2025 World GreenMech Contest
Coach Meeting

2025.07.03

Meeting Agenda

Time	Contents
09:00~09:20	Competition Announcements
09:30~10:40	GMJr. S Competition Rules Reminder
10:50~12:00	GMJr. P Competition Rules Reminder
13:30~15:00	R4M Competition Rules Reminder
15:10~16:30	GM Competition Rules Reminder

Competition Overview and Guidelines Briefing

2025 WGM Number of Registered Teams

	GM		R4M		GMJr.	
	Basic	Advanced	Basic	Advanced	Science	Programming
Elementary School	36	21	31	14	96	48
Number of Awards	Gold Medal1, Silver Medal2, Bronze Medal3		Gold Medal1, Silver Medal2, Bronze Medal3	Gold Medal1, Silver Medal1, Bronze Medal1		
Junior High School	26	25	28	12		
Number of Awards	Gold Medal1, Silver Medal2, Bronze Medal3		Gold Medal1, Silver Medal2, Bronze Medal3	Gold Medal1, Silver Medal1, Bronze Medal1	Gold Medal1, Silver Medal3, Bronze Medal6	Gold Medal1, Silver Medal2, Bronze Medal3
Senior High School	13	11	14	11		
Number of Awards	Gold Medal1,Silver Medal1,Bronze Medal1					
Subtotal	75	57	73	37	96	48

8/7(THU) Event Schedule

Contest Schedule

GreenMech - 2F (Basic , Advanced)

07:40 - 08:20	Registration
08:00 - 08:50	Material Inspection (All parents and teachers should leave the venue)
08:50 - 09:00	Opening Ceremony & Clarification of Rules - 2F
09:00 - 10:30	Production Time (Basic)
09:00 - 10:30	Production Time (Advanced)
10:30 - 12:30	Appraisals (Basic)
12:30	Award Ceremony (Basic) - 2F
11:40 - 12:30	Lunch (Advanced)
12:30 - 12:50	Gather & Enter (Advanced)
12:50 - 13:00	Fine-tuning
13:00 - 16:30	Appraisals (Advanced)
16:30 - 17:10	Feedback & Communications
17:10	Award Ceremony (Advanced) - 2F

R4M - 3F (Basic , Advanced)

Opening Ceremony & Clarification of Rules - 3F	
09:00 - 11:00	Assembly & Practice Time
09:30 - 11:20	Work Submission Period
11:20 - 12:30	Lunch
12:30 - 12:50	Gather & Enter
13:00 - 16:30	Competition Time
16:30	Award Ceremony (Basic & Advanced) - 2F

GreenMech Junior-2F/3F

Jr. Science

08:00 - 09:00	Registration & Material Inspection
09:00 - 09:10	Opening Ceremony & Rules Reminder-2F/3F
09:10 - 09:35	Competition One: Assembly & Practice Time
09:35 - 10:15	Competition One
10:15 - 10:35	Competition Two: Assembly & Practice Time
10:35 - 11:15	Competition Two
11:15 - 11:50	Calculation of Scores
11:50	Award Ceremony - 2F

Jr. Programmer

13:30 - 13:50	Registration & Material Inspection
13:50 - 14:00	Clarification of Rules
14:00 - 15:40	Competition Time
15:40 - 16:10	Calculation of Scores
16:10	Award Ceremony - 2F

Registration Procedure

Registration Method: At-table registration

Registration Time: 07:40–08:20
For **GM, R4M, and GM Jr.** teams, **team leaders or parents are not allowed to enter the competition venue after 08:00**.

Certificate of Student Enrollment: Please place your certificate on the competition table for collection by the staff.

Team Stickers: Event stickers must be attached to the **left sleeve**.

Materials Inspection Time: 08:00–08:50

Registration Time-Tabletop items

Competition	Category	Tabletop items
GM		Scientific Principles Reference Table, Competition Reminders, T-shirt, commemorative medal.
R4M		Competition Reminders, , T-shirt, commemorative medal.
GMJr.	**GMJr. Science (**Morning**)**	A set of Gigo #1261 Scientific Tour (including material checklist). T-shirt, Gigo #T224 Happy Snake, commemorative medal.
	GMJr. Programer (Afternoon**)**	A set of Gigo #7442-A “Coding & Robotics: Challenge Pack 1”. T-shirt, Gigo #T224 Happy Snake, commemorative medal.

Certificate of Student Enrollment

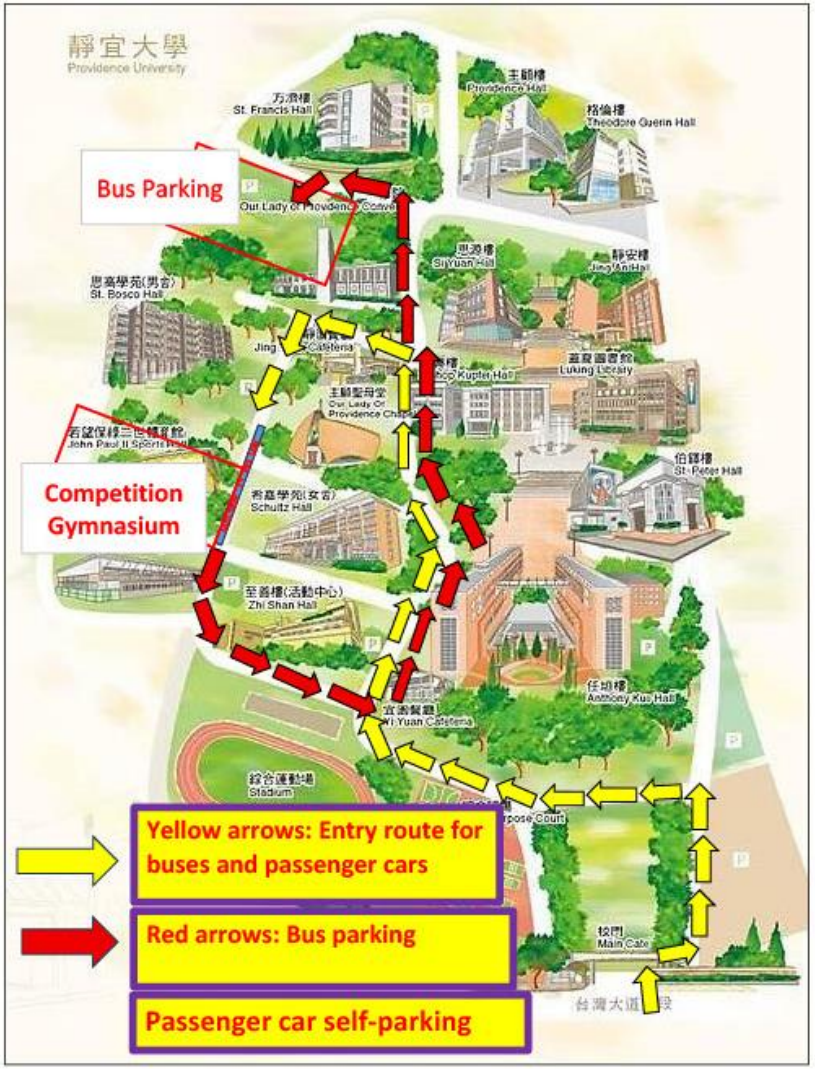
- Certificate of Student Enrollment will be collected at registration on the day of the event (must include a photo).
  A copy of the student ID card is acceptable.
  Graduating students may submit a copy of their diploma.
- If a contestant's identity is in question, proof of identity must be validated.
- If no photo ID is provided at registration, prizes will be issued only after a valid photo certificate is submitted after the competition.

Reminders for Maintaining the Competition Venue

To protect the gymnasium flooring, participating teams are **not allowed to consume beverages within the competition area.**
If any damage to the floor (caused by drinks or chemical substances) is found, the responsible team will be held liable for compensation.

Please ensure suitcases and ladders are properly protected to avoid damaging the floor.

Providence University Venue



Providence University – Parking Regulations

- **Parking Discount:** A payment of **NT$100** allows unlimited entries and exits at Providence University on the same day.
  Each vehicle must display the parking permit prominently on the windshield for inspection by campus security. Vehicles found without a permit during patrols will be immediately wheel-locked for unauthorized parking on campus.

- Buses may park in **Large Parking Lot No. 2**.

Please place the guest parking permit prominently on the windshield.

Providence University – Parking Regulations

Parking Inquiries:

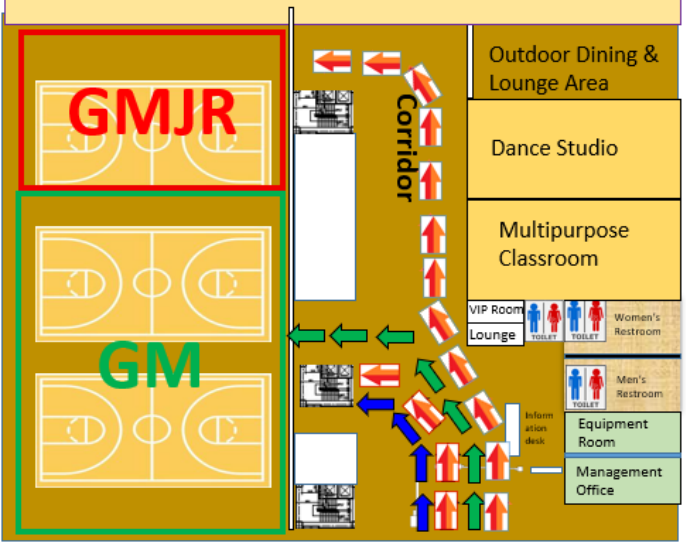
Please contact your sales representative for more information.

- **Tour Bus:** The overseas team will communicate directly with the sales representative regarding payment and follow-up arrangements.

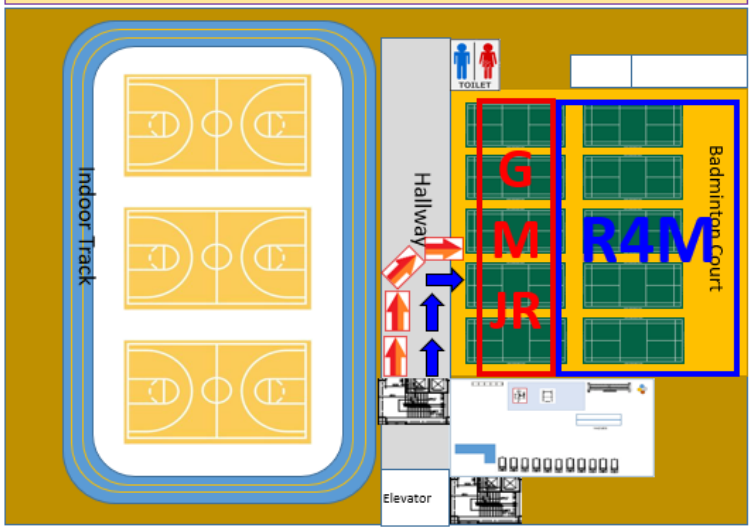
- *Large vehicles and tour buses may park at Parking Lot No. 2 near the mountain top.*

Providence University Venue

2nd Floor Layout Diagram

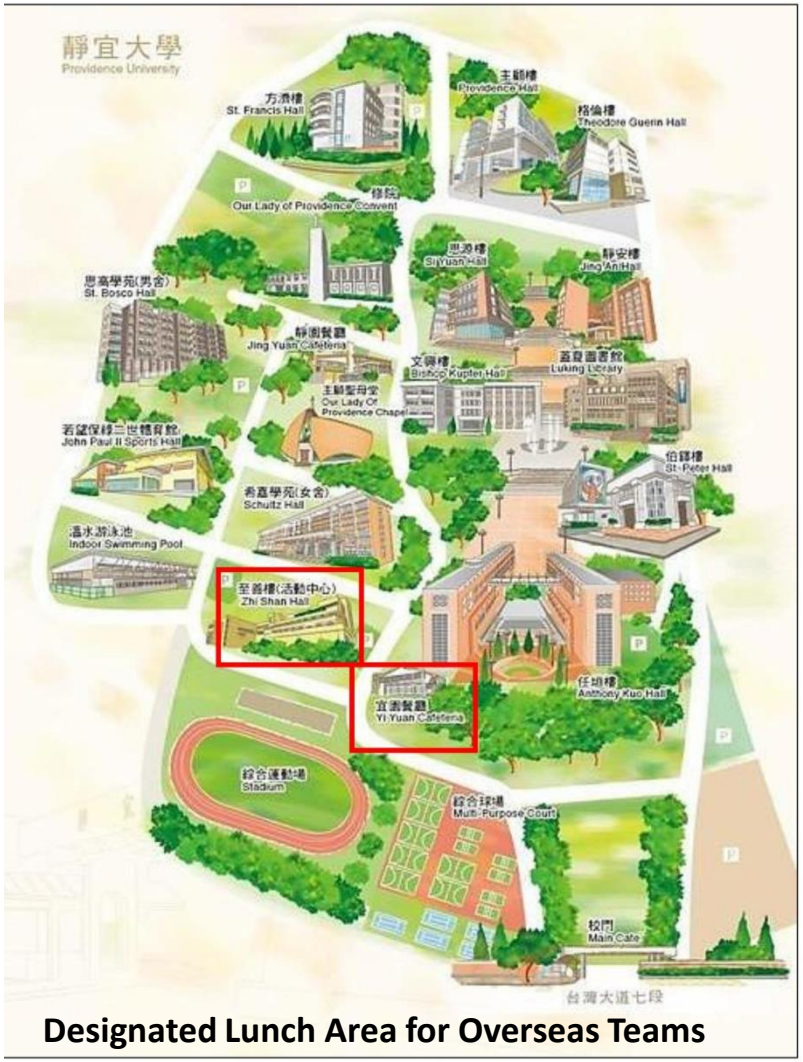


3rd Floor Layout Diagram



- Blue Arrow – R4M 3F Personnel Movement Route
- Green Arrow – GM 2F Personnel Movement Route
- Orange Arrow – GmJr 3F Personnel Movement Route (Tracks D, E, F)
- Red Arrow – GmJr 2F Personnel Movement Route (Tracks A, B, C)

Dining Area for Teams

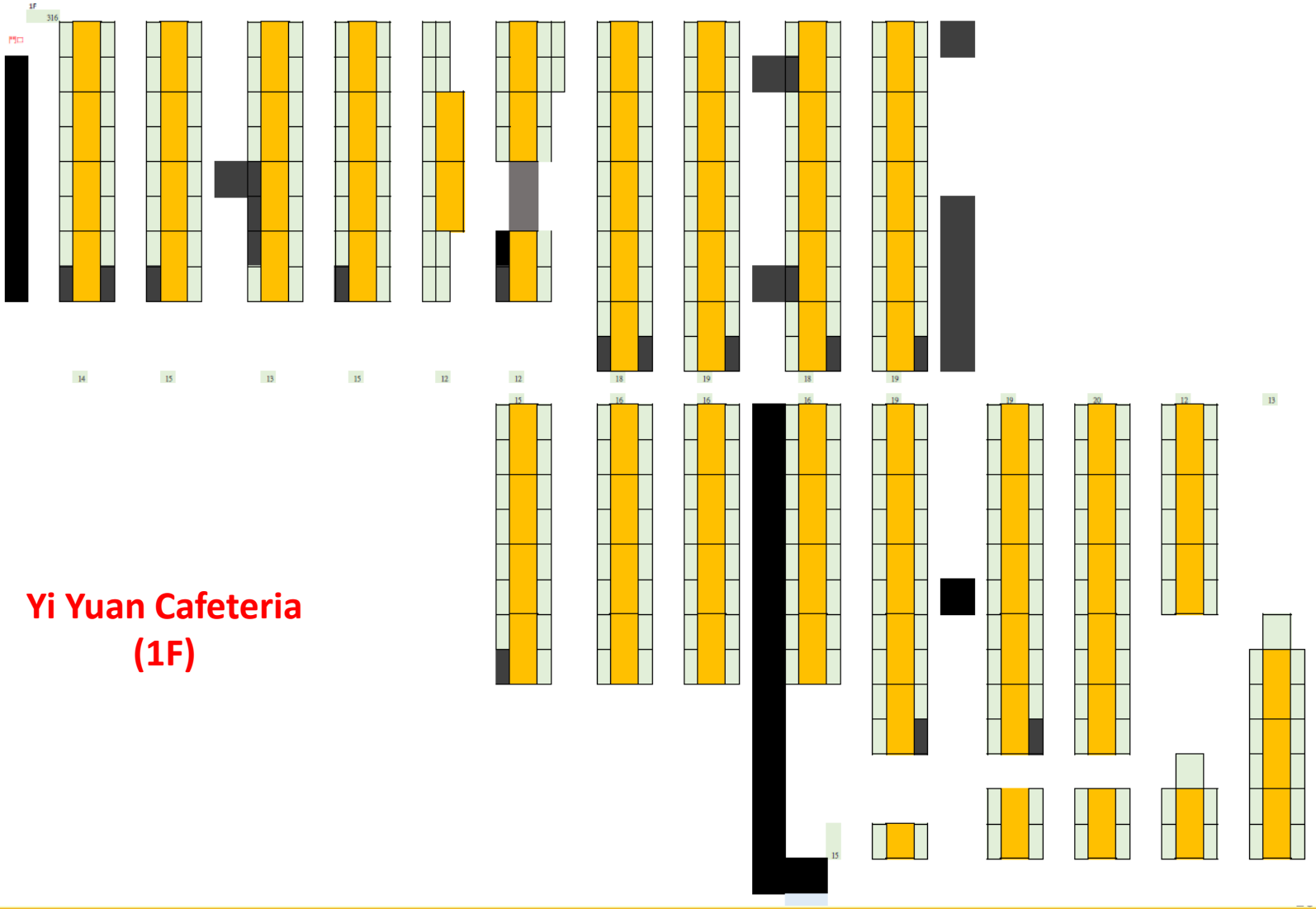


Designated Lunch Area for Overseas Teams

Dining Area for Teams

- There are **two dining areas** available. One of them is **"Yi Yuan," which consists of two levels: the first floor (1F) and the basement (B1)**.
- The dining areas are **air-conditioned** and open for **parents and coaches to rest**.
- During **designated meal times**, the area will be **cleared for exclusive use** by **participants**.
- **International teams** are requested to dine at their **assigned time slots and designated seats**. Please **vacate your seats promptly** at the end of your meal time to allow the **next group** to dine.

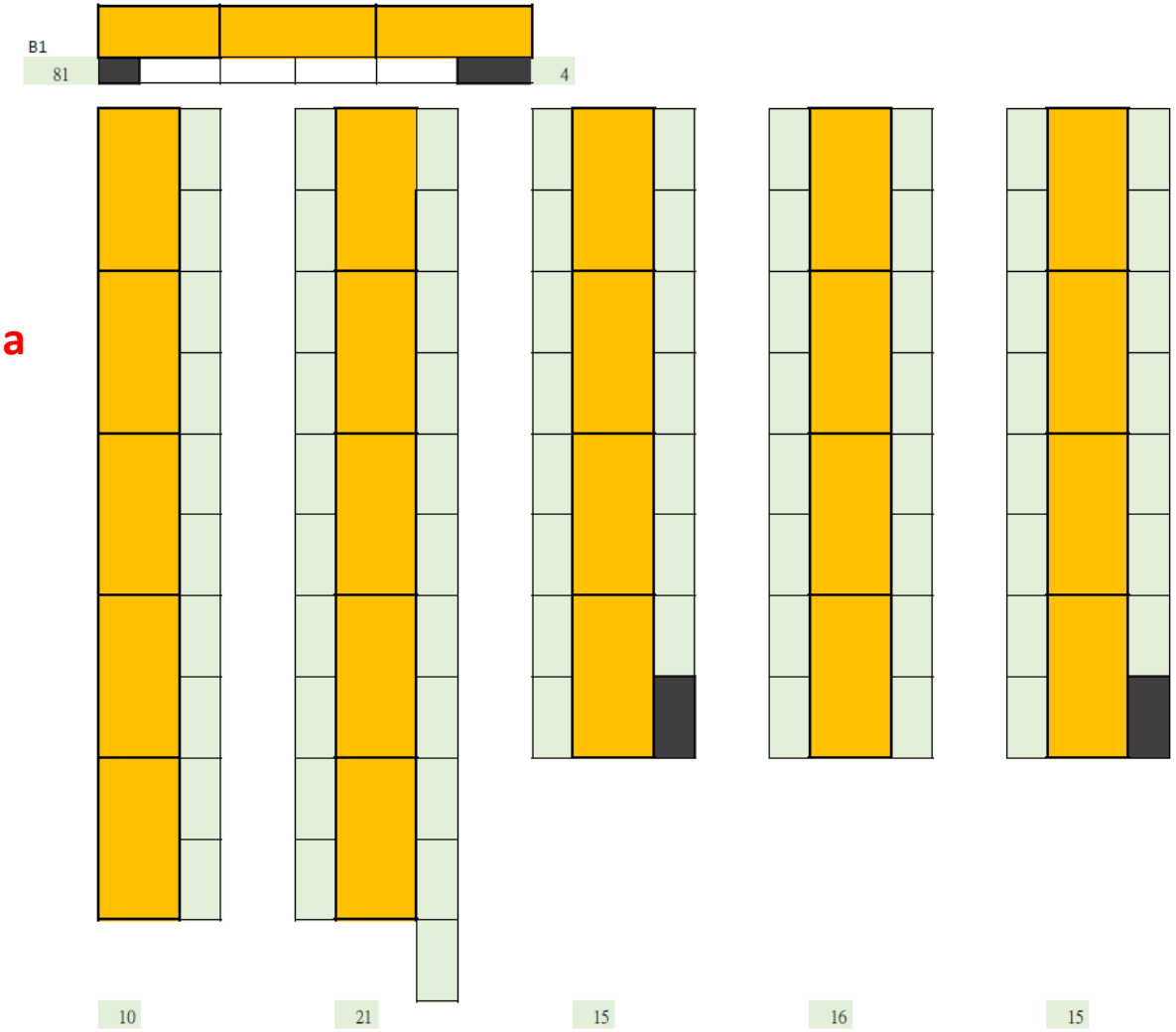
Dining Area for Teams



Yi Yuan Cafeteria
(1F)

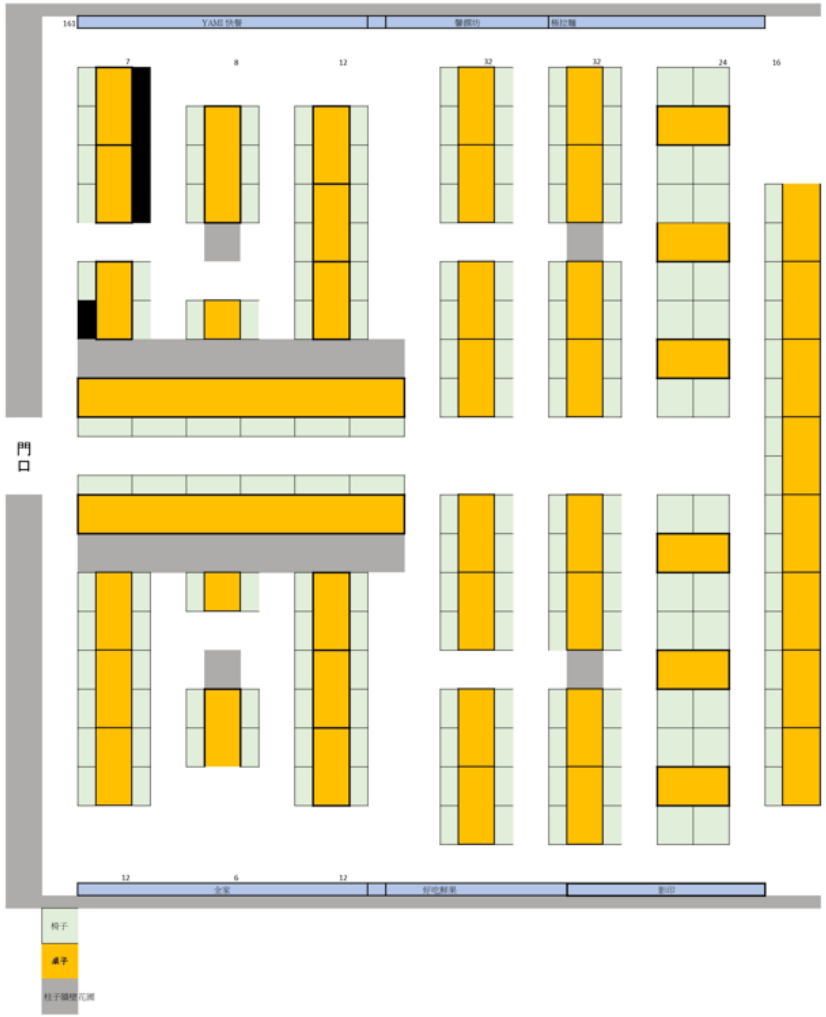
Dining Area for Teams

Yi Yuan Cafeteria (B1)



Designated Dining Area for Overseas Teams

Jhih-Shan Restaurant



Delivery Policy

Delivery is allowed on campus. Couriers must register at the security squad and meet customers at designated outdoor pickup points. Entry into buildings is not permitted.

Providence University Main Gate

2025/6/25 下午4:38 外送平台暑期期間試行入校規定 - 靜宜大學校警隊

靜宜大學 校警隊

外送平台暑期期間試行入校規定

114年度暑假期間，試行開放外送平台送餐入校

為提供全校師生暑假期間用餐更多樣選擇服務，於114年度暑假期間，試行開放外送平台送餐入校。

相關說明如下：

(一)試行期間：114年度暑假(114年6月23日(一)~114年9月7日(日))

(二)開放時間：全天開放。

(三)外送平台人員入校前須先於校警隊完成登記方得入校。

(四)訂餐人員須與外送平台自行約定取餐地點；但不得進入各大樓內。

敬請配合實施

校警隊關心您

Regulations for Delivery Access to Providence University

2025 WGM Competition Partner Discounts

The WGM Association has coordinated with partner hotels and amusement parks to offer **special discounted rates** for participating teams.

2025 WGM Hotel and Amusement Park Discounts:

https://reurl.cc/kn0xn9

Teams interested in these offers may contact the service providers directly.

Reminder:

When booking, **please clearly state that you are a participating team of the 2025 World GreenMech Competition** to enjoy the exclusive discounts.

2025 WGM Hotel and Theme Park Discount QR Code

Access Restrictions

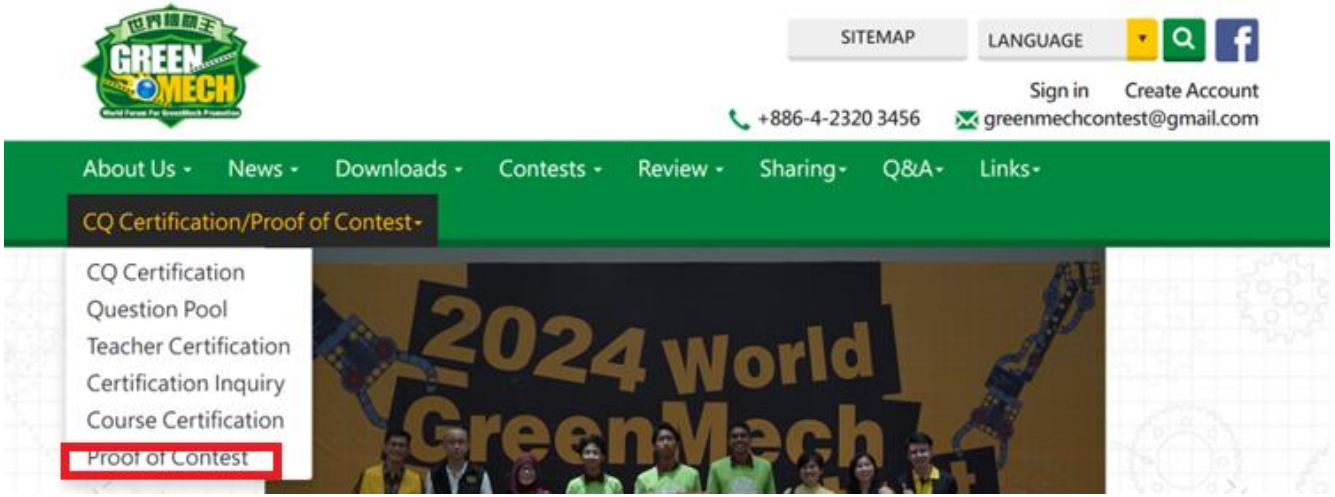
- For all three competitions, **only participating teams will be allowed entry to the competition venues**. Parents and teachers will not be permitted to enter the competition areas.

- **However, during the awards ceremonies for GM, R4M, and GM Jr., teachers and parents will be allowed to enter to watch the ceremony and join their teams on stage for the award presentation.**

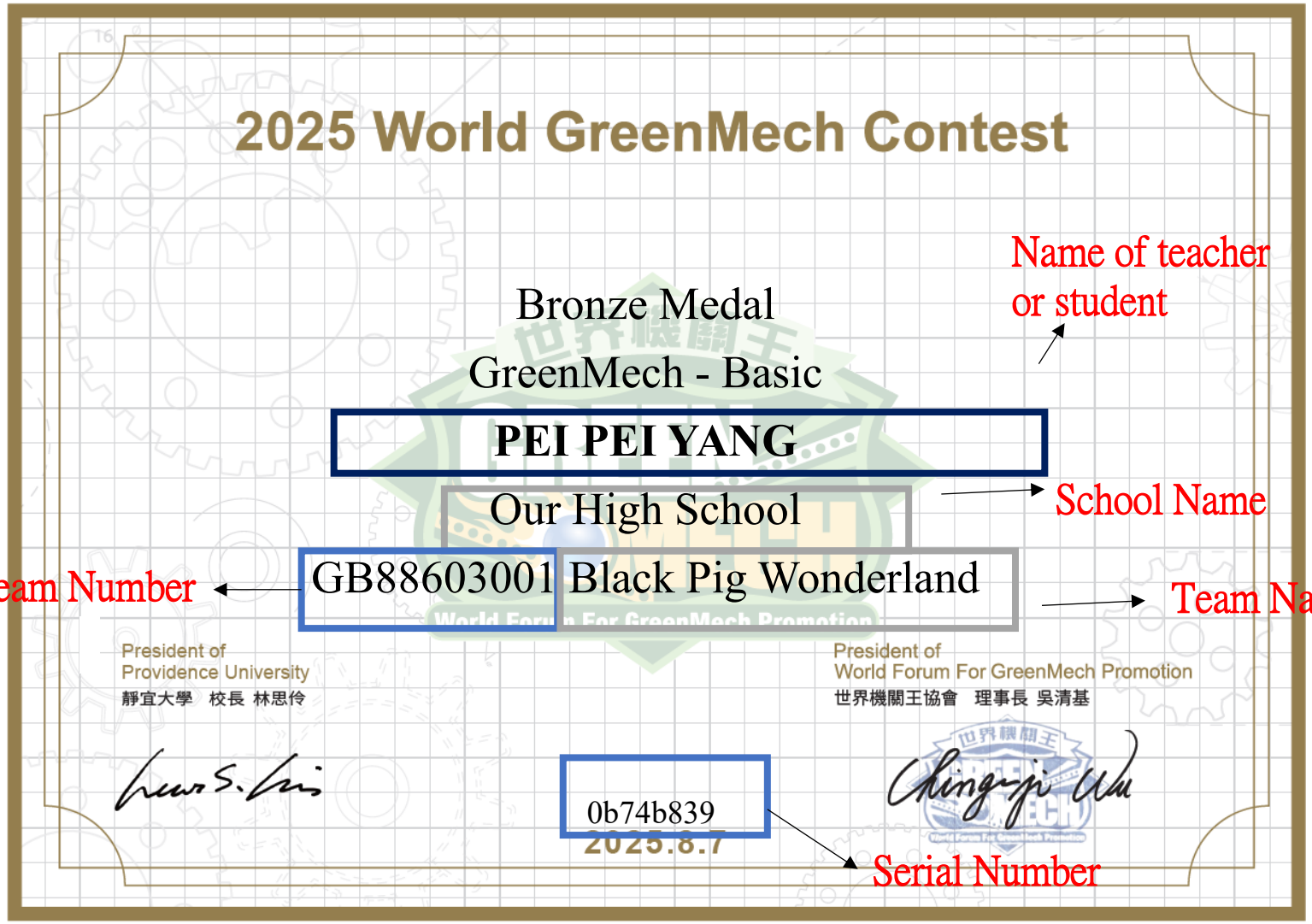
Award-Related Information

1. **Certificates:** All **certificates** for the **World Competition** are in **English**.

2. **Coach** and **Participation Certificates** will be provided as electronic English versions. Members can download them after the competition.



Award-Related Information



獎狀範例-台灣賽 中文版


2025 World GreenMech Contest
世界機關王大賽臺灣賽
金獎
GM 機關整合賽 - 基礎組
黃大福
永順國民小學
G88601004 我們第一名
President of
Providence University
靜宜大學 校長 林思伶
President of
World Forum For GreenMech Promotion
世界機關王協會 理事長 吳清基
0b74b830
2025.8.7

Award-Related Information

1. **Certificate Modification:** If you need to update information like the **team name** or **participant names**, please log in to the official website to make the changes. All modifications must be completed by **July 11th** . Any certificate modification requests submitted after this date will incur a **handling fee of USD $7 per certificate**.

Example of a team without an English team name

JS88601036	XXXX	DFES	國小組	XXX
JS88601035	XXXXX		國小組	XXXXX
JS88601034	XXXX	Twin Stars of Lihu	國小組	XXXXX

2. **Results Announcement:** The competition results (including Honorable Mentions) are expected to be announced on the **official competition website by 7:00 PM on Thursday, August 7.**

Award-Related Information

3. **Winning teams** are required to **submit their award video** within **one month after the competition (by September 4)**. The **prize money** will be transferred to your **designated account** after the video is **reviewed and approved**. Please **stay informed and follow up accordingly**.

Prize or Cash Award Collection

4. **Top 3 awards won by overseas teams:**
If the prize winner is not a resident of Taiwan, or is a foreign business/entity without a fixed place of business in Taiwan — including individuals from Mainland China who stay less than 183 days in a tax year, or Mainland Chinese companies and organizations without a fixed business location in Taiwan — a 20% withholding tax will be applied to the prize amount.

Competition Insurance Information

- **The event is covered by Nan Shan Public Liability Insurance, which applies to the competition venue at Providence University.**

Insured Amount

Bodily Injury Liability per Person	NT$1,000,000 元
Bodily Injury Liability per Accident	NT$10,000,000 元
Property Damage Liability per Accident	NT$1,000,000 元
Aggregate Limit of Liability	NT$22,000,000 元

Deductible per Person: NT$2500.

Competition Notice

- **R4M micro:bit Network Connection:**
  Teams are responsible for setting up their own network connections. If temporary files have not been cleared, the system can also function offline.

- **R4M Radio Channels:**
  The official website will announce **three radio channels per team**.
  If additional channels are needed, teams may request more on the competition day, and the organizers will provide extra channels accordingly.

- **2025 R4M Advanced Division – Three-Color Cards:**
  Teams are allowed to **prepare their own three-color cards**.

Three-Color Cards
QR code

- **Participant Replacement Notice**
  Due to force majeure, instructors may apply for participant replacement by July 11, limited to 50% of team members. Please provide official proof.

WGM Competition Q&A Guidelines

If you have any questions regarding the WGM competition, **please visit the Q&A section on the official website**, or click the link below to fill out the inquiry form. We will respond as soon as possible!

https://www.worldgreenmech.com/en/eng_qa2.asp

※ Please log in as a member before submitting the form.

Q&A on the official website

FAQ

Google Sheet: Q&A

Can student and parents refill water in the competition venue?	A drinking fountain is available in the gymnasium for parents to refill water. Since the fountain is located outside the competition area, students must inform staff before going out to refill water.
There is a statement in R4M said that only can complaint during the competition by team. What is the complaint form for if it can not complain anymore after the compeition finish?	Regulation 4.5 states: "If there are any doubts regarding the judgment during the making or evaluation process," teams must raise an objection with the judges immediately. If consensus cannot be reached, teams may proceed with an official appeal (see 2025 World GreenMech - Complaint Form 11.2). Additionally, the Complaint Form specifies that if there are doubts about the competition results, an appeal must be filed within one hour after the results are announced.
Is there Live on Youtube for R4M, GM Jr, GM?	Currently, there are no plans to provide YouTube live streaming for the three competitions; we appreciate your understanding.
We suggest that score can be publish after the team has been judged	Due to personal data protection, only total scores are available for inquiry. Please email your request to the official World GreenMech address, and our staff will check and respond.
Award ceremony for GM, R4M and GM Jr Programmer are in the same time and place?	The award times for each competition is different, and the estimated schedule is as following: GreenMech Jr. Science: 11:50 GreenMech Basic Division: 12:30 GreenMech Jr. Programmer: 16:10 R4M: 16:30 GreenMech Advanced: 17:10
when is the award ceremony for GM Basic? They have done appraisal at 12.30	These times are for reference only; actual award times will depend on the event schedule on the day. All awards will be presented at the John Paul II Gymnasium, 2F, Providence University.

Contest Rules

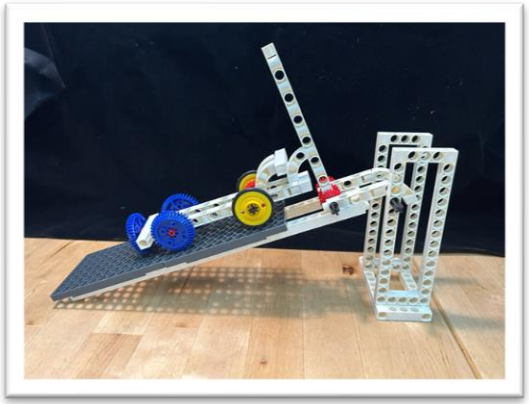
GreenMech Junior - Science

2025.07.03

Super Cop

Competition One: Bomb Disposal Vehicle

Competition Two: Hostage Rescue Mission



Material & Site Specifications

Contest equipment is standardized for all groups and includes 1 set of Gigo #1261 Scientific Tour
(including instruction manual).
Teams may bring the related items listed in the table. Do not prepare or bring other materials or tools. Teams violating this rule will be disqualified.

※Important Notice:

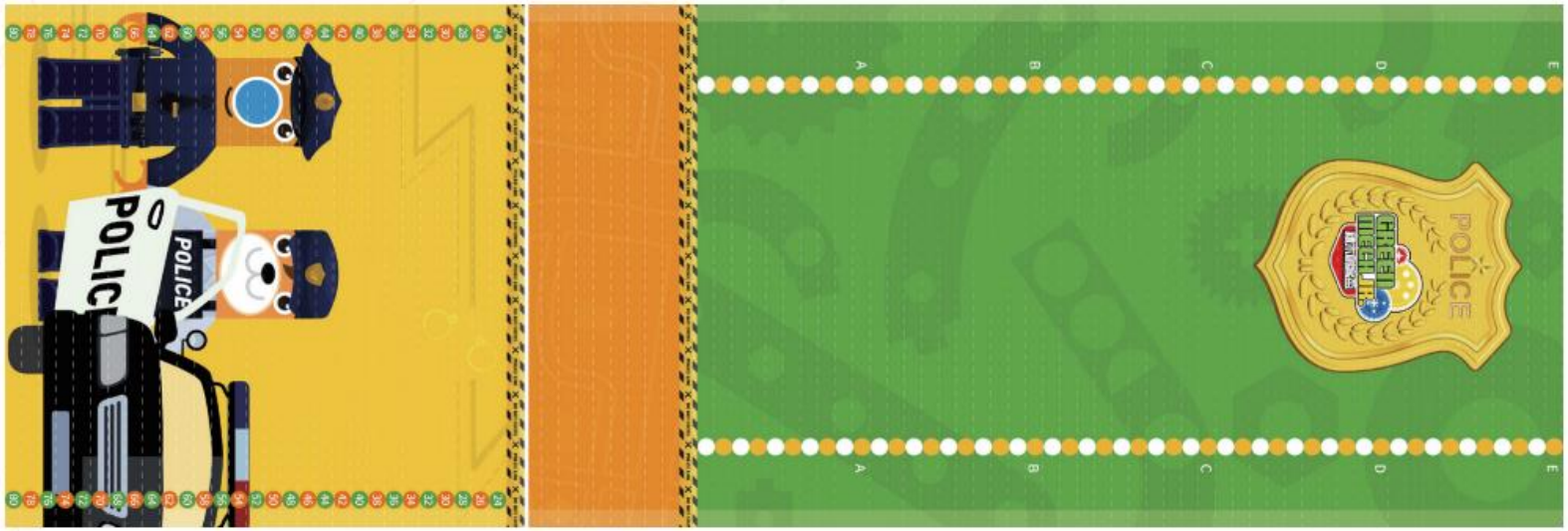
Please bring your own string for the "Rescue the Hostage" mission and keep it properly stored. Do not tie or wrap it around any building blocks when entering the venue. To ensure fairness, judges will not provide any assistance with related issues.

Material & Site Specifications

Item	Number and Rules
C-RACING TIRE	The quantity is unlimited, but it must be the same as those provided in the #1261 Science Tour kit.
C-BASE GRID	The quantity is unlimited, but it must be the same as those provided in the #1261 Science Tour kit.
String for the Competition Two.	The diameter of the string must be within 2mm, and the material and length are not restricted.
Police Cubes and Hostage Cubes for the Competition Two.	The number of building blocks is unlimited, but they must be brought in as individual parts.

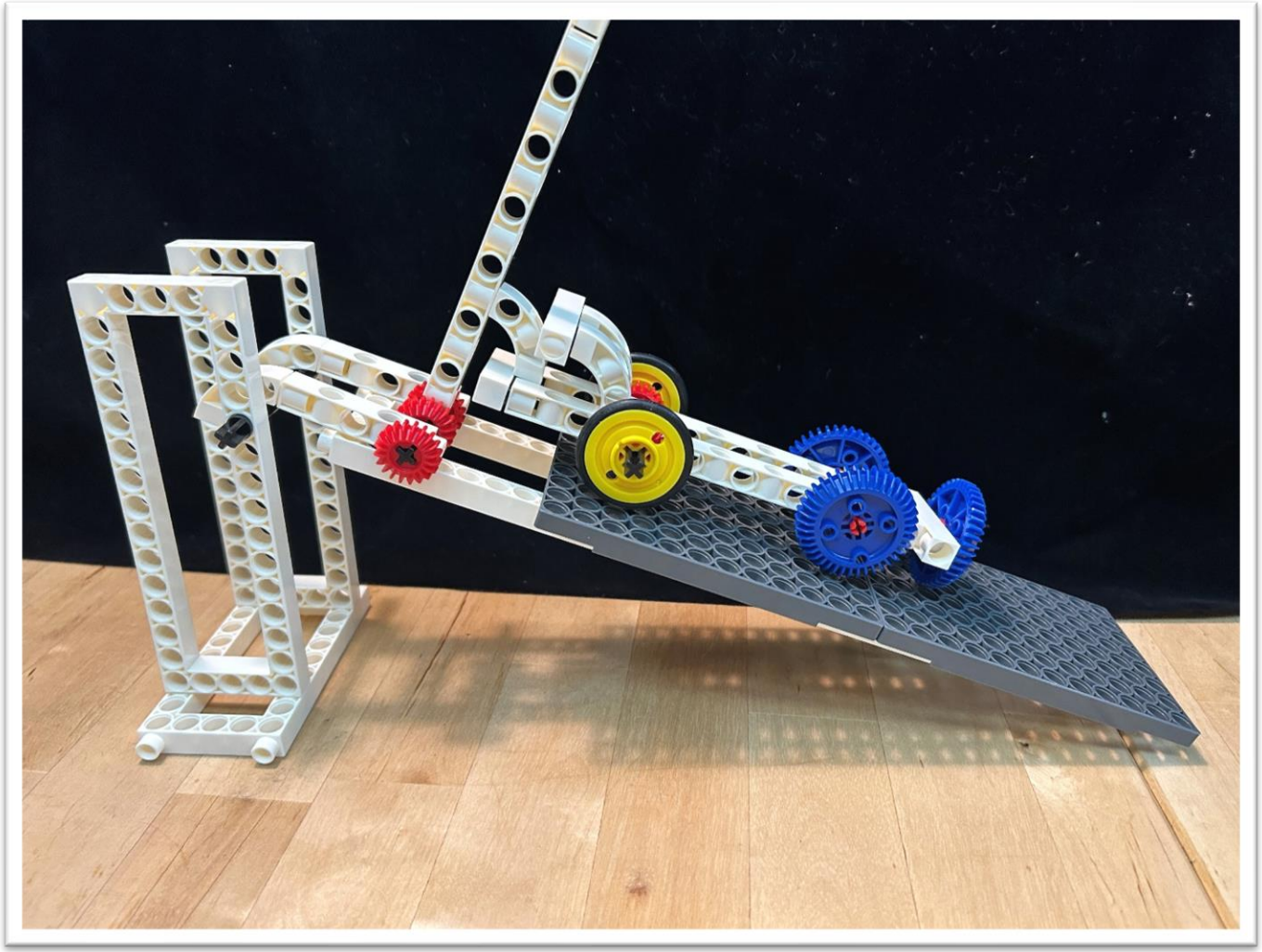
Bomb Disposal Vehicle

Competition One: Bomb Disposal Vehicle
(Contestants can refer to the #1261 Railcar Model.)



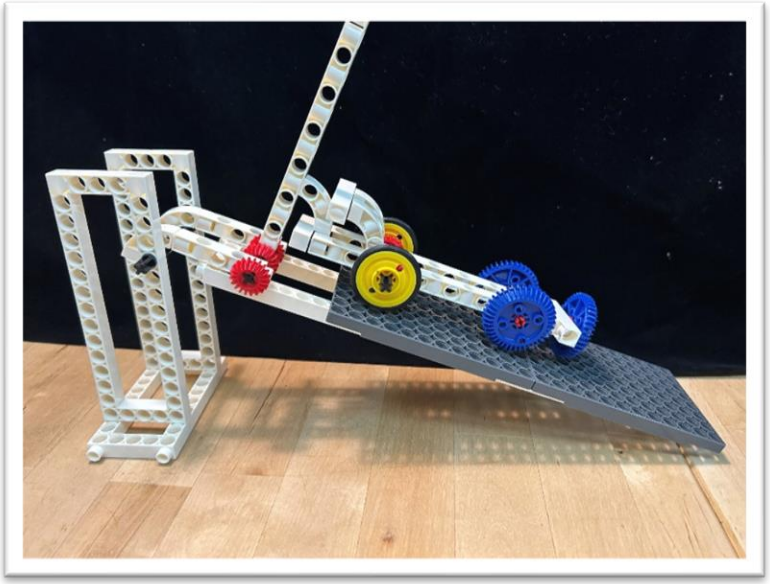
Contest Area: 180 x 60 cm

Competition One:
Bomb Disposal Vehicle



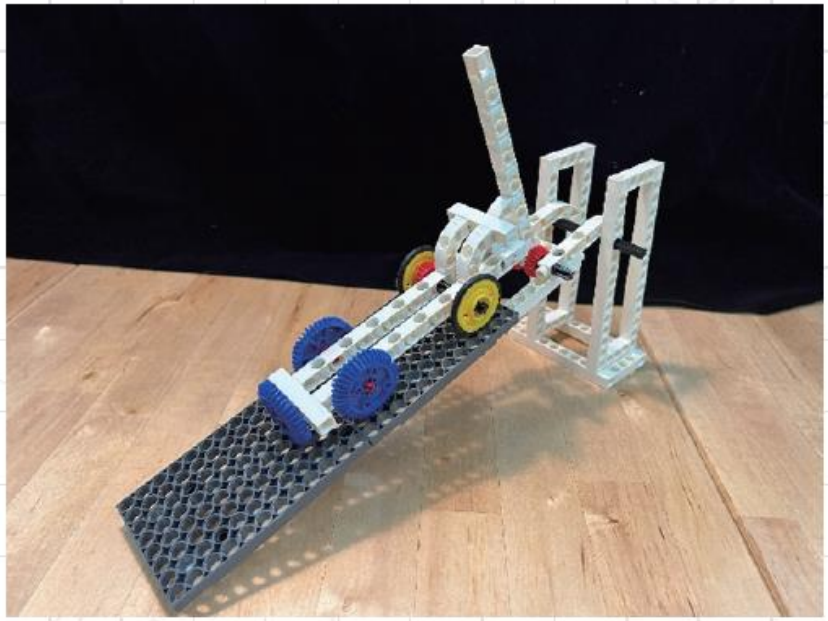
Competition One: Bomb Disposal Vehicle

1. Each team must make a four-wheeled vehicle (the contact points are wheel-shaped) and a slope. Teams must choose the best slope angle for their vehicle. The slope is fixed during operation, and cannot be held by hand. Teams must use a switch to release the vehicle.



Competition One:
Bomb Disposal Vehicle

2. The car must be no bigger than 20 cm x 20 cm. Viewed from the top, the slope and car must be fully within the preparation area before the competition begins.



Competition One: Bomb Disposal Vehicle

This competition uses the site paper (Matt PP photo paper) as shown in Figure 2. The contest area uses a 180 x 60cm table, and the site paper is placed and pasted onto the table. The table setup will be based on the on-site arrangement.

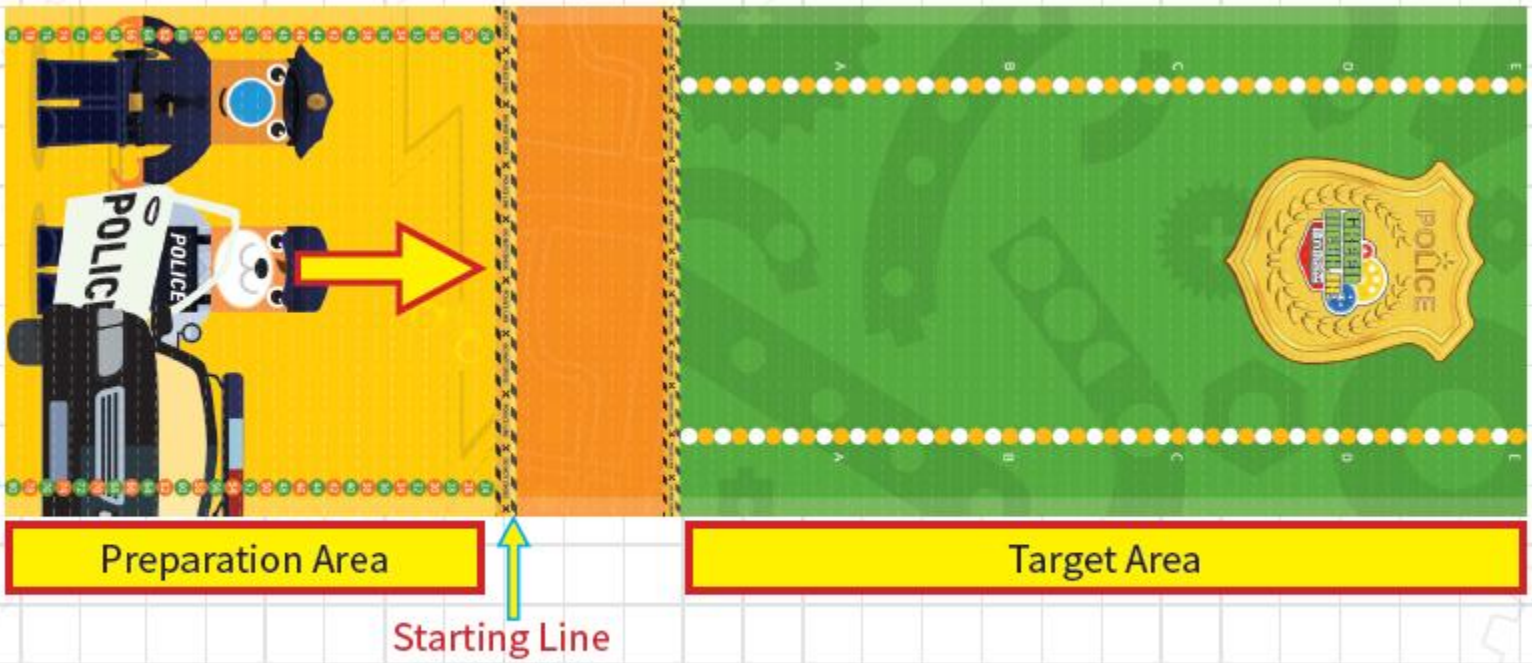


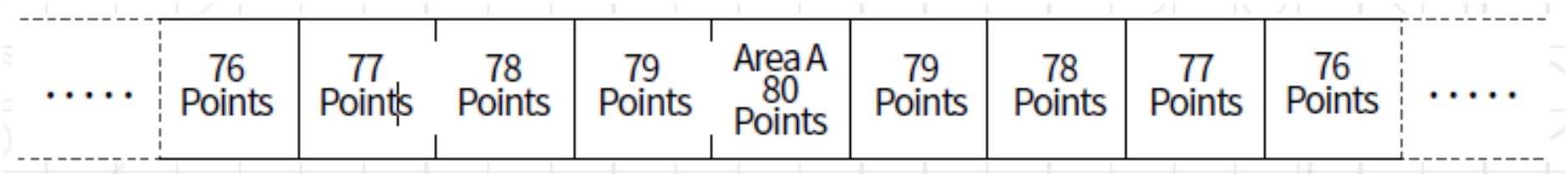
Figure 9-2. Description of the site for competition one; The starting line is at the intersection of the caution line and the orange zone.

Competition One: Bomb Disposal Vehicle

1. There must be a 40T blue gear on the car body as the basis for scoring. The judges will assign the score based on the position of the blue gear (the higher score of the two intersected areas) on the area map. The competition will be conducted 3 times, and the total score will be the score of the competition.
2. To release the car, a switch must be designed and used (Figure 6). After the switch is triggered, the car will slide down the slope under the force of gravity (no external force is allowed). If a team violates this rule, they will be warned. If teams violate the rule a second time, they will score 0 points for that operation.

Competition One: Bomb Disposal Vehicle

3. On the day of the contest, one area will be drawn from the assigned areas A through E, which will be worth 80 points. The two adjacent squares will be worth 79 points. This scoring pattern will be continued to the edge of the map, as shown below:



Competition One:
Bomb Disposal Vehicle

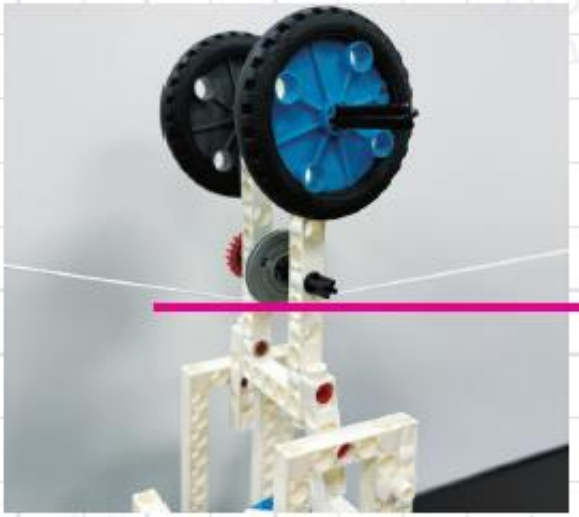
*** Before the contest begins, the car and slope must both be weighed. If the total score of two teams are the same, total weight is used to determine the ranking.**

Competition Two: Hostage Rescue Missions

1. Teams must make a cable car using the pulley mechanism. Teams must make sure there is enough room for the position of 2~6 rubber tires above the contact surface of the pulley and the string (as indicated by the red line in the figure below). The entire rubber tires must be above the contact surface.

The cable car may only be built using parts from Box #1261, excluding the transparent box (#1033) and string materials (R39-W85-200).

Competition Two: Hostage Rescue Missions



Make sure there is enough room for the position of 2~6 rubber tires above the contact surface of the pulley and the string (as indicated by the red line in the figure).

Figure 9-3. Example of the cable car.

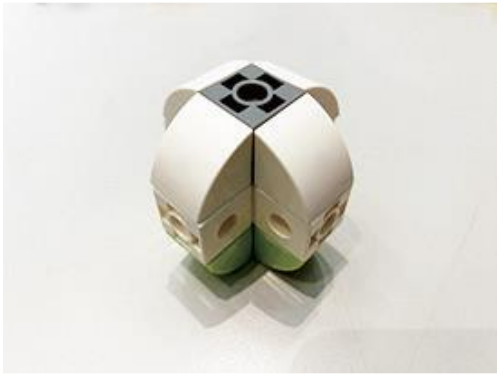
Competition Two: Hostage Rescue Missions

(1) During the competition, two contestants must stand respectively on the left side of the safety zone's blue line and the right side of the hostage zone's red line to carry out the rescue mission. The distance between the two lines is 3 meters.

Figure 9-4. Description of the site for competition two.

Competition Two: Hostage Rescue Missions

(2) The competition time is 90 seconds. Contestants must in the safety zone mount police cube onto the cable car, and transport one police cube to the hostage area. Then, they must place one hostage cube onto the cable car and transport this one hostage cube back to the safety zone. After placing the hostage cube into the basket in the safety zone, Contestants may proceed to the next rescue mission.



Police cube
(the color of the cube is not restricted).

Hostage cube
(the color of the cube is not restricted).

Competition Two: Hostage Rescue Missions

(2.1.) **Example of Correct Operation:**

1.During preparation, place the cable car, string, police blocks, and other items on the ground within the safety zone.

2.After the referee gives the start signal, the player places one police figure block onto the cable car.

3.Operate the cable car to slide from the safety zone to the hostage zone and place one hostage figure block onto the cable car (only one hostage may be rescued at a time).

4.Operate the cable car to return to the safety zone, remove the hostage figure block, and place it into the basket—this counts as one successful rescue.

5.Repeat steps 3–4 to continue rescuing hostages. If a police figure is lost, the player may use any remaining police blocks.

Competition Two: Hostage Rescue Missions

(3) During the competition, the organizers will provide each team with 3 police cubes and 12 hostage cubes during the competition. The following situations are considered casualties for the police and hostage cubes on the cable car.

1. For each rescue mission, if a contestant crosses the boundary lines of the safety zone or the hostage zone (with foot over the line as the standard), this team will receive a warning on the first offense, and further violations will be dealt with according to this rule).

2. Additionally, if any police, hostage cubes or cable car fall off or touch the ground during transportation, they will be considered casualties for that mission.

3. When a police cube is performing a mission, if a police cube falls off, this hostage cube is also considered a casualty. However, if only the hostage cube is dropped and the police cube remains on the cable car, this police cube can continue the rescue mission.

4. When the 90-second time ends, if any police cubes and the hostage cubes are not inside the basket in the safety zone, they are considered casualties.

Competition Two: Hostage Rescue Missions

(4) When the 90-second timer ends, the match is over. The number of hostages successfully rescued in the basket, along with the number of surviving and fallen police figures, will be converted into points according to the table below..

The number of hostages successfully rescued	The first to the fifth hostage	The sixth to the tenth hostage	The eleventh to the twelfth hostage
The score for each rescued hostage	+ 20 points	+ 30 points	+ 40 points

The number of surviving police officers	The number of deceased police officers
+ 10 points/each	- 10 points/each

* Score Calculation: For example, successfully rescuing 7 hostages would yield 160 points (20 x 5 + 2 x 30); while having two surviving police officers and one deceased would yield 10 points (10 x 2 - 10 x 1). Therefore, the total score would be 170 points.

Competition Two: Hostage Rescue Missions

(5) If all police officers are deceased before the time expires, no further points can be earned. That is, the points already scored will be counted.

(6) During the competition, teams must use the simulated cubes provided by the organizers. Each team needs to prepare their own cubes for practice sessions.

(7) Negative scores are possible in this competition and will be included in the overall score calculation.

(8) The cable car (with the required RACING TIRE already installed) and the string must all be weighed before the competition.

Criteria

9.5.1. This competition adopts a point based ranking system. If two teams' point scores are the same, the rankings will be arranged according to the following table.

Sequence order	Sequence item
1	Total combined score of the two competitions
2	Score of competition two
3	The number of surviving police officers
4	Score of competition one
5	Total weight of the two devices, where the lower weight is the winner.

【Q &A】

Before the competition begins, referees will measure and level all tables uniformly. Participants must verify the table level before starting.

The starting line is at the intersection of the caution line and the orange zone.

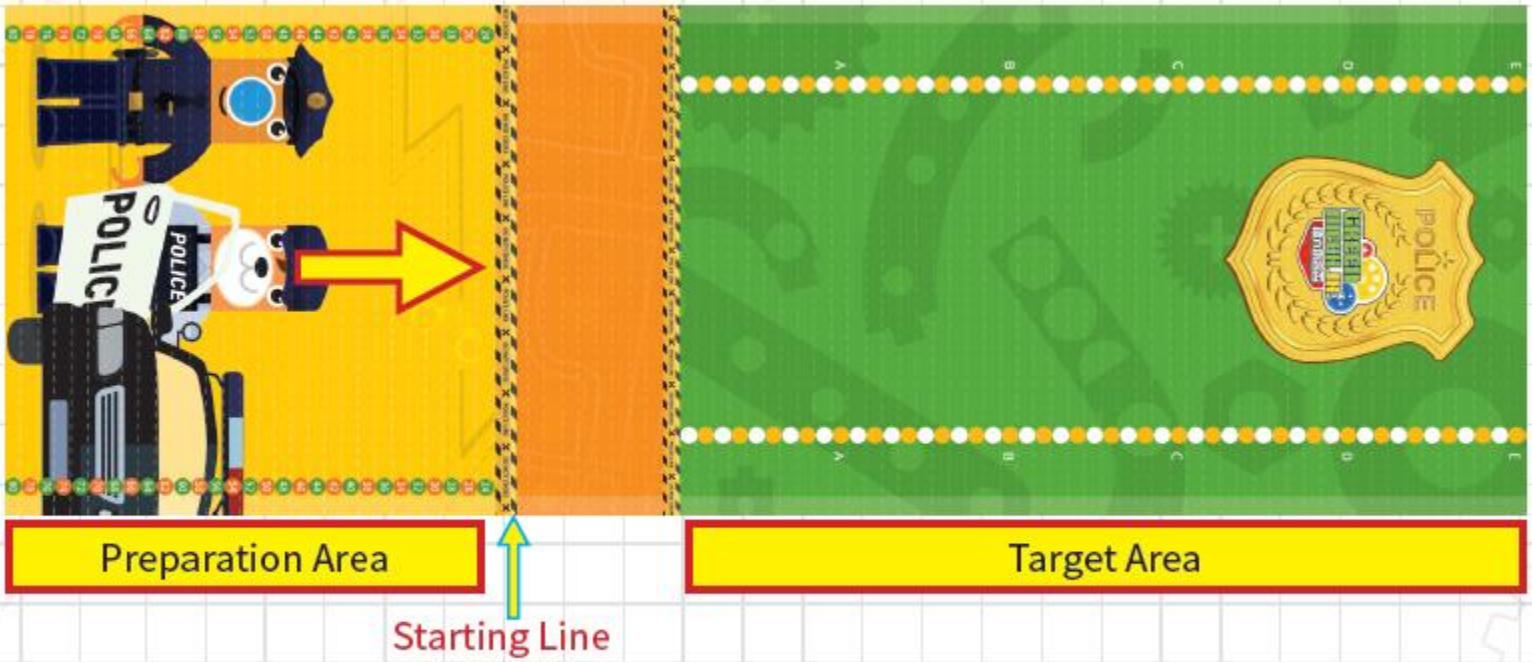


Figure 9-2. Description of the site for competition one; The starting line is at the intersection of the caution line and the orange zone.

【Q &A】

Competition 1 – Cable Car:

If the cable car derails during movement and the operator's feet remain behind the 3-meter line (between the safety zone and hostage zone), and the car can be reached by hand, it may be retrieved.

However, if the cable car is stuck around the middle of the 3-meter line and cannot be reached without crossing the line, it must touch the ground before restarting from the safety zone. In this case, the player must reload a police figure and start the run again.

Competition 2 – Hostage Rescue:

Players must not cross the boundary line (with their feet or body touching the ground beyond the line). The first offense will result in a warning. On the second offense, any figures on the cable car at that moment are considered dead.

If the player shows no intention of stepping back after the first warning, the referee may proceed directly with the second penalty.

Competition 2 – Hostage Rescue

The 90-second timer will not be paused once the competition begins. Players may request that the referee place the timer in a visible location. Scoring will be based on the number of target items inside the basket in the safety zone at the end of the time limit.

Materials must be self-prepared (including the string for Competition 2). During the pre-check, referees will only verify that all materials are in unassembled form (chains are the only exception). If a team fails to fully disassemble parts beforehand, resulting in any competition disadvantage, they will be responsible for the consequences.

Important Notice:

If a young participant has questions during the match and the judge doesn't respond clearly, they must immediately submit a protest form. **No appeals will be accepted after the match without a form submitted during the competition.**

Google Sheet: Q&A

GMJr. Science	During the competition, the organizers will provide each team with 3 police cubes and 12 hostage cubes during the competition, right? So, during the practice time, team can use the organizer cubes and hostage or must bring by themselves?	**The three police blocks and twelve hostage blocks provided by the organizers are only for use during the competition. Teams must prepare their own police and hostage blocks for practice, and these must be in unassembled parts during material inspection.**

GreenMech Junior - Programmer

2025.07.03

GMJR Programmer
Energy Minions

Total five missions:

Mission One: Renewable energy

Mission Two: Sustainable Energy

Mission Three: Air Pollution

Mission Four: Nuclear Waste

Mission Five: Clean Energy

Venue Description

Contest Area: 240 x 120 cm

Venue Description

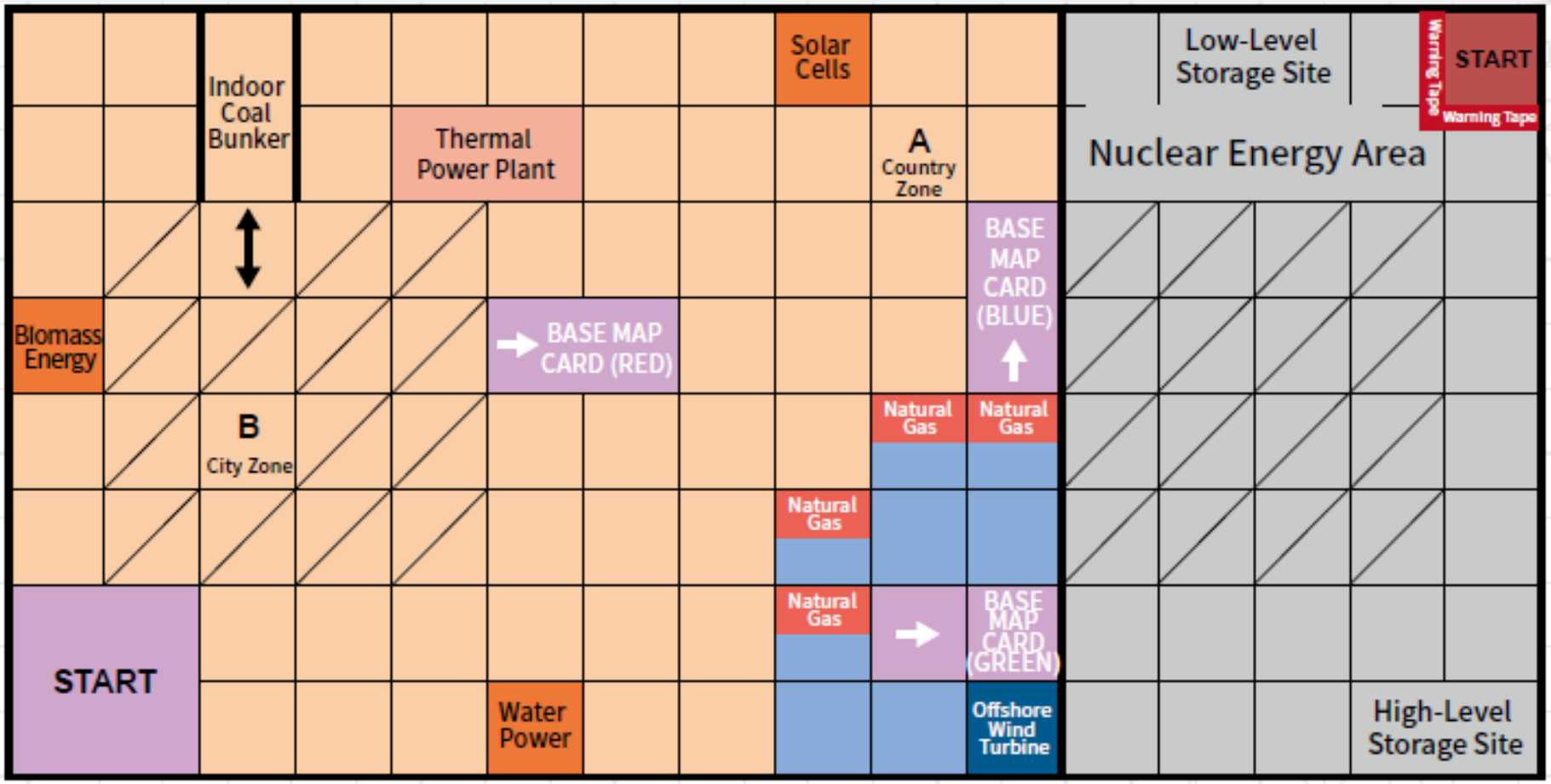


Diagram of the site (thick lines—indicate a wall that cannot be crossed).

Background

The global population is growing, and people need more and more energy. It is very important that we use energy properly and do not waste it. It is better to use renewable sources of energy wherever possible, because this is more sustainable and can be better for the environment. We need to find ways to use energy that keeps our world healthy for the future. As an Energy Minions, we need you to help achieve this sustainable energy goal.

Material Specifications

With the exception of instructions, the competition map is standardized for all groups.

Other required items are prepared by the participating teams, and must be disassembled.

Teams are not permitted to preassemble any parts of the body in advance. Teams are not permitted to modify the C-ROBOTIC BASE UNIT. Teams violating this rule will be disqualified.

Robot Specifications

(1) Each team may bring up to 3 Base Units to participate in the competition. The memory of all devices must be cleared by pressing and holding the delete button for 2 seconds while inspectors are present. The control box body shall not be modified, violation of this regulation results in disqualification. The size limit of each robot is 15 cm x 15 cm in length and width.

(2) During the execution of the program, if an error is found, the contestants can ask the judge's if they can retrieve the robot, but the robot can only be retrieved after the judge's approval. If this happens, countdown timer will continue running and the competition is not postponed.

Robot Specifications

(3) During a mission challenge, there can only be one robot on the field. When a robot on the field is operating, off-field robots can be prepared to read the program.

(4) After the robot program is executed or the program is re-read, the robot must start from the Start Area. The nuclear energy area is a controlled area. If the robot enters the nuclear energy area to perform a task, 10 points will be deducted from the team score for each occurrence. The robot must be immediately retrieved and returned to the Start area (AB78) to start again. Tasks in the nuclear energy area must use the specific Start area (P1).

General Mission

Each device starts in the Start Area. Each team plans the operation route of the robots and decides how to complete the missions. 20 minutes before the competition, each team draws lots to determine positions for task 3 (coal fuel and natural gas fuel) and task 4 (nuclear waste). Each team can then practice in the preparation area.

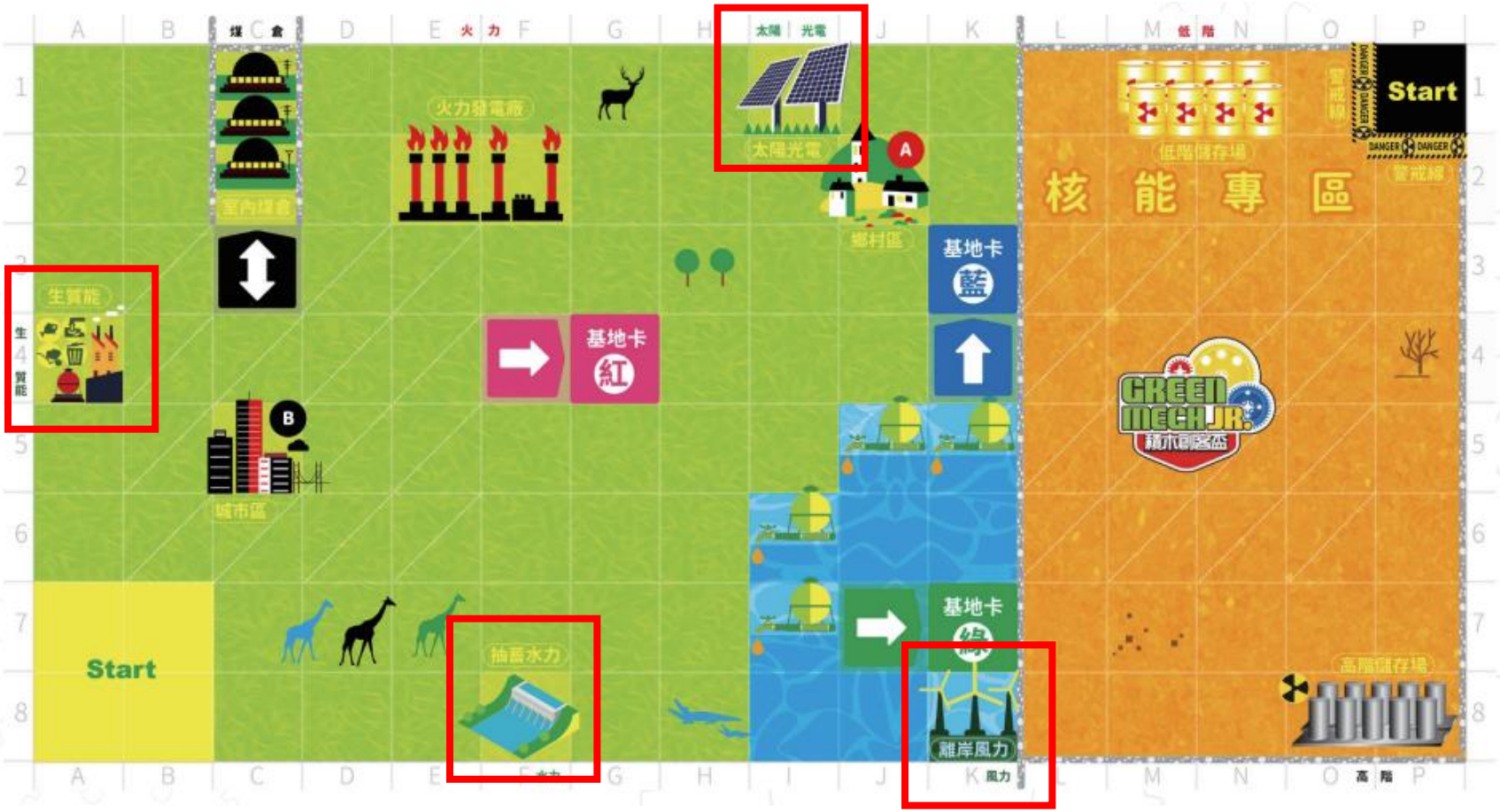
Mission One : Renewable Energy

(1) Mission One: Renewable energy

1. Description: There are four renewable energy areas on the map, water power, biomass energy, solar cells, and offshore wind turbines. In order to increase the proportion of renewable energy use, the robot must go to each area and perform a specified action to earn points.

2. Scoring Items: When the robot goes to a renewable energy area and turns on the green light twice (not turn on the green light for 2 seconds), the team earns 5 points. For four renewable energy areas, the team scores a maximum of 20 points.

Mission One : Renewable Energy



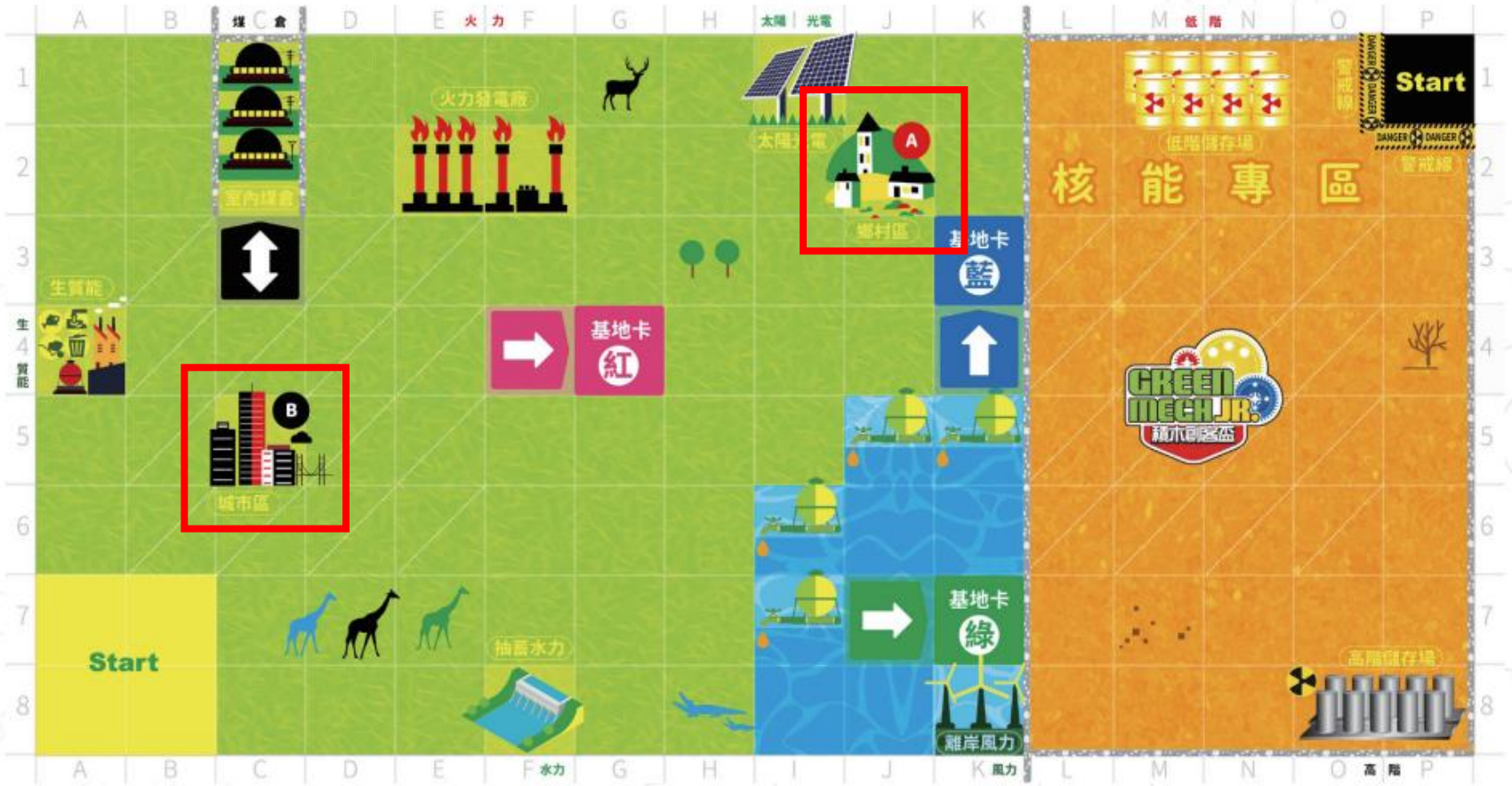
Mission Two : Sustainable Energy

(2) Mission Two: Sustainable Energy

1. Description: There is one area A and one area B on the site paper. Area A (Country Zone) is a rural area and needs to expand energy infrastructure; Area B (City Zone) is a densely populated urban area with large energy usage and needs to upgrade energy conversion efficiency. The task here is that the robot enters area A to carry out energy infrastructure construction (complete specified actions) and that the robot enters area B to upgrade energy conversion efficiency (complete specified actions).

2. Scoring Items: When the robot enters area A and the robot turns left, turns right, turns left, and turns right, the team earns 5 points. When the robot enters area B and turns on the seven colors of light, the team earns 5 points. Complete one task item, the team gets 5 points. The maximum score is 10 points.

Mission Two : Sustainable Energy



Mission Three : Air Pollution

(3) Mission Three: Air Pollution

1. Description: There is a thermal power plant, surrounded by three lumps of coal fuel (black). The robot should deliver these three coal lumps to the indoor coal bunker for storage. The robot should deliver three natural gas fuels (red) to the thermal power plant to improve combustion efficiency and reduce the occurrence of PM2.5 pollution. Coal and natural gas fuels are represented by building blocks. Teams should use the robot to push the building blocks to designated areas (indoor coal bunker or thermal power plant) to score points. The indoor coal bunker can only be entered and exited in the direction of the arrow, because there are walls on the left and right sides, the robot cannot cross the walls.

Example of coal (black) and natural gas (red) fuel.

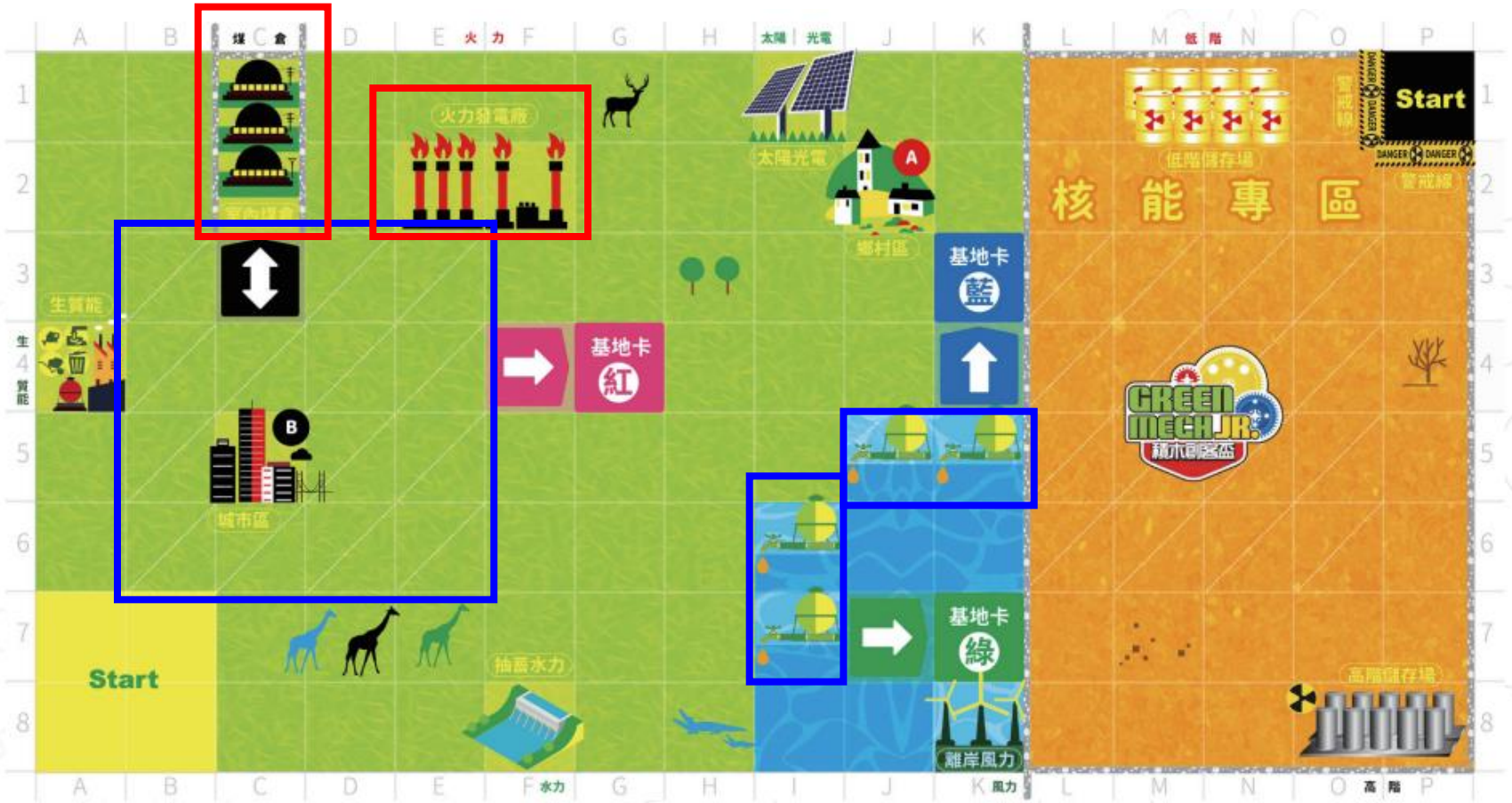
Mission Three : Air Pollution

2. Scoring Items: The three coal fuels are black (5 points each), and the three natural gas fuels are red (5 points each). The three coal and natural gas positions are drawn before the competition. Teams can score points by pushing coal into the coal bunker correctly, entering in the correct direction according to the arrow. Entering from an incorrect direction does not score points. Teams can score points by pushing natural gas fuel into the thermal power plant (no direction restrictions).

3. Competition Draw: Each team draws the positions for the fuels before the competition begins. Three coal fuels will be in the 3 squares out of the 14 oblique-line squares. Three natural gas fuels will be placed in 3 out of the 4 surrounding squares.

4. Point Deductions: The indoor coal bunker can only be entered or exited in the correct direction shown. Teams going into the bunker in the wrong direction get a 10-point penalty. If this happens, the team will need to immediately retrieve their robot and start again from the Start Area.

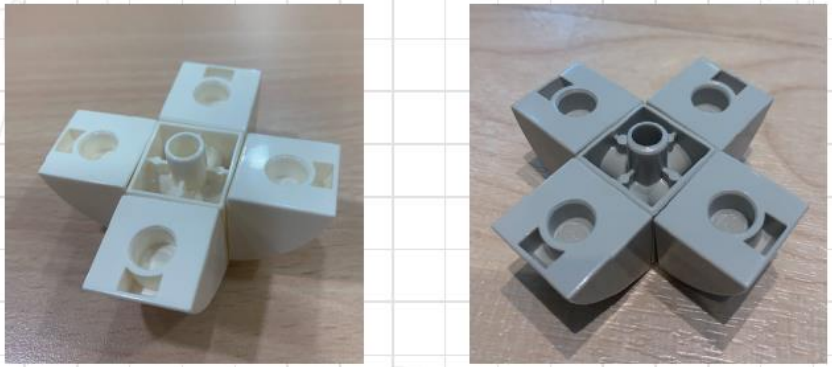
Mission Three : Air Pollution



Mission Four: Nuclear Waste

(4) Mission Four: Nuclear Waste

1. Description: To perform the “Nuclear Waste” mission, teams need to start from the "Nuclear Energy Area Start" (top right of the map). There is a warning line outside Start Area. There are 5 low-level nuclear waste items (white blocks), and 3 high-level nuclear waste items (gray blocks), as well as two permanent nuclear waste storage sites (one is for low-level, the other is for high-level). The robot needs to deliver the low-level nuclear waste to the low-level storage site; and deliver the high-level nuclear waste to the high-level storage site. This will allow the radiation to dissipate to natural background values over time. Teams can score points by pushing low-level and high-level nuclear waste to the designated areas. The "Nuclear Waste" task score is only valid for robots that start from the "Nuclear Energy Area Start".



Example of low-level (white) and high-level (gray) nuclear waste.

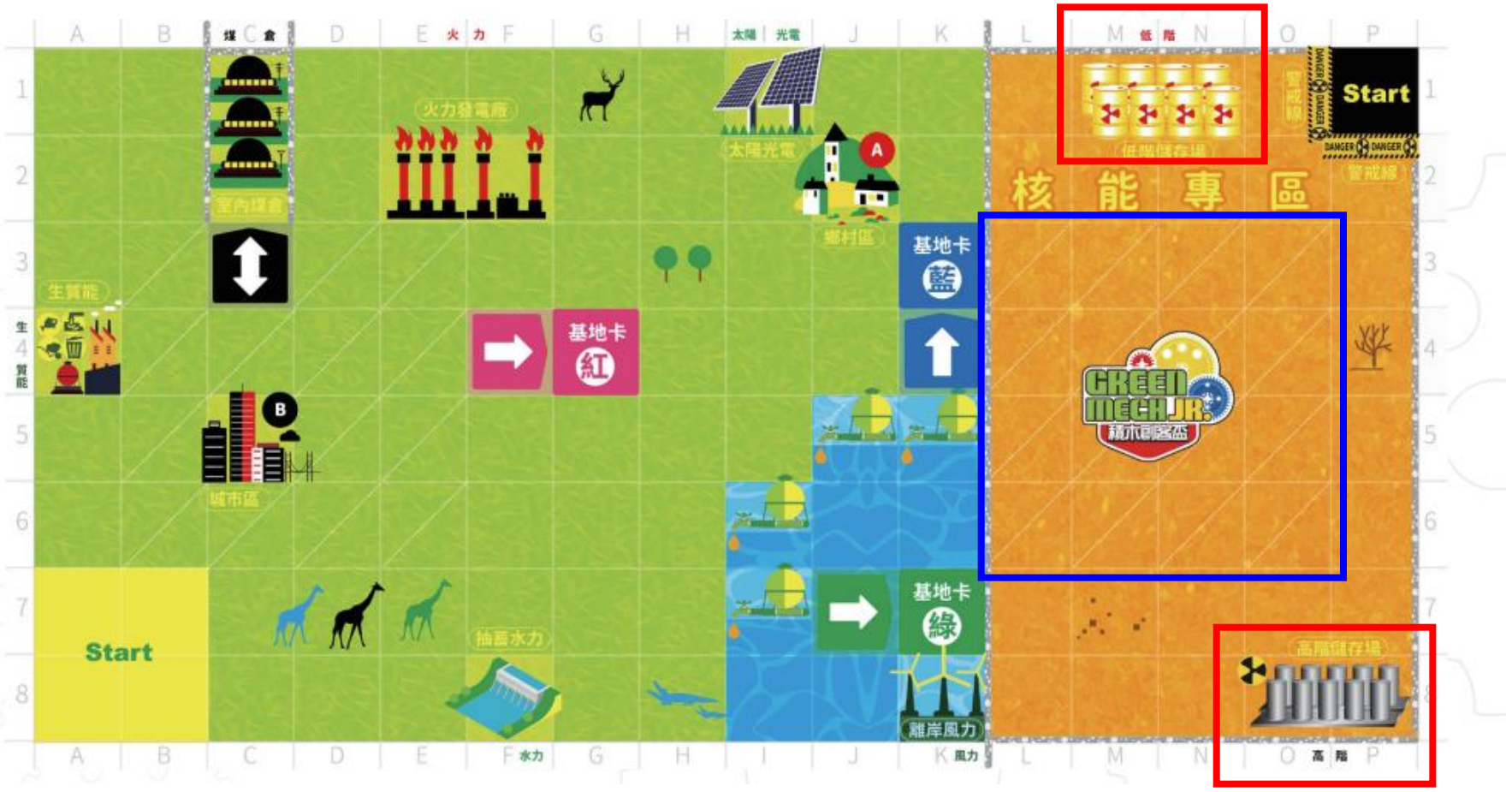
Mission Three : Air Pollution

2. Scoring Items: After the robot leaves the warning line, it must continue to emit emergency vehicle's siren sound and turns on the red and blue light flashing effects before it can perform the following scoring tasks. The robot then delivers the low-level nuclear waste (white) to the low-level storage site, and delivers high-level nuclear waste (gray) to the high-level storage site. Each nuclear waste is worth 5 points. There are 5 low-level nuclear wastes and 3 high-level nuclear wastes. The maximum score is 40 points.

3. Competition Draw: Each team draws positions for the eight nuclear waste items before the competition begins. Five low-level nuclear waste and three high-level nuclear waste items are placed in 8 out of the 16 oblique-line squares.

4. Point Deductions: When the robot performs a nuclear waste task, the robot can only walk within the Nuclear Energy Area (the gray squares). Teams going outside the Nuclear Energy Area get a 10-point deduction for each occurrence. If this happens, the team will need to immediately retrieve their robot and start again from the Start Area.

Mission Three : Air Pollution



Mission Five: Clean Energy

(5) Mission Five: Clean Energy

1. Description: There are three base map cards on the site. After the robot completes the specified task, this means that the it can collect various applications of clean energy, and achieve the goal of sustainable development.

2. Scoring items:

- Red base map card (Solar Power): Designated action, turn on the red light (5 points).
- Green base map card (Wind Power): Designated action, turn on the green light (5 points) and make the windmill rotate its blades (10 points).
- Blue base map card (Tidal power): Designated action, execute one rotation of the robot (5 points).

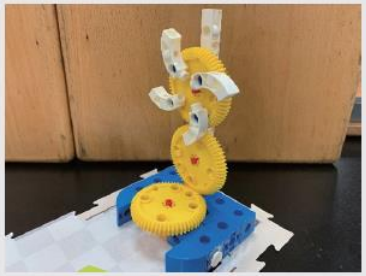
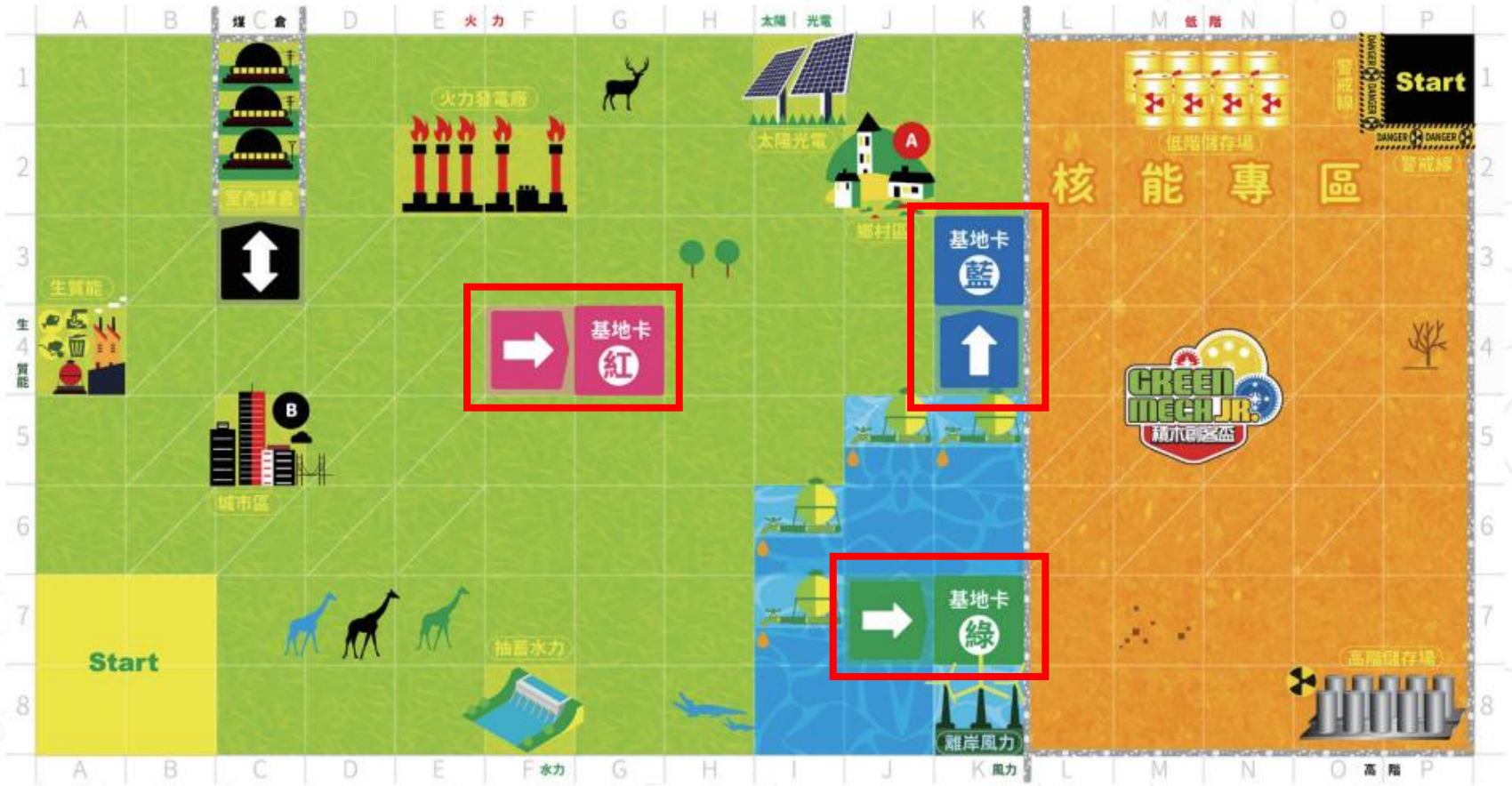


Diagram of a self-made windmill-device (can be modified by teams, but the windmill must be driven by the central output gear of the robot).

Mission Five: Clean Energy

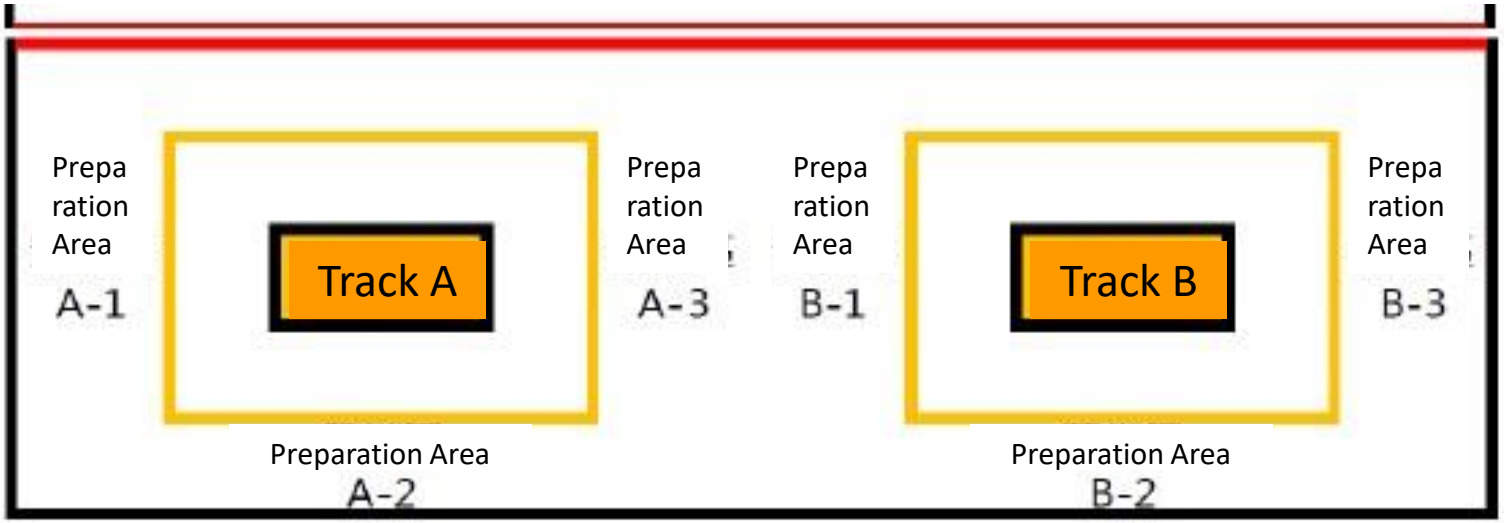


Criteria

This contest adopts a point based ranking system. If two teams' point scores are equal, the rankings will be arranged according to the following table.

Sequence Order	Sequence Item
1	Total score.
2	Mission 4 score.
3	Mission 3 score.
4	Mission 5 score.
5	Mission 1 score.
6	Mission 2 score.
7	Total contest time, where lowest is best.

Competition Venue Layout



【Q &A】

- 1. To prevent waiting teams from interfering with hose preparing, only the team currently scheduled for preparation may enter the preparation area. All other teams must wait in the team rest area until called by the judge.
- 2. Once each team completes the drawing in their assigned preparation area, their 20-minute preparation time begins. After this period, teams will proceed directly to compete. Teams are not required to disassemble their instruction cards, but map cards must only be assembled on the competition track during the official 6-minute competition time.
- 3. When time is up, only the points already scored will be counted as the final score.

【Q &A】

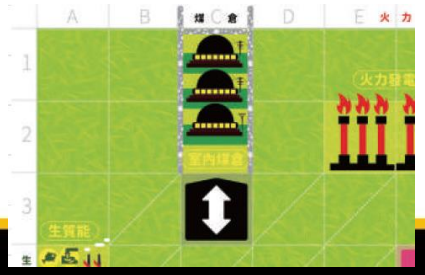
•4. After each team draws their assigned task location, they will be given a reference chart for practice purposes.

•5. Once a scoring action is confirmed, the referee will announce it verbally. After the announcement, the player may decide when to remove the scored target block. However, if the robot is touched or moved during the removal process, the robot must be immediately picked up.

•6. The blocks used for scoring in each task may be placed in any orientation, as long as they are positioned correctly within their designated space after the map cards are properly arranged.

【Q &A】

- 7. The indoor coal storage area is bordered by walls on both sides, and robots may not enter or exit by crossing the walls. However, if the robot pushes a coal block into the storage area while rotating in cells B3, C3, or D3—without crossing the wall—it will be considered a valid score. Pushing from other positions such as B1, B2, D1, or D2 will not count as a score.
- 8. Mission 5 requires the use of the base map card and its corresponding programming method in order to score.
- 9. There is no restriction on which direction the robot may enter the base map card. However, functions on the base map card are only activated when the robot moves toward the arrow in the same direction as the arrow.



【Q &A】

- 10. Only blocks that have scored correctly may be removed. Any blocks that did not score properly must remain on the map.
- 11. Before the competition begins, the referee will place the blocks in the designated grid spaces based on each team's draw. Players should confirm their placement. Once the competition starts and the map cards are laid down, players may reposition the blocks anywhere within the correct grid space (as long as they do not extend beyond the boundaries).
- 12. Materials must be self-prepared. During pre-check, referees will only verify that all parts are in an unassembled state. If a team fails to fully disassemble parts beforehand and it affects their participation, they must bear the responsibility.

Google Sheet: Q&A

GMJr. Programmer	If robot has been successfully "bring out" the coal (task 2) to the coal bunker area, student can use hand move the coal while the robot still moving?	Yes, coal blocks that have entered the coal bunker and have been scored may be removed from the field with the judge's approval.
	If robot has been successfully "bring out" the nuclear waste (task 3) to the storage area, student can use hand move the coal while the robot still moving?	Nuclear waste and coal are different objects. For Task 4, nuclear waste that has entered the storage area and has been scored may be removed from the field with the judge's approval; the same applies to coal in Task 3. If the object has not yet been scored, it cannot be moved manually.
	If a cross-shaped block lands between two grid spaces before entering the target area, can it be freely placed in either of those two spaces after the robot leaves the block?	Once the robot leaves the map card (15×15 cm) where the cross block is located, the cross block may be moved anywhere within that map card. If the cross block is between two map cards, the judge will determine which card it belongs to.
	Is the 20-minute preparation time for each group allocated for all participating teams to prepare simultaneously? Will there be a timer displayed at the venue to show the remaining time?	Teams will prepare in batches for 20 minutes. The assistant referee will personally visit each team to conduct the drawing, then notify them of their practice completion time. A timer will be provided on-site, and the official time will be based on this timer.
	Does shuffling the map cards and code cards refer to shuffling the entire deck? Will the order of the map cards and code cards be shuffled again before the competition starts?	Only the map cards need to be separated before the competition (not assembled into one piece), and the order of the map cards will not be shuffled.

世界機關王

GREEN MECH

World Forum For GreenMech Promotion

2025 Robot for Mission

R4M

ROBOT FOR MISSION

R4M Groups

2025 World GreenMech Contest	
Auction	Robot for Mission (R4M)
Groups	Basic Advanced
Participant Selection	(1) elementary school (2) junior high school (3) senior high school
Team Size	3 to 4 people
No. of Instructors	1 to 3 people

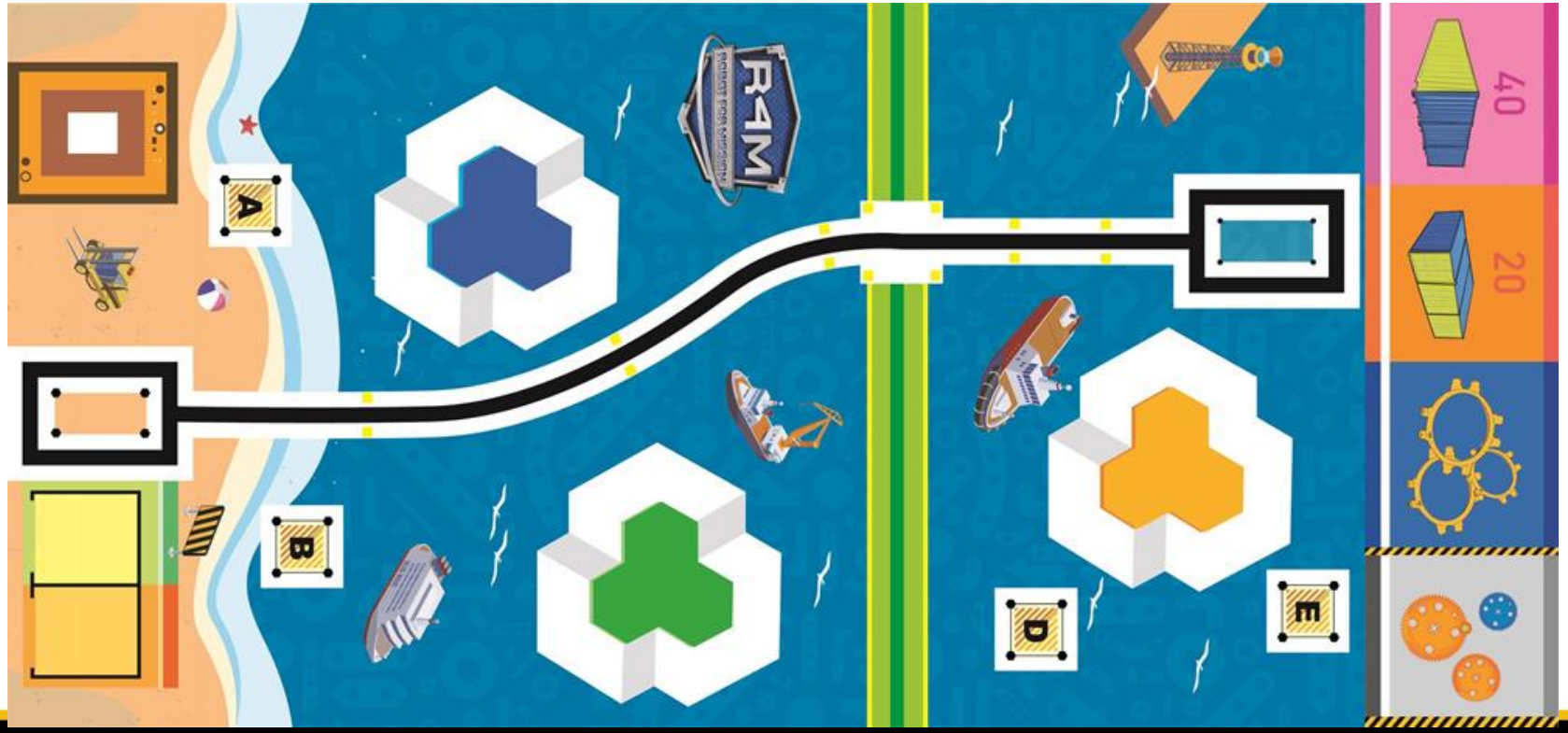
Robot for Mission

Basic

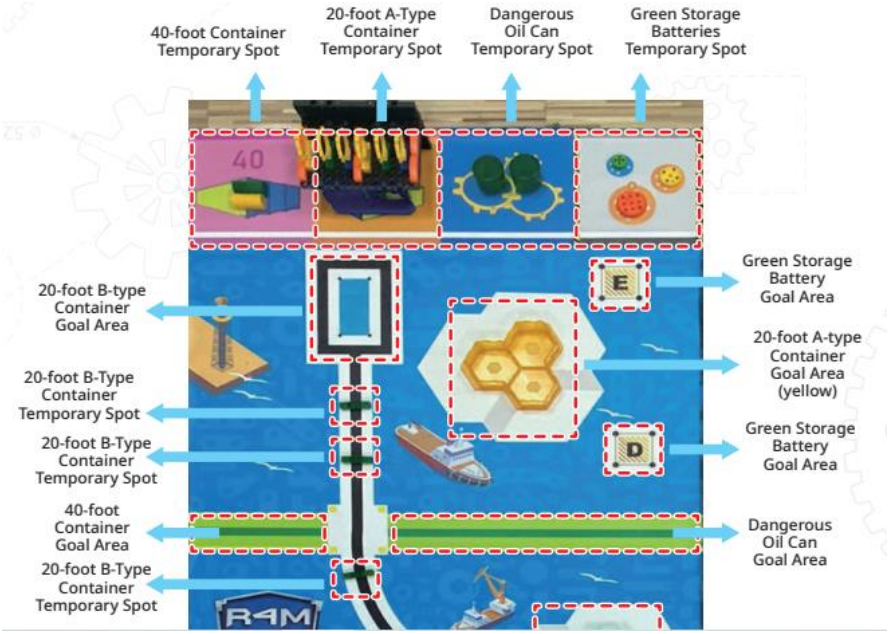
Theme & Venue Description

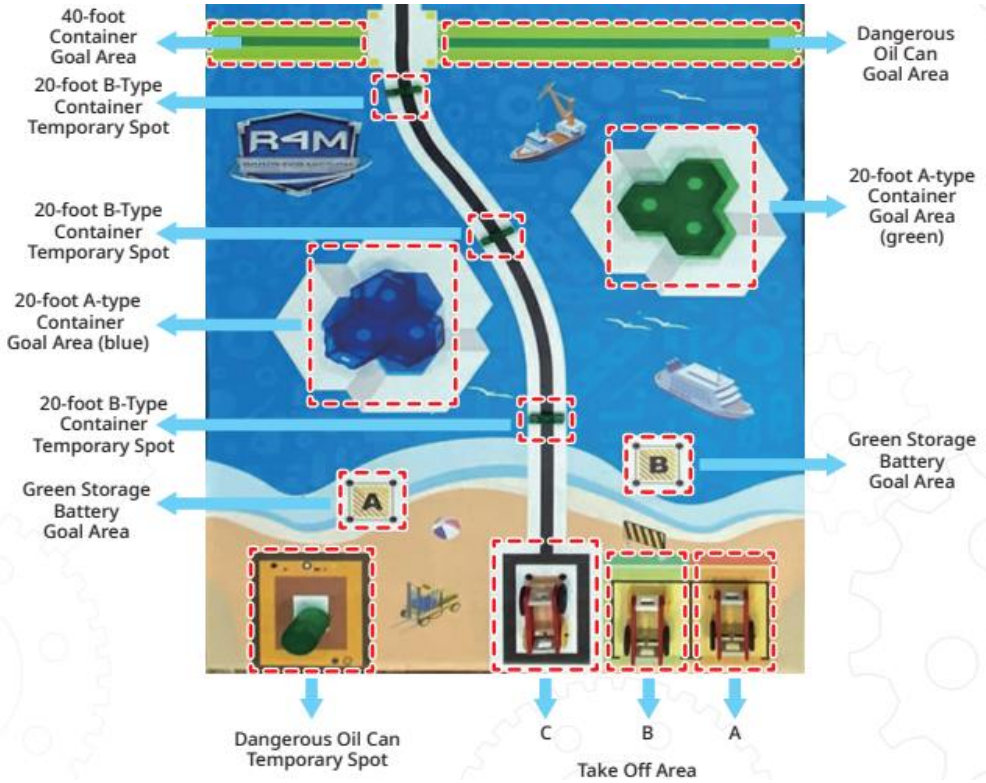
Gigo Container Port II

The contest area is limited to a space not exceeding 140 x 300cm and is covered by matte PP photo paper. Each competition area accommodates one team only. The A robot, B robot, and C robot should be placed in the departure or designated areas.



Venue Description





Before each task starts, Robot A, B, and C (micro:bit, programmed) must be placed in their respective starting areas, marked A, B, and C on the map.

Teams may begin the contest after the judge announces.

Task One

Robot A earns 5 points when the whole robot body has left Take Off Area A.

Robot B earns 5 points when the whole robot body has left Take Off Area B.

Robot C earns 5 points when the whole robot body has left Take Off Area C.

Task Two

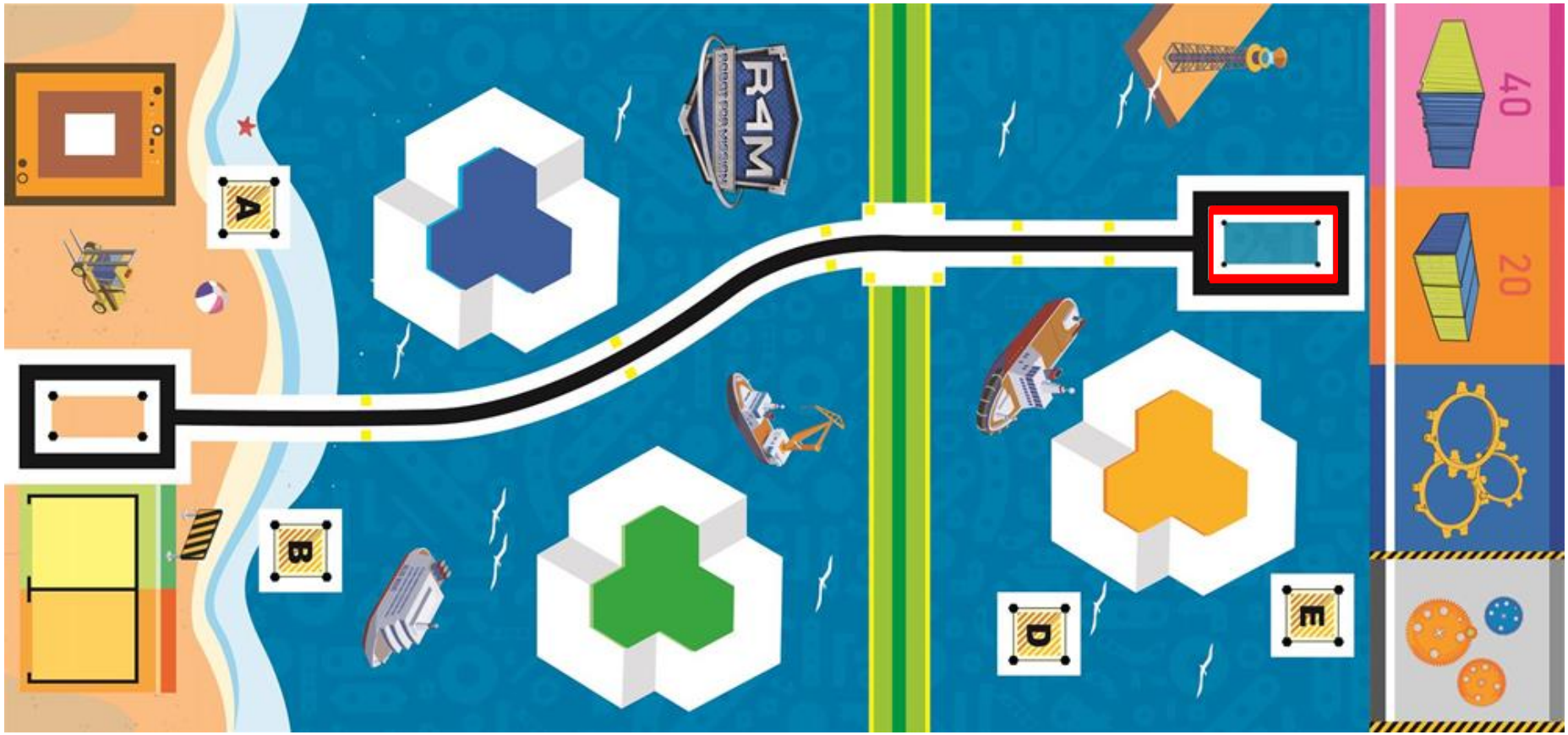
★ Robot C must be equipped with a LINEFOLLOWER SENSOR (1247-W85-B3 or 1409-W85-D). The relevant specifications are provided in Appendix 8.12.1

★ Robot C must be programmed, not remote control. The program can be written, modified or uploaded by the contestants on the spot during the competition.

★ Robot C must follow the black line and transport the 20-foot B-type containers to the goal area to score points. The full score table is shown below, and the total highest score is 160 points.

Status	Items	Points
A	Robot C delivers one piece of 20-foot B-Type Container to the Goal Area and is fully within the lines inside the black frame.	10
B	Robot C delivers two pieces of 20-foot B-Type Container to the Goal Area and is fully within the lines inside the black frame.	30
C	Robot C delivers three pieces of 20-foot B-Type Container to the Goal Area and is fully within the lines inside the black frame.	60
D	Robot C delivers four pieces of 20-foot B-Type Container to the Goal Area and is fully within the lines inside the black frame.	90
E	Robot C delivers five pieces of 20-foot B-Type Container to the Goal Area and is fully within the lines inside the black frame.	120
F	Robot C delivers five pieces of 20-foot B-Type Container to the Goal Area and is fully within the lines inside the black frame. The LINE FOLLOWER SENSOR (1247-W85-B3) or the INFRARED SENSOR (1409-W85-D) of Robot C autonomously goes to the designated goal area, and is fully within the lines inside the black frame.	160

Task Two



Task Two

NOTES:

Note 1: After the Robot C starts operation, if a programming error is discovered, then contestants may make corrections so that the robot can continue working. However, time taken to correct the program, or make other modifications including reading and performing the task is all included in the total task time.

Note 2: The software used by Robot C is micro:bit, and the main control box is Gigo's micro:bit control box (1269-W85-A1 or 1409-W85-A). Please refer to Appendix for exact specifications.

Note 3: The head of Robot C should be facing forward when it begins operation.
The Robot C must not exceed the black frame's outer lines when it begins operation.

Note 4: Equipment used to program Robot C such as laptops, tablets, and cables, the micro:bit mainboard, and an internet connection should be prepared by the contestants.

Note 5: This task can only be performed by Robot C.

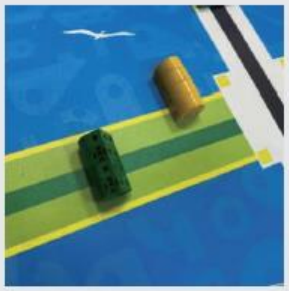
Task Three

Use robots A and B to transport the 40-foot containers to the goal area to earn the corresponding points. The corresponding points table is as follows, with a full score of 80 points.

Status	Items	Points
A	There is one 40-foot container transported to the goal area, stand up and must not exceed the yellow frame's outer lines.	30
B	There are two 40-foot containers transported to the goal area, stand up and must not exceed the yellow frame's outer lines.	80
C	There is one 40-foot container transported to the goal area (not standing up) and must not exceed the yellow frame's outer lines.	10
D	There are two 40-foot containers transported to the goal area (not standing up) and must not exceed the yellow frame's outer lines.	30
E	There are two 40-foot containers transported to the goal area (one as standing up and the other not standing up) and must not exceed the yellow frame's outerr lines.	40

Status B (team earns 80 points).

Status D (team earns 30 points).

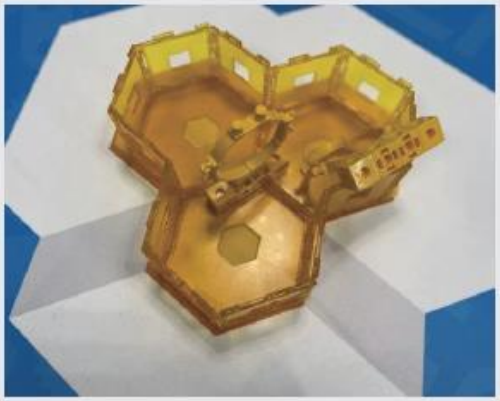


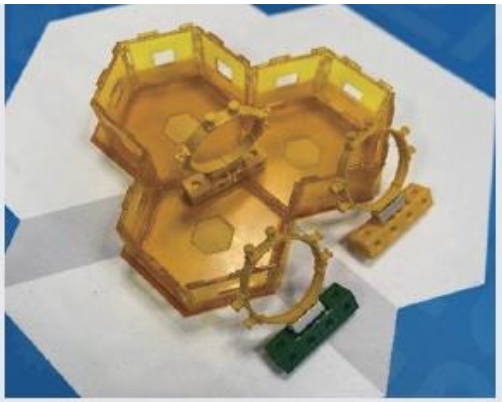
Status C (team earns 10 points).

Task Four

Robots A and B must be used to transport the 20-foot A-type containers and yellow circle (C-8 PIN ROUND FRAME FOR BOTTLE (7362-W10-G1Y))from the Temporary Spot to the Goal Areas and all orthogonal projections of containers and yellow circles are within the goal area. Points are awarded only if one piece is put within the goal area of the same color, and each correct piece earns 30 points. The maximum score is 220 points.

According to the picture above, teams (elementary school, junior high school, senior high school) can get 220 points.





According to the two pictures above, teams (elementary school, junior high school, senior high school) can get 30 points.
The 20-foot A-type container can get points only if the object is totally within the goal area.

Task Five

Robots A and B must be used to transport the dangerous oil cans from the Temporary Spots to the Goal Area.

Teams earn 40 points for each standing piece placed within the area.

Teams earn 20 points for each non-standing piece placed within the area. The maximum score is 150 points. Team can get points only if the object is totally within the goal area.

			
According to the picture above, teams can get the full 150 points.	According to the picture above, teams can get 60 points. (Three non-standing)	According to the picture above, teams can get 40 points. (Two non-standing) (One outside)	According to the picture above, teams can get 40 points. (One standing) (Two outside)

Task Six

Teams should use Robot A or B to transport the green storage batteries from the Temporary Spot to the Goal Areas A, B, D, or E. Each piece scores 20 points. The maximum score is 80 points.

(1) For elementary school teams, if one piece is transported within any goal area, the team earns 20 points.
(2) For junior high school teams, one specific goal area is draw out before the competition.
(3) For senior high school teams, all three specific goal areas are draw out before the competition.

The picture above shows the place markers for the pieces as the storage batteries.

R4M Basic Scoring Criteria

8.5.1. Score Calculation: 2 minutes are given to complete the task, and the highest scoring team wins. If there are more than 2 teams getting the full scores, the team with the least time wins.

8.5.2. Score Calculation (Total Weight): The total weight of the robot also affects the score. Lower weight robots receive higher scores.

8.5.3. Sequence Order: Awards are based on scores. If teams have the same score, the final result will be determined by the following order of decisions.

Sequence Order	Sequence Item		
0	The total scores.	6	Score of task five.
1	The competition time.	7	Score of task three.
2	The number of tasks with scores.	8	Score of task six.
3	The number of tasks with a full score.	9	Score of task one.
4	Score of task four.	10	Total weight. (Less, wins)
5	Score of task two.	* Remark: If more than two teams earn a full score, the team with the shortest time wins.	

Google Sheet: Q&A

When the robot has moved the line follower, can restart (reset)?	**Yes, after submitting a maintenance request to the judge, you may pick up Robot C and restart it. Once the restart is complete, you must resume from the Rocket Ship Area C.**
Can the robot use modified wheels by cutting the rubber belt (7446-w10-c2d/21t belt)?	**Yes, it is allowed, but rubber wheels must be connected using building blocks. The use of double-sided tape or non-block adhesives for connection is prohibited. Even materials like rubber bands are allowed only if used to increase the friction of the wheels. However, please note that such modifications are only permitted for the purpose of increasing friction. Using rubber bands or similar materials to bind or fix two objects together is not allowed.**
Can the old version of the IR sensor with transparent blue packaging be modified by making holes so that it is easy to calibrate?	**Yes, holes can be made in the old version infrared sensor (with a transparent blue casing) to facilitate calibration.**
Robot C must use force sensor?	**Not necessarily. A FORCE SENSOR or TOGGLE SENSOR is just one of the possible ways to start. Any manually operated method is acceptable. You can use the buttons on the Microbit board to start, or simply turn on the main controller's power.**

Google Sheet: Q&A (R4M Basic

How long is the Preparation time R4M Basic before 2 minutes competition? Can team adjust the mechanism and program before competition start?	Assembly + Testing Time (2 hours) 09:00~11:00: You may assemble your robot and practice in the competition area during this period. Each team's practice time in the competition area: 2 minutes for the Basic Division. The timing starts as soon as the team enters the competition area; if the team has not indicated readiness, the timing still starts automatically. Work Submission Period 09:30~11:20: After 11:00, you can only cooperate with the Work Submission process; no further assembly is allowed. Gathering and Entry 12:30~12:50: No assembly adjustments or competition area testing are allowed during this time. Competition Time 13:00~15:20 While waiting at your team's designated table: No assembly adjustments or competition area testing are allowed. While waiting at the preparation tables B or A before entering the competition area: No assembly adjustments,competition area testing, or connections are allowed. During the 2 minutes immediately before the official competition starts: Teams will have 2 minutes of preparation time to complete the following: Place each robot in its designated position. Check connections. Judges will guide teams through confirming the placement of all mission objects. After reviewing, teams may make minor adjustments as long as they comply with the rules. If any robot parts become loose during placement, teams may make fine or even structural adjustments, but must not exceed the size limits confirmed during Work Submission. If the judge visually determines that the robot exceeds size limits after adjustments, the robot must undergo re-checking. If it fails the re-check, participants must use their competition time to adjust the robot before they can start executing the tasks. Start of the Competition – 2-Minute Timing If the team needs to adjust the robot during the competition, they must inform the judge first and receive permission before making any adjustments. Actual Preparation Time The actual preparation time consists of the 2-hour assembly and testing period plus the 2 minutes immediately before the official competition on the competition area.
Can the R4M Basic Group's broadcast channels be pre-assigned and announced in advance?	We will announce the channel allocations for each competition area during the team leader meeting on July 3. Teachers on-site are also welcome to provide suggestions to help ensure the smooth running of the competition.

Google Sheet: Q&A (R4M Basic

Is it allowed to manually reposition with hands the objects (container, oil can, and battery) that were displaced by the movement of the robots?	**No, once an object has been moved by the robot, it cannot be repositioned manually.**
Can we bring a documented format of code?	**Yes, according to rule 8.6.9 of the regulations, teams may bring printed materials, pictures, video files, and other reference materials.**
Can we use Arduino not (Leonardo) for the Green mech (R4M) competition?	**Yes, it is allowed. Please note that teams are strictly prohibited from replacing the circuit board inside the main controller; however, it is permitted to connect other boards using external wiring. In the Basic Division, the main controller must be the Gigo main controller, and Robot C in the Advanced Division has specific restrictions. External modules are unrestricted in the Basic Division, and they are also unrestricted in the Advanced Division.**
Using the micro:bit main control box to control the vehicle, if programming or modifications need to be done on-site during the competition, the MakeCode website will be used. Please kindly clarify: Is it allowed to use a laptop connected to the internet at the competition venue for programming and editing? If yes, do participants need to provide their own internet access point (Wi-Fi hotspot)?	**You may bring a laptop into the venue and prepare your own network adapter to connect to the internet for on-site program adjustments.**
Regarding the position of the ring when placed in the hexagon. During the national it was explained that it should not fall, even if it hits the wall directly 0 Well in the video introducing the international rules, it is clear that the ring falls and gets points So what are the correct rules?	**According to the 2024 regulations, teams could earn points by using Robot A and Robot B to transport the 20-foot A-Type container from the temporary area to the 20-foot A-Type container goal area even if the yellow ring is out. However, in the 2025 regulations, the container and the ring's orthographic projection must both be entirely within the goal area to earn points.**

Robot for Mission

Advanced

Theme & Venue Description

AI Space Station

The contest area is limited to a space not exceeding 120 x 200cm and is covered by matte PP photo paper. Each competition area accommodates one team only. Robots A, B, C, and D automation platform, should all be placed in their starting or designated areas.

Starting position & Area Definitions

Teams may begin the contest after the judge announces.

Before each task starts, Robot A and Robot C (in programmed autonomous mode, not remote control) must be placed in the Ship Areas A and C respectively. The automation platform D must be placed in Space Station D. Robot B can be placed anywhere.

Task One

Robot A earns 10 points when the whole robot body has left the Rocket Ship Area A.
Robot B earns extra 10 points when it successfully completes one task.
Robot C earns 10 points when the whole robot body has left the Rocket Ship Area C.
Teams earn 20 points if the automation platform D successfully completes at least one task and is operated by remote control.

Teams earn 40 points if the automation platform D successfully completes at least one task and is fully automated by programming or performs AI identifisation.

Note: The fully automated program control or AI-based automated recognition is defined as requiring no further control by the contestant after pressing the start button at the beginning of the competition. The robot or device will be able to control itself, recognize targets, and score points autonomously.

Task Two

Robot C must be equipped with a C-LINE FOLLOWER SENSOR (1247-W85-B3) or the C-INFRARED SENSOR (1409-W85-D). The relevant specifications are provided in Section 8.12.1. Robot C must be programmed, not remote controlled. The program can be written, modified or uploaded by the contestants on the spot during the competition.

(Task 2.1.) Robot C must follow the black line and transport a small meteorite (2 pieces of small meteorite in total) to the Meteorite Collection Cabin to score points.

(1) Elementary school teams can use any method to move the small meteorite directly to the Meteorite Collection Cabin. Each small meteorite scores 35 points, 2 pieces of small meteorite in total.

(2) Junior high school teams and senior high school teams need to use Robot A, Robot B or automation platform D to move big meteorite to the Meteorite Disinfection Space (including airspace) first, and then teams can move the small meteorite to the Meteorite Collection Cabin. Each small meteorite scores 35 points, 2 pieces of small meteorite in total.

(Task 2.2.) When Robot C autonomously enters the Ship Sanitation Station by AI identification or programmed, teams earn 70 points. The Ship Sanitation Station is divided into three areas A, B, and C. Before the competition, Organizer will draw a color from red, blue, and green for all groups. The card should be placed between the second and third intersections (as shown). Teams can place the card themselves, but if it's moved by another robot during the competition, teams can request a repair. The teams must park Robot C in the monster area of the same color. To facilitate robot color recognition and minimize interference, all teams are required to bring a white sheet of paper (A4 size or smaller) to place under the designated color card (red, blue, or green) during the competition.

Task Two

Completion of tasks 2.1 and 2.2 earns 30 bonus points. The highest possible score for this task is 170 points.

Task Two

The above two images show that a junior high school team has made their Robot C park in the green monster area, earning 70 points.

The above two images show that a team has moved a small piece of meteorite to the Meteorite Collection Cabin (inside the red frame).
For this, elementary school teams earn 35 points. junior or senior high school teams must first move the big meteorite to the Meteorite Disinfection Area, then to the Meteorite Collection Cabin to get the same points.

Task Two

NOTES:

Note 1: After the Robot C begins operation, if a programming error is discovered, contestants may make corrections so that the robot can continue working. However, time taken to correct the program, or make other modifications, including reading and performing the task, is all included in the total task time.

Note 2: The software used by Robot C is WebAI x Gigo, or micro:bit and the main control box is C-Gigo AI CONTROL BOX (1206-W85-A) or C-micro:bit Control Box (1269-W85-A1 or 1409-W85-A), Please refer to Section 8.12.1 for exact specifications.

Note 3: The head of Robot C should be facing forward when it begins operation. It should not be aiming directly at the black line. And the whole of Robot C should be within the lines outside the black frame.

Note 4: Equipment used to program Robot C such as laptops, tablets, and cables, and an internet connection should be prepared by the contestants.

Note 5: This task can only be performed by Robot C.

Task Three

Contestants may use Robot A, B or the automated platform to transport the goods from the Fuel Ball Transfer Tower to the Space Station Fuel Tower. The corresponding scoring table is shown in Note 2. A full score is 300 points.

The picture above shows 6 fuel balls and 3 fuel sticks, scoring 180 points.

The picture above shows 8 fuel balls and 4 fuel sticks, scoring the full 300 points.

The picture above shows 1 fuel ball, scoring 10 points.

The picture above shows 2 fuel balls and 1 fuel stick, scoring 60 points.

★Note 1: Any extended conveyor belt, arm or slide on the automation platform D can only be reached by remote control. Teams cannot use hands to extend these parts. Any extending parts of the automation platform D must remain within the green frame, before the competition begins.

Any violation of this rule results in an accumulating 50-point team deductions. (e.g., four violations result in a 200-point deduction.)

Number of groups	Corresponding objects	Points
1	1 fuel ball	10 points
2	2 fuel balls & 1 fuel stick	60 points
3	3 fuel balls & 1 fuel stick	70 points
4	4 fuel balls & 2 fuel sticks	120 points
5	5 fuel balls & 2 fuel sticks	130 points
6	6 fuel balls & 3 fuel sticks	180 points
7	7 fuel balls & 3 fuel sticks	190 points
8	8 fuel balls & 4 fuel sticks	300 points

Task Four

Robot A or B must be used to transport the First-Class Ship and Special-Class Ship from the Temporary Spot to the Spacecraft Parking Area. Points are awarded to teams based on the following system.

If the First-Class Ship is parked on the third floor of the Spacecraft Parking Area, each ship gets 30 points. 90 points are awarded if all three are on the third floor.

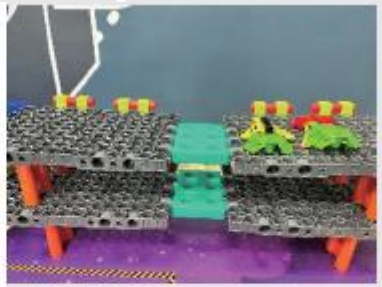
If the Special-Class Ship is parked on the second floor of the Spacecraft Parking Area, each ship gets 50 points. 150 points are awarded if all three are on the second floor.

If all six ships are on the correct floor, teams can get bonus 60 points. The maximum scores is 300 points.

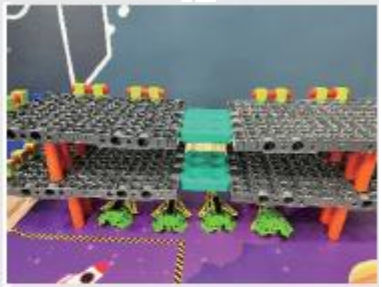
If the First-Class Ship or Special-Class Ship is parked on the first floor of the Spacecraft Parking Area, each ship gets 10 points.

The picture above is awarded the full 300 points.

The picture above is awarded 170 points



The picture above is awarded 30 points



The picture above is awarded 40 points

Task Five

(Task 5.1.) Use Robot A and B, or the automated platform to deliver the six meteorite fragments from the A, B, C, D, E, and F areas to the two Meteorite Temporary Spots. Each fragment gets 15 points. All six meteorite fragments earns 90 points.

(Task 5.2.) Use Robot A and B, or the automated platform to deliver the big meteorites from the Meteorite Disinfection Area to the two Meteorite Temporary Spots. If the big meteorite is the same color with the area, each big meteorite gets 50 points, and two big meteorites with the correct color get 100 points. If the big meteorite is the different color with the area, each big meteorite only gets 20 points.

Completion of tasks 5.1. and 5.2. correctly will earn 30 bonus points. The highest possible score for this task is 220 points.

The picture above is awarded 60 points

The picture above is awarded 90 points

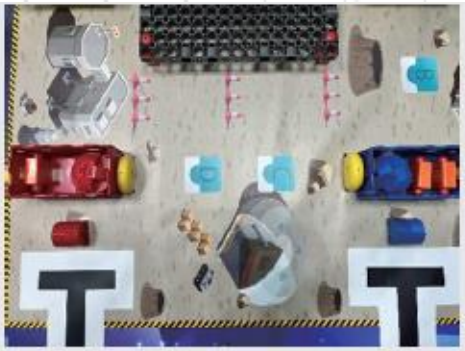
The picture above is awarded 130 points

Task Five

(Task 5.1.) Use Robot A and B, or the automated platform to deliver the six meteorite fragments from the A, B, C, D, E, and F areas to the two Meteorite Temporary Spots. Each fragment gets 15 points. All six meteorite fragments earns 90 points.

(Task 5.2.) Use Robot A and B, or the automated platform to deliver the big meteorites from the Meteorite Disinfection Area to the two Meteorite Temporary Spots. If the big meteorite is the same color with the area, each big meteorite gets 50 points, and two big meteorites with the correct color get 100 points. If the big meteorite is the different color with the area, each big meteorite only gets 20 points.

Completion of tasks 5.1. and 5.2. correctly will earn 30 bonus points. The highest possible score for this task is 220 points.



The picture above is awarded 145 points

The picture above is awarded 100 points

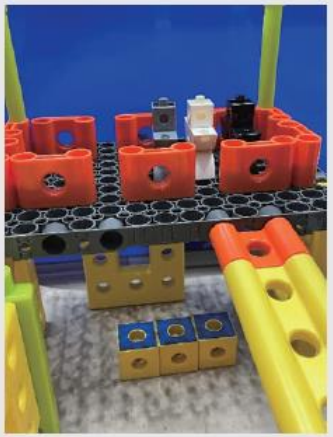
The picture above is awarded the full 220 points

Task Six

(Task 6.1.) Transport Fuel Hydrogen Tanks using Robot A, Robot B, or an automated platform to the first-floor deck of the Space Station Platform Area (not the airspace mezzanine). The Fuel Hydrogen Tanks can be stacked. Place each Fuel Hydrogen Tank directly above the JUMBO BASE GRID 30×20cm of the Fuel Ball Transport Tower with the blue side facing up. Each correctly placed tank will earn 25 points, while those with the non-blue side facing up will earn 10 points. A maximum of 75 points can be earned if all three tanks are completed correctly.

(Task 6.2.) Use Robot A, Robot B or the automation platform to move the spacemen from the Spaceman Rest Zone to the second floor of the Fuel Ball Transfer Tower. Each spaceman earns 30 points. All three spacemen can earn 90 points.

Completing tasks 6.1 and 6.2 correctly will earn 35 bonus points. The highest possible score for this task is 200 points



The picture above is awarded the full 200 points.

The picture above is awarded 150 points.

The picture above is awarded 90 points.

Scoring Criteria (Advanced)

8.10.1. Score Calculation: 3 minutes are given to complete the task, and the highest scoring team wins. If there are more than 2 teams getting the full scores, the team with the least time wins.

8.10.2. Score Calculation (Total Weight): The total weight of the robot also affects the score. Lower weight robots receive higher scores.

8.10.3. Sequence Order: Awards are based on scores. If teams have the same score, the final result will be determined by the following order of decisions.

Sequence order	Sequence item
0	The total scores.
1	The competition time.
2	The number of tasks completed.
3	The number of tasks with a full score.
4	Score of task two
5	Score of task three.
6	Score of task four.
7	Score of task six.
8	Score of task five.
9	Score of task one.
10	Total weight.

Google Sheet: Q&A

How long is the Preparation time R4M Advanced before 3 minutes competition? Can team adjust the mechanism and program before competition start?	For the R4M Advanced, several time segments are scheduled before the official competition: Assembly and testing time (2 hours): From 09:00 to 11:00, teams may assemble and practice in the competition area. Each team has 3 minutes of practice, counted from the moment they enter the competition area. Work Submission period: From 09:30 to 11:20. After 11:00, teams may only cooperate with Work Submission and are not allowed to make any further assembly or testing. Gathering period: From 12:30 to 12:50, during which no assembly or testing is allowed. Competition time: From 13:00 to 15:20. Teams waiting at their own tables, Preparation Table B, or Preparation Table A may not perform any assembly or testing, although connections may begin at Table A. 3 minutes immediately before the official competition starts on the competition area: Place each robot in its designated position. Check connections. Judges will guide teams through confirming the placement of all mission objects. After reviewing, teams may make minor adjustments as long as they comply with the rules. If any robot parts become loose during placement, teams may make fine or even structural adjustments, but must not exceed the size limits confirmed during Work Submission. If the judge visually determines that the robot exceeds size limits after adjustments, the robot must undergo re-checking. If it fails the re-check, participants must use their competition time to adjust the robot before they can start executing the tasks. Competition Start – 3-Minute Timer Once the competition begins, a 3-minute timer will run. If adjustments are needed during the competition, the team must inform the judge and receive permission before proceeding. Actual Preparation Time The actual preparation time consists of the 2-hour assembly and testing period plus the 3 minutes immediately before the official competition on the competition area.

Google Sheet: Q&A

Can the workpiece (object to be moved to complete the mission) if it shifts due to the movement of another robot be re-arranged to its original position manually using hands?	
HAND interference on parts/items on the field should is allowed ? (balls, red rods, astronauts, fragments, etc.)..if the ball or rods or any parts fall into a position that is difficult for the robot to reach (or out of the field), HAND is allowed to pick it up?...any wrong position, only the robot can fix it after the start.....(there is no such thing as allowed to reset) Hand interference is only allowed to lift the robot if there is damage with a reduction value? 🙏	**Please note that except for the small meteorites transported by Robot C, which may be requested to be repositioned, no other objects on the field may be manually adjusted after the competition starts. This includes objects that fall outside the field, which may only be moved by the robot itself. Additionally, robots may only be picked up if they are damaged or require parts replacement, and only after applying for maintenance.**
Is it allowed to manually reposition with hands the objects (meteorite, fuel ball, fuel stick, ship, fuel hydrogen tanks, etc.) that were displaced by the movement of the robots?	
Task 2.2. Before the competition, Organizer will draw a color from red, blue, and green for all groups. It means all teams from all level will get and do the same destination (red/blue/green), right?	**Yes, if the drawn color on the day is red, the C cars of the elementary, junior high, and senior high divisions must all stop infront the red card.**
During the city-level competition for the line-following vehicle, an A4 white paper is placed at the end of the track. Will the same setup be used for the World Championship (National Competition)? Since the white paper is not part of the original map and is not a flat surface, it can easily cause slipping for teams in Group A/B when crossing it. Is there an alternative solution? Or, for groups that do not require color sensing, is it possible to make the placement of the A4 white paper optional rather than mandatory?	**The white paper is mainly provided for color sensors. If the white paper is displaced during the competition by robots, it does not need to be repositioned on the competition area, but it cannot be removed manually.**

2025 GreenMech

Basic

GM Basic

7.3.1. Event Schedule (Half-day contest, with 90 minutes production time.)

Registration	Materials Inspection	Clarification of Rules	Production & Testing	Appraisals
07:40 ~ 08:20	08:00 ~ 08:50	08:50 ~ 09:00	09:00 ~ 10:30	10:30 ~ 12:30

7.3.2. Contest Tasks: Each team should design and correctly connect 4 basic devices and 1 designated device.

7.3.3. Contents of Device

(1) Contest Tasks: Each team should design and correctly connect 4 basic devices and 1 designated device without using electricity.

(2) The order of tasks will be drawn on the day of the competition.

(3) Prepare your own materials: Teams must prepare 6 A-40mm BALL (7330-W11-M1), and 3 C-RACING TIRE (1115-W85-F2).

7.3.3. Contents of Device

(1) Contest Tasks: Each team should design and correctly connect 4 basic devices and 1 designated device without using electricity.

(2) The order of tasks will be drawn on the day of the competition.

(3) Prepare your own materials: Teams must prepare 6 A-40mm BALL (7330-W11-M1), and 3 C-RACING TIRE (1115-W85-F2).

Prepare your materials

 7330-W11-M1B	 1115-W85-F2B
A-40mm BALL x 6 (Any color is OK)	C-RACING TIRE x 3 (Any color is OK)

Contents of Device

Group	The order of tasks
elementary school	No drawing is needed; all tasks are arranged by the teams themselves.
junior high school	Draw the task for the first device; the remaining tasks can be arranged by the teams themselves.
senior high school	Draw the tasks for the first and second devices; the remaining tasks can be arranged by the teams themselves.

Contents of Devices	
Tracks	1. Design a mechanism to release 2 balls (self-prepared by teams, and there is no restriction for the specification of balls) sequentially along the track. One ball must fall vertically for more than 30 cm, and the other ball must move horizontally for more than 30 cm. 2. One of the balls must be able to directly trigger the next device.
Pulley	1. Design a pulley mechanism to lift an object vertically for more than 30 cm. 2. This object must be able to directly trigger the next device.
Hydraulic Pressure	1. Design a hydraulic device to lift all three racing tires by more than 5 cm in one operation (a regular syringe can be used). 2. The racing tires must be able to directly trigger the next device.
Lever	Design a mechanism using the principle of a lever.

Designated Device

Content of the Last Device (Designated Device) - A Launcher

1. On the day of the competition, teams are required to make their own automatic launcher that will automatically release two pieces of 4-centimeter balls (Gigo A-40mm BALL) with one operation into a designated target area via mechanical triggers. Each team needs to prepare a total of 6 balls.
2. The teams shall make the target area and place it in a specified location. The target area should be positioned in the lower left corner of the work, with no devices or obstructions directly above its projection. Any violation of this rule will result as disqualified.
3. There are 3 chances to automatically launch a ball. Each time a ball is placed into the target area, the team should not move the ball out. Finally, the combined score from these 3 launches are counted as the score of the designated mission.
4. At the moment of ball launch, the horizontal distance between the ball's position and the target area must be greater than 90 centimeters.
5. After the ball is launched, balls must not touch any devices or objects, and the final resting position of the ball is used for scoring in this operation.

On the day of the competition, the team should make the target area and put it onto the team's table.

The launcher is designated as the 5th device. The others are marked 1 thorough 4, their order of tasks will be drawn on the day of the competition, and their position can be determined by teams.

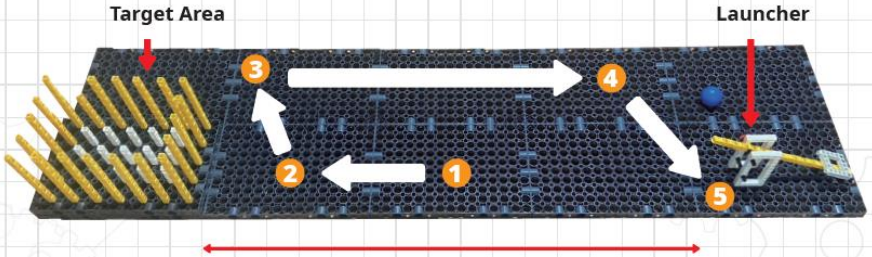
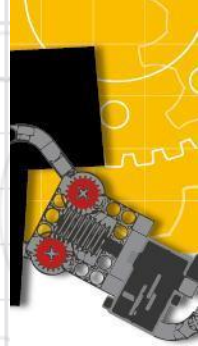


Diagram of the overall work

The target area is the 30 x 20 cm area in the lower left corner of the whole work.
This area needs to be cleared, and the team must place the target area correctly before grading begins.



Scoring	
Smoothness (20%)	1. When the device is in operation, 2 points will be deducted if anything falls out of the device area. 2. If there is a problem with the functioning of a device after it has been put in the arena and it requires manual intervention to resume operation, the team will receive a 2-point deduction. 3. The smoothness and number of devices need to be weighted for scoring.
Total Number of Devices (5%)	The total number of devices must be correct. Each device must be labeled clearly, in order, from "Device 1" to "Device 5". Each correctly labeled device receives 1 point. (Refer to Device Labels)
Tracks (8%) Pulley (8%) Hydraulic Pressure (8%) Lever (8%)	1. Demonstrate the corresponding scientific principles in each device (3%) 2. Sophistication (5%)

7.3.4.1. Rating notes

Scoring Considerations	
Smoothness 20%	The Smoothness is scored by the operation from the first device to the fifth device. The Smoothness score operates from the first device to the fifth device. 5 minutes is granted for fine-tuning before scoring begins. Contestants must sign to acknowledge their score after it has been given.
Total Number of Devices 5%	
Tracks 8% Pulley 8% Hydraulic Pressure 8% Lever 8%	1. Demonstrate the correct scientific principles for each device (3%). Fully meeting the task specifications earns 3 points, partial compliance earns 1 point, and complete non-compliance results in 0 points. 2. Sophistication (5%): Movements can be shown in a variety of ways, more complex designs can earn more points. 3. The four devices will be graded by different judges. There is a 2-minute preparation time before scoring begins, and contestants do not need to sign after scoring.

Designated Device

Scoring

Designated Device and Mission (43%)

1. Automatic launch (2 points)
2. If the horizontal distance is less than 90 centimeters, the designated task will not be scored.
3. If the target area design does not comply with regulations, the designated task will not be scored.
4. Balls do not touch any items or devices (3 points).
5. Score, according to the ball location:

Area A	4 points
Area B	3.5 points
Area C	3 points
Touching the target area when falling, but not in the ABC area	2 points
Falling without touching the target area	0 points

6. Bonus Points: If a ball lands inside the target area and stacks on another ball and a five-hole rod, that ball earns an additional 1 point.

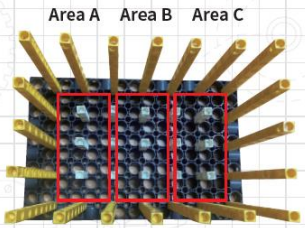
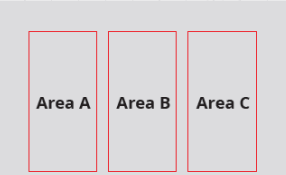


Diagram of the target area



On the day of the competition, the team should make the target area and put it onto the team's table.

Scoring Considerations

Designated Device and Mission 43%

After the smoothness score has been awarded, the landing score for the first launch of the designated mission will be recorded. The second and third launches need only be triggered by the last action of previous device. Scoring will only occur if the second and third launches are automatically launched.

Notice

Scoring Notice of Smoothness & Designated Device and Mission	
1	Participants must build their own target zone and place it in the designated location. The target zone should be positioned at the bottom left corner of the entire project. No structures or devices are allowed directly above it in top view. Violations will result in no score for that part.
2	For the smoothness evaluation, participants must guide the judges through the movement flow of stages 1 to 5. Only one team member is allowed to operate the mechanism; other members must not touch any components. In case of a mistake, please wait for the judge's instructions before proceeding.
3	Smoothness scoring will continue until the ball is thrown, and the score of the first landing point will be recorded.
4	For the second and third evaluations, only the final action of the 4^{th} device needs to be reset. After scoring is completed, the participant must sign to confirm the result.

Scoring Notice of the Content of Device	
1	The task must be completed exactly as specified; otherwise, the score for that challenge will be zero.
2	Multiple judges will evaluate the project together. Please train the students so that each one is responsible for explaining one challenge to the judges. No signature is required after scoring.

Google Sheet: Q&A

GM Basic	In a hydraulic device, does the tire have to make contact with the next triggering device?	As long as the next device is triggered through the racing tire or objects connected to it (such as building blocks or cotton string), it complies with the regulation.
	How do you score 43 in the catapult task?	All six balls landing in the four-point zone: 24 points All three launches triggered automatically: 6 points All three launches meeting the "no-touch" condition: 9 points Each ball landing stacked on another ball earns an extra 1 point; if four balls are stacked, an additional 4 points can be earned The maximum combined score is 43 points.
	Is it mandatory for teams in the Basic of the Robot Mechanism Challenge to check in strictly between 07:40 and 08:20? Due to the travel time required from the HSR (High-Speed Rail) station to Providence University via Wuri Station, some participants may arrive slightly later than 08:20. In such cases, will they still be allowed to enter and participate in the competition? According to the schedule, the competition is set to begin at 9:00 a.m. We appreciate your clarification. Thank you.	If a team is unable to arrive check-in table on time due to force majeure, they may still enter the competition upon arrival. However, please note that requests for time extensions will not be accepted; teams must complete the competition within the remaining time.
GM	How can a team know that they already finish judgement from all judges?	Before scoring, judges will explain the scoring criteria to be evaluated. Teams may record all scoring criteria themselves to track which have or have not yet been assessed. For scores related to fluency and scientific concepts, the judge will have students confirm and sign immediately after evaluation.

GM Advanced

7.4.1. Contest Theme: The overall theme of the work is open to interpretation

7.4.1.1 Creative device: Please incorporate the concepts of environmental protection, recycling, and reuse when designing the creative device.

The world is confronting significant challenges due to climate change and environmental pollution, rendering the traditional linear economic model unsustainable. The circular economy offers a new approach designed to reduce resource consumption, extend product lifecycles, and minimize waste through strategies like Reduce, Reuse, and Recycle. This model aims to achieve sustainable resource utilization. By embracing the 3R principles and the circular economy, we can create innovative and unique solutions. The 3R principles form the core of the circular economy and include:

Reduce: Minimizing resource use from the source, such as reducing purchases, using reusable items and extending product lifespans.
Reuse: Reusing items, such as using second-hand goods and repairing damaged items.
Recycle: Recycling waste materials to create new products or raw materials.

GM Advanced

7.4.3. Contest Tasks

Each team should make a total of 8 devices (4 general devices, 1 creative device, and 3 green energy devices) and the devices should connect and operate correctly.

7.4.4. Advanced (Elementary, Junior & Senior High School)

Work Configuration Chart: the sequence of devices is designed and planned by teams.

(1) Devices need to be labeled 1-8, and the creative devices and green energy devices should be marked on the label.
(2) The order of operations must fit the sequence according to the device label number.
(3) Only general devices are graded for scientific concepts.
(4) Green energy sources cannot be the first or last device.

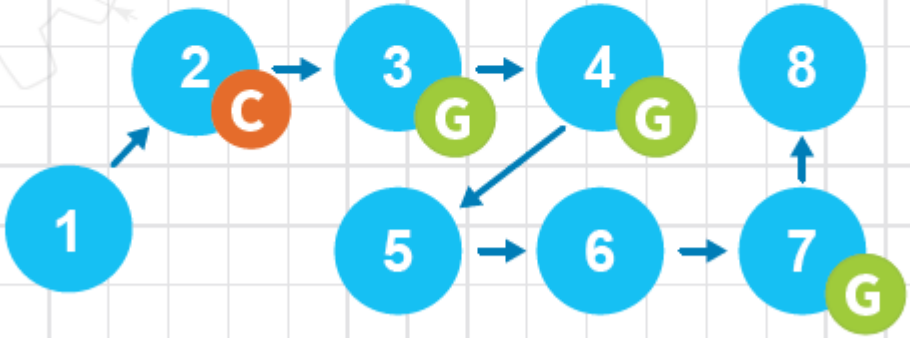


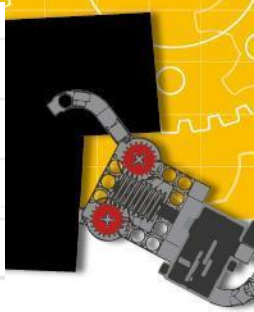
Figure 1. Work configuration chart showing devices and labels. Orange C indicates a Creative Device, Green G indicates a Green Energy Device.

GM Advanced

7.4.4.1. Scoring Items (Advanced)

Scoring	
Smoothness 20%	1. When the device is in operation, 2 points will be deducted if anything falls out of the device area. 2. If there is a problem with the functioning of a device after it has been put in the arena and it requires manual intervention to resume operation, the team will receive a 2-point deduction. 3. The smoothness and number of devices need to be weighted for scoring.
Total Number of Devices 16%	A device labeled correctly earns 2 points.
Green Energy 24%	Three green energy devices
Scientific Concept 16%	Eight scientific concepts or principles because there are four general devices. Each general device has two scientific concepts.
Creative Device 16%	Use plastic bottles, with no restriction on the brand of the bottles, combined with building blocks to design and present a challenge addressing the issue of plastic reduction.
Mechanical Design of the Whole Work 8%	The overall theme of the work is open to interpretation.
Decision Criteria Order (if two team scores are the same)	1. Smoothness 2. Total Number of Devices 3. Green Energy 4. Scientific Concept 5. Creative Device 6. Mechanical Design of the Whole Work

7.4.4.2. Scoring Considerations (Advanced)



<table>
<tr><th colspan="2">Scoring Considerations</th></tr>
<tr><td>Smoothness
20%</td><td rowspan="2">The smoothness score will be multiplied by the score for devices used (Total Number of Devices). 5 minutes is granted for fine-tuning before scoring begins. Contestants must sign to acknowledge their score after it has been given.</td></tr>
<tr><td>Total Number of Devices
16%</td></tr>
<tr><td>Green Energy
24%</td><td>1. There are total 5 minutes of preparation time for Green Energy and Scientific Concept before scoring begins. After scoring, the contestants need to sign for confirmation.
2. Green energy devices cannot be the first or last devices.
3. Teams have two chances of the operation: If the system works on first operation, teams earn 5 points. If the system works on second operation, teams earn 3 points. Otherwise, no points are earned.
4. Each green energy device earns 8 points. Three devices count to 24 points.
<table>
<tr><th>Scoring Items</th><th>Scores</th></tr>
<tr><td>This green energy device can activate the first action of next device successfully</td><td>5 points</td></tr>
<tr><td>The content of device is using the green energy resources</td><td>3 points</td></tr>
</table>
</td></tr>
<tr><td>Scientific Concept
16%</td><td>Scoring are applied according to the Scientific Concepts demonstrated. Scores are applied based on the Scientific Principles Reference Table. There are total 5 minutes of preparation time for Green Energy and Scientific Concept before scoring begins. After scoring, the contestants need to sign for confirmation.</td></tr>
</table>

GM Advanced

Creative Device 16%	The design of the creative should focus on the structures made from plastic bottles and building blocks, creating innovative mechanisms. 1. Uniqueness: Devices or mechanisms have their own characteristics and are different from those of other teams. 2. Sophistication: The movements of mechanisms are displayed in a variety of ways, and the mechanism design is more difficult than those of other teams. 3. Theme: On-target and clearly stated. 4. The content of the creative device will be graded by the judge. There is a 2-minute preparation time before scoring begins, and contestants do not need to sign after scoring.
Mechanical Design of the Whole Work 8%	Contestants must describe and explain the design concepts of mechanisms relating to their project and the storytelling, in spoken English. There is a 2-minute preparation time before scoring begins, and contestants do not need to sign after scoring. 1. Design concept of mechanisms and storytelling (6 points). 2. Spoken English (2 points): English can be simple, but must be clear.

GM Advanced

7.7.1. Scientific Principles Reference Table

Scientific Principles Reference Table					
Item	Device Number (Contestant Evaluation)	Judge Evaluation	Item	Device Number (Contestant Evaluation)	Judge Evaluation
Law of Inertia			Connecting Rod		
Force & Acceleration (Gravity Potential)			Truss		
Action and Reaction			Chain Gear/ Transmission		
Center of Mass / Domino Effect			Track		
Leverage			Ratchet & Pawl		
Circular Motion& Centripetal Forces			Acoustics		
Pascal's Principle			Electricity		
Communicating Vessels			Thermology		
Bernoulli's Principle			Magnetism		
Wheel and Axle			Elasticity		
Pendulum			Friction		
Static Electricity			Buoyancy		
Worm Screw Worm Gear			Other (to be completed by contestant)		
Capillary Action / Siphon			Other		
Pulley			Other		
Cam			Other		

GM Advanced

Green Energy & Scientific Concept	
1	Make sure to properly guide the children in filling out the Scientific Concept Form. It will be collected at 11:00.
2	• • This competition includes five types of green energy: wind, water, solar, magnetic, and chemical. Using green energy to trigger the next challenge earns 8 points. These challenges cannot be placed in Challenge 1 or 8, and each must use a different type of green energy. Max score: 24 points. • • In the past, using green energy earned points regardless of effectiveness. This year, it must drive a working mechanism to count. • • Batteries cannot be used with green energy displays.
3	After scoring is complete, participants must sign to confirm the results.

Creative Device & Storytelling	
1	Please guide the students to use partial or full English in their presentation.
2	There will be a 3-minute preparation time before the evaluation. During scoring, students will introduce their design on their own. Judges will not ask questions or touch any student materials.
3	No signature is required from participants after the evaluation.

Google Sheet: Q&A

GM	How can a team know that they already finish judgement from all judges?	Before scoring, judges will explain the scoring criteria to be evaluated. Teams may record all scoring criteria themselves to track which have or have not yet been assessed. For scores related to fluency and scientific concepts, the judge will have students confirm and sign immediately after evaluation.

Thank You.