DR. NELSON YING
TRI REGION SCIENCE
AND ENGINEERING FAIR

Overly Complicated Machine Volume Calculator

Machine Dimensions

1. **Your team may decide to design a machine that fits entirely in a cube of space six feet on each side, length, height and width, and call it done. Just make sure it disassembles into pieces that will make it through a 5'6" door at Syracuse University.**

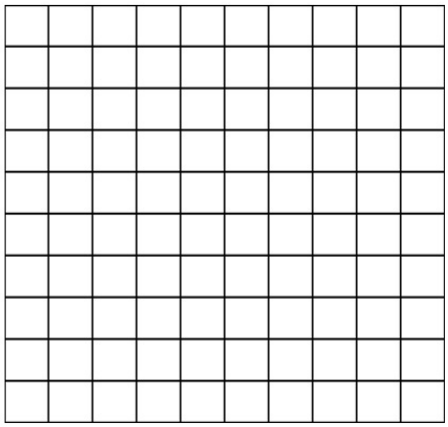
2. Advanced volume calculation option: All machines must fit in an overall volume of 250 cubic feet (7.1 cubic meters). Your calculation choice does NOT affect the judges' scoring!

3. Your machine may not exceed 10' length or 10' width or 8' height (3 m or 3 m or 2.4 m).

4. Think ahead and make your machine in smaller parts, so each can go through 5.5' wide doors.

5. Teams may build a machine in any shape they wish, so be creative!

   a. Draw your machine footprint. A 10x10 grid helps!

   Count the number of 1' x 1' (0.3 m x 0.3 m) squares into which the machine footprint falls. This is the AREA of the machine footprint. *If any part of the machine enters any of the 1' x 1' (0.3 m x 0.3 m) squares (even if it does not touch the ground/table), the entire square must be counted.*

   b. Measure from the lowest to the highest point of your machine; this is the HEIGHT.
   NOTE: If the ENTIRE machine sits on a table, the height of the table may be excluded from the height of the machine. If ANY piece lies below the table surface, then the height of the table must be included in the height of the machine.

   c. Calculate the Machine Volume using the formula: area x height = machine volume

   d. Your Machine Volume must be equal to or less than 250 cubic feet (7.1 cubic meters).

Mary Eileen Wood, Director of STEM Initiatives
Director, Ying TRSEF
315.498-2738 office 315.559.9374 cell
200 Mulroy Hall, Onondaga Community College
Syracuse NY 13215
www.YingTRSEF.org