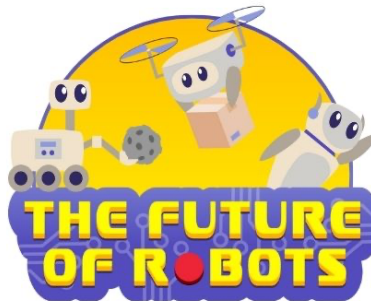




RoboStarter Kids Game Rules Season 2025



The Future of Robots Space Robot

*WRO themed game for students 6 to 9 years old
For use at a national level. Version: January 15th 2025
(Note: Rules for local WRO events may vary!)*

Table of content

1. Introduction	3
2. Game Field	3
3. Game Objects and Positioning	4
4. Robot Missions	5
1) Mars Reunion:.....	5
2) Bring supplies to astronauts:.....	5
3) Growing vegetables on the Moon:	5
4) Clean up debris in space and bring a spare part to the satellite.	6
5) Bring the astronauts safely back to earth:.....	6
6) Get bonus points and avoid penalties.....	6
5. Specific Game Rules & General Rules	6
6. Specific rules about the competition.....	7
7. Scoring	9

Information on how to use these game rules in countries:

We deliberately have a mix of simple and more difficult tasks in the game rules. At a local, regional or national level however, there will be many teams that do not have the experience, knowledge or time to solve everything. This is intentional. By offering simple and more complicated tasks all teams will be able to solve parts of the challenge and can keep trying to improve their work. (Also see chapter 6 National Organizers are also allowed to adapt the rules to local events).

Please check chapter 5 for specific rules about allowed materials and the flow of the game and competition for this RoboStarter Kids game!

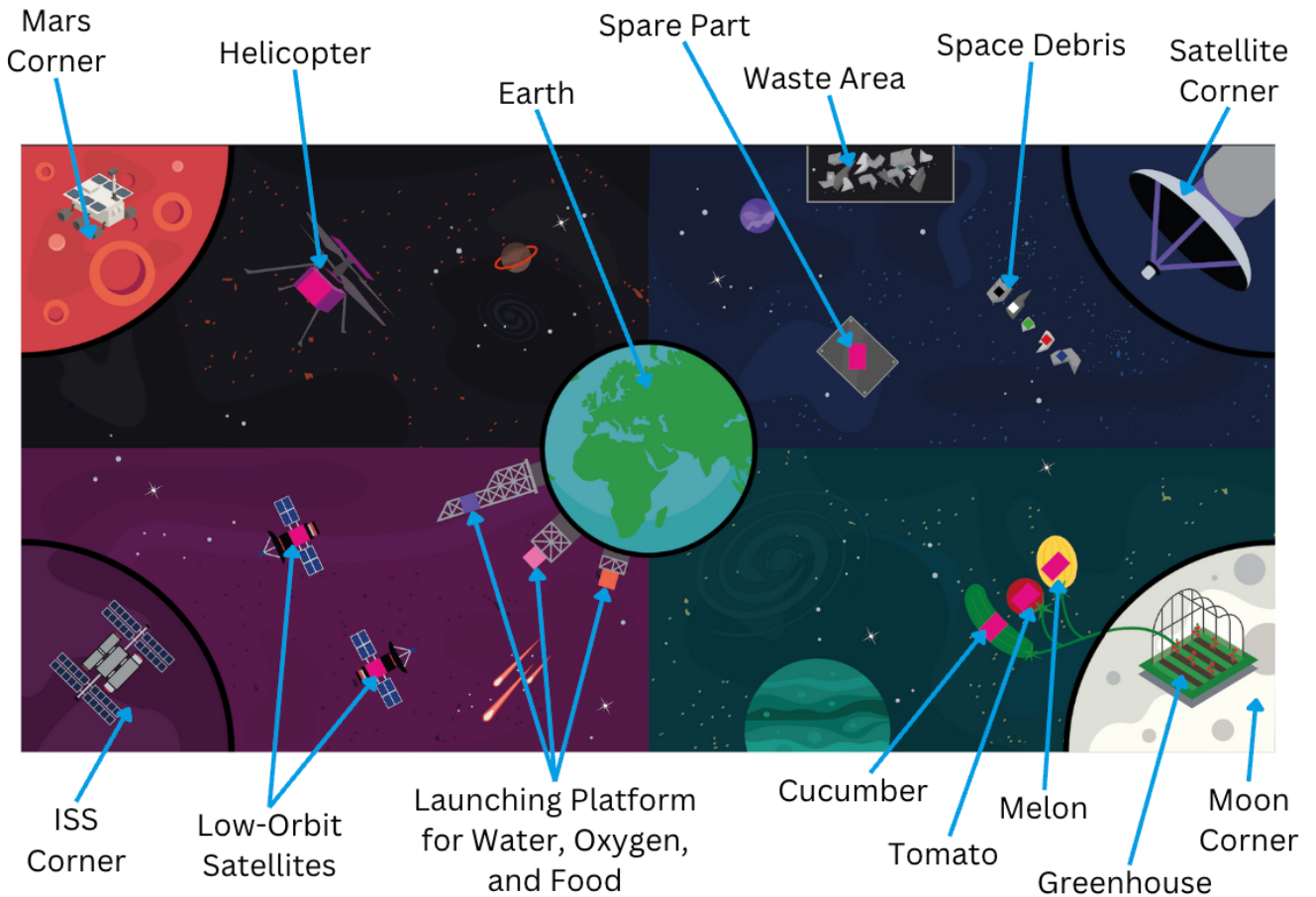
1. Introduction

Humans have been sending satellites into space for decades. These missions allow us to gain more information about our Sun, the Earth, and other planets, and look deep into space at black holes, distant stars and galaxies.

But working in Space is challenging, dangerous and very expensive so can your Robot help us?

2. Game Field

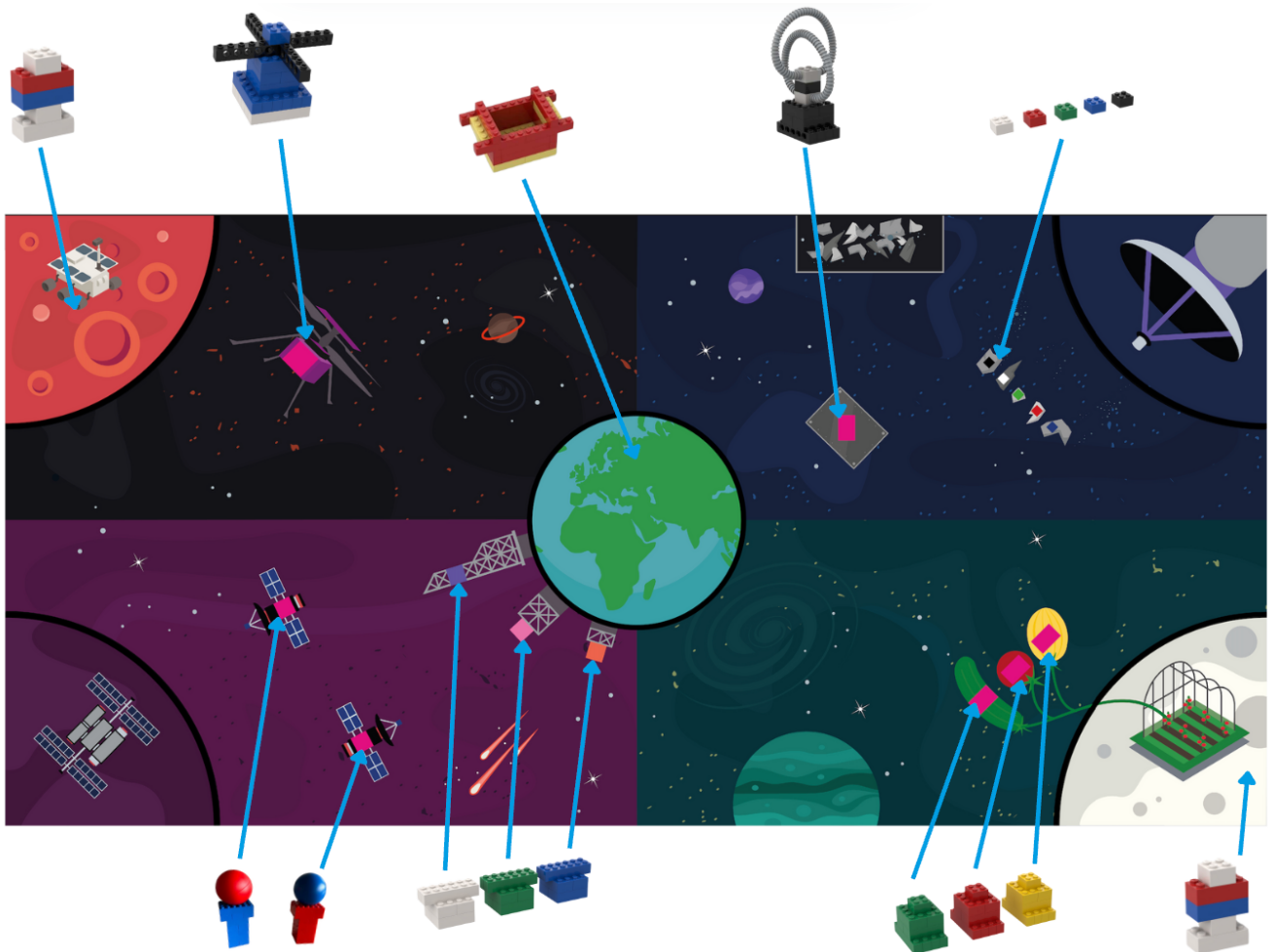
The following graphic shows the game field with the different areas.



For more information about the table and game field specifications, please take a look at WRO RoboMission Category General Rules.

3. Game Objects and Positioning

- **2 Astronauts:** One is on the **Moon Corner**, and one is on the **Mars Corner**. *The team decides the start position within the area.*
- **1 Return Capsule:** Placed on **Earth** (Central Circle). *The team decides the start position within the area.*
- **1 Helicopter:** Positioned on the **helicopter image** near the Mars Corner.
- **3 Supplies for the ISS:** **Oxygen** (white element), **Food** (green element), and **Water** (blue element) are on the **launching platforms** on Earth.
- **2 Low-Orbit Satellites:** Placed in front of the **ISS Corner**.
- **3 Vegetables:** **Green (Cucumber)**, **Red (Tomato)**, and **Yellow (Melon)** are positioned in front of the **Moon Corner**.
- **1 Spare Part** to repair the broken Satellite.
- **5 Space Debris:** Placed in front of the **Satellite Corner**.



4. Robot Missions

For greater clarity, the missions will be explained in multiple sections. The team can decide which parts of the missions they will do and in which order. **Final scoring will be based on the situation on the field at the end of the run. So, if an element was correctly placed first but is accidentally moved out of the correct place later and then not in the correct place by the end of the game, no points are given for this task**

1) Mars Reunion:

On Mars, there are two robots, a helicopter and a rover. A strong storm caused them to lose each other, and now the helicopter is far away!

Your robot's mission is to help the helicopter find the Mars rover. Can you help them find each other and work together again?

Mission: Bring the helicopter to the Mars corner. Points are only given if the helicopter is completely inside the Mars corner and not damaged – the line belongs to the corner.

2) Bring supplies to astronauts:

If astronauts are going to settle on the Moon, or explore further reaches of our Solar System, they will need air, food and water. Currently, the only human outpost is the International Space Station (ISS). ISS is supplied with water and food from Earth. Each astronaut needs approximately 1 kg of oxygen, 1 kg of dehydrated food and 3 kg of water per day.

Mission:

Your goal is to:

1. Deliver the supplies (blue for water, green for food, and white for oxygen) to the ISS Corner.
 - The elements must start from their platforms on Earth.
 - To score points, each element must be inside or touching the Space Station Corner and must not be damaged.
2. Avoid the low-orbit satellites. They must not be moved or damaged.

3) Growing vegetables on the Moon:

Supplying 5 kg of supplies per astronaut per day from Earth is costly and impractical for long duration space missions, so scientists are researching how to create a closed life support system could be used in space. Such a life support system is essential for further space exploration and will also help us improve the way we use resources on Earth.

Mission:

1 red element for tomato, 1 green element for cucumber and 1 yellow element for melon are placed in the corresponding squares in front of the Moon corner.

Bring the elements to the greenhouse on the Moon. Points are only given if the elements are inside or touching the greenhouse and not damaged – the lines belong to the greenhouse.

4) Clean up debris in space and bring a spare part to the satellite.

In space there are communications satellites, weather satellites, and the International Space Stations. But what happens to a satellite once it has served its purpose? It continues to circle (orbit) around Earth!

Space debris, or space 'junk', refers to human-made objects that are orbiting the Earth but no longer serve a useful purpose.

Missions:

1. **Clean Up the Debris:** Clean up the debris in space by moving the **five space debris pieces** to the Waste Area. Points are given for each debris piece that is **completely inside the Waste Area**. Remember, the line is part of the area.

2. **Repair the Satellite:** After cleaning up, move the **Spare Part** to the Satellite Corner. Points are only given if the Spare Part is **completely inside the Satellite Corner**, not damaged, and at least **one debris piece is inside the Waste Area**.

5) Bring the astronauts safely back to earth:

Travelling in space is very dangerous. After completing a successful mission in space, your task is to bring the astronauts safely back to Earth! Your robot must navigate the space station, secure the astronauts in the return capsule, and guide them through the journey back to Earth's surface.

Mission:

A **return capsule** is on Earth, and the team can choose its starting position. The robot must:

1. Move the capsule to Mars and the Moon. The robot must operate autonomously. If the return capsule touches the Mars or Moon corners, the team is allowed to manually place the astronaut into the capsule.

2. The robot must then return the capsule to Earth. Once the capsule touches Earth, the team should manually place the astronauts on Earth. Points are only given if astronauts are completely inside Earth and are not damaged.

6) Get bonus points and avoid penalties

BONUS POINTS are given only if at least one of the other points are assigned.

BONUS POINTS are given

- if the low-orbit satellites are not moved or damaged.

PENALTIES (will be subtracted from the score unless the score becomes negative):

- If a team illegally touches the robot (outside the four corners and the centre circle) or a game object a penalty of 1 point is subtracted from the total score pr touching

5. Specific Game Rules & General Rules

For the RoboStarter Kids Game, the normal WRO RoboMission General Rules apply, but there are some specific rules just for this age group. These specific rules are replacing similar articles in the General Rules and are mentioned here:

Specific rules about material

1. The controller, motors and sensors used to assemble the robot must be from the LEGO Education WeDo 2.0 Core Set or LEGO Education SPIKE Essential. Exception: VEX GO is accepted, **allowing the use of only 2 ports**. Any number and combination of motors and sensors are allowed, while only one controller (Smarthub) can be used.
2. The maximum dimensions of the robot before it starts must be within 250mm×250mm×250mm. After the robot starts, the dimensions of the robot are not restricted.

Specific rules about the game

3. The robot must start from within one of the CORNER AREAS or Earth, inside the black lines.
4. During the attempt, the robot must be moved/operated under programmed control autonomously. The robot can be controlled by any compatible device using Graphical Programming Languages.
5. During an attempt, the team is allowed to touch/grab the robot when any part of the robot, e.g. a wheel, **touches** a CORNER AREA or Earth (centre circle).
6. During an attempt, the team is also allowed to move a robot from one CORNER AREA to another CORNER AREA or Earth. It is only allowed to move the robot, not the game objects.
7. Teams are not allowed to add or remove parts and change the structure of the robot during an attempt.
8. During an attempt, members of the team are:
 - *Not allowed to touch any game object outside of the CORNER AREAS, and Earth.* If a team touches a game object outside a corner area or Earth, the judge will place the touched item at the location on the field where it was located, when the team touched the item, and in the position it was, when touched.
 - *Not allowed to touch the robot unless the robot is touching a CORNER AREA or Earth.* If a team touches a robot, which is not touching a CORNER AREA or Earth, a penalty of 1 point is subtracted from the score.
 - If a team illegally touches the robot or a game object, a penalty of 1 point is subtracted from the score unless the score becomes negative.
9. The mission is completed when either:
 - A team member shouts “STOP” and the robot does not move anymore.
 - The 2-minute time limit has expired.

6. Specific rules about the competition

1. A National Organizer decides about the format of the RoboStarter Kids category and communicates this format to the participants. Please remember that a competition day for our youngest should be fun. It is also important that all teams have the same number of attempts to solve the challenge.

2. National Organizers can add one or multiple Surprise Tasks to the competition. This boosts the creativity of the teams. A surprise task could be added to the official task. The National Organizer can also design a separate Surprise Task, that the teams can solve in an extra game round. This ensures that the team can show both the task that they practised for and their ability to solve a challenge in a short time. The game objects and the game field will be the same as in the original game. For Surprise Tasks you can award up to 50 points.
3. Teams can bring the robot assembled to the competition. They do not need to re-build the robot on the competition day.

Here is an example for a competition day:

Please note that it is the National Organizer that decides about the schedule in the country!

- a) Opening Ceremony: 15min – 30min
- b) Test & Attempt time: 120 min – 180 min: During this time teams can test their robots and do their official runs (e.g. 3 runs per team).
- c) Lunch / Break: 30min – 60min
- d) Surprise Task Challenge(s): 80 min – 120 min: During this time teams can solve one or more Surprise Tasks to score additional points.

National Organizer can decide to add some possibilities to their internal tournament such as:

- allow the use of 2 hub, one as a remote controller
- allow more robotic kits and platforms
- give scores for the programming project or the building (see interview suggestion)
- give time to rebuild the robot on the competition day

7. Scoring

Mission	Each	Max.
Mars reunion		
Helicopter is completely in the Mars Corner and is not damaged.	10	10
Bring supplies to the astronauts in the ISS		
The supply elements are completely in the ISS corner, and not damaged.	10	30
The supply elements are partly in the ISS corner, and not damaged.	5	
Growing vegetables on the Moon		
The vegetable elements are completely inside the Greenhouse and not damaged.	10	30
The vegetable elements are partly inside the Greenhouse and not damaged.	5	
The vegetable elements are completely inside the Moon Corner and not damaged.	2	
Clean up debris in space and bring a spare part to the Satellite		
The Space debris elements are completely inside the Waste AREA.	5	25
The Spare part is completely inside the Satellite corner, and is not damaged (Only if at least one debris element is inside the Waste area)	15	15
Bring the astronauts safely back to Earth		
The astronaut elements are completely inside the Earth area and not damaged.	20	40
Get bonus points (Only given if other points are assigned) and avoid penalties		
The low-orbit satellites are not moved or damaged.	5	10
If a team illegally touches the robot (outside the launching areas) or a game object, a penalty of 1 point is subtracted from the score unless the score becomes negative.	- 1	
Maximum Score		160