MINDSTORMS SUMO BOT COMPETITION RULES

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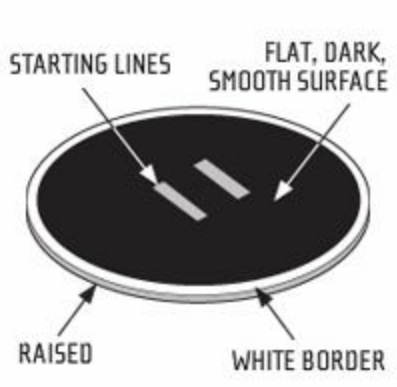
What is LEGO Sumo?



LEGO Sumo is a contest where two autonomous LEGO MINDSTORMS robot contestants try to push or flip each other out of a circular ring. The first robot to touch the floor outside of the ring loses. The last robot remaining in the ring wins the round. The robot that wins the most rounds wins the contest. While pushing your opponent out of the ring is the most common way to win a round, disabling your opponent (flipping, lifting, etc.) is also encouraged.

LEGO Sumo takes place in a circular ring four feet (122 cm) in diameter with a two-inch (5 cm) white border along the ring's perimeter. The surface of the ring is smooth plywood (painted black) and is about one and one half inches (3.8 cm) above ground level. The raised platform helps to determine when a robot has "fallen off" (generally determined by the robot touching the ground outside the ring, but left up to the judges discretion).

CONTEST RULES

Robot construction and limitations

All MINDSTORMS Sumo robots must be constructed of 100% unmodified LEGO parts (no gluing, cutting, melting, or other modification or modified pieces are allowed with the exception of "Atomic City Invitational" commemorative printed bricks). This rule applies to sensors and motors as well. Robots can use one NXT or one EV3 brick and up to four motors and four sensors. An upper weight limit of 2 pounds applies to all robots.

All robots must fit within a 1' by 1' square frame (although they can have any flat orientation within that frame; in other words, the front of the robot could be diagonal within the frame if the rest of it fits in a 1' by 1' square frame). No piece of the robot should be designed to deliberately become detached, but the robot may have a variable geometry. In other words, it may expand or unfold additional structure after the start of a bout, but the initial "footprint" of the robot must fit within the 1' by 1' square.

Robots must be completely autonomous after the bout is started.

The Arena:

The event will take place on a 4' diameter smooth plywood or similar surface ring, painted flat

black, with a 2” wide white border to help the robots determine the edge of the ring. It will be raised a few inches above the floor to help determine when a robot has “fallen off” (generally determined by the robot touching the ground outside the ring, but left up to the judges jurisdiction). No assumption should be made about what is beyond the edge of the ring (i.e., the ring may be undercut, for example).

Competition:

The robots will proceed in combat until one unit is disabled or removed from the ring. A robot is considered to be “removed” from the ring when the drive system falls off the edge and touches the floor. A robot whose body hangs over the edge is not considered 'off' until it physically tips off the edge and touches the floor. Judgment of the ring officials is final. A robot that disables or removes the enemy gets a “Win” credited to it, and if a robot “suicides”, the other robot gets a “Win” credited to it. Should one robot become disabled (flipped on its back or side, for instance) and is unable to move, the ring officials will award the victory to the remaining robot. If it is determined by the judge that both robots are stuck in an entanglement or deadlock for at least fifteen (15) seconds, the judge will call for a Reset. If the judge declares a Reset, the clock is stopped, the robots are put back in starting positions, and the robots will be reactivated and clock restarted. A match is over after two (2) minutes or after one “Win” occurs. If there is no victor after 2 minutes, see “How to get points”. At the end of each round, the contestants are responsible for making sure the ring is clean and ready for the next round.

Starting a bout:

Robots must be started facing directly away from each other and separated by a 12 inch gap. Each must be 6 inches from the center of the arena. At the start of a bout the robots must wait three seconds before any motion is made (with the exception of shape changing; i.e. lowering or extending an arm or other feature), and the first motion should be directly away from the center. **NEW for 2016** → Robots must either touch a white line somewhere on their starting half of the board, or turn in an arc with a radius at least as wide as the distance between their wheels (i.e. no spinning in place and rushing the other robot) before attempting to engage the other robot. If there is no clear front of back to a robot, the direction of this first motion will define the “front” for purposes of the initial facing of the robots. A robot must start moving within ten seconds of the start of a bout.

Robots must be capable of some form of movement across the ring surface.
Robots must be completely autonomous after the bout is started.

Event structure:

The Sumo Bot Challenge will be set up in two distinct parts. First a round robin format will be used to allow for seeding in the double-elimination portion of the tournament. The organizers might change the event structure based on number of entries or other constraints.

Round Robin: Each robot, in a group of four, faces each other robot (one at a time) in a match. With this, every robot gets a chance to compete against every robot in the group. This method also has the advantage of determining all robots' actual rank, not just a sole winner from each group.

Double Elimination: After seeding has taken place from the round robin portion of the tournament, the double elimination portion of the tournament will take place. Upon losing two matches, the robot is out of the contest.

Through the participation in the round robin and double elimination portions of the tournament, each robot will be involved in a minimum of three matches.