



### [SUPPLEMENTARY RULES]

**Construction Requirements:** There is no restriction on the materials used, but **ready-made device is not** allowed. The device should consist of two parts: the “control unit” and “device”.

**Functions:** The “control unit” is used to control a wireless “device” to complete the task.

**Dimensions:** There is no restriction on the weight of the “device”. The “device” should not exceed **30cm x 30cm x 40cm (Height)**; there is no restriction on the “control unit”.

**Competition Objects:** Each team in the Senior Secondary Group will receive **25** objects of same colour, while each team in the Junior Secondary Group will receive **20** objects (Fig 1). Participants should control their “device” to throw the object (projectile) to the scoring area within the time limit. The scoring area will be divided into “**scoring grid**” with different areas and scores. When the time is over, the referee will calculate the points scored in the different grids by each projectile.

**Power Supply Restriction:** The device must use DC of **24V** or below. Participants need to bring their own batteries or transformers (Transformer must less than 100W.)

#### **Competition System:**

The game will be divided in Junior Secondary Group and Senior Secondary Group, competition to be held among each group. The schedule of competition is divided into: group stages, semi-finals and finals. Teams that failed to qualify in the group stage will be arranged to enter the repechage. Team(s) with the highest scores in the repechage can advance to the semi-finals.

1. **Group stages:** Playing order of the teams will be determined by drawing lots before the games. The 2 teams with the highest scores in each group stage game will advance to the semi-finals;
2. **Repechage:** On the competition day, according to the number of participating teams and the current situation, more details about repechage and the number of qualified teams will be announced after the group stages are completed;
3. **Semi-finals:** 16 teams that won from the group stages and from repechage, 4 teams will play in each game and the 2 teams with the highest points in each game will advance to the finals;
4. **Finals:** 8 teams that advanced from the semi-finals will play one game, and their scores will be ranked from the highest to the lowest.

#### **Pitch: (Fig 2)**

The dimension of the scoring area is a circle with 280cm in diameter. The scoring area is divided into several “scoring grids” in different sizes. Dimension of the device area is 90cm x 50cm. The scoring area is 30cm apart from the device area. The "device" for the competition must be placed within the device area.

#### **Competition Method:**

According to the result of the draw and the schedule of the competition, each game will be played by 4 to 8 teams. Within the time limit of the competition, participants of each team must throw their projectiles into the scoring area, the points will be calculated after the competition is completed. Points in different scoring grids will be calculated in each specific way. If there are teams with same



score, the following conditions will be sequentially compared to determine the qualifying team:

1. The team with less unthrown projectiles remain will qualify;
2. The team with more projectiles thrown into the scoring grid with the same colour as the team's device area will qualify;
3. The team with more projectiles thrown into the star-shaped scoring grid will qualify.

If the scores are still the same after the above comparison, an additional play-off will be arranged for the teams with the same score in the game, and the rules of the game will be announced before the start of the play-off.

**Competition Process:**

Before the game starts, participants must place their "device" in the device area. The "device" can store and place more than one projectile, which can be added continuously throughout the game. In each throwing process, only one projectile is allowed to be thrown. When the game starts, the team can use the "controller" to control the "device" to perform throwing actions in accordance to the regulations at different stages of the game. After each throw, the team can manually or automatically place objects that have not been thrown on the "device" to continue throwing. Projectiles thrown from the device, but not thrown into the scoring area can be picked up and thrown again without affecting other teams.

<b>Junior Secondary Group</b>			
Each game lasts 10 minutes and is divided into two stages. After each stage, the participating team will be given time for adjustment. Teams are allowed to use the "controller" or manually change the position of the "device" (but "device" must stay within the device area) and change various throwing parameters during the game. It is not allowed to touch any part of the "device" when the "controller" operates it during the throwing action.			
1 <sup>st</sup> Stage	5 mins	Each team will receive 10 projectiles.	Throw the projectiles into the scoring grid within the time limit. After the 1 <sup>st</sup> Stage, all 1 <sup>st</sup> Stage unthrown projectiles will be forfeited. If all the projectiles provided in the 1 <sup>st</sup> Stage have been thrown into the grid, participants can receive the projectiles provided in 2 <sup>nd</sup> Stage to continue. At the end of the 1 <sup>st</sup> Stage, projectiles in 2 <sup>nd</sup> Stage will not be forfeited.
2 mins		Adjust the device	
2 <sup>nd</sup> Stage	5 mins	Each team will receive another 10 projectiles. (If these projectiles have been already provided in the 1 <sup>st</sup> Stage, no addition projectiles will be given again in the 2 <sup>nd</sup> stage.)	Throw the projectiles of the 2 <sup>nd</sup> Stage into the grid within the time limit.



<b>Senior Secondary Group</b>			
Each game lasts 12 minutes and is divided into three stages. After each stage, the participating team will have time for adjustment. During the game, the “device” must be fixed on the device area and not allowed to move, but “device” is allowed to rotate in place and adjust the parameters for the projectiles.			
1 <sup>st</sup> Stage	2 mins	Each team will receive 5 projectiles.	The "device" needs to run fully automated, including adjusting the angle and throwing direction. When the referee announces the start of this stage, the team can only give a single order to the "device", and only has one chance to repair it during this stage. No further contact with the “device” is allowed until the end of the stage. When the 1 <sup>st</sup> Stage is completed, all 1 <sup>st</sup> Stage unthrown projectiles will be forfeited. If all projectiles have been thrown in the 1 <sup>st</sup> Stage, the team still have to wait for the stage to end before receive the projectiles of the 2 <sup>nd</sup> Stage.
3 mins		Adjust the device	
2 <sup>nd</sup> Stage	5 mins	Each team will receive 10 projectiles.	Throw the projectiles into the scoring grid within the time limit. After the 2 <sup>nd</sup> Stage, all 2 <sup>nd</sup> Stage unthrown projectiles will be forfeited. If all the projectiles provided in the 2 <sup>nd</sup> Stage have been thrown into the grid, the team can receive the projectiles of the 3 <sup>rd</sup> Stage to continue. At the end of the 2 <sup>nd</sup> Stage, projectiles in 3 <sup>rd</sup> Stage will not be forfeited.
2 mins		Adjust the device	
3 <sup>rd</sup> Stage	5 mins	Each team will receive another 10 projectiles. (If these projectiles have been already provided in the 2 <sup>nd</sup> Stage, no addition projectiles will be given again in the 3 <sup>rd</sup> stage.)	Throw the projectiles of the 3 <sup>rd</sup> Stage into the grid within the time limit.

**Designated Throwing Objects:** Each piece is approximately 4cm x 4cm x 4cm and weighs about 80-100g.

**Scoring Method:**

- Each scoring grid on the pitch is marked with Arabic numerals (e.g.: 10, 20, 40, 50, 60) and Roman numerals (e.g.: I, II, III, V). The Arabic numerals represent the points of the grid, while the Roman numerals represent the quota for the number of teams that can occupy the grid;



2. Quota for occupying the scoring grid: It is determined by the Roman numerals on the grid, and the number of projectiles thrown into the grid to determine whether the team meets the quota and obtains the points. For example, if the Roman numeral on the grid is II, then the quota for that grid is the first 2 teams that throw the most projectiles. If the total number of projectiles is the same and the number of scoring teams exceeds the quota, then teams with the same total number of projectiles that exceed the team quota can only get half of the points marked on the grid;
3. If a team's projectiles occupy the grid with the same colour as the device area, the points obtained from that grid for that particular team will be doubled. This scoring does not affect the "points of the grid" in (1) mentioned above nor points obtained by other teams within the scoring grid quota;
4. For the scoring grid marked with a star, three or more projectiles must be thrown in the grid in order to occupy the grid. If less than the specified number of projectiles are thrown, no points will be scored for this grid.

#### **Competition Judgment Guidelines:**

1. If the projectile is thrown into the area of the scoring grid (including the vertical 3D extending area) but not touching the ground (For example, the projectile is stacked on top of another projectile), the projectile will not be regarded as touching the scoring grid and hence no score will be counted. Therefore, for each projectile thrown into the scoring grid, the score is determined by the position at which the projectile touches the "pitch";
2. During the game, any part of the "device" shall not enter the space (including the vertical 3D extending area) of the scoring area. If any part of the "device" enters the space of the scoring area during the throw, that throw will be void and the projectile will be forfeited without scoring;
3. If the projectile touches two or more scoring grids at the same time (stepping on the boundary), according to the grids where the projectile "steps on the boundary", the projectile should count to the grid that is closest to the center of the pitch. (Note: The distance is measured by the scoring grid position, not the actual position of the projectile);
4. At the end of stage of the game, any projectiles that are not within the scoring grid will be regarded as unthrown;
5. When the referee confirms that all projectiles from all teams in the game have been thrown into the scoring area, the referee can end the stage of the game without waiting for the whole stage time to be over.

#### **Timeout and Maintenance:**

No timeout is allowed during the game. If the "device" fails to operate during the game, the team can repair their "device" on spot or outside of the pitch after notification and having the referee's permission. However, the game will continue to be timed during the maintenance. Except for the first stage for the Senior Secondary Group, the team can move or take out the projectiles on the device during maintenance, but not place any projectiles on the device during the maintenance. In addition, the projectiles on pitch cannot be moved during the maintenance. After the maintenance, the Junior Secondary Group team can place the "device" anywhere on the device area to continue, while the Senior Secondary Group team must place their "device" back on its original position before the maintenance to continue the game. Projectiles that have been thrown into the scoring grid before maintenance will continue to be counted, and objects that have not been thrown can continue to be used.



**Violation of Rules:** Teams will be disqualified depending on the severity of violations, as regulated below-

1. Intentionally causing damage to the pitch or objects during the competition;
2. Touching the “device” or projectiles during the competition without pre-approval;
3. Using “device” that violate specification required by the supplementary rules;
4. Deliberately obstruct other teams or their works from competing;
5. Using “devices” that have not been inspected by the organizer;
6. Using an unqualified battery that has not been inspected by the organizer;
7. Team members enter the restricted pitch area during competition without permission;
8. Disobeying the instruction of the staff, interfering or stalling the competition;
9. Violations, insulting or abusive words of participating teams;
10. Violation of the principles of fair play.

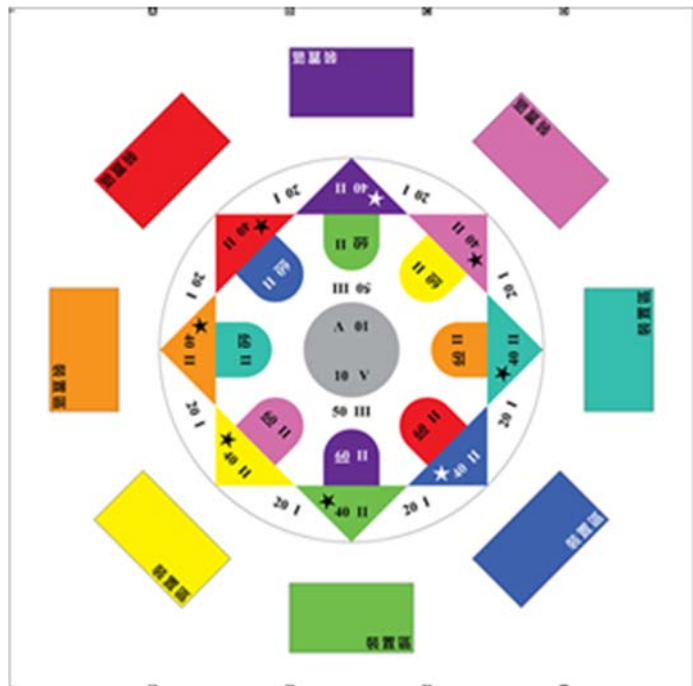
**Others:**

1. All teams should pay attention to electrical safety;
2. Maintenance tools shall be prepared by the participating teams. The organizer shall not provide them.
3. Participants are allowed to use the test pitch at the museum during opening hours before the competition;
4. Should any dispute arise, the decision of the organizer shall be final;
5. Final decisions shall be made by organizer should any unexpected situations happen during the competition;
6. In case of any discrepancy in the different language versions of the regulation, the Chinese version shall prevail.

Fig 1: Projectiles



Fig 2: Pitch





2023年度通訊博物館電子裝置製作比賽  
Museu das Comunicações – Concurso de Construção de Dispositivos Electrónicos, 2023  
Communications Museum - Electronic Device Construction Competition, 2023

