

31. Mini-Sumo-Bot Competition

Classroom Activity: Design and build a mini "Sumo-Bot" for competition. The robots must push each other out of the sumo ring.

Grade (s): 9 to 12

Course(s) and Strand (s): Technological Education

Exploring Technologies, Grade 9 Open

- A. Technology Fundamentals
- B. Technological Skills

Technological Design, Grade 10 Open

- A. Technology Fundamentals
- B. Technological Design Skills

Technological Design, Grades 11 University/College

- A. Technological Design Fundamentals
- B. Technological Design Skills

Technological Design, Grades 12 University/College

- A. Technological Design Fundamentals
- B. Technological Design Skills

Technological Design in the 21st Century, Grade 12 Open

- A. Technological Design Fundamentals
- B. Technological Design Skills

See supplementary document Ontario Curriculum Alignment for Engineer-in-Residence Secondary Classroom Activities: Science and Technological Education for relevant overall and specific expectations.

Assessment Categories:

- Knowledge and Understanding
- Thinking
- Communication
- Team-building skills

Type of Activity: Classroom/Lab

Preparation: approx. 30-45 minutes

Time needed to complete the task: 75 minutes for building + 60 minutes for competition. Students are expected to prepare outside class.

Materials and Resources for Teachers:

<http://www.robotroom.com/Bugdozer.html>

<http://www.circ.mtco.com/index.htm>

Materials and Resources for Students:

<http://www.tcrobots.org/articles/a03.htm>

found materials (parts from vcrs, walkmans, etc.)

Activity Description:

Working in teams students will design and build a mini-sumo-bot. The sumo-bots will compete in a round robin event.

The Robot:

The robot will be made of found materials such as parts from vcrs, walkmans etc. Servo motors, motors with existing gearboxes, logo or mechanno-type building materials are not permitted. The robot must weigh no more than 500 grams (including all parts and attachments except the control box). It must fit into a tube that is 10cm wide, 10 cm deep and any height and be controlled by a tether leading to a control box. Each robot may have only one control box. The design must not allow the robot to separate into pieces during a match, although extendable parts that remain attached to the main robot are permitted. Parts that damage the competition Ring or the opponent's robot or operator are not permitted. Liquids, powders, inflaming devices or air may not be thrown at an opponent. The robot may not be stuck to the Ring with glue or other suction devices. The designs must be supported by data, analysis and drawings. A paper outlining the steps in building the robot, including labeled diagrams and clear instructions will be required.

Students should name and number their robots.

The Competition:

The objective is to use the sumo-bot to push the opponent's robot outside the Ring. The Ring is 77 cm in diameter. One match will consist of three rounds, within a total time of 3 minutes. The winner advances to the next round. A point is awarded if:

- a robot legally forces the body of the opponent's robot to touch the space outside the Ring
- a robot touches the space outside the Ring on its own.

Penalty points will be awarded for infractions.

If both robots are in a clinch and stop for more than 5 seconds or move in the same orbit, the match is stopped and restarted.