

2019 DESIGN AND BUILD FOR LIVE CONTEST

3. HOW TO CALCULATE MACHINE VOLUME



Calculating Machine Volume - Complete this on your Team Page

ALL TEAMS IN THE LIVE CONTEST must design their machine to fit in an overall volume of 300 cubic feet (8.5 cubic meters). The machine volume is defined as the overall footprint (area) of the machine (rounded up to the nearest foot) multiplied by the height of the tallest step.

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

How to Calculate the Volume of a Machine

1. Calculate the volume online on your Team Page. You may also draw out your machine footprint on the grid found in FORMS.

NOTE: The overall dimensions of your machine may not exceed 10' length x 10' width x 8' height (3 m x 3 m x 2.4 m). 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.

2. 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.

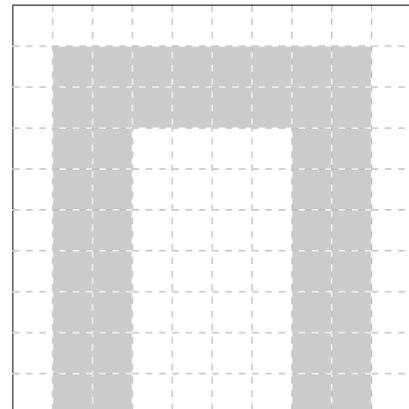
EXAMPLE: area = 44 squares

3. Measure from the lowest to the highest point of your machine; this is the height of your machine.

NOTE: If the ENTIRE machine sits on a table, the height of the table may be excluded from the height of the machine. If only ONE section of the machine uses a table, then the height of the table must be included in the height of the machine.

EXAMPLE: The tallest part of the machine is a 5' tower, so height = 5'

Example



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

EXAMPLE: 44 squares (area) x 5' (height) = 220 ft³

5. Your Machine Volume must be equal to or less than 300 cubic feet (8.5 cubic meters)

EXAMPLE: 220 ft³ ≤ 300 ft³ (maximum) g Machine Volume is within specifications

CAUTION: Machines that exceed the maximum machine dimensions of 10' L x 10' W x 8' H (3 m L x 3 m W x 2.4 m H) will be disqualified.