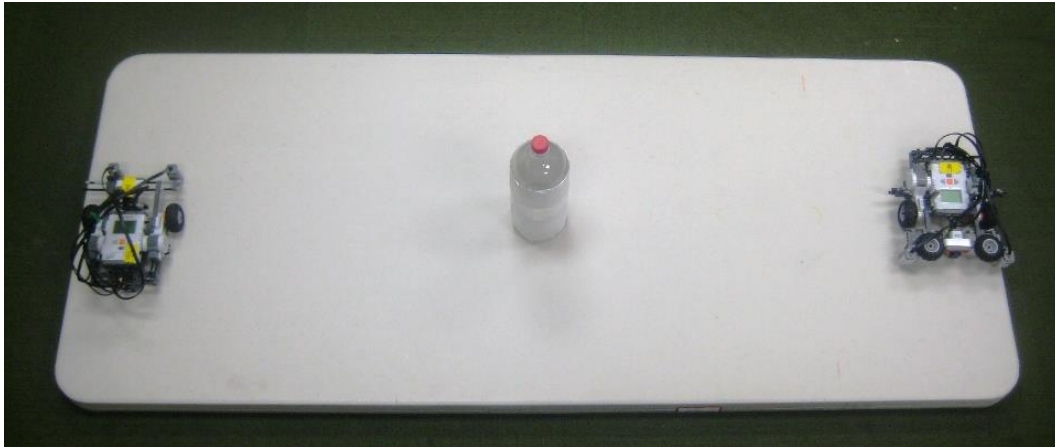
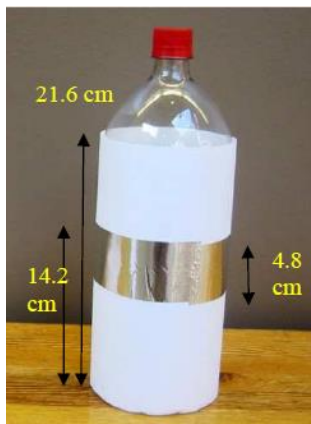


# Robofest 2014 BottleSumo

1-29-14, V2.0



(Figure 1) An example of BottleSumo Game Initial Configuration



(Figure 2) Bottle Dimensions



(Figure 3) Table Setup

## 1. Game Objective and Synopsis

The objective of the game is to **EITHER** be the first robot to find and *intentionally*\* push a 2 liter bottle (filled with 1 liter of water – see Figure 2) off the table **OR** be the last robot remaining on the table. In either case, after the event (either the bottle was pushed off or the opponent is off the table) the robot must survive on the table at least 3 seconds\*\*. A robot is considered off the table *when any of its parts are touching the floor*, whether it was pushed off the table by the other robot or it fell off the table on its own.

(\*) The game continues without the Bottle like head-to-head sumo wrestling:

- When it is not clear which robot pushed the bottle off the table.
- When the bottle was dropped off by accident (unintentionally). Examples are:
  - A robot does not have any sensor in the rear and the bottle is pushed off while backing up.

- A robot does not have any sensor on the side and the bottle is pushed off while spinning.
- The bottle is pushed off the table as a result of one robot pushing the opponent robot.

(\*\*) If the robot that pushed off the bottle does not survive for 3 seconds, then the opponent has a chance to win. If the robot that pushed off the opponent does not survive for 3 seconds, then the game becomes tie.

How to start the game (the way to start the robot to move) is unveiled 30 minutes before impounding robots – *An example: a robot must wait 5 seconds after the game is started and the bottle will be placed, approximately the same distance from each robot, during the wait time by a Judge.*

Starting location, starting orientation, and location of the bottle will be unveiled after impounding before starting the first match.

Each robot must be fully autonomous. **No** human control, signal, or remote computer control (teleoperation) is allowed.

## 2. Age Divisions and Competitions

This BottleSumo game in 2014 is only for Junior (Grades 5-8) Division teams. Another similar game, BottleZone is for Senior (Grades 9-12) teams.

## 3. Team Size

Maximum three members per team

## 4. Robot Requirements

Teams must construct the robot before the competition day. Teams are required to bring laptop computers to adjust their programs since lighting condition, floor color, and table color, etc. are unknown until the competition day. The following table shows details about robot specifications.

Maximum robot mass	1 Kg
Robot kit	Any
Maximum robot width, length, and height	25cm Robots may <b>*NOT*</b> expand their dimensions during the game.
Number of robot controllers per robot	One controller only
Traditional sensor types	Any unless it can be harmful to humans.
On-board vision sensor system	Not allowed
Number of sensors	Any
Motor types	Any
Number of motors	Maximum 3
Wheels or legs	Either
Material	Any. You may use tape, glue, rubber bands, etc. (However, you cannot glue/tape the robot to the sumo ring floor.) Vacuum or sticky tires are <b>not</b> allowed.
Programming language	Any

## 5. Game Playing Field

One 76.2cm x 182.9cm (30" x 72") plastic folding table (such as those found at <http://www.buylifetime.com/Products/BLT/PID-22901.aspx>) is used for the ring (See Figures 1 and 3). The surface is light in color (almond or tan), but the exact color is unknown until the competition day. The table is placed on a dark colored floor with the legs folded under. The table is raised up at least 5cm as shown in Figure 3.

## 6. Competition Procedures

- 1) Right after opening ceremonies, how to start the robot is unveiled. 30 minute timer will start. No adult help is allowed at this time.
- 2) After the 30 minutes, all the robots are impounded. At that time, size and weight will be checked. Judges will also inspect the robot for any illegal materials.
- 3) **Time Trials:** Using the same configuration with 2 bottles and starting location/orientation, Judge will measure the time taken to push the two bottles off the table. Max time given is 2 minutes. If the robot itself falls off the table, 2 minutes 1 second will be recorded. Special prizes may be awarded based on this Time Trial result.
- 4) After the Time Trial, each robot must be impounded again.
- 5) After the Time Trial of all the robots, judges will allow teams to take the robots back to the team table to fix any problems for around 10 minutes. During this time, robots will be ranked based on the time taken. Using the rank, Single Elimination Seeded Tournament Brackets will be made.
- 6) Before starting matches, all the robots must be impounded again. Size and weight must be checked again.

## 7. Game Match Rules

1. A match consists of up to three games. At the start of each game, the judge will announce (1) the location of the robots on the table and (2) the orientation of the robots (see Figure 1).
2. Immediately after the judge gives the signal to start the game, *each robot must satisfy the starting requirement mentioned in section 1* and everyone must move at least 72" away from the table and may not approach the table until after the end of the game.
3. If the robot violates the starting requirements, the robot automatically loses the game.
4. Again, if the bottle is dropped off the table unintentionally (by chance), judge continues the game.
5. A maximum of 2 minutes are given for each game. At the judge's discretion, the judge may choose to declare a tie game if:
  - Both robots at the same moment touch the space outside the table.
  - It is not clear which robot fell off the table first.
  - NO progress has been made in a reasonable period of time.
  - The robots fail to touch each other for a reasonable period of time.
  - The robots are hopelessly entangled or otherwise deadlocked.
  - BOTH robots fail to start.
  - There is no winner after two minutes.

The Judge has all the discretion in making ANY-and-ALL final decisions for the cases not considered in these rules.