Mini-Sumo Robot

Middle School, High School

Contest Description

The Mini-Sumo Robot Contest requires a student team to build a self-propelled, self-controlled, sensing robot designed to force another Sumo Robot outside a four (4) foot competition ring. The competition ring will be a square painted flat black, measuring 4' across. There is an inside square surrounded by a one-inch (1") wide, painted or taped, flat white square. Another white one-inch (1") wide line will surround the inner ring with one-inch (1") between them. When any part of the robot crosses completely over the 1" white outer line while being pushed by the opposing robot, it will lose the heat.

Rules

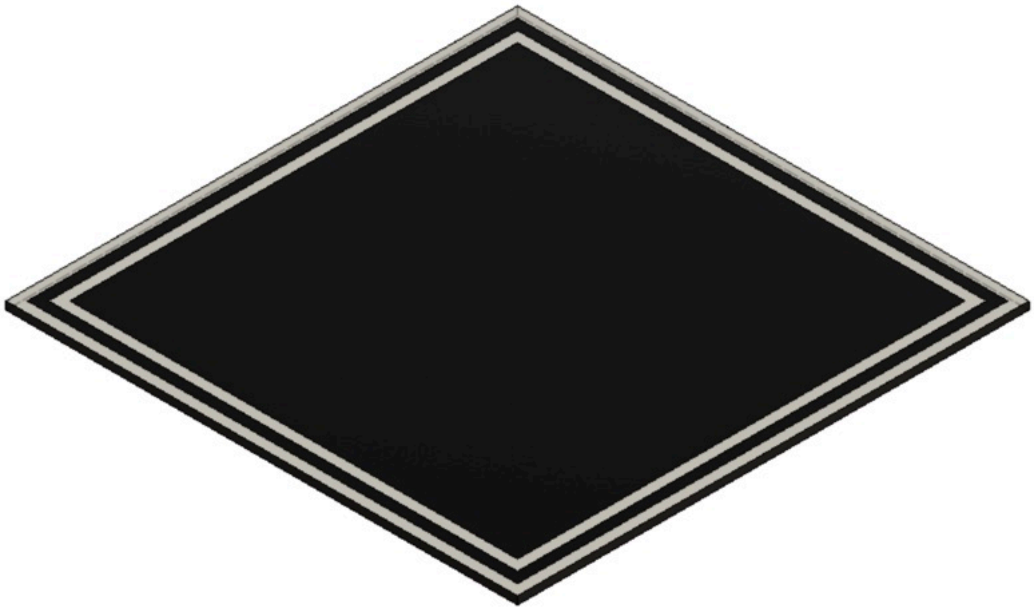
1. The Sumo must be powered by electrical storage batteries. No other power sources will be allowed. These batteries must be sealed, and all possible precautions must be incorporated into the design to prevent accidental spills. The judges may disqualify any design that is determined to be unsafe.
2. Plastic (PET, PETG, ABS, PLA, etc.) is the only material that can be used for the chassis and body of the robot. No other types of materials are allowed (i.e., metal, carbon fiber, wood)
3. Motors, electronics, axles, fasteners, and adhesives can be any material but cannot be used in such a way to enhance the structural integrity, armor the robot, or enhance any defenses.
4. A robot may be disqualified at the Event Organizer's discretion if it is deemed to violate the spirit of rules 2 or 3. Contact the event organizer ahead of time if you are not sure your robot meets the above criteria.
5. The Sumo must use sensing devices to govern the motion of the Sumo and must use sensors to detect the other Sumo and/or the edge of the white circle.
6. Robots cannot exceed 1.5 Kilograms in weight.
7. Robots cannot exceed a maximum size of 20cm x 20cm x 20cm. Any robot entered that does not meet the size requirement by the end of the device evaluation or expands beyond that size during competition will be disqualified. **Device evaluation will take place at the time indicated on the Official Schedule.**
8. The Sumo Robot drive wheels **must** be non-destructive to the playing surface.
9. The Sumo Robot may not have a remote off/on switch.
10. Double elimination contests will decide the winner of the contest.
11. At the beginning of each competition, with the power switch in the "off" position, the Sumo handler(s) will position their Sumo as instructed by the judges. Four start configurations will be possible:

At the command of the judge/facilitator, the handler(s) will turn the power switch to the "on" position.

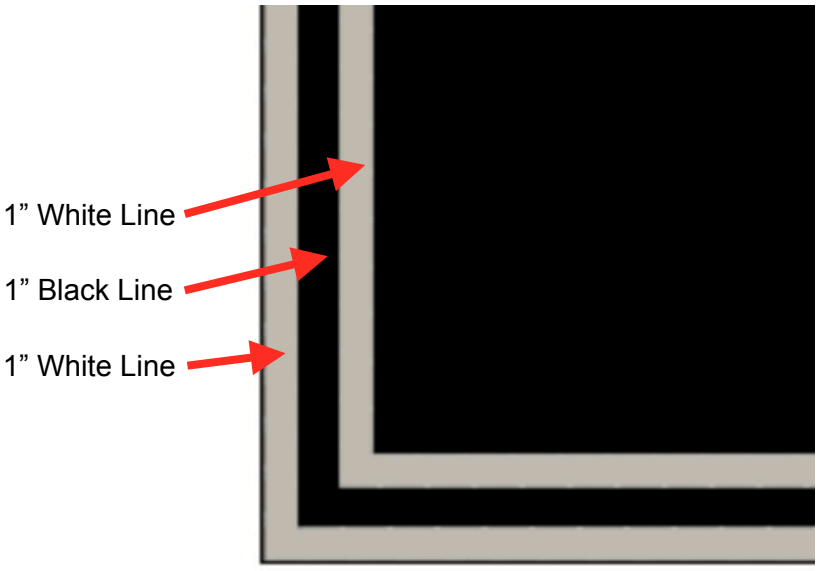
9. **(New for 2026)** When one robot causes **any part** of their opponent to go past the outer white line, that robot is declared the winner of that engagement. To be a loss the robot must have been pushed out by the opposing robot. Driving beyond the outer white line while not under direct contact with an opponent does not constitute a "win" and is declared a "fault".
10. **(New for 2026)** If a fault is declared, the robots are positioned in the same starting position, and the contest begins anew.
11. **(New for 2026)** If a robot causes three faults, the other robot is declared the winner of the match.
12. **(New for 2026)** If both Sumos leave the ring at the same time, a "no-contest" is declared, and the two Sumos are repositioned, and the contest begins anew.
13. **(New for 2026)** If, after one minute, no winner is declared, the contest is determined to be a "draw," and the two Sumos are randomly repositioned in one of the possible start configurations, and the contest begins anew. If three encounters in a row end in a "draw", the judges shall declare a winner based on action observed within the ring and on the design of the selected Sumo robot.
12. A pit area, with access to a 110-volt standard outlet, will be provided.
13. Teams must bring documentation of their design process and the iterations that have taken place during the current school year. (i.e., Engineers Notebook or Portfolio)
14. Decisions of the judges are final and binding.

Mini-Sumo Ring Details

Isometric View of the Mini-Sumo Competition Ring



Close-up detail of the lines with dimensions



Pre-Competition Device Evaluation/ Interviews Mini-Sumo Robot

LEVEL: **_____ Middle School** **_____ High School**

SCHOOL: _____

CAPTAIN: _____

1. Criteria

Sumo Weight	
Weight Size Requirements ***(Maximum 1.5 Kg)***	Weight =
Sumo Measurements	
Size Requirements ***(maximum 20cm x 20cm x 20cm)***	Check if within size requirements _____

Elimination Heats will be held at the time published on the Official Schedule

Entries not meeting any of the above criteria must be brought into compliance before being allowed to compete.

Judge's Comments:

_____

_____

Judge's Signature: _____