placed in the set area.

5.3.1.5 Once placed, teams can't change the robot or download programs until the match is over.

5.3.1.6 After a round ends, teams can fix their robots and update the program in the prep area, but they must keep the same turn order for the next round.

5.3.2 Pre-match preparation

5.3.2.1 Take your robot and follow the guide into the match area. If you and your teammates are late, your team will lose the match.

5.3.2.2 Team members on the field must stand near the robot base and must not lean against the competition table.

5.3.2.3 Put your robot into the robot base. The top-down projection of the robot (including any attached components) cannot extend partially or entirely beyond the robot base.

5.3.2.4 Attending team members must finish all preparations within one minute, during which the robot must remain within the robot base, and no program modifications or downloads are allowed. Once you are ready, signal to your referee.

5.3.3 Start of a match

5.3.3.1 After the match starts, your robot starts moving on its own.

5.3.3.2 When referees confirm that a team is ready, they will count down "3, 2, 1, start". After hearing "start", you can start your robot. Students in the lower elementary school group may begin writing programs.

5.3.3.3 If a robot moves before "start" is said, it is a false start. The team will get a warning or a penalty.

5.3.3.4 Once the robot starts, it can only follow its pre-programmed instructions.

5.3.3.5 After the robot starts, any parts that fall off completely will be left on the field, and students must not touch them. If a student touches a fallen part, it counts as touching a model outside the base, and any points related to that separated part will become invalid.

5.3.3.6 Once the match starts, if a task model leaves the field, it cannot be returned until the current round ends.

5.3.4 Retry

5.3.4.1 A retry will be triggered in any of the following cases:

(1) You touch the robot after it leaves the robot base.

(2) The robot goes off the competition field.

5.3.4.2 During the retry, you cannot change the layout of the field, and you must put the robot back to the robot base.

5.3.4.3 Tasks that are completed before the retry will still count. However, any models the robot is carrying when it returns to the robot base for a retry will become invalid. The models will be collected and kept by the referee until the current round ends.

5.3.4.4 The number of retries for each round is not limited. The timer won't stop or restart during retries.

5.3.5 Autonomously return to robot base

5.3.5.1 The robot can be programmed to return to the robot base as many times as needed without being considered as retries.

5.3.5.2 The return is considered successful only if the top-down projection of any part of the robot is entirely within the boundaries of the robot base.

5.3.5.3 After the robot returns, you can touch the robot to make changes or repairs.

5.3.6 End of match

5.3.6.1 Each round lasts for 150 seconds.

5.3.6.2 If you decide to stop your play during the competition, raise your hand and clearly call out to the referee that you are ending the match. The referee will stop the timer and end the match. Otherwise, wait until the referee announces that the match is over.

5.3.6.3 After the referee announces that the round is over, power off your robot immediately, and do not touch or move your robot or task models on

the field. If either you or your robot causes a change to the position or state of any task model, the related task will not be awarded any points.

5.3.6.4 The referee will announce your score. If the score is miscalculated, you can ask the referee to correct it. If you have no objections, you must sign to confirm your score. In the event of a dispute, you may appeal to the chief referee for a final decision. The organizing committee will not accept any appeals made outside the field.

5.3.6.5 After the round ends, you must restore the layout of the competition field to the initial state and take your robot to the preparation area.

6. Scoring

6.1 After each match, points will be given based on the tasks the robot completes (task models touched by your robot after the referee announces that the round is over will not be scored). If you or your robot damages the model of a completed task before the match ends, no points will be awarded for that task. For the scoring rule of each task, see Section 3 in this document.

6.2 The order in which you complete your tasks does not affect your points for a single task.

6.3 If there is no retry in a match, and your robot operates in a smooth and continuous motion, you will get an extra reward of 40 points. A bonus of 30 points will be awarded for completing the match with one retry; 20 points for two retries; 10 points for three retries; and no bonus points will be awarded for four or more retries.

7. Fouls and disqualification

7.1 If you fail to arrive 15 minutes after debugging starts, your team will be disqualified from that round.

7.2 If there is a false start for the first time, your team will get a warning. The robot must return to the standby area to restart, and the timer will be reset. If a second false start occurs, your team's score for that round will be invalidated.

7.3 If your robot collides with any field element and causes damage, your team will receive a warning. A second violation will result in your team's score for that round being invalidated.

7.4 If you or your robot damages a task model, your team will receive a warning and no points will be awarded for that task.

7.5 If a team member who is not currently competing interferes with the match, their team will be disqualified from the round, and the affected team will be allowed to replay the match

7.6 If you touch a task model outside the robot base, that model will be considered invalid, and the match will be stopped immediately. Your score will be counted based on the tasks completed prior to the foul.

7.7 If you don't follow the referee's instructions, your team's score for that round will be invalidated.

7.8 If you access the internet, download materials, take photos or videos of the competition field, your team's score for that round will be invalidated.

7.9 If you contact your coach or parents without the chief referee's permission, your team's score for that round will be invalidated.

7.10 For any matters not specified in these rules, the chief referee will make the final decision. The organizing committee authorizes the chief referee to interpret these rules.

7.11 These rules are the only reference for refereeing. Referees have the highest authority in all competitions, and their decisions are final. Referees can refuse to review match recordings. Any questions regarding referee's decisions must be raised by a student representative to the chief referee between rounds. Once the chief referee makes the decision, no further appeals will be accepted.

8. Ranking

8.1 Teams in each division will be ranked by total scores. In the case of a tie, the following tie-breaker criteria will be applied in sequence until the tie is resolved:

(1) The team with the shorter time across all rounds ranks higher;

(2) The team with fewer retries across all rounds ranks higher;

(3) The team with the highest single-round score ranks higher.

8.2 Awards will be determined based on the final ranking. Teams with zero points or who forfeit the competition will not be ranked. Honors include Champion, Runner-up, Third Place, as well as First/ Second/ Third Prizes.

Scoring Sheet of Inventions Trail					Round__
No.		**Team**		**Division**	

Appendix:

Task	Description	Full points	No.	Scored points
Compass	The red pointer's vertical projection lines up with the yellow piece below.	50		
Paper making	The paper falls completely off the upper board and lands on the lower board.	60		
Gun power	The cannonball lands completely inside the square frame and touches the baseboard.	40		
Movable-Type printing	The character block is placed onto the magnetic position and both magnets attach.	40/each		
Seismoscope	The steel ball falls into the lower surrounding frame (without touching the baseboard or the field).	40		
Pyramid	The pyramid is placed on the second platform and its base touches only the second platform.	60		
Great Wall	The building material is placed on the top of the Great Wall (touching only the Great Wall).	60		
Bonus task	See the competition announcement for details.	100		
Extra reward	40-10 x Number of retries (> 0)			
Total score				
Time spent				

Score Confirmation			
I hereby confirm that the scores recorded above are accurate, valid, and reflect the true results of the match. I have no objections.			
Team members:		Referee:	
Remarks			
Chief referee:		Scorekeeper:	