**Final Game Rules for Rev Duo V2 and 3 Kit Robotics Competition**

# Objective

The objective of the game is for each team's robot to collect and deposit as many tennis balls as possible into designated scoring areas to earn points within a set time limit.

# Game Field

1. **Field Layout**:
   * The field is divided into two halves by a red line.
   * Each half has yellow lines that represent different point zones:
     + The first yellow line – ZONE 1 : 1 point
     + The second yellow line – ZONE 2 : 2 points
     + The orange bins: 3 points each for depositing balls inside
   * Tennis balls are scattered within each half.
   * Each half contains orange bins positioned strategically.
2. **Boundaries**:
   * The blue line marks the boundary between each team's area.
   * Robots must stay within their designated half of the field.

# Teams

1. Each team consists of 2-4 participants.
2. Each team is assigned one half of the field.

# Robot Specifications

1. Robots must be built using the Rev Duo V2 and 3 Kit.
2. Maximum dimensions: 3’ x 18" x 18".
3. Robots can have mechanisms to pick up and transport tennis balls.

# Game Play

1. **Starting Position**:
   * Robots start from the area near the red star marker in their respective halves.
2. **Game Duration**:
   * Each match lasts 2 minutes.
   * Playoff matches last 3 minutes.
3. **Scoring**:
   * Tennis balls placed in the bins score points:
     + First yellow line: 1 point
     + Second yellow line: 2 points
     + Balls deposited in bins: 4 points
   * Teams will also earn a 2X multiplier bonus on balls in a bucket if the number of balls in the bucket matches the number on the bucket.
   * If a team pushes a ball into the opposing team’s section, the opposing team will receive the ball or the points based on the yellow section the ball went into.
   * 1 point for every ball in a robot (not touching the ground).
   * 0 points for every ball outside the boundary.
4. **Penalties**:
   * Robots crossing into the opponent’s half incur a 1-point penalty for each infraction.
   * Robots going out of the boundary incur a 5-point penalty for each infraction.
   * Moving a bucket out of play results in a 2-point penalty each time.
   * No points are awarded for balls out of play.
   * Robots causing harm to another robot will be disqualified.

# Match Flow

1. At the start signal, robots begin to move and collect tennis balls.
2. Robots navigate their half of the field, collect tennis balls, and deposit them into the designated scoring zones or bins.
3. Teams can strategize to maximize their points by efficiently collecting and depositing tennis balls.
4. The match ends when the 2-minute timer runs out (3 minutes for playoffs).
5. Points are tallied, and the team with the most points wins the match.

# Tiebreakers

In the event of a tie, the following criteria are used to determine the winner:

1. The team with the most tennis balls collected in a single bin.
2. The team with the most tennis balls collected in total during a designated overtime period of 1 minute.

# Safety Rules

1. All participants must wear safety goggles during the match.
2. Robots must be inspected before the match to ensure they meet all safety requirements.

# Suggested Grading

Teams will be graded in part based on the number of points they earn in the competition:

* F = 0 or fewer points
* D = 1-11 points
* C = 12-19 points
* B = 20-30 points
* A = 31-39 points
* A+ = 40-45 points

Students will also need to schedule a time to interview and answer some questions about their robot, which will account for an additional **20 points**.

**Note**: Students must take a video of their best competition run and save it for future use.

# Additional Notes

1. Teams are encouraged to practice good sportsmanship.
2. Collaboration and communication within the team are essential for success.

These rules provide a structured and fair competition, focusing on the participants' ability to design, build, and operate their robots effectively within the given constraints.