



International Youth Robot Competition (IYRC) 2023 KOREA

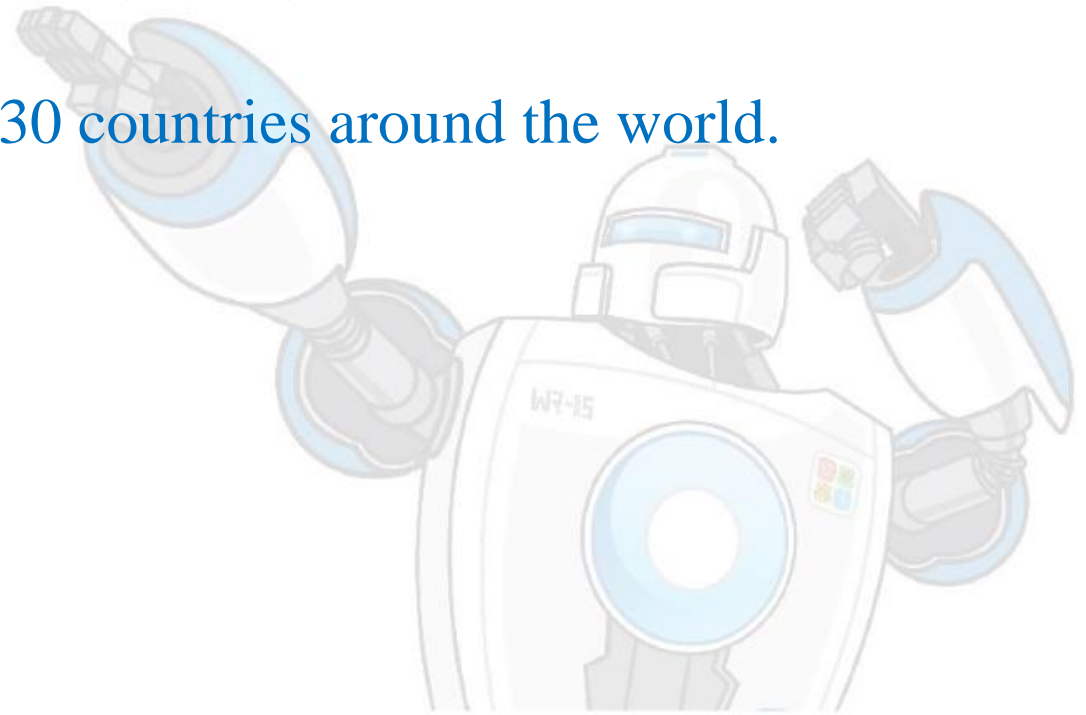
RULES & REGULATIONS

Version 1.1



Overview

1. Date: _____
2. Venue: _____
3. Organizer: International Youth Robotics Committee (IYRA), _____
4. Co-organizer:
5. Participants: More than 2,000 participants from 30 countries around the world.





Overview

Competition Categories

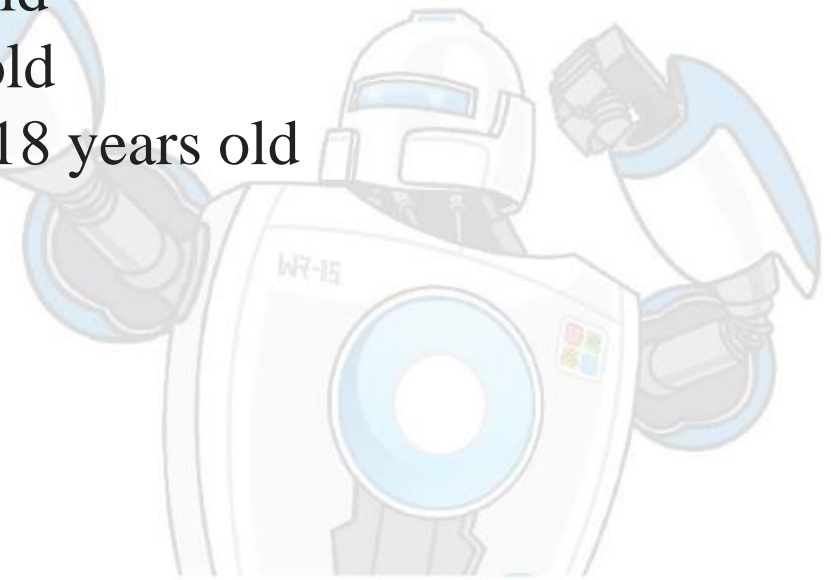
1. Bowling (Kinder Skill) · 5-8 years old
2. Road Challenge (Kinder Skill) · 5-8 years old
3. Item Recycle (Junior Skill) · 8-13 years old
4. Animal Kingdom (Junior Coding) · 8-13 years old
5. Soccer (Junior Skill) · 8-13 years old
6. Push-push (Junior Skill) · 8-13 years old
7. Volleyball (Junior Skill) · 8-13 years old
8. Volleyball (Senior Skill) · 13-18 years old
9. Push-push (Senior Skill) · 13-18 years old
10. Safe the forest (Senior Coding) · 13 – 18 years old

Open Category

11. Humanoid Robot Mission

Compulsory

12. Creative Design (Organization Basis)





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[KNDER CATEGORY \(Age 5 – 8\)](#)

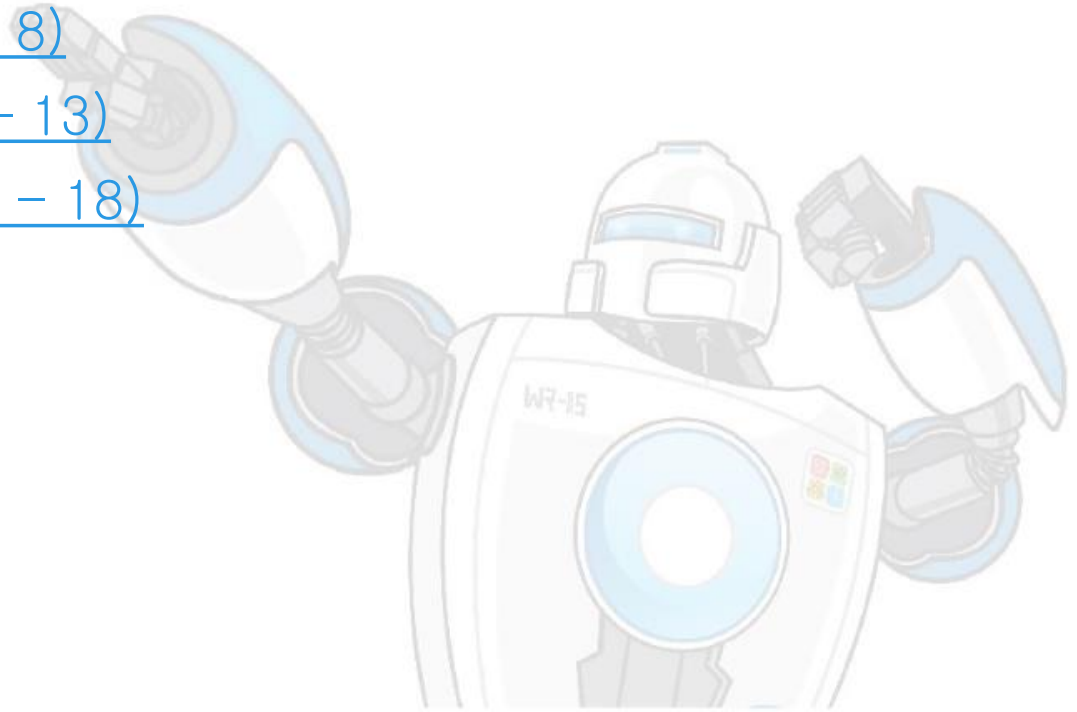
[JUNIOR CATEGORY \(Age 8 – 13\)](#)

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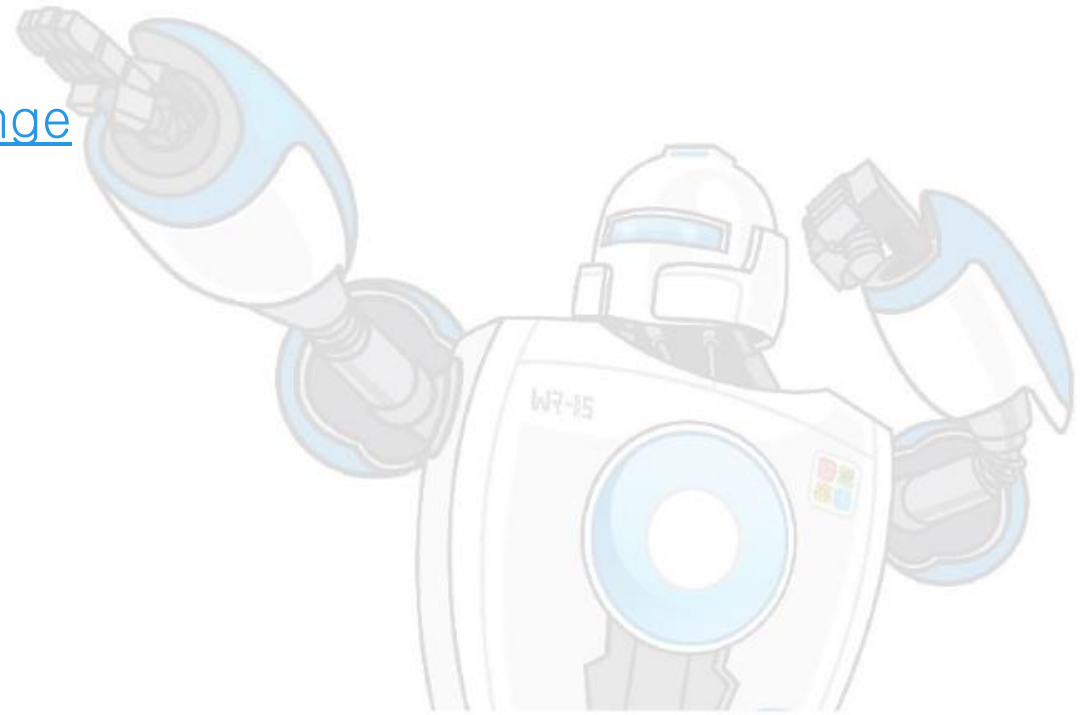
KINDER CATEGORY

K-BL01

[Bowling](#)

K-RC02

[Road Challenge](#)





BOWLING (K-BL01)



Age

5-8

Category

Individual Mission

Robot Kits
allowed

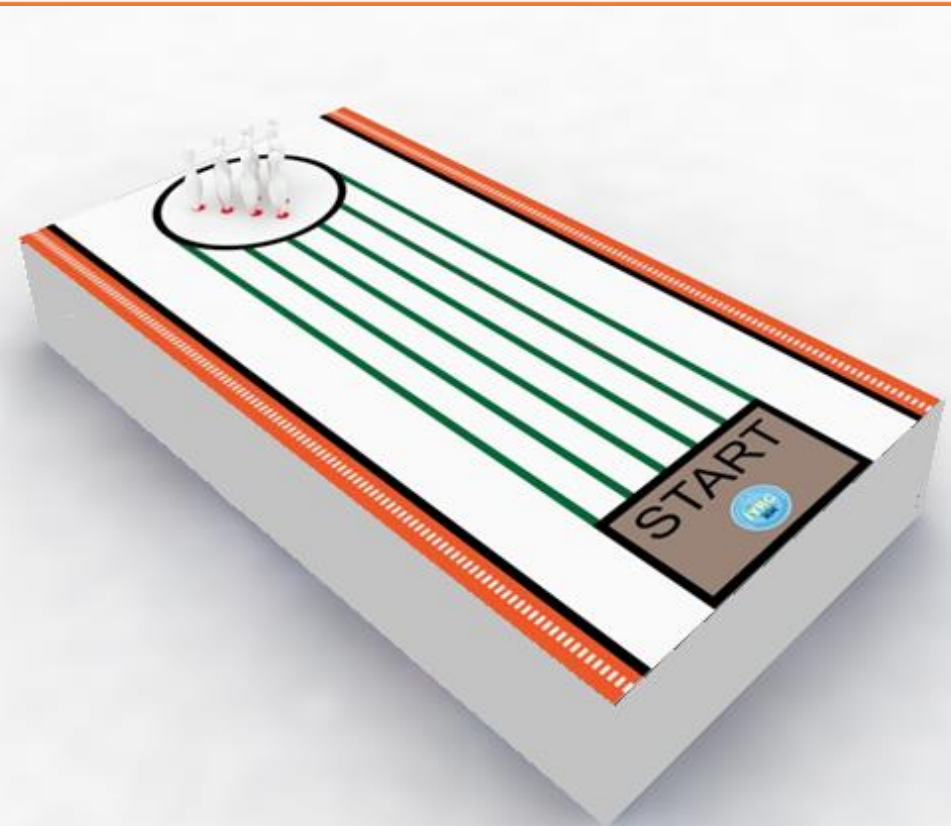
GOMA & BRAIN

Mission

Throw ball to knock down
pins from start box

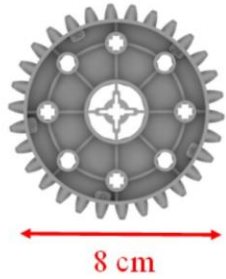
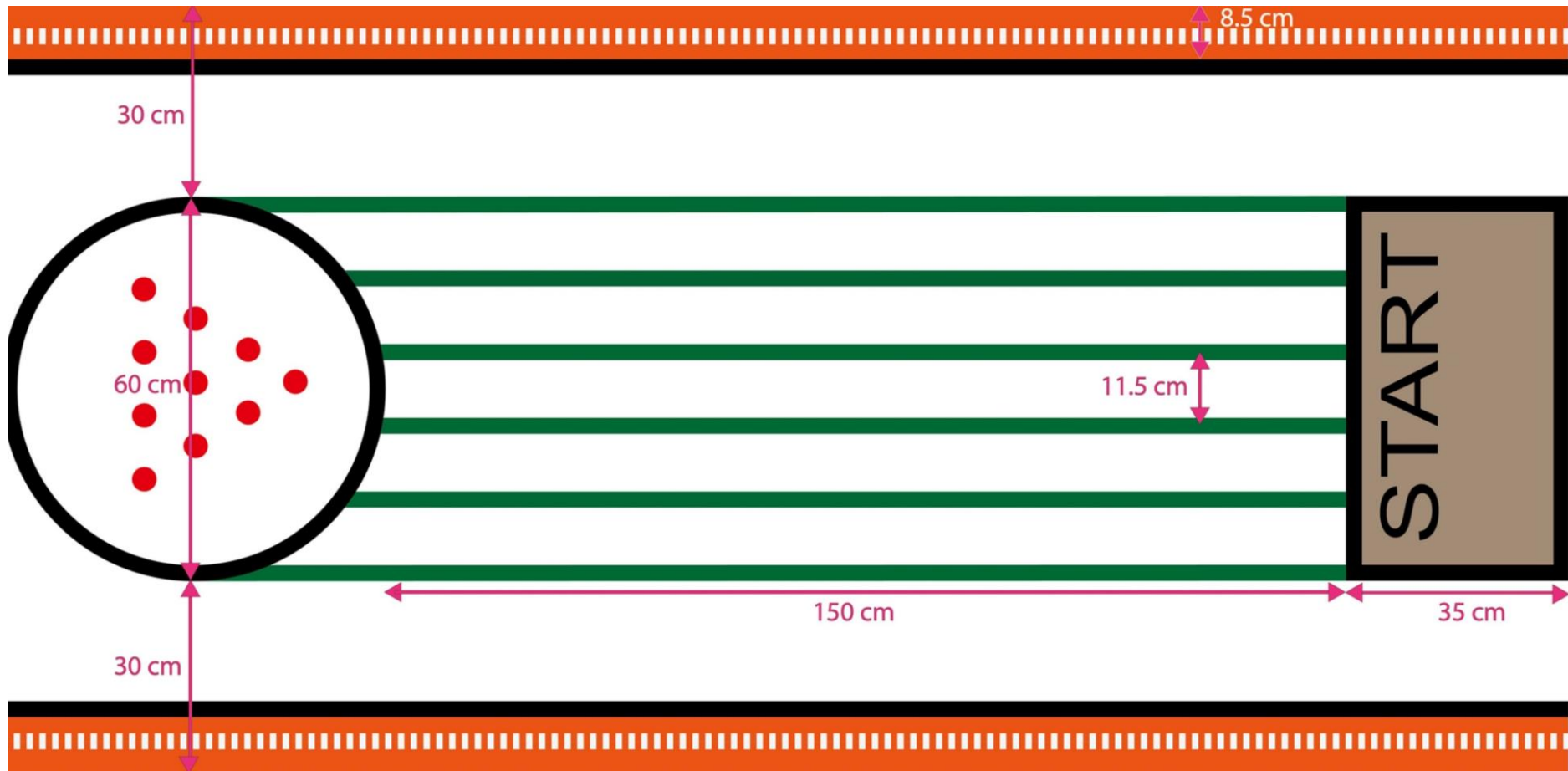
Robot
Building

Pre-build & On the spot
Card programming





BOWLING GAME FIELD





BOWLING GAME RULES

Dimensions & Restrictions

- Initial size shall not exceed 35cm (H) X 35cm (W) X 35cm (L).
- Robots are allowed to expand to any size after the game starts
- Robots are **Strictly NOT ALLOWED** to have any foreign parts (including rubber band, black tape or scotch tapes) other than the parts in GOMA & BRAIN
- Robots are not allowed to have any power supply above 6V DC (Volt of Direct Current).

Game Duration

- 3 minutes is given from the point of receiving programming cards and reader from referee
- 2 rounds whereby each round will have 3 attempts to shoot, (total of 6 attempts)
- Time taken to replace the pins will not be counted within the 3 minutes given



BOWLING GAME RULES

Scoring

- Programming : If participants are able to program the robot by themselves (10 marks)
- Programming : If participants request referee's help to program the robot (0 marks)
- Shooting : 1 point for each pin knocked down
- Reset of pins : Reset of pins only during the first attempt of each round, or when a Strike or Spare occurs during previous attempts.
- Strike : When all 10 pins are knocked down in one attempt
- Spare : When balance of pins are knocked down in 2nd attempt



BOWLING GAME RULES

Game Play Details

- Programming cards & card readers will be provided by organizer.
- The participant will be disqualified if batteries used does not have original voltage label indicating the battery voltage.
- Participant's Robot must always stay within the start box throughout the mission. If the robot moves out of the start box when shooting, it is a foul and no points will be given to the participant for that attempt.

Win/Lose Criteria

- Participant with the highest score will be the winner.
- If same points occur, the higher points from the first attempt will be compared to determine the winner, if the points are the same the second attempt would then be compared, so on and so fourth until the last attempt.
- In the case whereby all points are the same, the date of birth of the participant would be compared. The younger participant would be the winner.



BOWLING SCORE EXAMPLE



| Child | 1st | 2nd | 3rd | 4th | 5th | 6th | Programming | Total | Ranking |
|------------|-----|-----|-----|-----|-----|-----|-------------|-------|---------|
| A (6yo) | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 70 | 1 |
| B (7yo) | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 70 | 2 |
| C | 10 | 8 | 2 | 10 | 7 | 3 | 0 | 40 | 3 |
| D | 8 | 2 | 10 | 5 | 3 | 2 | 10 | 40 | 4 |
| E | 4 | 3 | 1 | 10 | 5 | 2 | 10 | 35 | 5 |
| F | 4 | 3 | 1 | 10 | 4 | 3 | 10 | 35 | 6 |



ROAD CHALLENGE (K-RC02)



Age

5-8

Category

Individual Timed Mission

Robot Kits

GOMA & BRAIN

Mission

Control robot to accomplish missions

Robot Building

Pre-built remote control robot



ROAD CHALLENGE GAME FIELD



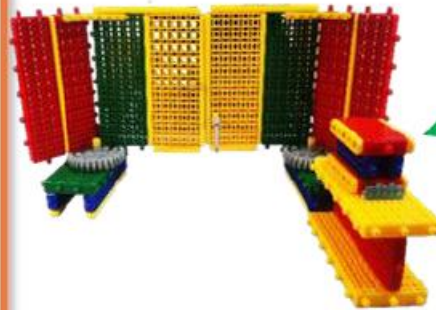
ROAD CHALLENGE MISSION 1

MISSION 1 GATE & OBSTACLE

Robot to push through the gate and make sure the shaft attached to the gate able to drop the obstacle behind the gate.



Gate FrontView



Gate Back View



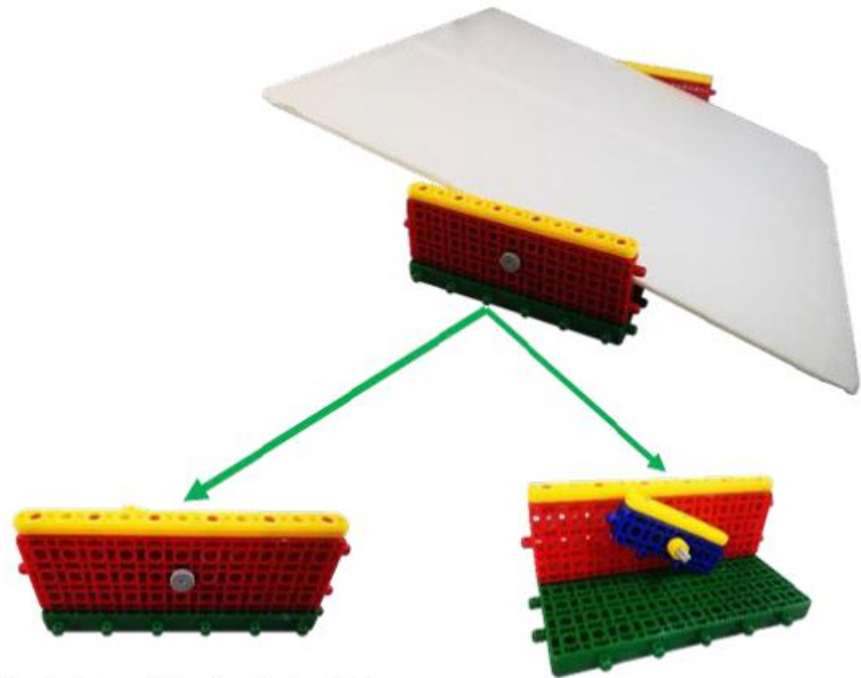
Obstacle

ROAD CHALLENGE MISSION 2

MISSION 2 CROSS BRIDGE

SIZE : 32cm(W) x 40cm(L)

Robot must move across the bridge.



Bridge Outside View

Bridge Inside View

ROAD CHALLENGE MISSION 3

MISSION 3 Hill

Robot must go over the hill to complete the mission.





ROAD CHALLENGE GAME RULES

Dimensions & Restrictions

- Initial size shall not exceed 30cm (H) X 25cm (W) X 30cm (L).
- Robots are **NOT allowed** to expand to any size after the game starts
- One start button and one GOMA Brain Mainboard is allowed. No limit on DC Motors

Game Duration

- 3 minutes is given from the point of Starting Whistle blown.
- Game may end before 3 minutes when :
 - Robot arrives at END line
 - Disqualification of a participant
 - When referee judges that the continuation of the match is impossible

Scoring (Points system)

- Mission 1 : Robot able to pass through gate (10 points)
- Mission 1 : Shaft behind gate pushes down the obstacles (10 points)
- Mission 2 : Robot manages to pass through bridge (20 points)
- Mission 3 : Robot manages to go up and down hill (20 points)
- Stop at End Line (20 points)

ROAD CHALLENGE GAME RULES



- Moving out of the road :
 - 1 wheel moves out of the road (-2 points each time)
 - 2 wheels move out of the road (-5 points each time)
 - Maximum 20 points will be deducted in total.

Game Play Details

- When Starting Whistle is blown, counting time starts and robot can start to move from Start Line to complete all the missions.
- Robot must stop at the Finish Line for timer to record valid time.
- Any parts fallen or broken are not allow to fix it back during the game play.
- Robot shall stay and move within the boundary of the road at all time.

Win/Lose Criteria

- Participant with the highest score is the winner. If same score happened, lowest time recorded is the winner.
- If both score and time recorded are the same, The younger participant will be the winner.

ROAD CHALLENGE SCORE EXAMPLE



| Child | Mission 1 | | Mission 2 | Mission 3 | Stop at End Line | Out of Road Penalty | Total Points | Time Taken | Rank |
|---------|-----------|----------|-----------|-----------|------------------|---------------------|--------------|------------|------|
| | Gate | Obstacle | | | | | | | |
| A (5yo) | 10 | 10 | 20 | 20 | 20 | 20 | 60 | 170 | 4 |
| B (6yo) | 10 | 10 | 20 | 20 | 20 | 20 | 60 | 170 | 5 |
| C | 10 | 10 | 20 | 20 | 20 | 20 | 60 | 150 | 3 |
| D | 10 | 10 | 20 | 20 | 20 | 10 | 70 | 150 | 1 |
| E | 10 | 0 | 20 | 20 | 20 | 0 | 70 | 175 | 2 |
| F | 10 | 10 | 20 | 20 | 0 | 0 | 60 | 180 | 6 |



JUNIOR CATEGORY

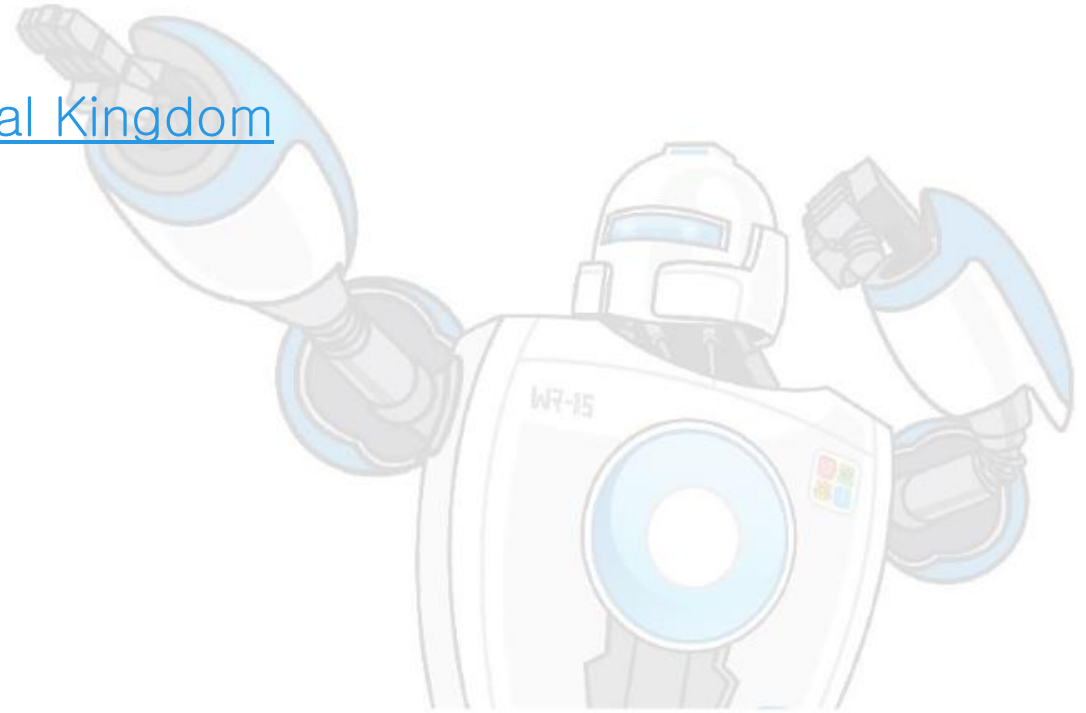
J-IR03 [Item Recycle](#)

J-AK04 [Animal Kingdom](#)

J-SC05 [Soccer](#)

J-PP06 [Push-push](#)

J-VB07 [Volleyball](#)





ITEM RECYCLE (J-IR03)



Age

8-13

Category

Team of 2 Timed Mission

Robot Kits
allowed

MRT Series & HUNA
educational robot kit

Mission

Remote control robot to
sort and place recyclables
into different categories:
Aluminium, Paper & Plastic

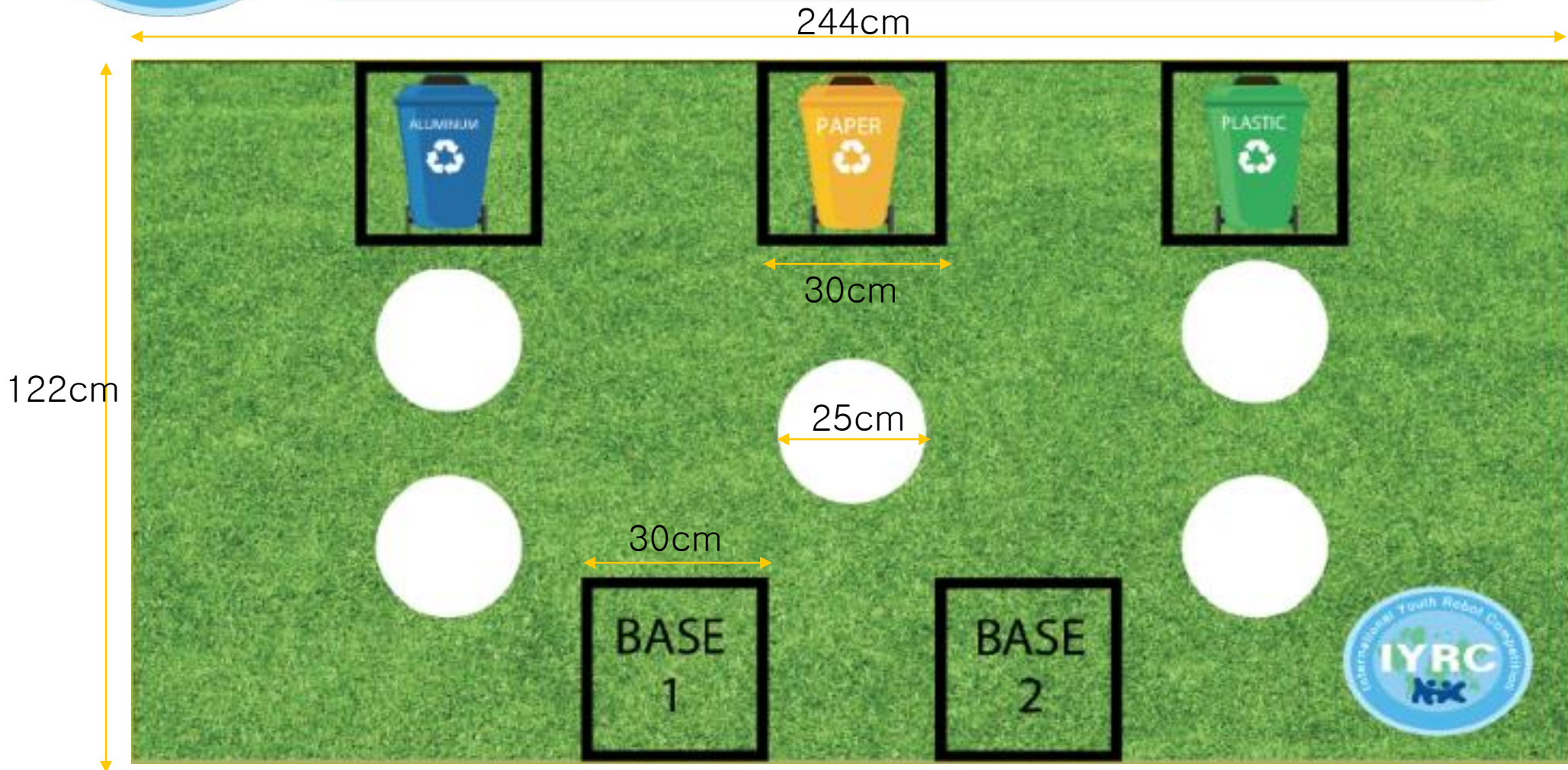
Robot
Building

Pre-build remote control
robot





ITEM RECYCLE GAME FIELD





ITEM RECYCLE GAME RULES

Dimensions & Restrictions

- Initial size shall not exceed 25cm (H) X 25cm (W) X 25cm (L).
- Robots are **NOT allowed** to expand to any size after the game starts
- Maximum **4 DC motors and 1 mainboard** are allowed

Game Duration

- 3 minutes is given from the point of Starting Whistle blown.
- Game may end before 3 minutes when :
 - All recyclables have been placed to the destination
 - Disqualification of a participant
 - When referee judges that the continuation of the match is impossible

Scoring (after robots complete the mission/times up)

- Robots go back to Base after completing mission. (5 points each)
- Recyclable correctly placed in the recycle storage. (5 points each)
- Items place on the black line, not fully into the recycle. (0 point)
- Recyclable wrongly placed fully into the recycle storage. (**deducted 5 points each**)



ITEM RECYCLE GAME RULES

Game Play Details

- When Starting Whistle is blown, counting time starts and robots can start to move from Base to push recyclables to its recycle storage.
- There are 3 different types of recyclables and 3 categories of recycle storage:
 - Plastic : 2 pcs of big wheel spindle and 1 pcs of M-shaft
 - Aluminium : 2 pcs of AL Sprocket, 3 pcs of 15 AL Frame, 3 pcs of Pillar Block 45, 6pcs of Bolt-8mm, 6 pcs of bolt-16 mm and 12 pcs of Nut
 - Paper : MRT Paper Cup
- There are 5 spots on the map where each spot has 3 pcs of different types of recyclables. Participant has to separate and push each recyclable to accurate recycle storage.
- Timing will stop once all recyclables are placed in the recycle storage and the robots move back to BASE.

Win/Lose Criteria

- Team with the highest score is the winner. If there are two or more teams with the same score, the lowest time recorded to finish the mission is the winner.
- If the points and time of both teams are the same, the younger average age would be the winner.



ITEM RECYCLE SCORE EXAMPLE



| Team | Plastic | Aluminium | Paper | Penalty | Back To Base | Total Points | Time Taken | Rank |
|---------|---------|-----------|-------|---------|--------------|--------------|------------|------|
| A (9yo) | 20 | 25 | 20 | 0 | 10 | 75 | 170 | 4 |
| B (7yo) | 25 | 20 | 20 | 0 | 10 | 75 | 170 | 3 |
| C | 20 | 20 | 20 | 10 | 10 | 60 | 150 | 6 |
| D | 20 | 20 | 20 | 5 | 10 | 65 | 150 | 5 |
| E | 25 | 25 | 25 | 0 | 10 | 85 | 175 | 1 |
| F | 25 | 25 | 25 | 0 | 10 | 85 | 180 | 2 |



ANIMAL KINGDOM (J-AK04)



Age

8-13

Category

Individual Timed Mission

Robot Kits
allowed

MRT Series & HUNA
educational robot kit

Mission

Program robot to trace the line and push the blocks into the barn (feeding animals), turn on Power Generator plus carrying injured animals back to Rescue Center and stop

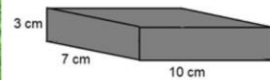
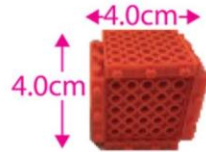
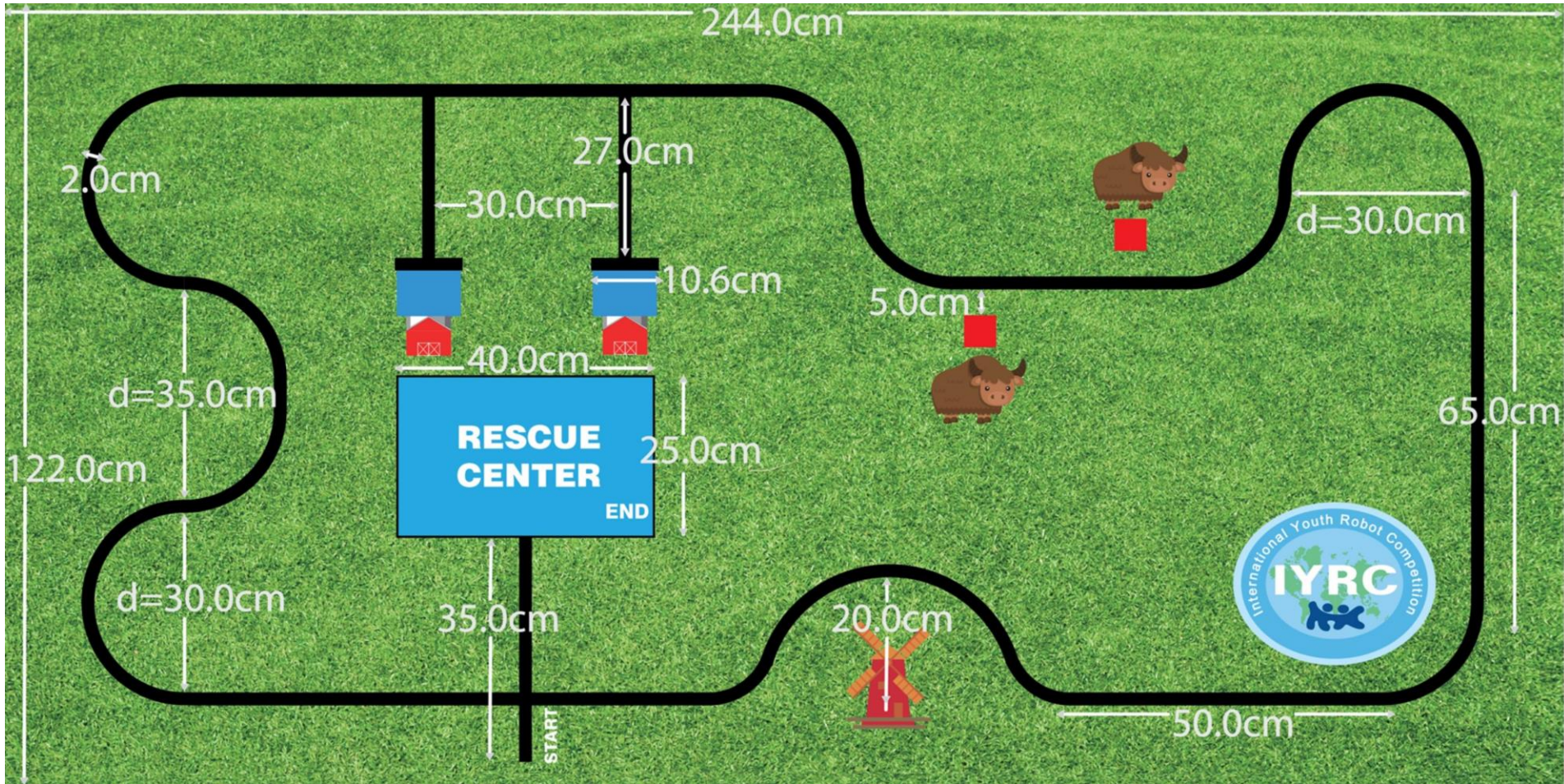
Robot
Building

Pre-build &
Pre-programmed





ANIMAL KINGDOM GAME FIELD

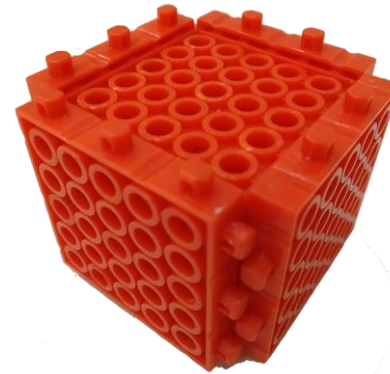




INJURED ANIMAL & FOOD

For injured animals and food, it is as picture on right it assembled with 6 pcs of 5*5 blocks.

Food will be placed on a stage of 3cm(H) x 5cm(W) x 10cm(L) like picture on the right





ANIMAL BARN & FOOD

Horse & Cow barn :

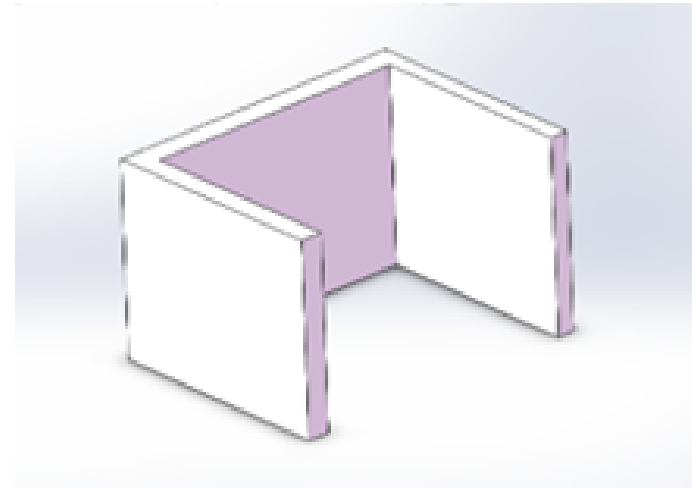
L : 8cm, H : 8cm , W:8cm

Power Generator Switch:

L: 20cm, H : 7cm ,

Cube:

L : 7cm, H : 5cm , W:7cm





ANIMAL KINGDOM GAME RULES

Dimensions and Restriction

- Initial size shall not exceed 20cm (H) X 20cm (W) X 20cm (L).
- Robots are **NOT allowed** to expand to any size after the game starts.
- Maximum 4 DC motors, 5 IR sensors, 2 servo motors, 1 tracer sensor block and 1 mainboard.

Game Duration

- Each match is stipulated for 2 rounds with a total duration for a maximum 3 minutes.
- Game may end before 3 minutes when :
 - Completion of 2 rounds
 - Disqualification of a participant
 - When referee judges that the continuation of the match is impossible

Scoring

- Robot successfully pushes food into barn shed. (15 points each)
- Collect injured animals at the road side. (5 points each for removing them from the injured area)
- Switch the generator on by spinning the long stick at the semi-circle. (20 points)
- Successfully bringing the injured animals back to the Rescue Center. (10 points for each animal)



ANIMAL KINGDOM GAME RULES

Game Play Details

- Robot should stay behind the starting line (distance from starting line to the Robot IR sensors not exceed 5cm) and facing west (R&R map position as the reference). Timer starts when the robot's IR sensors cross the starting line.
- Once the match has begun, the robot must move by its own to complete the following task:
 - Task 1 : Push the food into horse and cow barn.
 - Task 2 : Carry the two injured animals away from their initial location.
 - Task 3 : Switch on the power generator by passing through the semi-circle following the line and pushing the long stick, robot that does not follow the line and move to the next checkpoint would not be awarded points.
 - Task 4 : Make sure all injured animals carried by robot is placed into the Rescue Center. No points awarded if any part of the injured animals is out of the Rescue Center's black box.
 - Task 5 : Robot stops at the Rescue Center with any part of the robot's body stays inside the Rescue Center area.

Win/Lose Criteria

- Highest score of the two attempts will be used for ranking of winners.
- Participant with the highest score is the winner. If there are two or more participants with the same score, the lowest time recorded to finish the mission is the winner.
- If both points and time of participants are the same, the participant who is younger would be the winner.



ANIMAL KINGDOM SCORE EXAMPLE



| Child | Task 1 | Task 2 | Task 3 | Task 4 | Task 5 | Total Points | Time Taken | Rank |
|---------|--------|--------|--------|--------|--------|--------------|------------|------|
| A (9yo) | 30 | 10 | 20 | 20 | 20 | 100 | 150 | 3 |
| B (7yo) | 30 | 10 | 20 | 20 | 20 | 100 | 150 | 2 |
| C | 30 | 10 | 20 | 20 | 20 | 100 | 130 | 1 |
| D | 30 | 10 | 20 | 20 | 0 | 80 | 120 | 4 |



SOCCKER (J-SC05)



Age

8-13

Category

3v3 Tournament

Robot Kits
allowed

MRT Series & HUNA
educational robot kit

Mission

Soccer match using remote
control

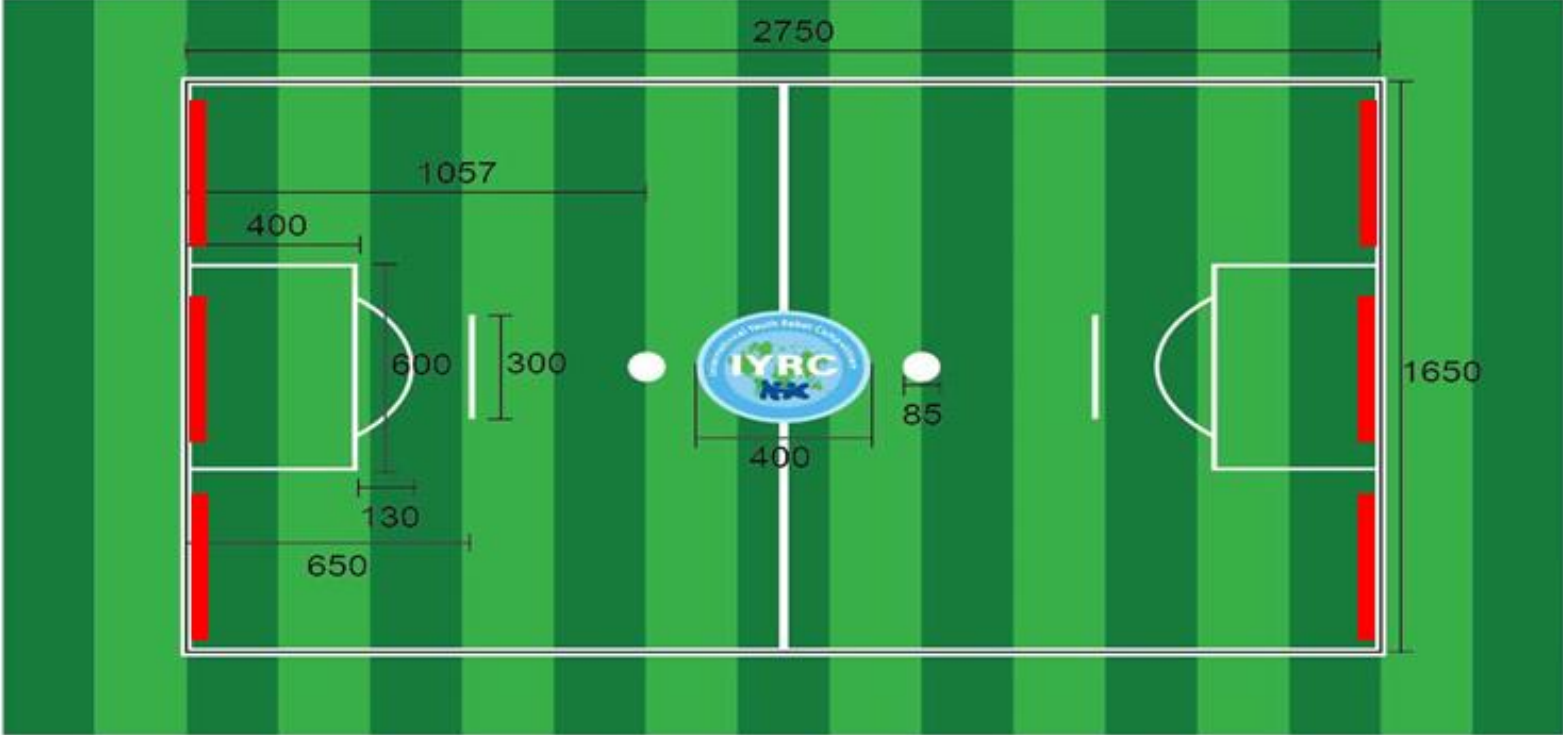
Robot
Building

Pre-build remote control
robot





SOCCER Jr GAME FIELD



measure : mm



Starting position for each team



SOCCKER Jr GAME RULES



Dimensions and Restrictions

- Initial size shall not exceed 25cm (H) X 25cm (W) X 25cm (L).
- Robots are **NOT allowed** to expand to any size after the game starts.
- Maximum up to 2 DC motors, 2 servo motors and 1 mainboard are allowed.
- Robot cannot be designed with a closed structure to handle the ball. The judge will check the robot structure before the competition starts.

Game Duration

- Each game is stipulated for 3 minutes.
- Each match is stipulated for 2 rounds with each round's duration for a maximum of 1.5 minute. After the end of each round the players are to switch to the opposite side of the game field. (Only apply to Semi-final and Final game)
- Extension of rounds is only when both sides have the same score. The extension round would be for a maximum of 1 minute. At the event of the same score after the extension round penalty shoot out will commence until a winner is found.

Starting Position

- Each team will place their robot's in front of starting position as indicated in Soccer Game Field diagram before the match/round begins.



SOCCKER Jr GAME RULES

Game Play Details

- Team variants (participants have to declare to referee which variant they choose before each match, these roles cannot be changed during the match):
 - 1 Defender & 2 Strikers
 - 2 Defender & 1 Strikers
- Defender
 - cannot leave own area (own half of the field), therefore cannot enter opponents area.
 - allowed to enter own penalty area with non-stop movement to protect the goal, but is **Not Allowed** more than 10 continuous seconds inside the penalty area or being stationary (not moving) inside penalty area.
- Striker
 - Allowed to enter both own and opponent's area
 - Allowed to enter opponent's penalty area to score goal, but not more than 10 continuous seconds inside opponent's penalty area.
 - Not allowed to enter own penalty area.



SOCCKER Jr GAME RULES

Game Play Details

- Fouls:
 - Any offender will be issued a yellow card. Upon receiving 2 yellow cards within a match, the player will be removed from play for 1 minute. After 1 minute the offender can re-enter the game field upon referee's approval. If an offender receives it's 4th yellow card within a match they are removed from play for the rest of the match.
 - When a goal is scored but at the same time or immediately before a foul is made by the same team who scored the goal, the goal would not be valid. (eg: when defender enters opponent's area when goal is scored)
- Type of fouls:
 - A robot that purposely block the ball against the side of the field and does not move.
 - A Defender that enters the opponent area
 - A Striker that enters own penalty area
 - A Defender or Striker that stays inside the penalty area for more than 10 continuous seconds
 - A Defender that purposely not moving in own penalty area to block the goal post
 - A participant who ignores the instruction of the referee
- Dead Ball:
 - When the ball is held by a robot and not able to move (stalemate) for more than 5 seconds.
 - Referee will blow the whistle and all robots must stop. Referee will place the ball accordingly to the situation and the game will resume with referee's instruction.
 - If this happens more than 3 consecutive times, the ball will be placed at the middle and all robots are to return to their starting position.



SOCCKER Jr GAME RULES

Game Play Details

- Penalty shoot-out in the event of a draw (each participant has to take turn for penalty shoot-out):
 - Ball will be placed on the white dot.
 - Robot which is making the penalty shot should start its movement in the mid field circle to hit/push the ball into the goal without any part of the robot's body crossing the white line.
 - 3 attempts will be given for each team to score as many goals possible.
 - If both teams has the same score after the 3 attempts a Sudden Death will occur.
- Sudden Death:
 - Each team will send 1 representative for the sudden death round. The representative has 1 chance for a penalty shoot-out. If one team manages to score while the other did not, the scoring team will be the winner. In the event that both teams scores or misses a 1v1 match will begin.
 - The first team to score in the 1v1 match will be the winner.

Scoring

- Each goal is 1 point awarded to the scoring team.
- A goal occurs when the ball is being pushed/hit/rolled into the goal post passing the line.

Win/Lose Criteria

- The team with the most goals wins.



PUSH-PUSH (J-PP06)



Age

8-13

Category

Individual Tournament

Robot Kits
allowed

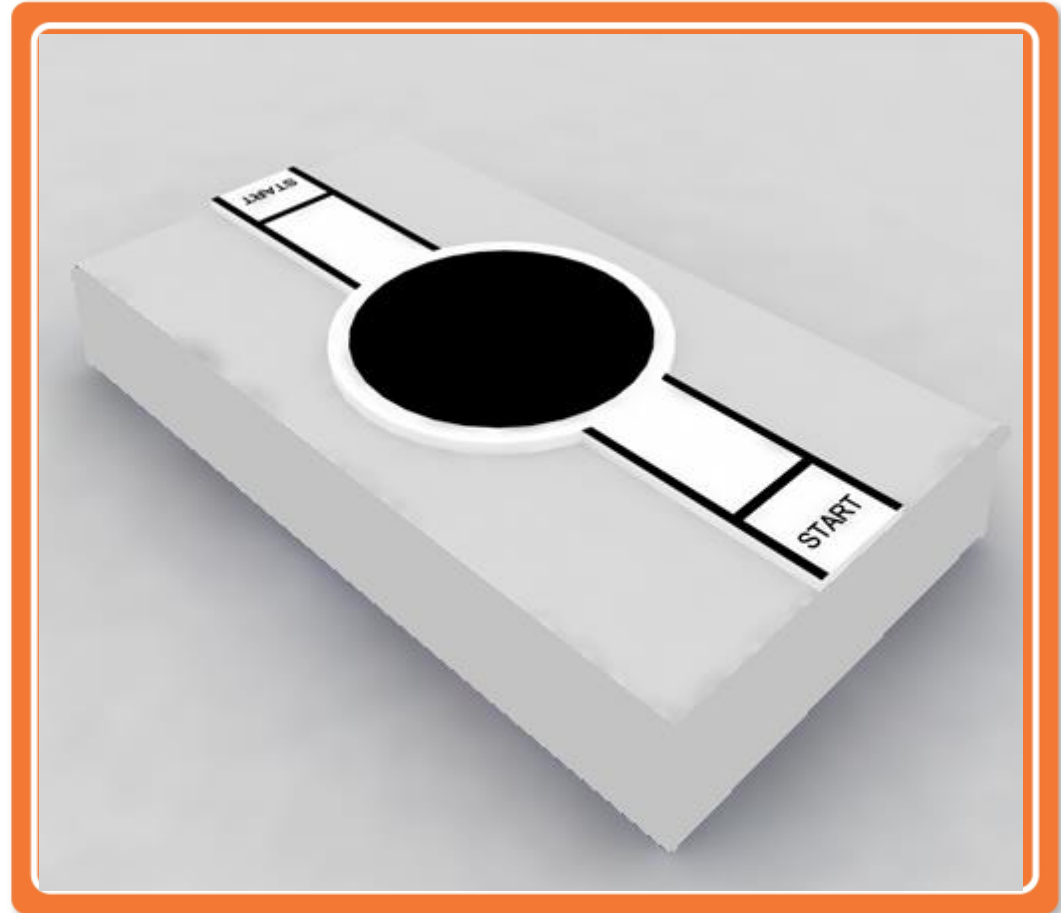
MRT Series & HUNA
educational robot kit
(Exclude Kicky and Brain
kit)

Mission

Remote control robot to
pass through the runway
and push opponent outside
of the black ring

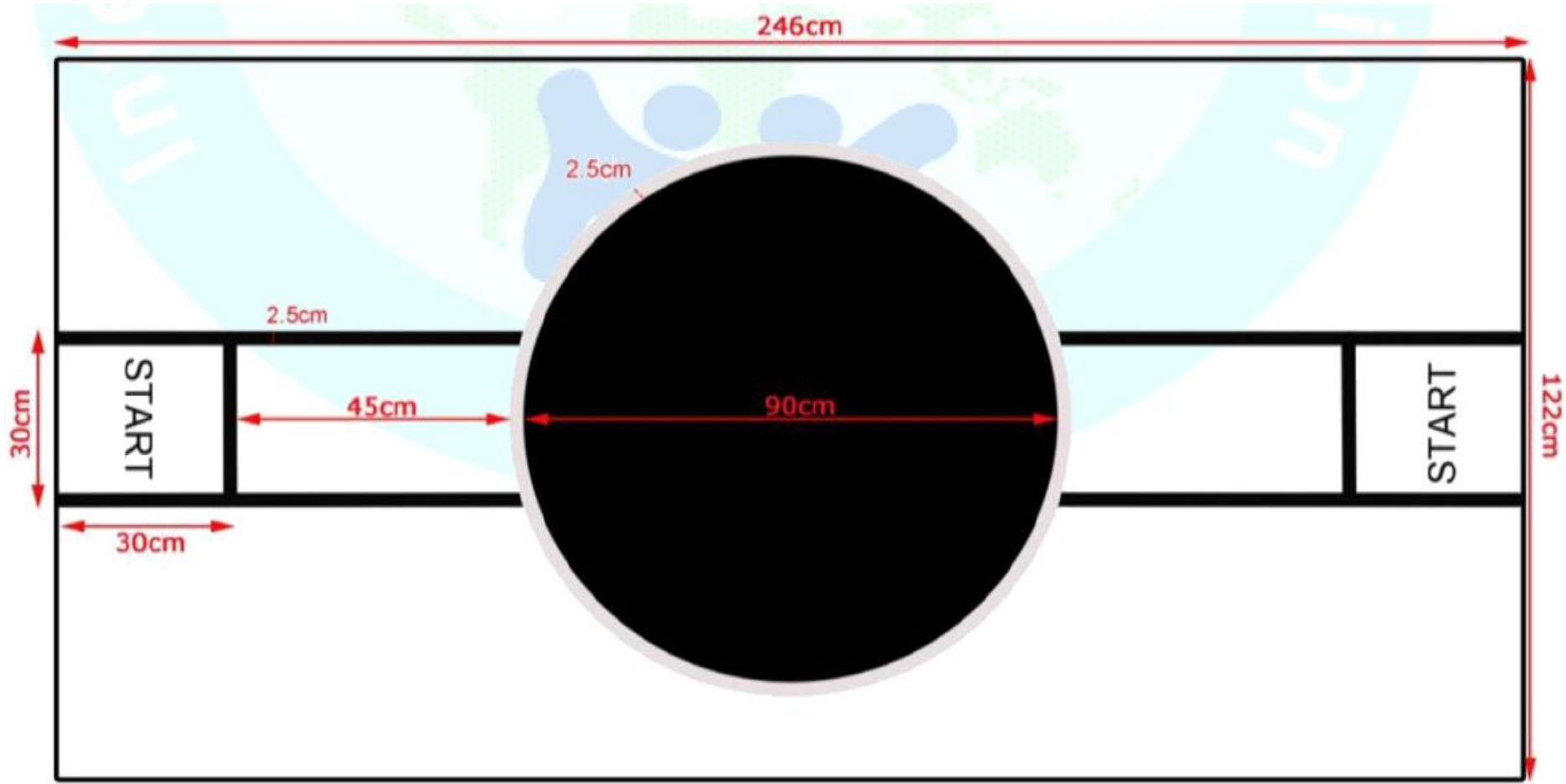
Robot
Building

Pre-build remote control
robot





PUSH-PUSH Jr GAME FIELD





PUSH-PUSH Jr GAME RULES

Dimensions, Weight and Restrictions

- Initial size shall not exceed 20cm (H) X 20cm (W) X 20cm (L). However, robots are allowed to expand to any size after the game starts
- The maximum weight of the robot is 800 grams (Including batteries)
- Maximum up to 2 DC motors, 2 servo motors and 1 mainboard are allowed

Game Duration

- Each match is stipulated for 3 rounds with each round's duration for a maximum of 1 minute.

Scoring

- Draw : Both robots still moving and are within the play field both. (1 mark each)
- Draw : Both robots fall off the play field at the same time. (0 mark for both)
- Win : Pushes at least half of the opponent robot out from the play field or opponent's robot not able to move back into the play field. (2 marks for winner, 0 marks for loser)



PUSH-PUSH Jr GAME RULES

Game Play Details

- First whistle
 - Robots MUST be placed behind the start line on the runway before the First whistle.
 - Robots are to remain stationary until the First whistle has been blown.
 - Robot must pass through the runway and stop at the black ring waiting area.
- Second whistle
 - Robot starts to engage the opponent and attempt to push them off the game field.

Win/Lose Criteria

- If the robot drops from the runway before reaching the black ring, the participant will lose the round.
- If within 10 seconds the robot still unable to enter the black ring waiting area, the participant will lose the round.
- Within 1 minute, the robot that pushes the opponent's robot off the playfield (black colour ring) first is considered the winner for the round. If both robots falls off from the playfield at the same time it is a draw.
- If more than half of the robot's body being push out of the ring onto the runway (Based on referee's decision), or the robot is unable to go back into the ring, it is considered lost for the round.
- If draw after 3 rounds then participant who has a lighter robot will be the winner.



VOLLEYBALL (J-VB07)



Age

8-13

Category

2v2 Tournament

Robot Kits
allowed

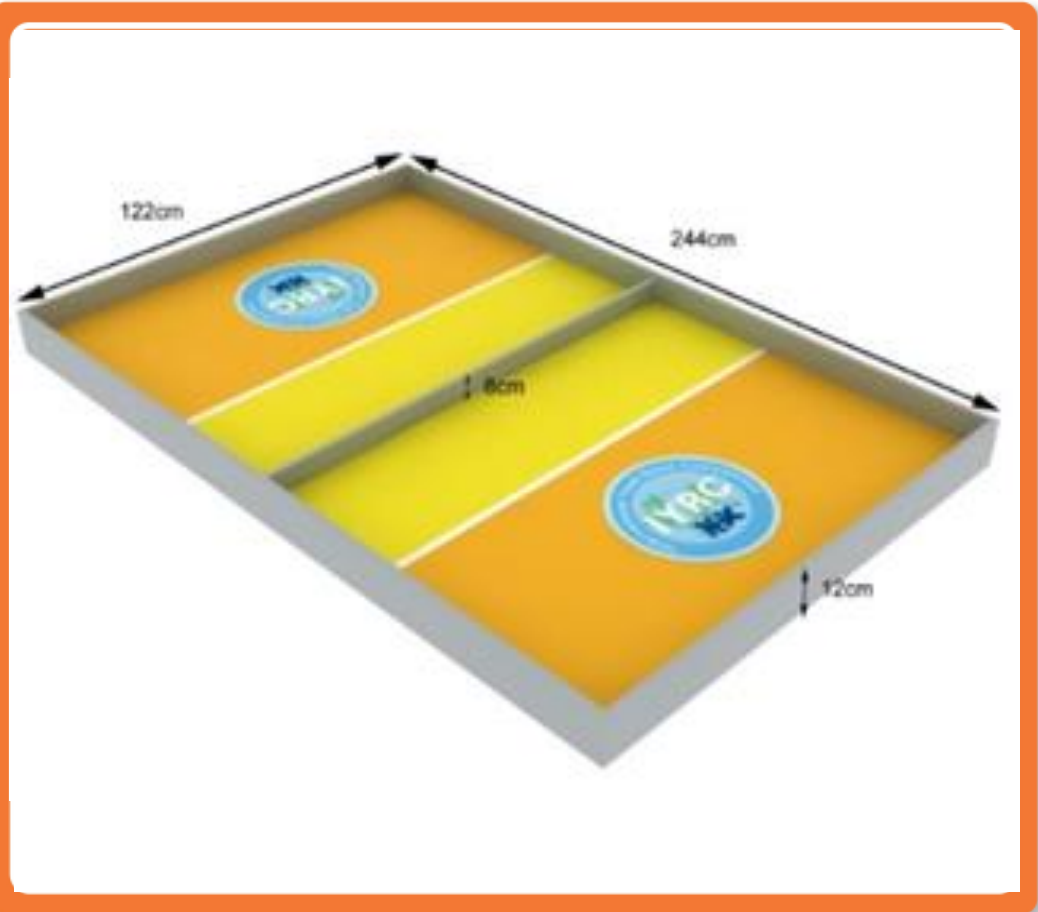
MRT Series, & HUNA
educational robot kit

Mission

Remote control robot to
transfer table tennis balls
into opponent's field

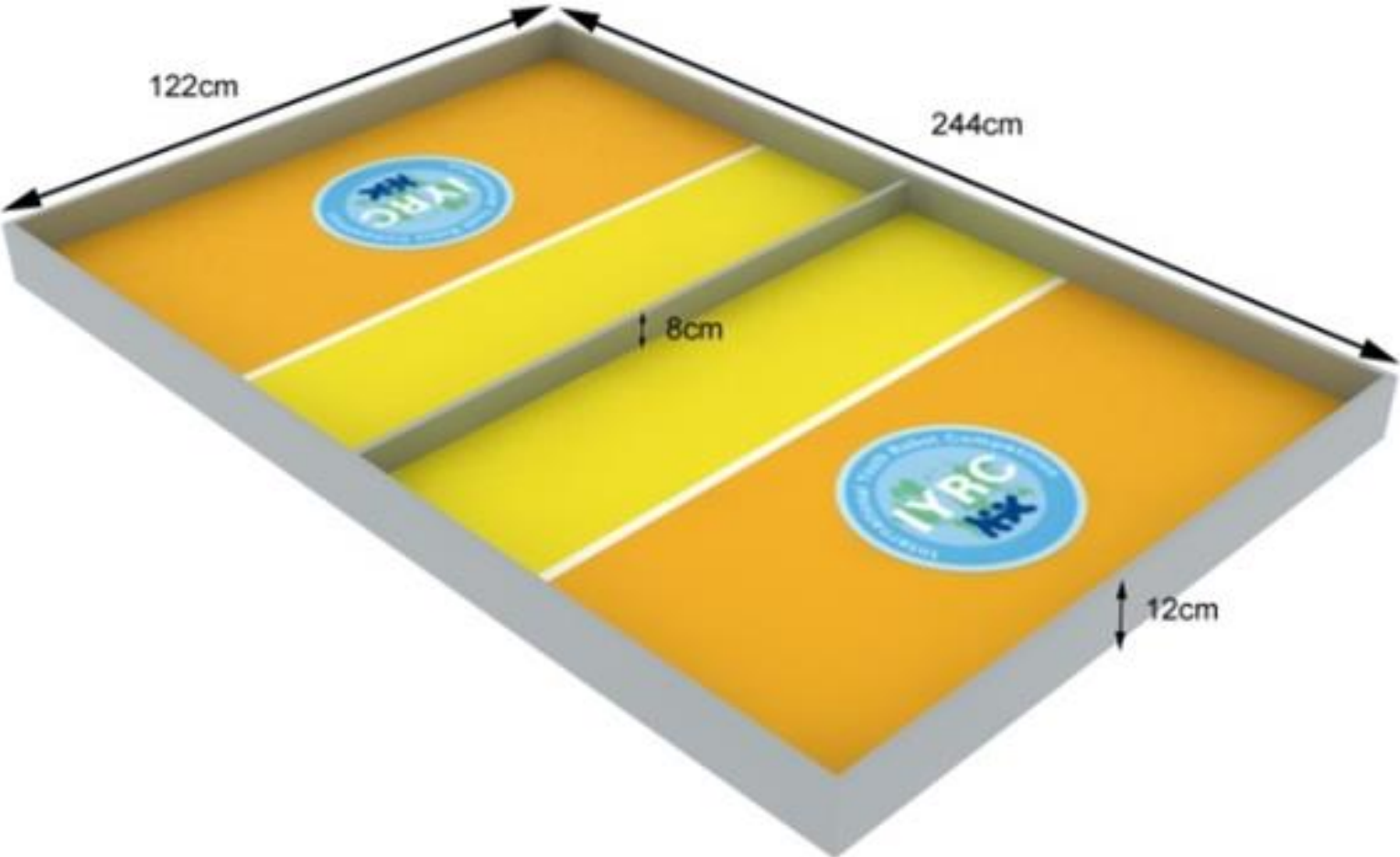
Robot
Building

Pre-build remote control
robot



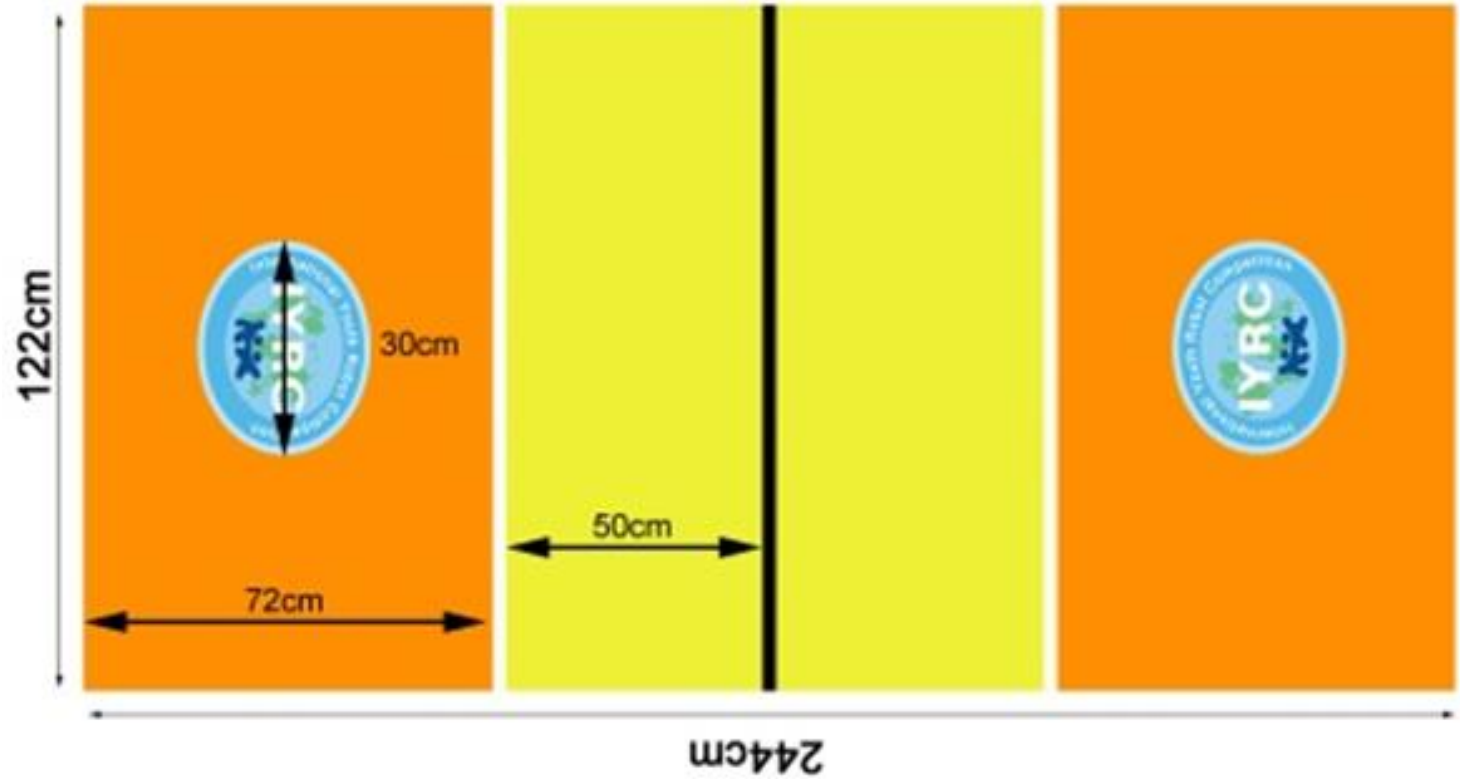


VOLLEYBALL GAME FIELD





VOLLEYBALL GAME FIELD





VOLLEYBALL GAME RULES

Dimensions and Restrictions

- Initial size shall not exceed 25cm (H) X 25cm (W) X 25cm (L). However, robots are allowed to expand to any size after the game starts
- Maximum up to 2 DC motors, 2 servo motors and 1 mainboard are allowed

Game Duration

- Each match is stipulated for 1 round with a duration for a maximum of 3 minutes.
- Extension of rounds is only when both sides have the same score. Each round extension would be for a maximum of 30 seconds and 1 robot from each team will be chosen to compete in the current state of the game field to determine the final winning team.
- Game may end before 3 minutes when :
 - One team manages to throw all balls into opponent field
 - Disqualification of both participants from the same team



VOLLEYBALL GAME RULES

Game Play Details

- Each team will have 20 table tennis balls placed in the IYRC Logo circle of their own field.
- Each team can deploy any tactics or manoeuvres to grab or collect the table tennis balls from the tower and transfer them into the opponents' field.
- If the table tennis ball is thrown outside the field, the ball will be put back to the side where the ball was thrown out from by the referee.

Win/Lose Criteria

- Draw : Both sides have equal number of balls thrown to the other side.
- Win : Team which has the most number of tennis balls thrown to the opponent's side or have successfully thrown all tennis balls over to the opponent's side before the time ends.
- Lose : Team which has the least number of tennis balls thrown to the opponent's side or have all team members removed from play due to foul or disqualification.



SENIOR CATEGORY

S-VB08

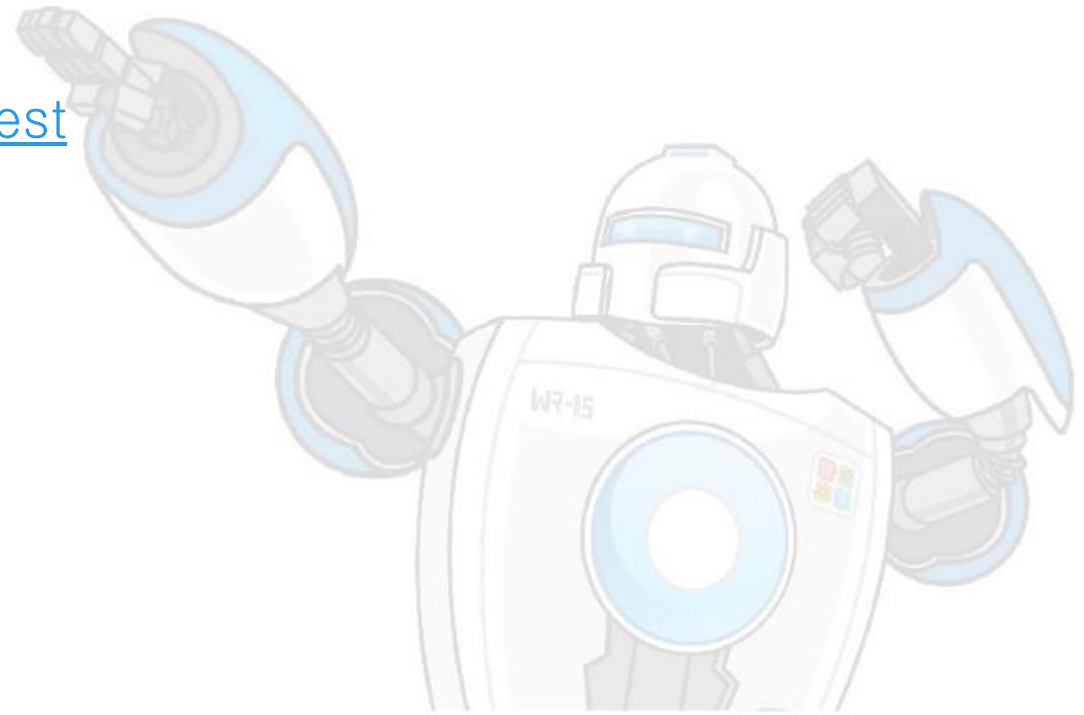
[Volleyball](#)

S-SF09

[Save the Forest](#)

S-PP10

[Push-Push](#)





VOLLEYBALL (S-VB08)



Age

13-18

Category

2v2 Tournament

Robot Kits
allowed

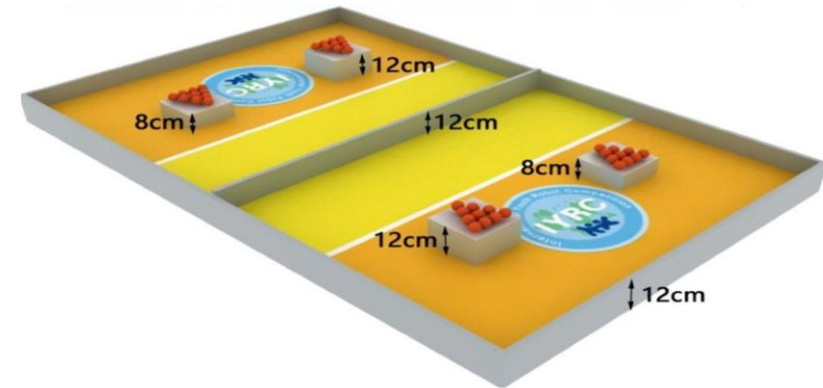
MRT Series, & HUNA
educational robot kit

Mission

Remote control robot to
transfer table tennis balls
into opponent's field

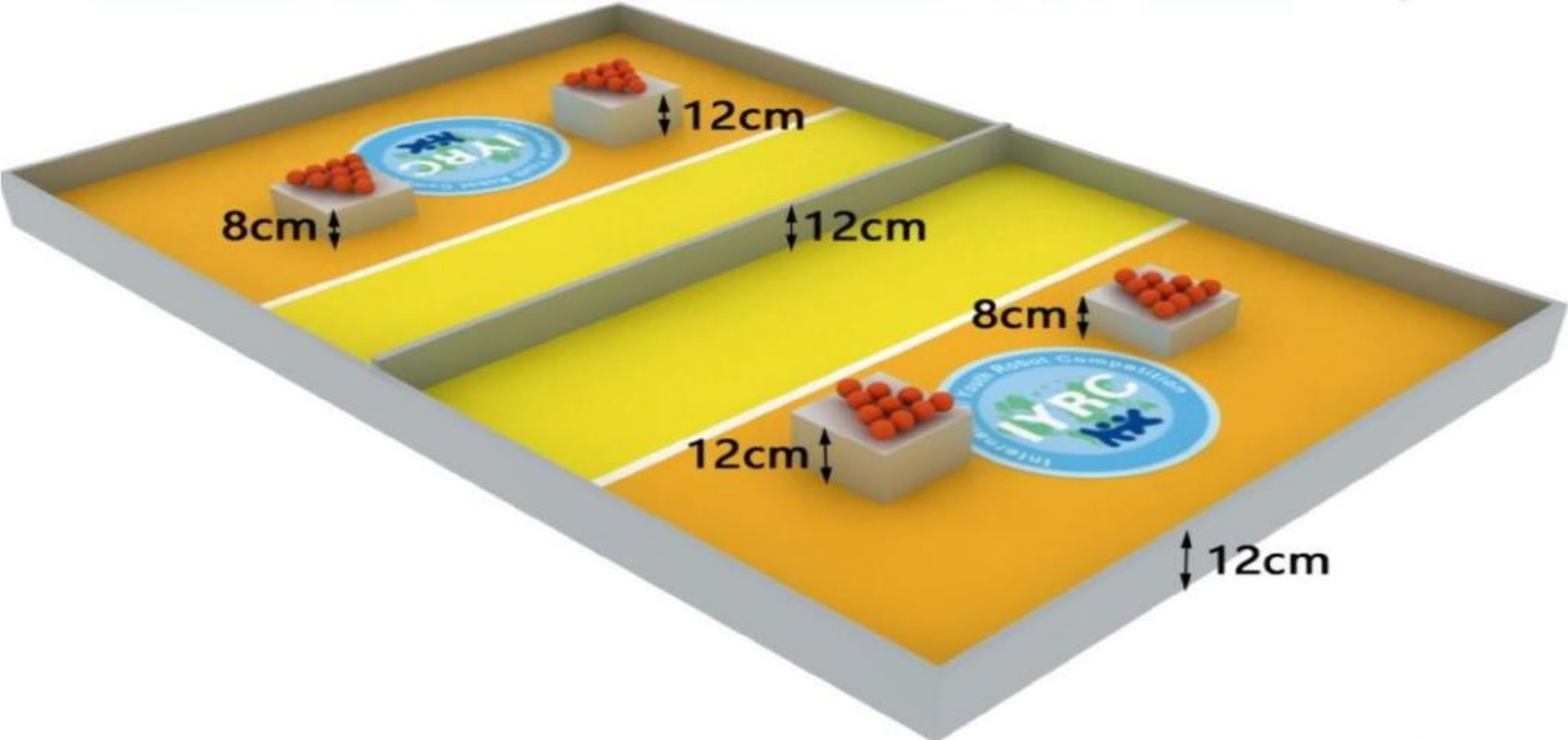
Robot
Building

Pre-build remote control
robot



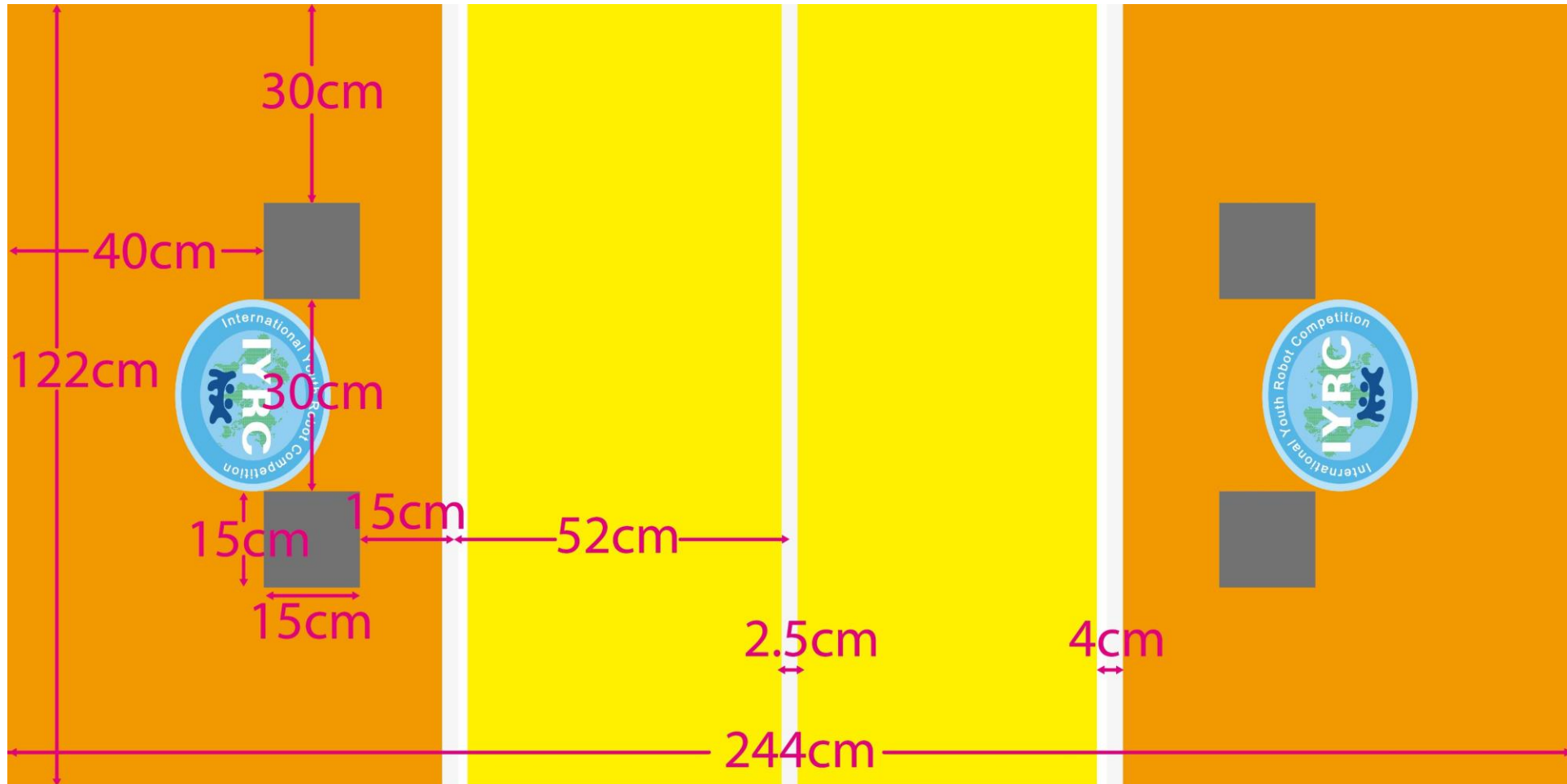


VOLLEYBALL GAME FIELD





VOLLEYBALL GAME FIELD





VOLLEYBALL GAME RULES

Dimensions and Restrictions

- Initial size shall not exceed 25cm (H) X 25cm (W) X 25cm (L). However, robots are allowed to expand to any size after the game starts
- Maximum up to 2 DC motors, 2 servo motors and 1 mainboard are allowed

Game Duration

- Each match is stipulated for 1 round with a duration for a maximum of 3 minutes.
- Extension of rounds is only when both sides have the same score. Each round extension would be for a maximum of 30 seconds and 1 robot from each team will be chosen to compete in the current state of the game field to determine the final winning team.
- Game may end before 3 minutes when :
 - One team manages to throw all balls into opponent field
 - Disqualification of both participants from the same team



VOLLEYBALL GAME RULES

Game Play Details

- Each team will have 20 table tennis balls placed on top of two different height towers in their own field.
- Each team can deploy any tactics or manoeuvres to grab or collect the table tennis balls from the tower and transfer them into the opponents' field.
- If the table tennis ball is thrown outside the field, the ball will be put back to the side where the ball was thrown out from by the referee.

Win/Lose Criteria

- Draw : Both sides have equal number of balls thrown to the other side.
- Win : Team which has the most number of tennis balls thrown to the opponent's side or have successfully thrown all tennis balls over to the opponent's side before the time ends.
- Lose : Team which has the least number of tennis balls thrown to the opponent's side or have all team members removed from play due to foul or disqualification.



PUSH-PUSH (S-PP09)



Age

13-18

Category

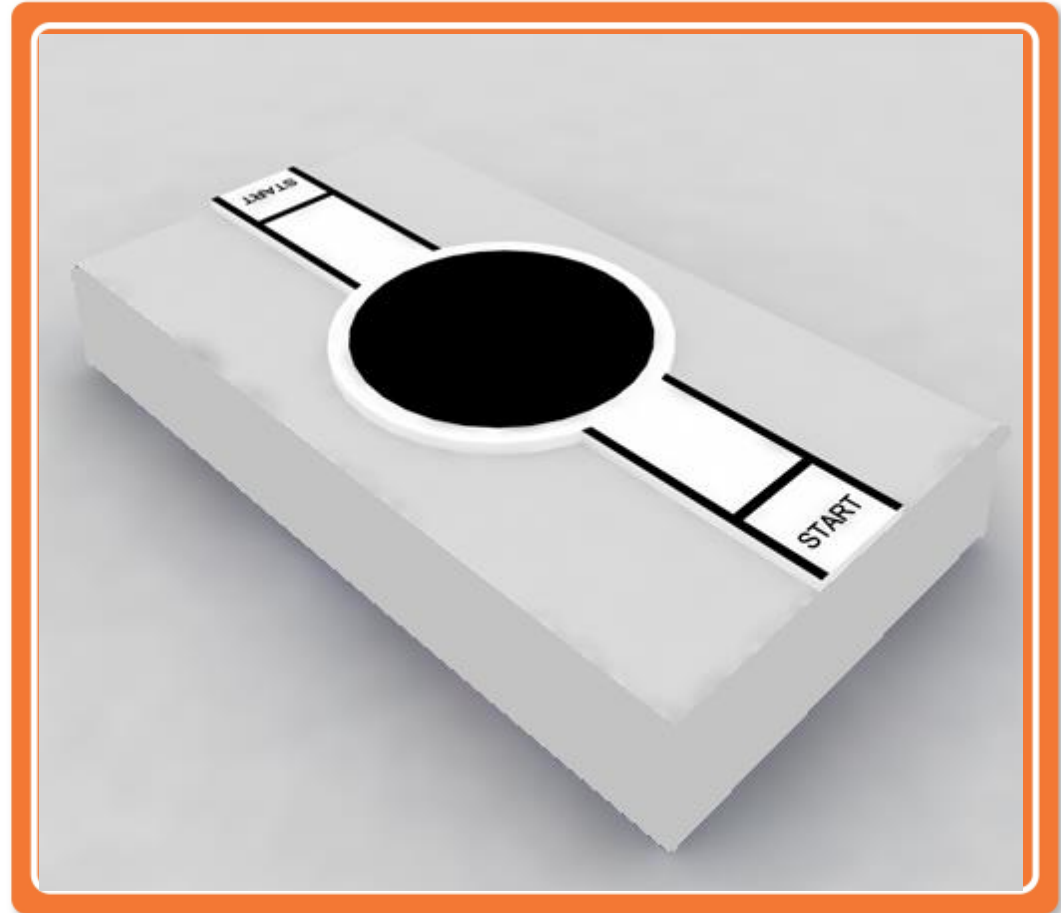
Individual Tournament

Robot Kits
allowed

MRT Series & HUNA
educational robot kit
(Exclude Kicky and Brain
kit)

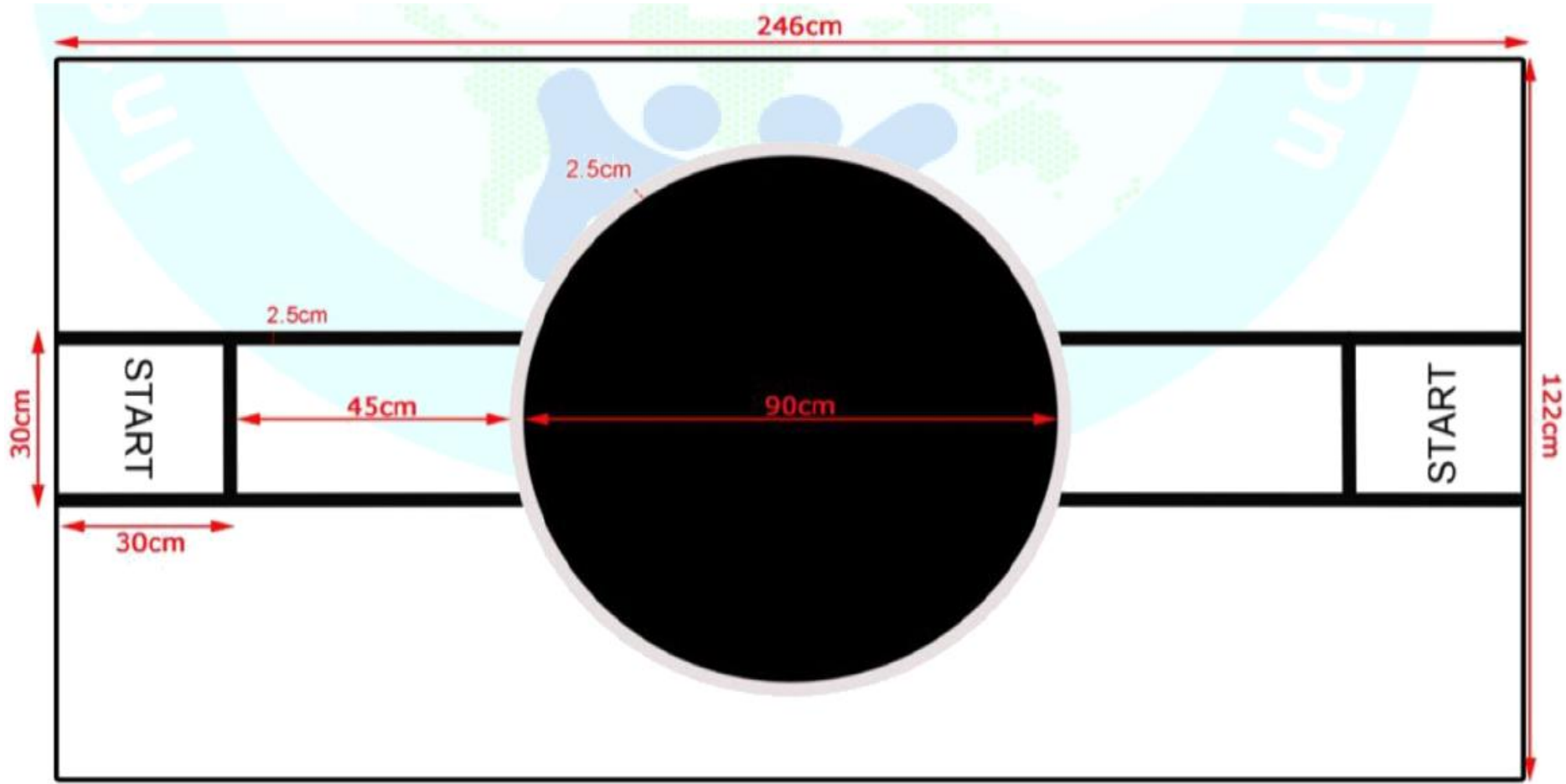
Mission

Require participants to
program the robot to pass
through the runway
automatically and push
opponent outside of the
black ring using remote
control





PUSH-PUSH Sr GAME FIELD





PUSH-PUSH Sr GAME RULES

Dimensions, Weight and Restrictions

- Initial size shall not exceed 20cm (H) X 20cm (W) X 20cm (L). However, robots are allowed to expand to any size after the game starts
- The maximum weight of the robot is 800 grams (Including batteries)
- Maximum up to 2 DC motors, 2 servo motors and 1 mainboard are allowed

Game Duration

- Each match is stipulated for 3 rounds with each round's duration for a maximum of 1 minute.
- Extension of rounds is only when both sides have the same score. Each round extension would be for a maximum of 1 minute and will be repeated until a winner is found. For extension rounds, robot will be placed back to back at the start of the round.

Scoring

- Draw : Both robots still moving and are within the play field both. (1 mark each)
- Draw : Both robots fall off the play field at the same time. (0 mark for both)
- Win : Pushes at least half of the opponent robot out from the play field or opponent's robot not able to move back into the play field. (2 marks for winner, 0 marks for loser)



PUSH-PUSH Sr GAME RULES

Game Play Details

- First whistle
 - Robots MUST be placed behind the start line on the runway before the First whistle.
 - Robots are to remain stationary until the First whistle has been blown.
 - Robot must pass through the runway autonomously and stop at the black ring waiting area without using remote control.
- Second whistle
 - Robot starts to engage the opponent and attempt to push them off the game field using remote control.

Win/Lose Criteria


- If the robot drops from the runway before reaching the black ring, the participant will lose the round.
- If within 10 seconds the robot still unable to enter the black ring waiting area, the participant will lose the round.
- Within 1 minute, the robot that pushes the opponent's robot off the playfield (black colour ring) first is considered the winner for the round. If both robots falls off from the playfield at the same time it is a draw.
- If more than half of the robot's body being push out of the ring onto the runway (Based on referee's decision), or the robot is unable to go back into the ring, it is considered lost for the round.
- If draw after 3 rounds then participant who has a lighter robot will be the winner.



SAVE THE FOREST (S-SF10)

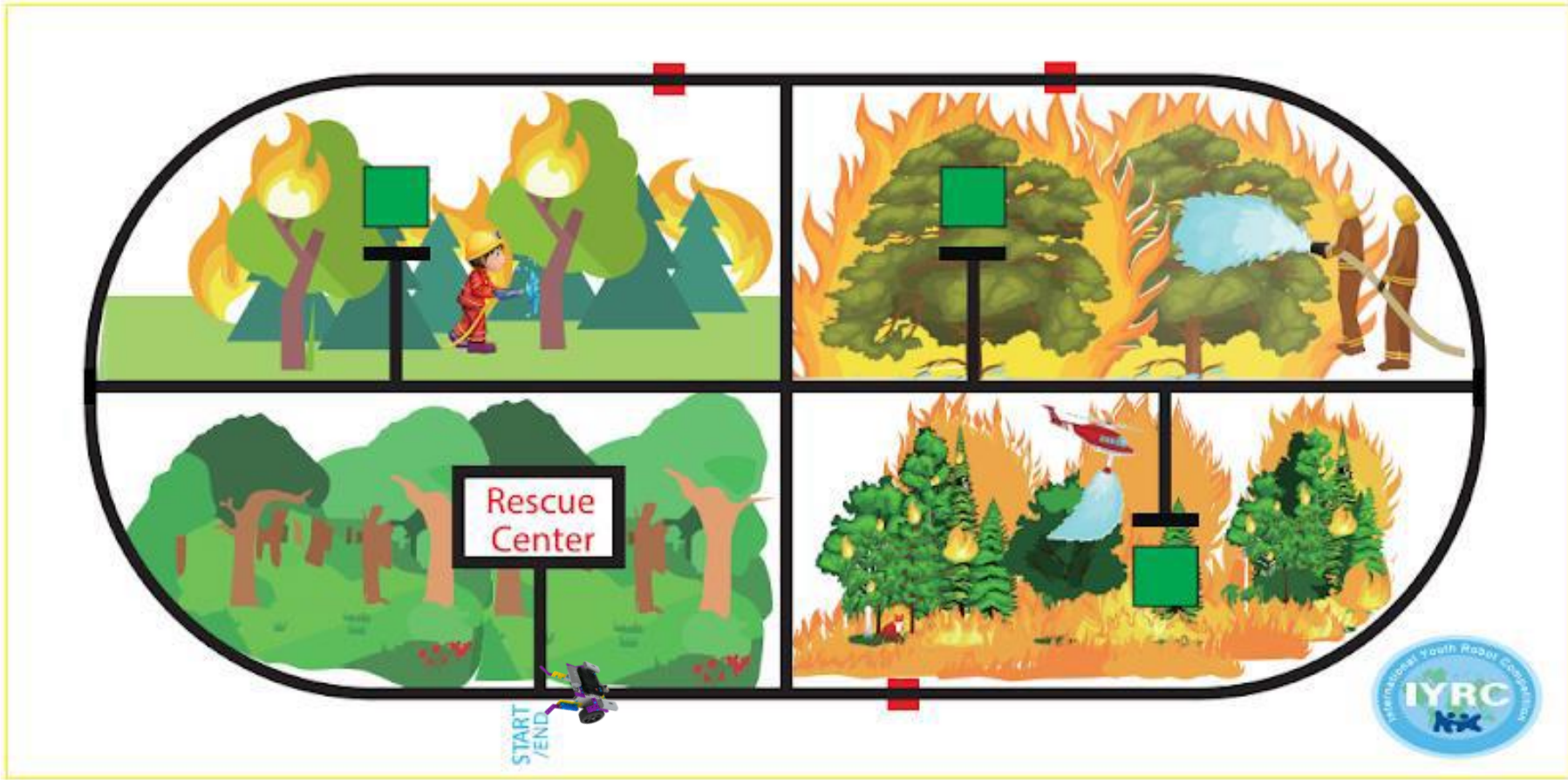


| | |
|--------------------|---|
| Age | 13-18 |
| Category | Individual Timed Mission |
| Robot Kits allowed | MRT Series |
| Mission | Robot runs autonomously to trace the black line to complete some missions . |
| Robot Building | Pre-build & on-site programming |





SAVE THE FOREST GAME FIELD



Note: Maze wall height is 12cm



SURVIVORS

Assembled by 6 pcs of 5*5 Blocks

Survivor to be placed on red spots and need to carry by robot to the rescue center.





PUT OUT FIRE TRIGGER

L : 10cm, H : 15cm , W:7cm

Height of IR sensor from ground : 5.5
cm

Place on green spots. Initially Red LED
on, after triggered, Green LED will be
turned on.





SAVE THE FOREST GAME RULES

Dimensions and Restriction

- Initial size shall not exceed 20cm (H) X 20cm (W) X 20cm (L).
- Robots are **Not allowed** to expand to any size after the game starts.
- Maximum 4 DC motors, 5 IR sensors, 2 servo motors, 1 tracer sensor block and 1 mainboard.

Game Duration

- Each participant is given a maximum of 3 hours to perform the coding and testing of the robot
- Each match is stipulated for 2 rounds with a total duration for a maximum 3 minutes.
- Game may end before 3 minutes when :
 - Completion of 2 rounds
 - Disqualification of a participant
 - When referee judges that the continuation of the match is impossible



SAVE THE FOREST GAME RULES

Quarantine

- During the 3 hours given to perform the coding and testing, all participants are quarantine for said period of time.
- Participants are allowed to do testing and modify the robot during the 3 hours given.
- Once participant is satisfied with the performance of the robot, they may hand over the robot to the referee before the 3 hours is up.
- No more programming or modification is allowed once the 3 hours is up or if the participant hands over the robot to the referee earlier.
- Participants would then wait for their turn to be called for the match.

Game Play Details

- Robot should stay behind the starting line (distance from starting line to the Robot IR sensors not exceed 5cm) and facing west (R&R map position as the reference). Timer starts when the robot's IR sensors cross the starting line.
- Whistle will be blown as a sign of start of the match.
- Participant is allowed to start (switch on) the robot using single switch operation.



SAVE THE FOREST GAME RULES

Scoring

- Carry all 3 survivors to the rescue center – fully inside the rescue center box. (Each survivor 10 points)
- Put out fire means Green LED on. (Each 10 points)
- Stop at the Start/End line at the end of the game play. (20 points)

Disqualify

- Participant touch the robot or items on the game field during the game play.
- Stalemate of more than 5 sec.
- Not tracing the line for more than 5 sec.

Win/Lose Criteria

- Highest score of the two attempts will be used for ranking of winners.
- Participant with the highest score is the winner. If there are two or more participants with the same score, the lowest time recorded to finish the mission is the winner.
- If the points and time of both participants are the same, the participant who is younger would be the winner.



SAVE THE FOREST SCORE EXAMPLE

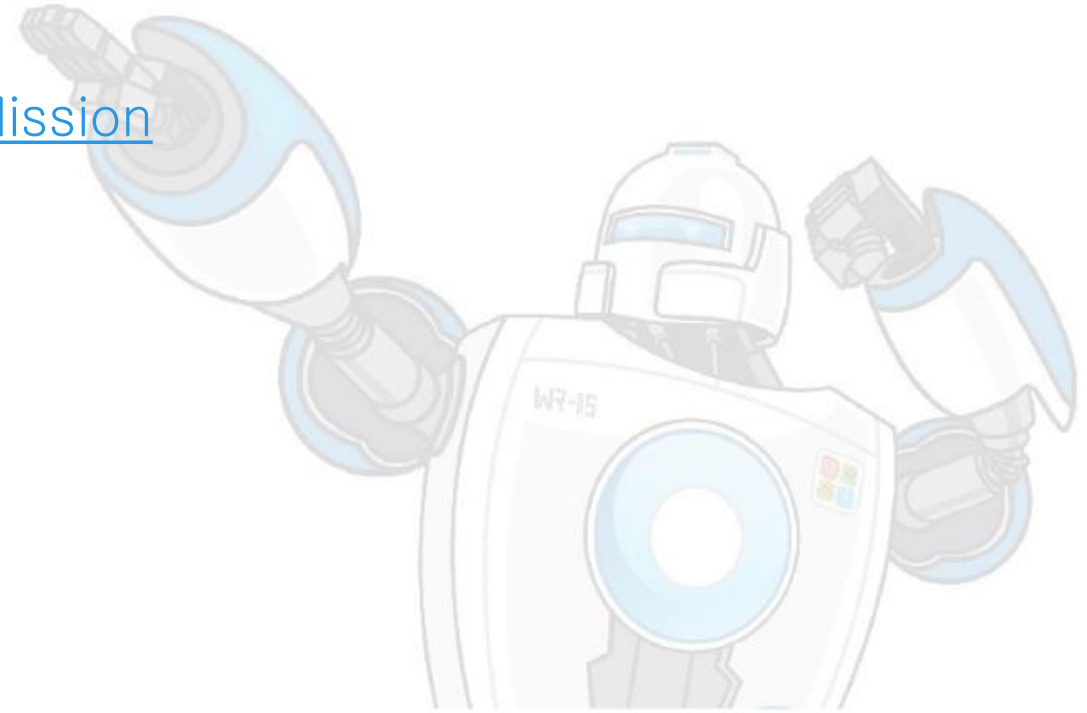


| Child | Survivor rescued | Put out fire | Stop at Start/End line | Total Points | Time Taken | Rank |
|-------------|------------------|--------------|------------------------|--------------|------------|------|
| A (15yo) | 30 | 20 | 20 | 70 | 160 | 2 |
| B (13yo) | 30 | 20 | 20 | 70 | 160 | 1 |
| C | 20 | 20 | 20 | 60 | 170 | 3 |
| D | 20 | 10 | 20 | 50 | 140 | 4 |



OPEN CATEGORY

O-HN01 [Humanoid Robot Mission](#)

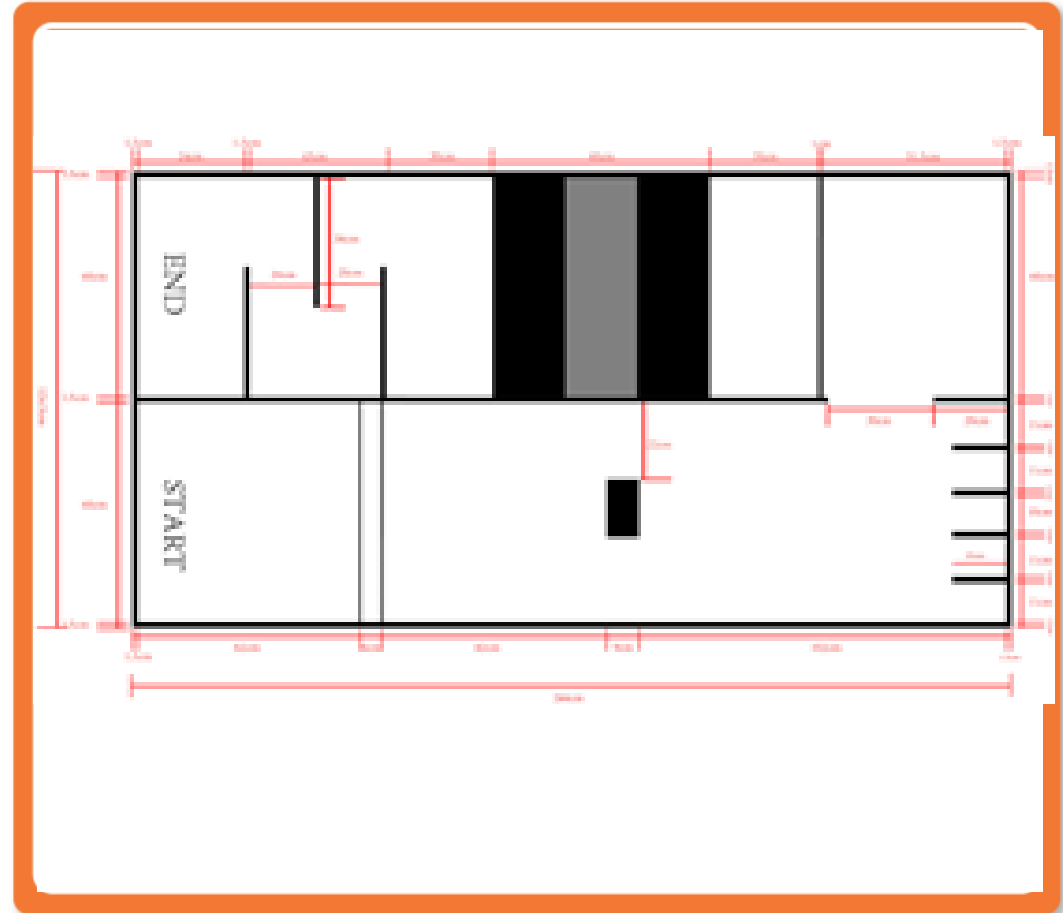





HUMANOID ROBOT MISSION (O-HN11)

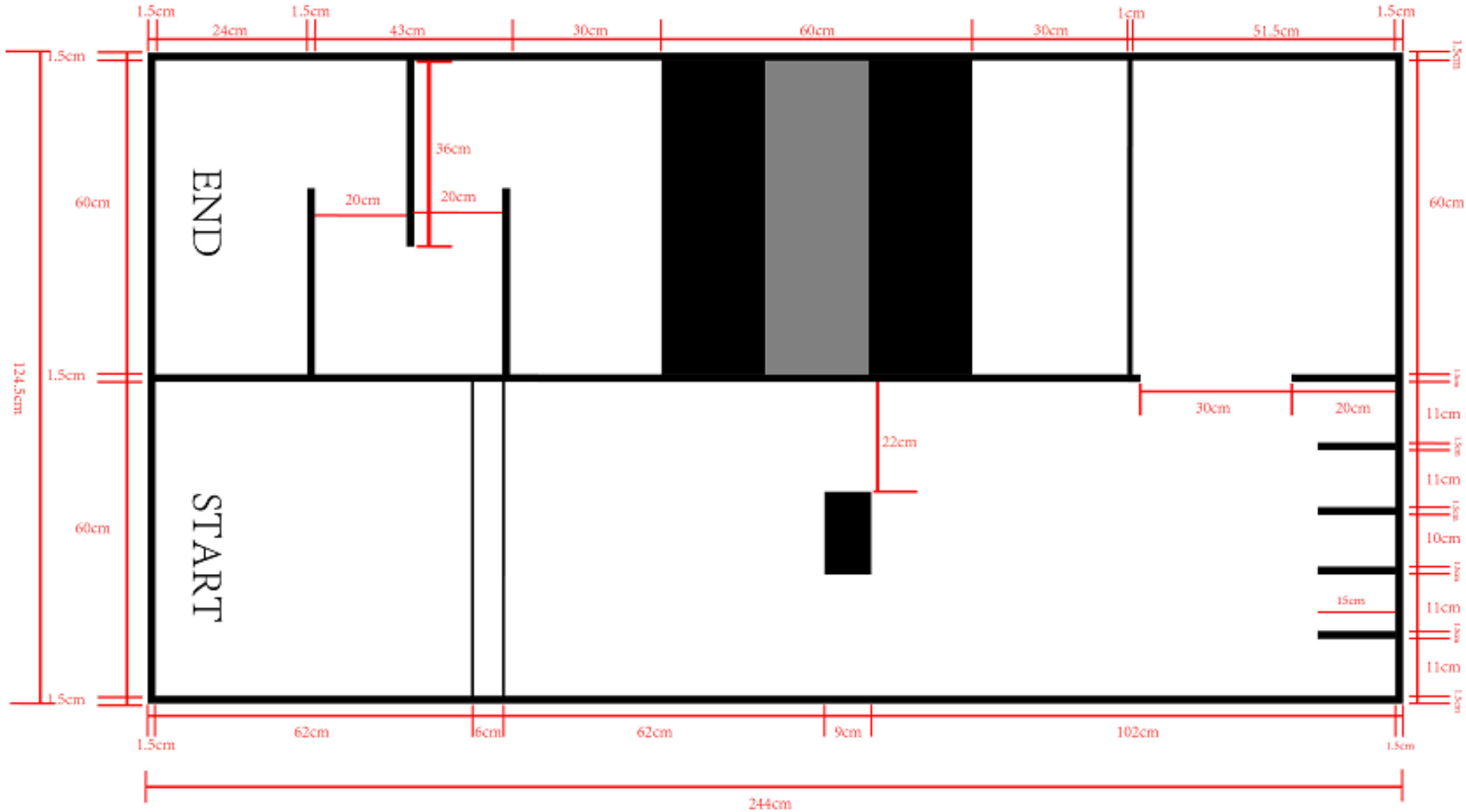


| | |
|----------------|---|
| Age | All |
| Category | Individual Time Mission |
| Robot allowed | MRT LINE Core Humanoid |
| Mission | Control the Humanoid to complete missions |
| Robot Building | Pre-programmed LINE Core Humanoid |





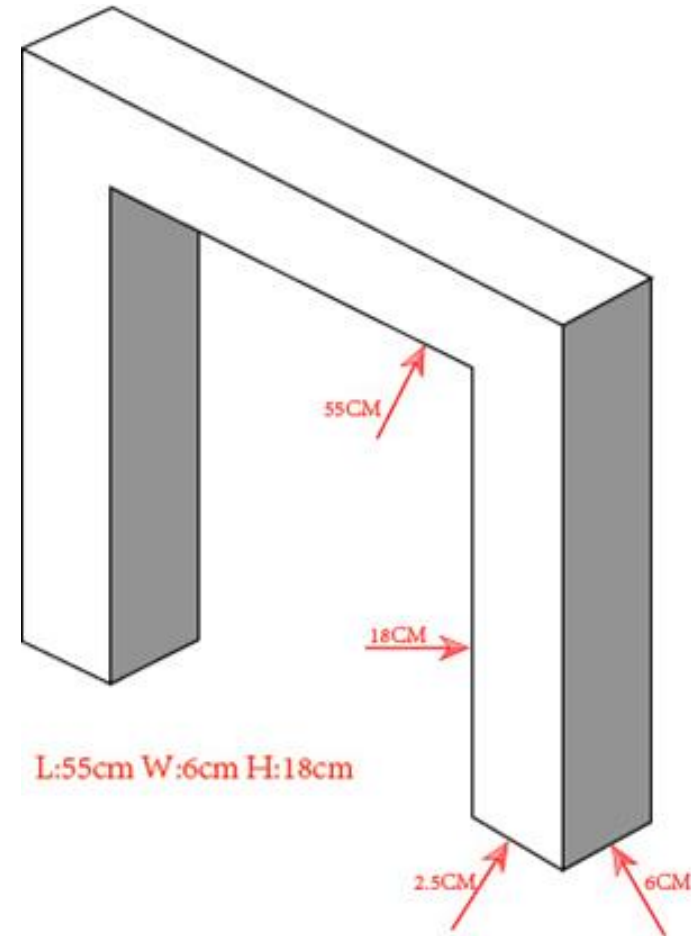
HUMANOID ROBOT MISSION GAME FIELD





MISSION 1

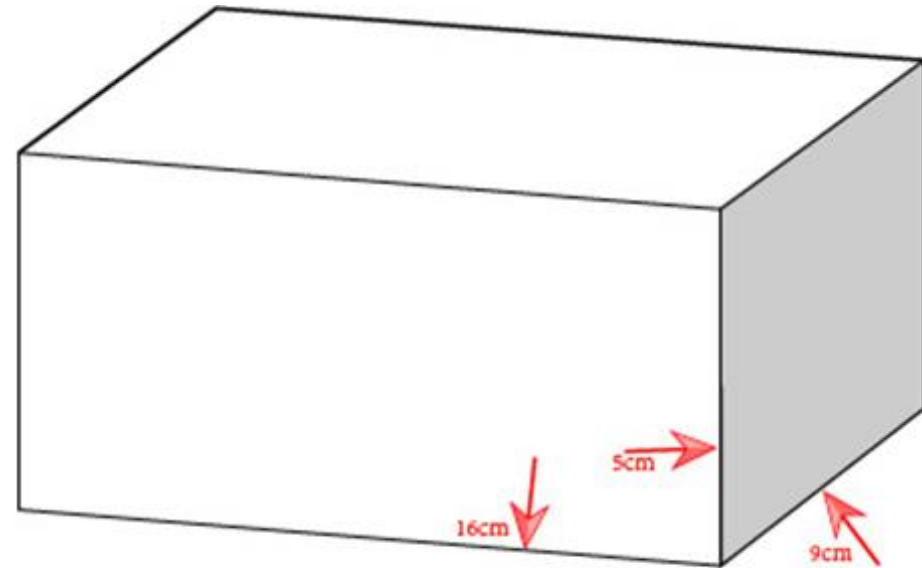
Robot needs to crawl under obstacles placed on the passage. Successfully completed mission will be awarded 20 points.





MISSION 2

Robot needs to use hand to carry the props (6cm soft sponge cube) and robot legs must cross the red line before dropping the props to designated area. Successfully completed mission will be awarded 20 points.

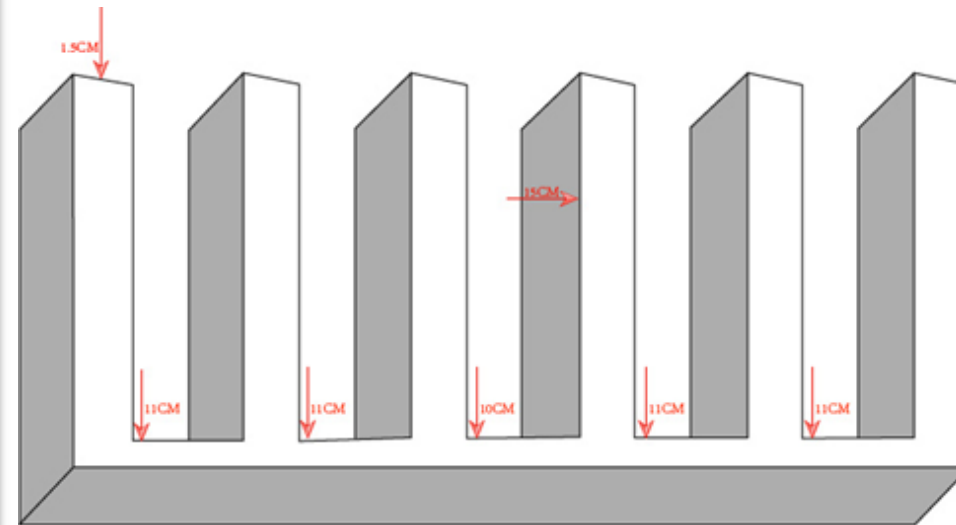


Rectangle: L:16cm W:9cm H:5cm



MISSION 3

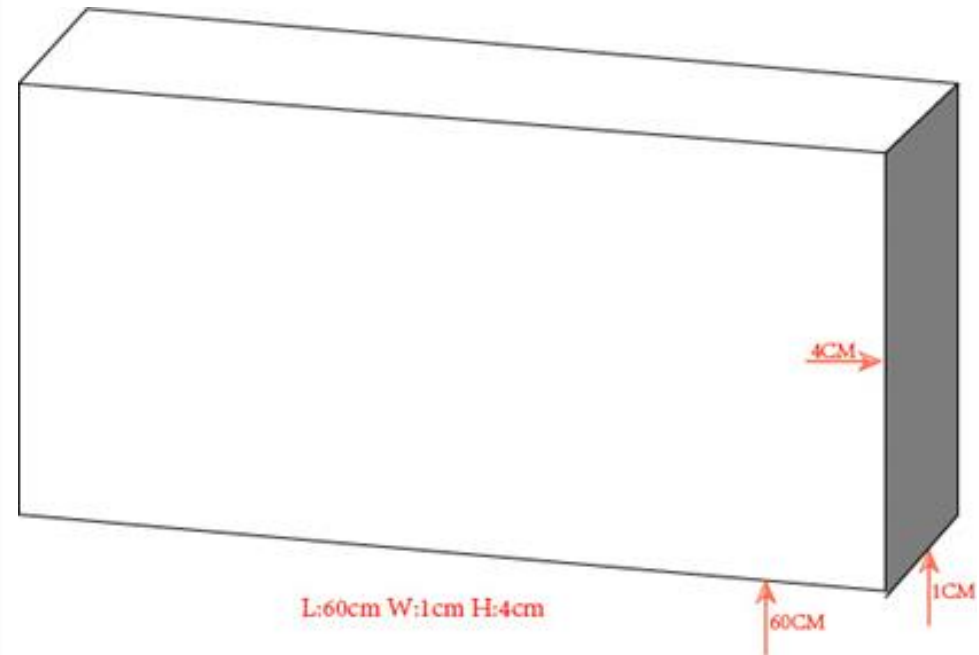
Robot needs to use a foot to kick the soccer ball (there are 2 balls) into the slot label with 16/18/20/18/16. The ball successfully enters into the highest point slot will be recorded.





MISSION 4

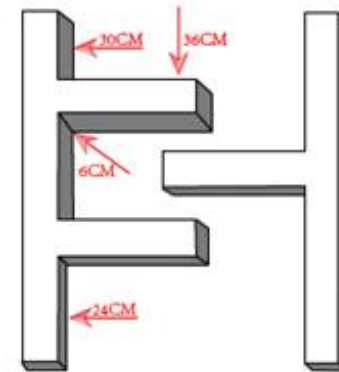
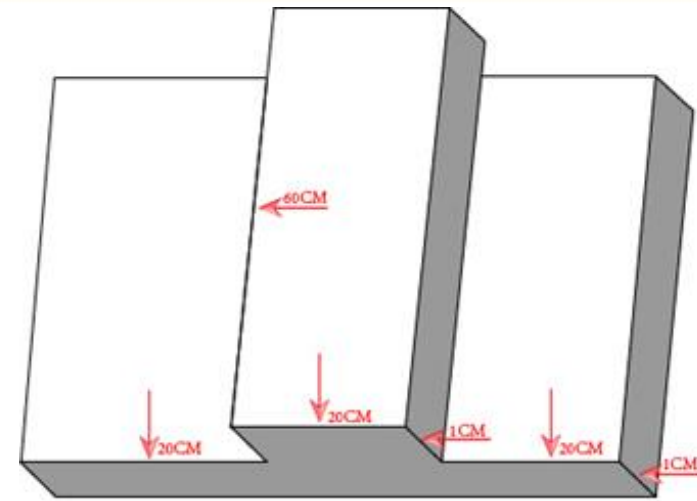
Robot need to cross above the obstacle placed in the passage. Must be in standing position. Successfully completed mission will be awarded 20 points.





MISSION 5

Robot can only walk through the two steps staircase (walk up stairs 5 points, walk down stairs 5 points) and then walk through the Z-type route to reach the end (10 points).





HUMANOID ROBOT MISSION GAME RULES



Dimensions and Restrictions

- Only MRT LINE Core Humanoid and its parts are allowed to use.
- The battery specification, length of robot leg and arm should strictly adhere to the instruction manual (LINE Core Humanoid).

Game Duration

- Each match is stipulated for 1 round with a duration for a maximum of 5 minutes.
- Game may end before 5 minutes when :
 - Robot reached the end line.
 - Disqualification of a participant
 - When referee judges that the continuation of the match is impossible



HUMANOID ROBOT MISSION GAME RULES



Game Play Details

- Participant should prepare their own Android device (Airplane Mode) to control the robot.
- Robot can start to move once the whistle blown.
- During the game, if robot out of battery and not be able to control anymore, game will be terminated and current point will be recorded.
- Each mission has 2 tries. The second try, referee will place the robot at the starting point of the mission / the point gap of the mission.
- If both failed, then referee will move it to the next mission starting point / next point gap.
-

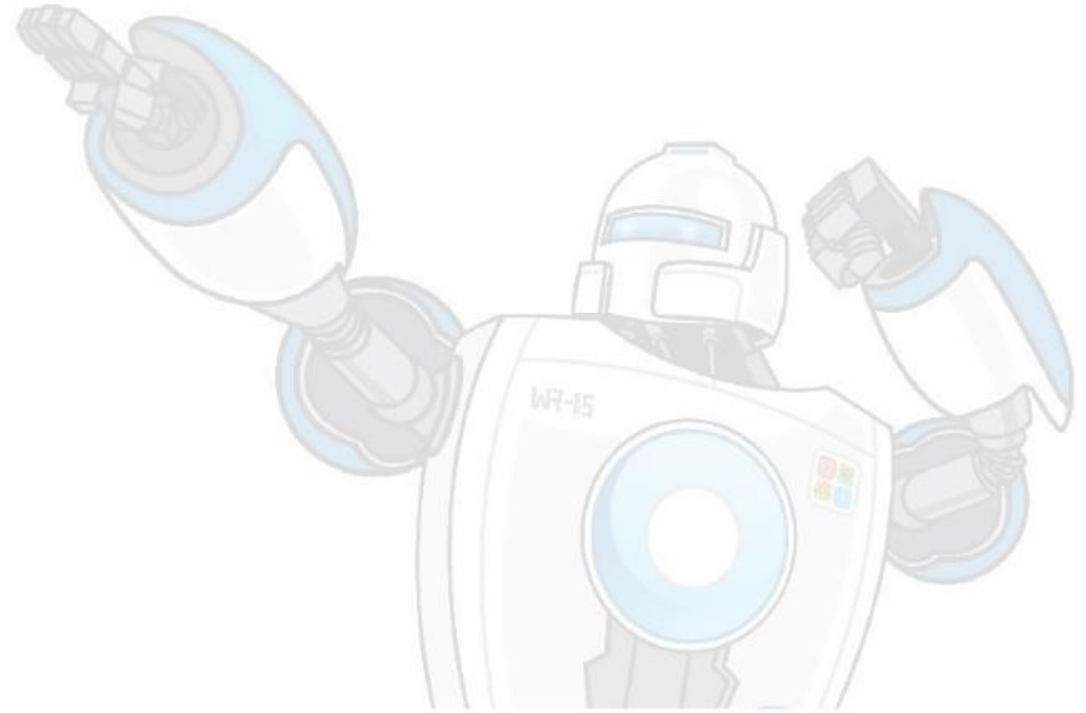
Win/Lose Criteria

- Participant with the highest score is the winner. If there are two or more participants with the same score, the lowest time recorded to finish the missions is the winner.
- If the points and time of both participants are the same, the participant who is younger would be the winner.



COMPULSORY CATEGORY

C-CD01 [Creative Design](#)





CREATIVE DESIGN (Compulsory)



Age

All Participants

Category

Team of 3–5 students
with 1 teacher

Robot Kits
allowed

MRT Series & HUNA
educational robot kit

Mission

Create a robot/system
expressing the given theme

Robot
Building

Pre-build





CREATIVE DESIGN

Objective

- To provide a platform for students to showcase their creativity, innovation and programming skills. They are required to work together as a team to design a robot based on the given theme. Furthermore, they need to present and demonstrate their creation well to convince and impress the judges.

Theme 2023: **“Robots for People in need”**



CREATIVE DESIGN RULES



Dimensions and Restriction

- There is no limitations to the size, amount of blocks and weight for the model.
- MRT series of products must be the main components to build the model.
- You can cross use parts from all MRT products to build the model.
- Models/Robots build can be autonomous or by remote controlled.
- Other materials can be used to further enhance the model/robot such as camera, paper cups, rings, clips, sticks, bottles, 3D printed models, etc (keeping in mind that the main component needs to be products from MRT series).

Project Pre-registration (via email)

- Participants should submit the requirements IN ADVANCE to the official email HQ.IYRA@gmail.com
- Please check the important dates:
 - Deadline for sending requirements to email : **June 31 2023**
 - Confirmation to the qualified teams : **July 15 2023 (IYRA HQ)**
- The requirements are as below :
- More than 3 pictures containing robot, all your team member faces, and teacher together in one photo.
- Video showing your robot in operation for at least 10 seconds to 1 min.



CREATIVE DESIGN REQUIREMENTS

Presentation

- All participants are to build their model/robot in advance.
- Participants are given 2 hours to assemble or prepare their model/robot.
- Each group has 5 minutes to introduce their model/robot to the referee during the judging time.
- All presentations are to be done in English, if the participants are not able to speak English, they would need to find their own translator.

Display

- All models/robots are to be displayed in the allocated tables assigned to groups.
- Participants are required to ensure their models/robots are taken care off during the display time to the public until the judging is complete.
- 4 copies of the printed Manual (Presentation File) in English is required for the display and judges review, it needs to include:
 - 1) Robot Name
 - 2) Purpose
 - 3) Team Member introduction and task allocation
 - 4) Introduction of the project
 - 5) Specification and features
 - 6) how to program (if needed)
 - 7) functionality of robot.



CREATIVE DESIGN SCORING

Scoring

- Relevance to theme (10 points)
- Creativity & Uniqueness (30 points)
- Robot Functionality (30 points)
- Team work (10 points)
- Presentation skill (20 points)

Additional points

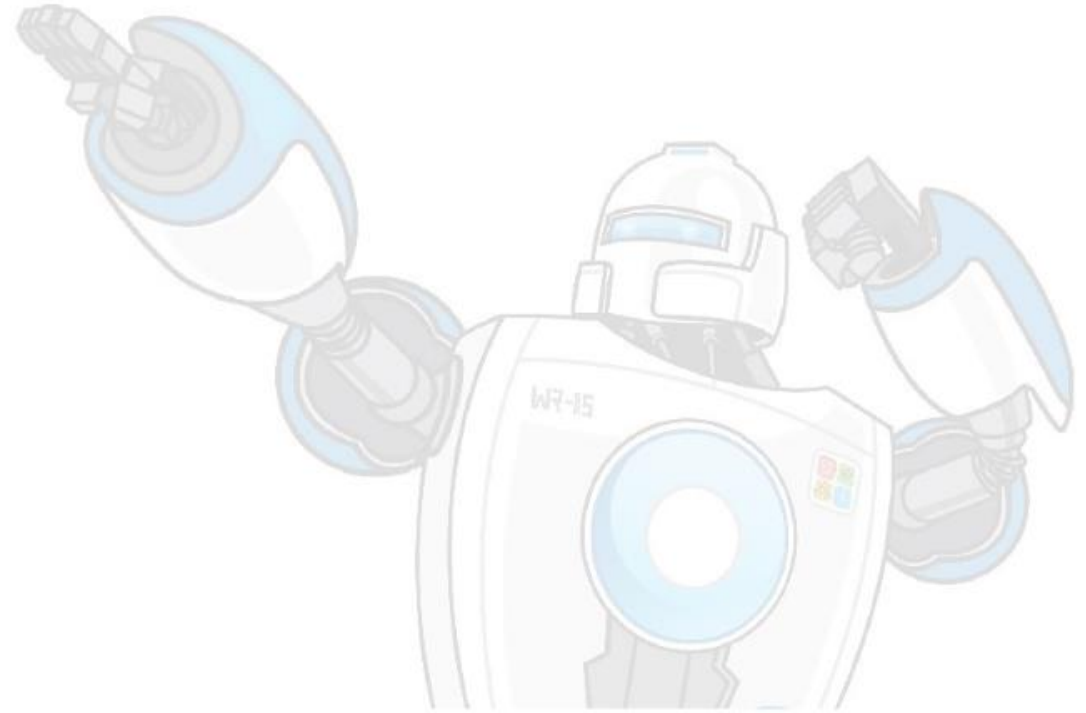
- Robots make motion or move autonomously. (+5 points)
- Participants submit how to code or programming code (+5 points)
- Participants use more than two types of main board from MRT products. (+5 points) (E.g. MRT3 Main board + MRT5 Main board + LSM + MRT Coconut + MRT Blacksmith + MRT Duino Main board)

Win/Lose Criteria

- The judges will check if the team meets the requirements or not, and evaluate teams' works first.
- Participating group with the highest score is the winner. If there are two or more groups with the same score, the lowest average younger participating group is the winner.



GENERAL GAME RULES





GENERAL RULES

Common Rules

- The organizer reserves the right to disqualify any participants if found violates any rules.
- In the event of any disagreement or misunderstanding, the judges' decision will be final.
- If there are any changes to the rules and regulations, it will be announced to all participants 10 days before the competition starts. The judges will have full authority to explain and enforce the rules for all the competition category.

Participants

- Participants are allowed to participate in **Maximum 2 categories** + 1 Creative Design (Compulsory).

Scoring

- Each participant/team representative needs to confirm the competition result and sign immediately after the end of the match.
- Participants are not allowed to dispute the result recorded after the confirmation.
- All time are measured using a stopwatch.



GENERAL RULES

Competition Rules

- Prior to the start of the competition, all robots will undergo an inspection.
- If a robot does not meet the specifications or design restrictions, the participant will be given a grace period of 15 mins to modify their robot to meet the specification or comply with the design restriction, failure to do so within the time limit the participant will be disqualified.
- If the robots encounter any technical difficulty before the start of the match, they will be given 5 minutes to fix the robot.
- Judges can assign practice playfield and restrict practice time per participant / team to ensure equal and fair practice time.
- RF Remote Control will be provided by organizer for categories that requires a remote control robot. In this case, robot should set to Channel 1 or programmed to Channel 1 (MRTX mainboard) in order for it to work.
- All robot parts are not allowed to drop while the match is in progress. Judges may take necessary action against the teams that dropped their robot parts that could affect on-going matches.
- Participants are not allowed to touch their robots and/or remote controls during the competition unless instructed by the judges.
- Sharing of robots among the participants in the competition is not allowed.



GENERAL GAME RULES

Robot Design Restrictions

- Only MRT Series, & HUNA educational robot kit are allowed (Cross using parts is allowed).
- No limitation to the amount of blocks used to build the robot as long as within size and weight restrictions.
- My Robot Time Toy series and MRT Soccer Robot are **Strictly NOT ALLOWED**.
- Electronic parts are not allowed to be modified in any way. If found guilty, the participant would be **IMMEDIATELY** disqualified.

Robots

- Robots are not allowed to have any power supply above 9V DC (Volt of Direct Current). VAC (Volt of Alternating Current) power supplies are strictly prohibited for safety reasons.
- Robots will need to protect their sensors from any outside interferences if necessary.
- Robots RC receivers will need to be protected from any outside interferences.

Game Fields

- Robots shall not damage any part of the field or obstacles deliberately.
- Robots shall not cause any danger to the arena and surroundings in anyway whatsoever.



GENERAL GAME RULES

Fouls (2 Fouls = Disqualification)

- Not obeying judges' order. Disrupting order
- Communication with spectators or other participants

IMMEDIATE Disqualification

- Robot does not comply with the size/weight restrictions of the game participated
- Usage of parts that is not authorized before match
- In case of technical problem such as robots are uncontrollable, the referee will pause the match and help participants to turn off and on the robot only. If the robot still cannot function after the robot is turned back on, the participant will be disqualified.
- When the robot is not able to move not due to technical reasons for more than 10 seconds (due to fallen off parts, stuck, design flaw, etc)
- Carry storage devices including MP3 player, PMP, USB memory
- Touching or damaging other participant's robot, laptops, or belongings
- Touching the robot or the game field and it's contents while the match is in progress. (except for Bowling)



GENERAL GAME RULES

Remote Controlled Robots

- Participants who remote control the robot shall keep a certain distance away from the game field area without touching or disturbing the game.
- Any related to channel setting in programming, do program it to Channel 1 (default) as RF Remote Control will be used in the competition.

Other Rules

- While the match is in progress, at any time the referee whistles, the human operator should stop the robot.
- Upon removal of a robot from the playing pitch, it can only re-enter the match upon referee's approval.
- The parts which are fallen or broken from the robots cannot be fixed back onto the robots during the match.
- The referee's decision would be final and no disputes will be entertained.



GENERAL TOURNAMENT RULES

Team Tournament Rules

- All the tournament based games will be based on “Knock out” system.
- Participants are to submit their robots for inspection in the morning of their competition day before 9am.
- After participant’s robot are submitted for inspection and passed the restricted regulations, participants are not allow to touch their robots until their match begins with the approval of the referee. Any participant who touches their own or other’s robot without consent of the referee will be **IMMEDIATELY** disqualified.
- All the teams will be distributed in opposing pairs by IYRC committee randomly.
- Number of participants per team is determine by category of game registered.
- Each participant is to control his/her own robot only
- Only the winning teams will proceed to the next round of competition.

THANK YOU