

8th Grade Do It Ahead Marble Machine

Description:

Students, as individuals or in teams of two, will build a machine using recyclable materials that allows a marble to roll freely and continuously for as long as possible in forward motion. The winner will be the machine whose marble travels the longest amount of time. The winner will receive a grade of 100%.

Competition Rules:

1. The entire machine must be attached to a base and not exceed a length of 55 cm, a width of 55 cm, or a height of 55 cm (including the base). The machine should not exceed the size of an X-Large, Public Storage Box. The boxes can be purchased at Public Storage. They are 6.0 Cubic feet in volume and measure 22 in x 22 in x 21 1/5 in. These boxes will be used to measure your machine when you enter the competition.
2. The marble machine must be powered solely by the force of gravity.
3. No machine or device (positioned along or at the end of the track) may be used to re-start the motion of the marble. No device can pick up or reposition the marble once it is in motion.
4. No oils, sand, or other viscous solutions may be used in this competition.
5. The marble must roll in a prepared track that has a definite beginning and ending point. The end of the track must stop the forward motion of the marble.
6. The marble must be visible to the judges at all times. No closed tubing may be used, even if it is clear and the marble is visible.
7. Each contestant will have two chances to demonstrate their machine. The best (longest) time will be recorded.
8. Funnels or bowls may **not** be incorporated into the machine.
9. Contestants must be positioned at the marble machine at the time of the judging. The contestant, not the judge, is responsible for starting the

marble's motion. Once the marble is set in motion, the marble machine cannot be touched until the marble stops. Parents are not allowed to touch the machines during the competition.

10. CPO steel marbles will be used to test the machines. These marbles can be purchased at the following website: http://www.cpo.com/em_accessories.shtml The item number is 92W-392-3020. Five marbles can be purchased for \$6.95 plus shipping and handling. You might want to consider splitting the cost with 5 other groups of students so that you will have the appropriate marble to test your machine.

Machines that do not meet the minimum requirements, as discussed above, will be disqualified and will receive a maximum grade of 84%. Students who meet all minimum requirements will receive a grade of no less than 85%. Grades will be scaled based on performance, with the top three winners receiving a 100%.