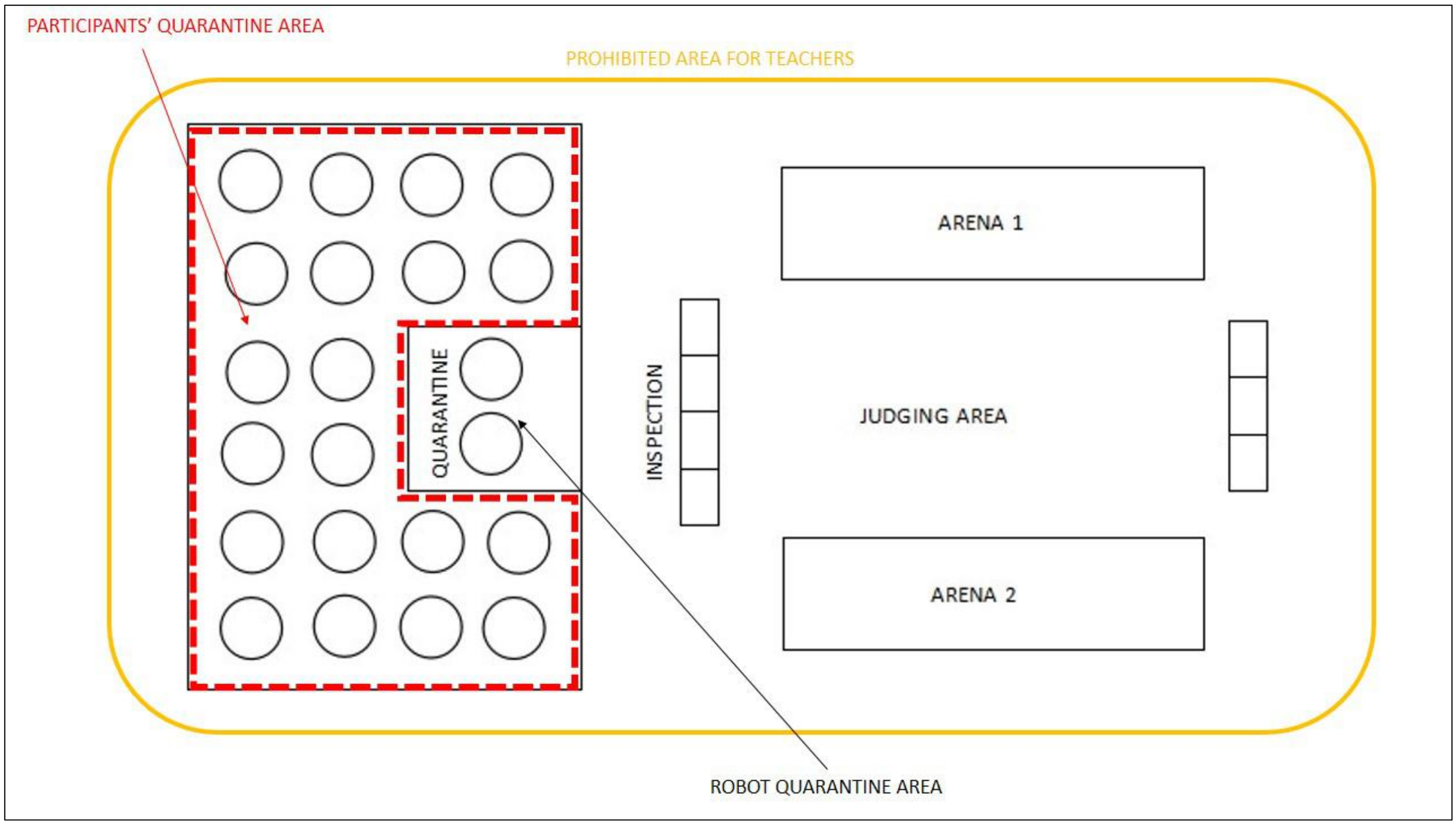
UNITEN Green Millenial Exhibition 2019 (UGME)

Robotics Competition

Competition Descriptions, Rules & Scoring

1. FLOOR PLAN



Floor Layout Plan

2. COMPETITION DESCRIPTION

Welcome to UGME2019 Robotics Competition. In this challenge, we will be challenging participants' credibility in designing, programming, controlling and their robot's agility as well as speed, in order to complete a task that will be given randomly. To be the winner, win the battle and collect the highest score to triumph over the competition.

Participants must build a robot that is **compatible** to the competition/challenge. This consists of **TWO sections**.

- Section 1:
  - Simple Random task.
  - Compulsory to proceed to the next section.

- Section 2:
  - Sumo Battle Platform.
  - The goal is to push the opponent's robot off the platform.

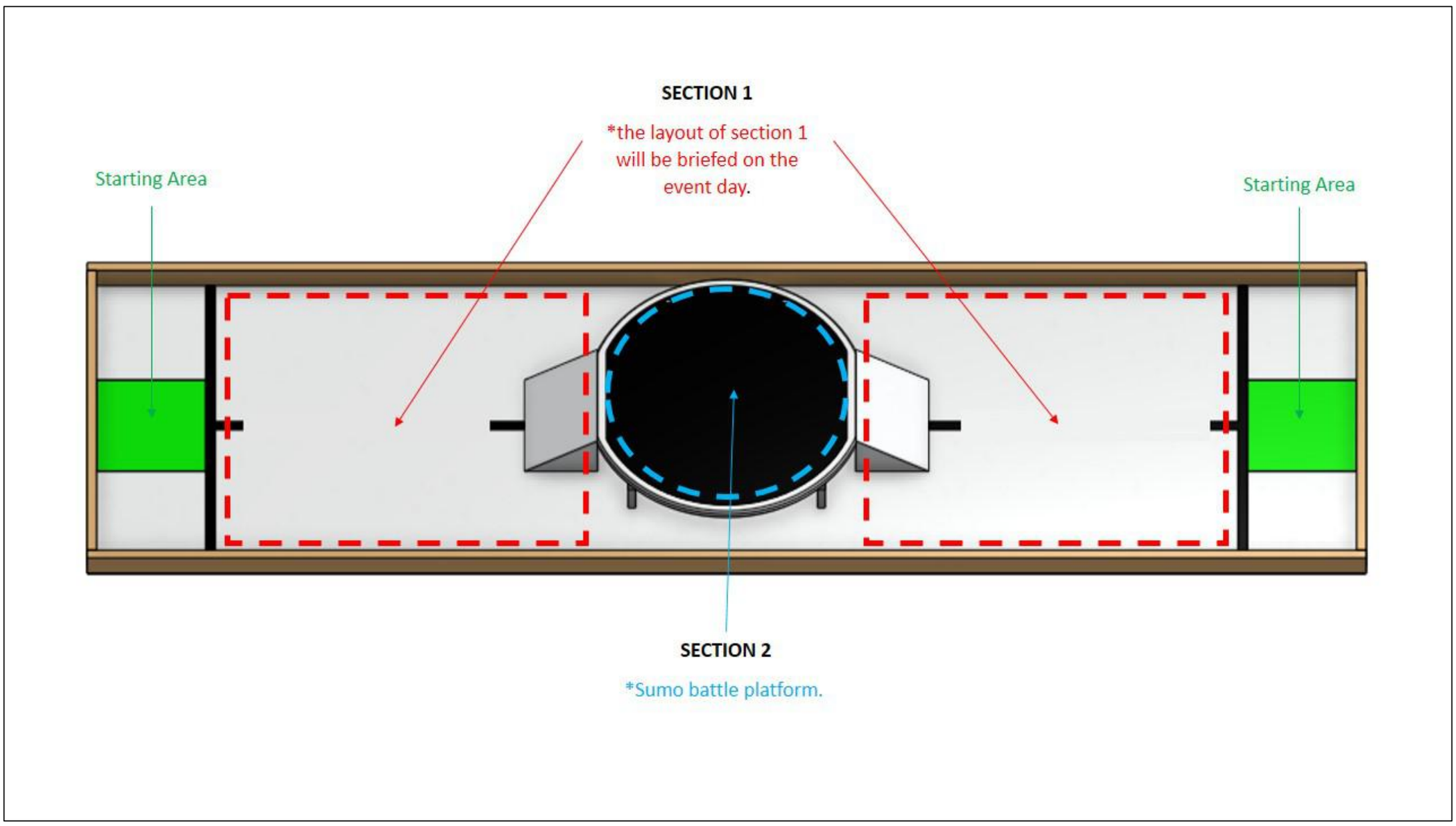
Each team will be participating 3 rounds of the same challenge. Between the interval of each round, each team will be given 30 minutes for modifications and improvements of the robot.

Robots that collect the highest points throughout the tournament will win the UGME2019 Robotics Competition.

3. SPECIFICATIONS

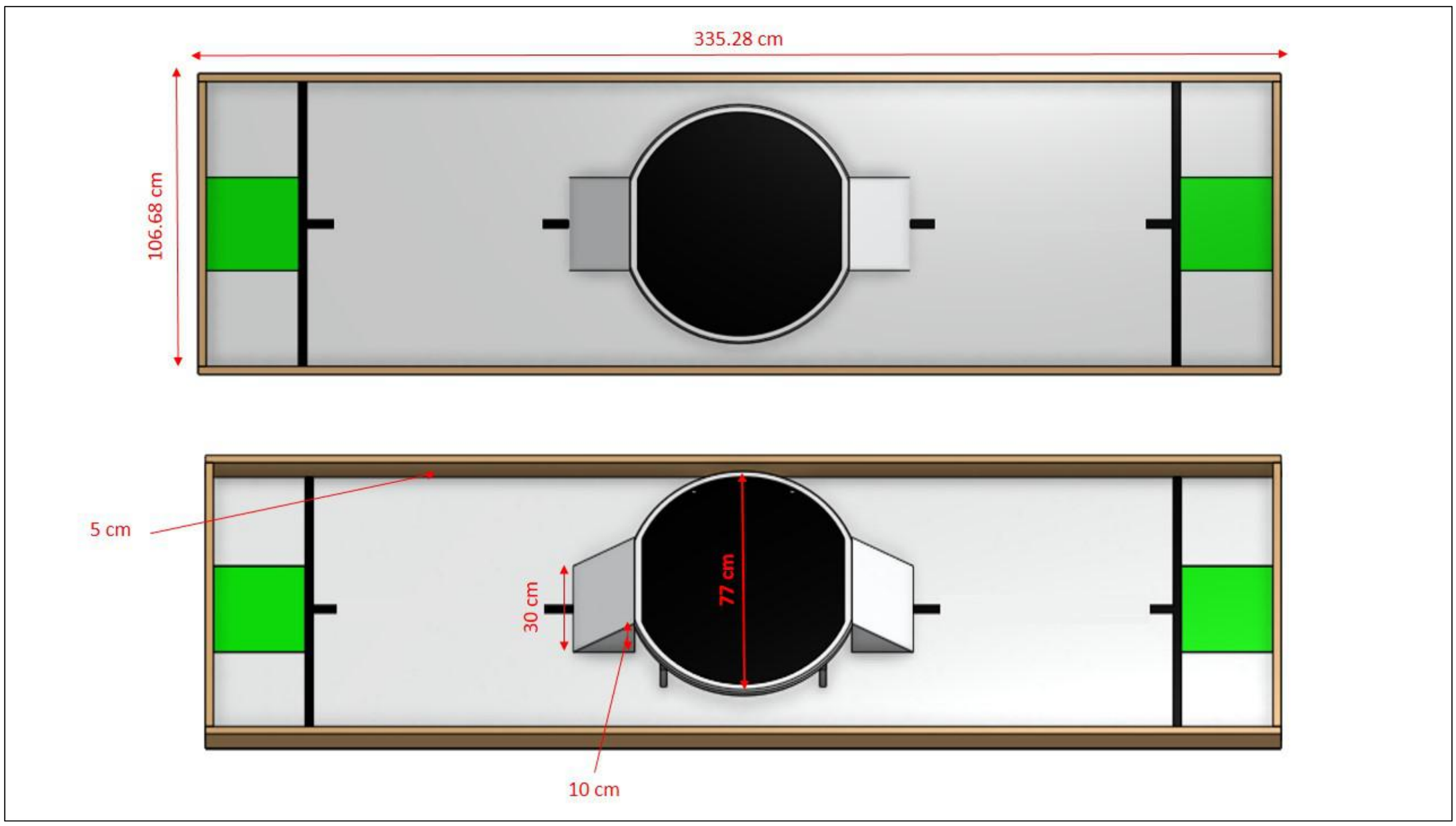
3.1 Arena

3.1.1 Arena Arrangement



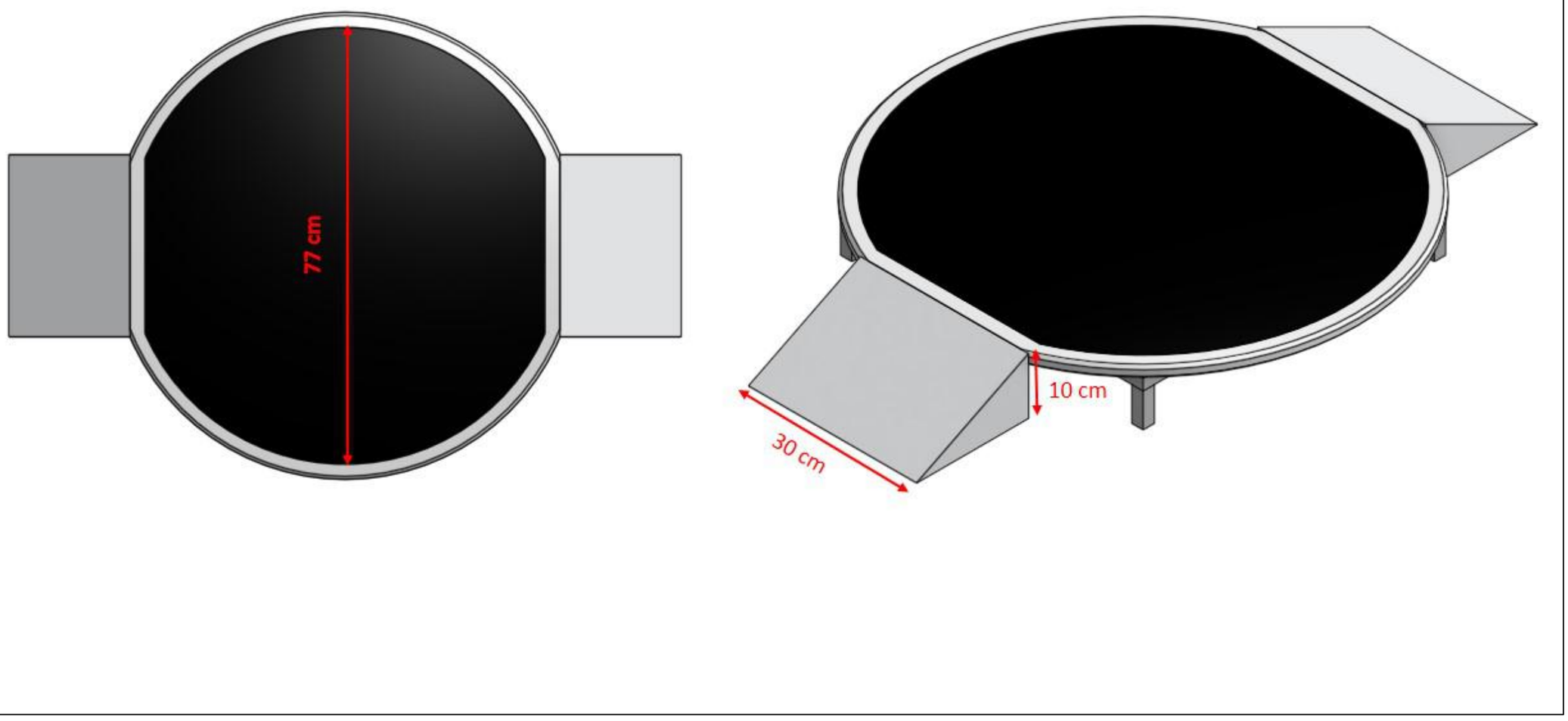
Arena Arrangement

3.1.2 Arena Specifications



Arena Specifications

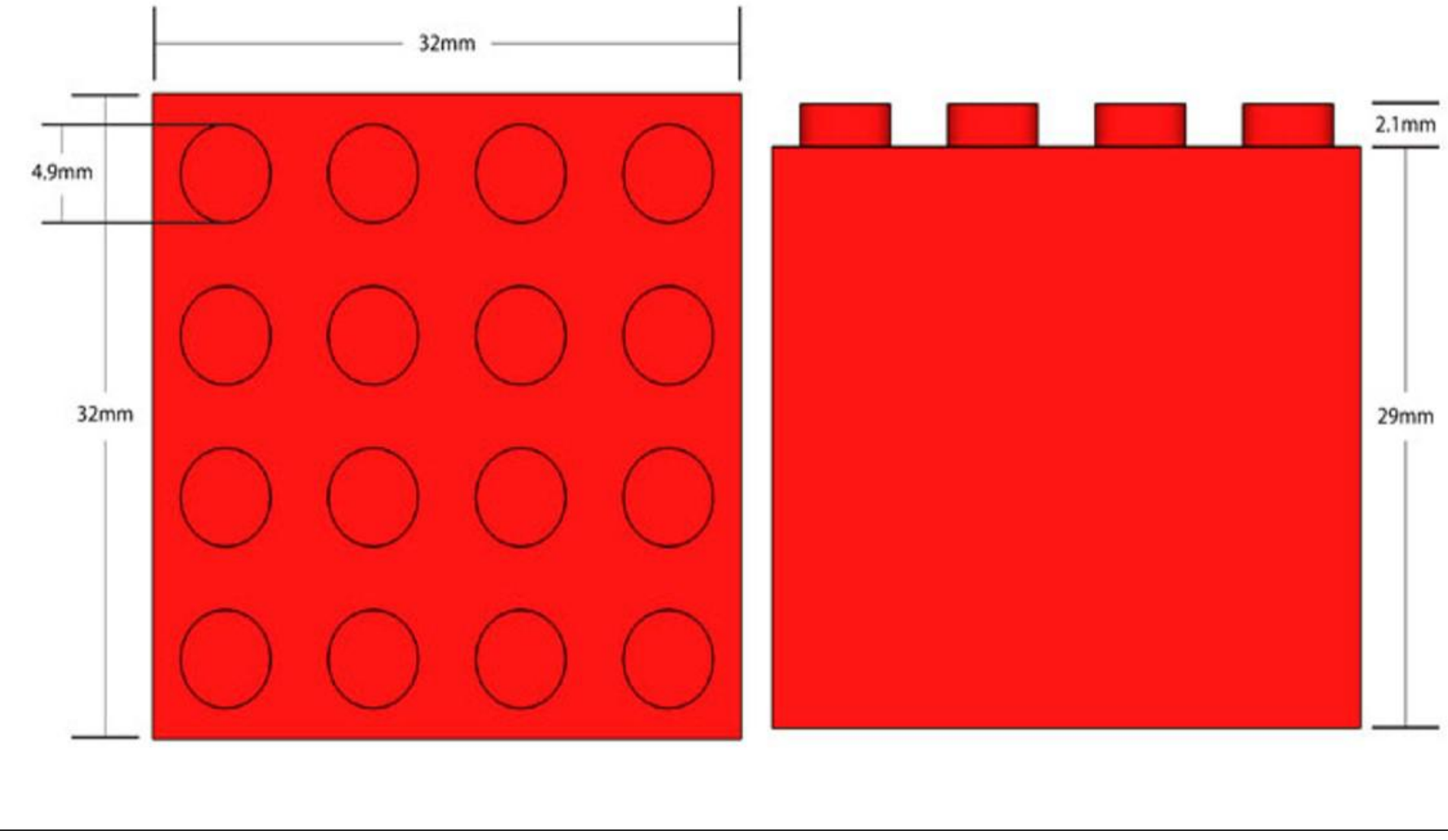
3.1.3 Sumo Battle Platform Specifications



Platform Diameter: 77cm ; Platform Height: 10cm ; Ramp Width: 30cm

3.2 Section 1 Equipment

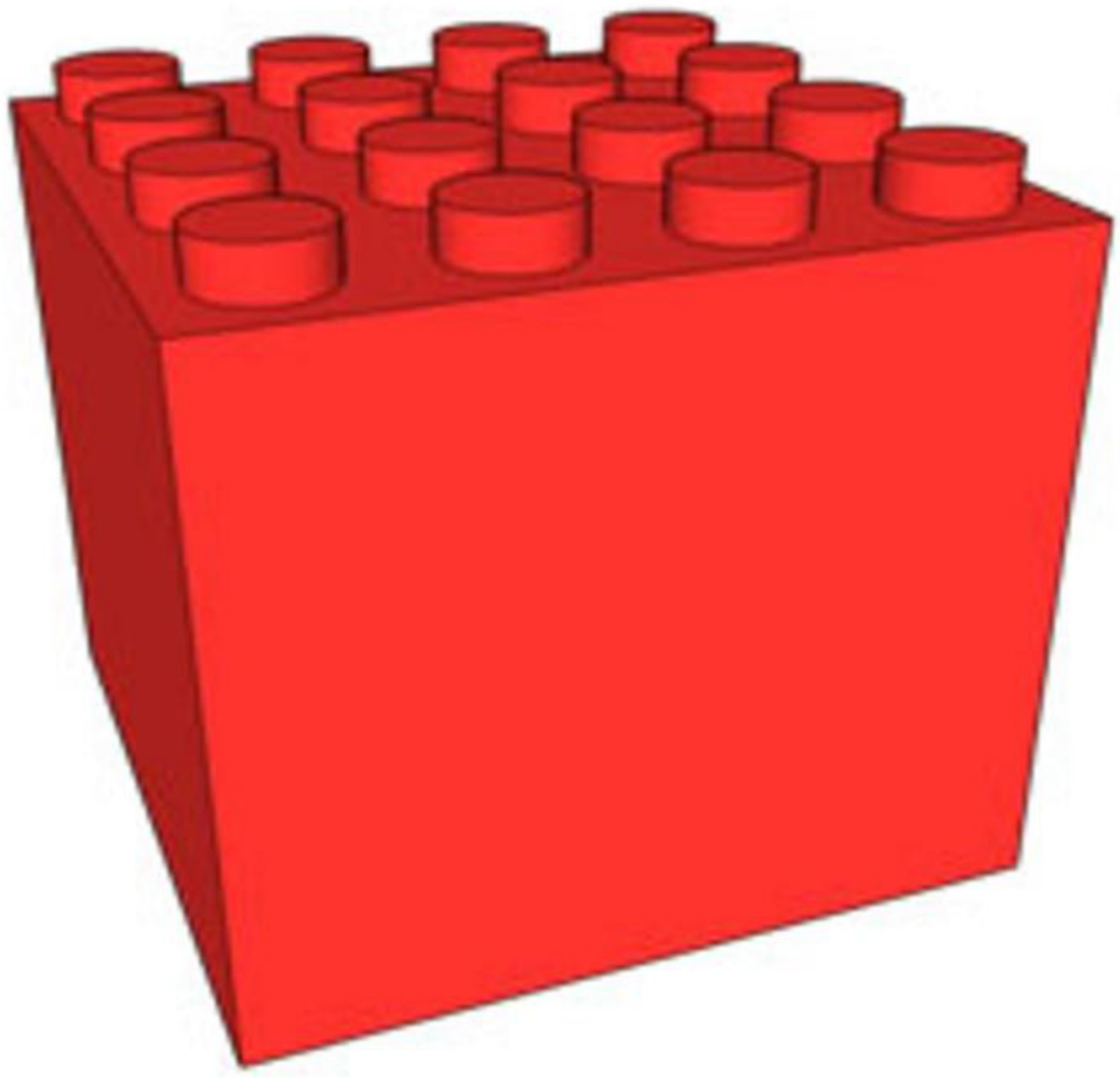
3.2.1 Object Dimensions



Object Dimensions

‹Error tolerance of court : ± 50mm ›

3.2.2 Object Model



Object Model

4. SECTIONS OVERVIEW

- **Two robots** will compete in a battle to collect the highest points to win.

- The robot's mission is to complete the **SIMPLE RANDOM** task in SECTION 1(will be given on the day of competition) in **3 minutes** time(if the robot fails to get on the platform on minute 3, the opponent's on-platform-robot will automatically wins the round without battling) before they have a battle on the "Sumo platform" which is SECTION 2. ***(participants will be given time to construct and program their robot to complete the task)***

- In order to complete SECTION 1, participants are given time to construct and build their robot to suit the requirements of the RANDOM task. Then they have to program their robots to accomplish the task. ***(in SECTION 1, participants are not allowed to remotely control their robot to complete the task)***

- Only after they have finished the task, they are allowed to proceed to SECTION 2. ***(note that it is compulsory to complete the task in SECTION 1)***

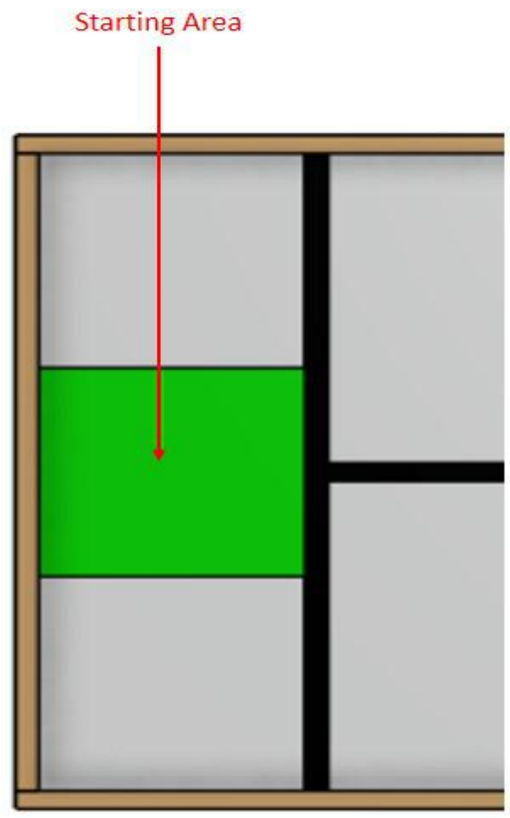
- SECTION 2 is rather simple, the robots will enter the sumo ring and end the challenge by winning the sumo battle by pushing the opponent off the platform. ***(in SECTION 2, participants are allowed to remotely control their robot to complete the task)***

5. SECTIONS DETAILS

5.1 Rules & Regulations

a) The robot will have **3 minutes** to complete the task and **2 minutes** to battle. Time begins when the judge gives the signal to start. The robot must be placed in the starting area. Once physical changes have been made, the judge will give the signal to select a program (but not run). Participants must wait for the judge's signal to start before setting the robot into motion (run the program).

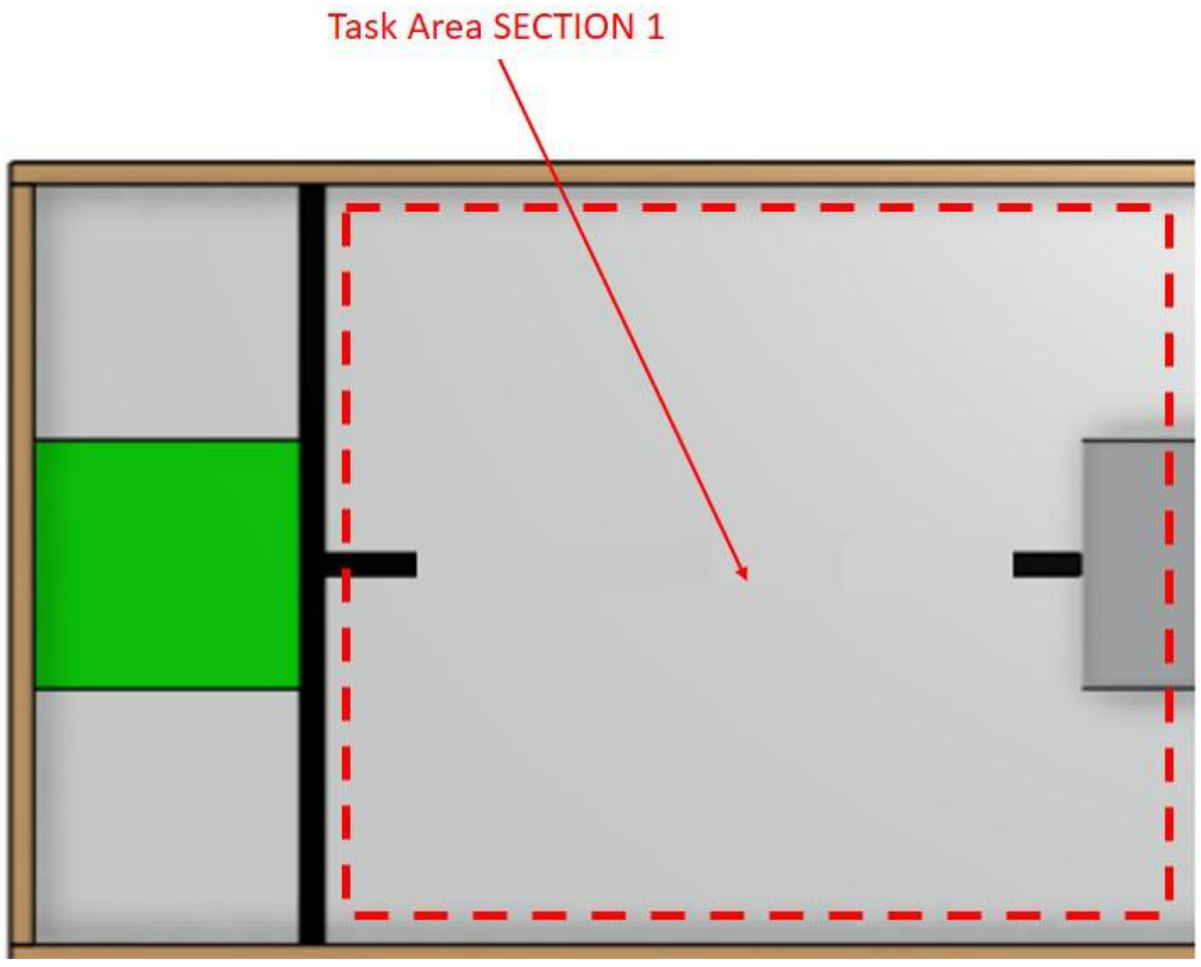
b) The maximum dimensions of the robot at the starting area must not more than **250mm x250mm x 250mm** (including all the extensions, extended components, antenna etc.). After the robot enters the arena, the dimensions of the robot are not restricted.



Starting Area

c) Participants are **required** to program their robots to complete SECTION 1 whereas in SECTION 2, they are free to control their robot remotely in the battle.

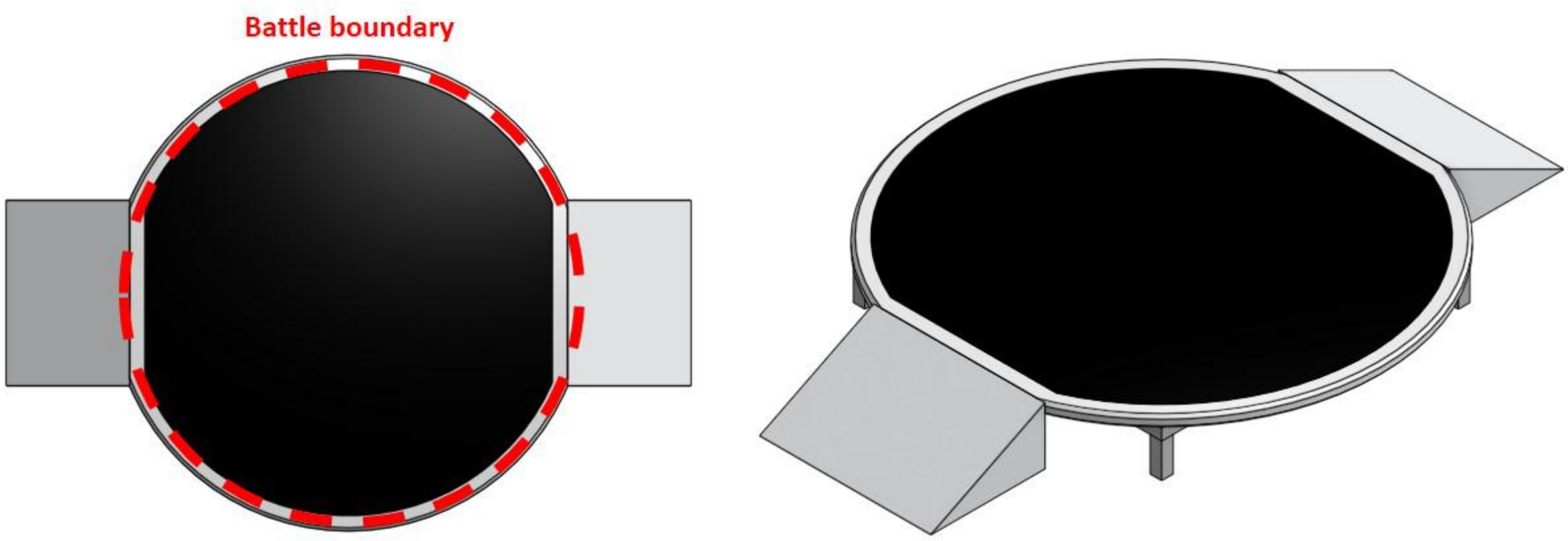
d) When the judge gives the signal to start, the robots will move to SECTION 1 where they **MUST** complete the **SIMPLE RANDOM** task (that will be given in the briefing) in **3 minutes** time to proceed to SECTION 2 (Sumo Battle).



Task Area SECTION 1

e) In SECTION 2, **Sumo Battle,** participants are **allowed** to remotely control their robot. However, they need to change the settings or the program so that the robot could be controlled by them. The maximum weight of the robot before and during the battle is **2 kilograms** only.

f) The moment that the robots or one of the robots enters the zone, the battle starts. The robots have to push each other out of the zone**(the 77cm circle boundary)** in order to win the round.



Task Area SECTION 1 and The Boundary

(TAKE NOTE: The robots need to reach SECTION 2 within 3 minutes of completion time of the task (SECTION 1). Robots that fail to reach the platform in time will LOSE the round)

6. POINTS DISTRIBUTIONS/ SCORING

a. Score will only be calculated at the end of the challenge or when the time stops.

b. Scoring:

SITUATION	POINTS
Completing Task (SECTION 1)	5
Winning Battle (SECTION 2)	5
Total per round	10
Grand total (3 rounds)	30

c. Completing the task in SECTION 1 will lead to a total of 5 marks but, take note that if the task is **not completed** **within 3 minutes time**, participants will not only lose those marks, they will not be able to compete in SECTION 2.

d. Win the battle in SECTION 2 by pushing the opponent off the platform. Both team is considered **losing** if the following situations occur:

   i. Both robot fall off the platform.
   ii. Both robot still standing on the platform after minute 5.
   iii. Both robot fail to be on the platform by minute 3.

e. If teams have the same score, rankings will be decided by the time taken for each team to complete the task.

7. GENERAL INFORMATION

- ✓ The Arena is **3352mm x 1066mm** in exterior dimension
- ✓ The walls/ fall guards at each edge of the table are **25.4mm in thickness** and **50mm in height**. They may be constructed from a clear plastic, cardboard, painted, unpainted wood or any other materials.

IMPORTANT NOTE

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1) Participants are only allowed to use:

- ◆ **LEGO® MINDSTORMS® EV3** (Core & Expansion set)
- ◆ **LEGO® MINDSTORMS® NXT**
- ◆ Or any other LEGO Education products that are **PROGRAMMABLE**

2) All robots are allowed to have at most **4** functional motors and only **1** programmable brick.

3) Robots are allowed to be controlled by any sorts of controller (only controller are allowed to be non lego products)

4) Robots are not allowed to be installed with extra or external non LEGO products on/ built within the robot.

5) The maximum dimension allowed for the robot before the challenge is **250mm x250mm x 250mm.**

6) The maximum weight allowed for the robot to enter the competition is **2 kilogram**.

7) Any rules or qualifications disagreement will result in elimination.

8) The judges' decision are final. The results cannot be questioned.