

2-Liter Bottle Rocket Contest for High School Students

Official Rules

Spring 2012

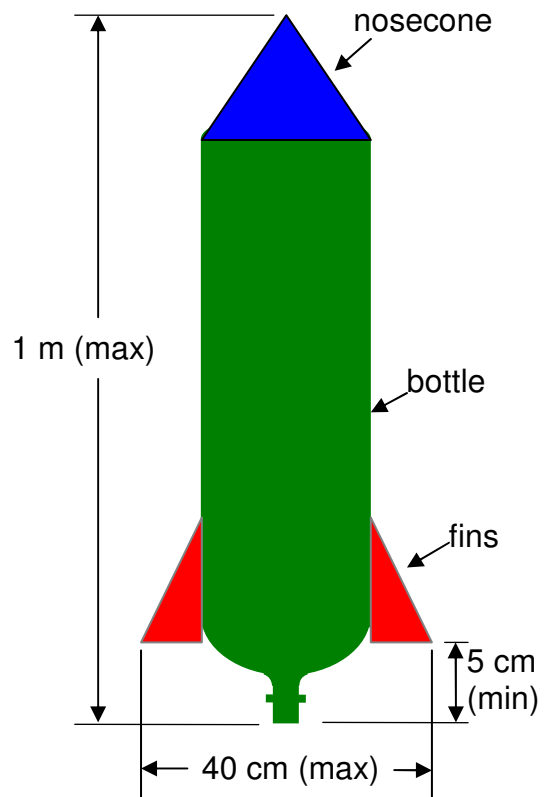
Cookeville Campus of Nashville State Community College

STUDENT REQUIREMENTS:

1. Student must be currently enrolled in high school (public, private, or homeschool).
2. Rockets are permitted to be built by teams of up to 3 students.
3. Rules are subject to change as necessary.

ROCKET REQUIREMENTS:

1. The only propulsion component permitted is water and compressed air. Target air pressure for launch is approximately 100 psi (pounds per square inch or 690 kPa).
2. Rockets are to be constructed from 2-Liter soda bottles (such as Coke and Pepsi) with fins, nosecone, and recovery system. 3-Liter bottles may not be used as this would require launcher modifications.
3. Each rocket must have a parachute recovery system that limits the speed of the rocket as it descends.
4. Maximum diameter of a rocket (including any fins or nose cone attachments) is 40 cm (16 inches).
5. Maximum height of a rocket (including any fins or nose cone attachments) is one meter (39 inches).
6. The rocket fins or any other item attached to the rocket must not hang lower than 5 cm (2 inches) above the rocket nozzle. This is required to prevent interference with the launcher.
7. Each team will be allowed to enter a single rocket. The rocket may be repaired if necessary between launches.



CONTEST RULES:

1. The contest will be held on Wednesday, May 9, 2012 at 9:30AM at the Cookeville Campus of Nashville State Community College. The Cookeville Campus is located at 1000 Neal Street, Cookeville, TN 38501.
2. Each school faculty sponsor (teacher) should notify the contest organizer (by email preferably) of the number of teams that will be competing at least 2 weeks prior to the contest (April 25, 2012). This notification is necessary in order for the NSCC Cookeville campus to properly prepare for the number of students.
3. Each school will be provided with a copy of the registration form required to participate. Each team should have the registration form filled out completely before arriving on campus for the competition.
4. The Contest
 - Build the rocket that will have the longest time of flight (measured from liftoff to touchdown).
 - Each launch will be timed. The team with the rocket that achieves the longest time of flight will be declared the winner.
 - Teams may choose to launch rockets several times in order to improve flight time. The best flight time for each team will be used to determine final placement.
 - If necessary, in order to accommodate all teams, each team may have to be limited to 5 launches.
 - Launches will be conducted on a first come basis.
 - The rocket must reach an altitude of 75 feet in order for flight time to be valid.
 - Launches will start at 9:30 am and end by 1:00 pm with an approximate 30 minute lunch break.
 - The teams with the top 3 times of flight at the end of the contest will be declared 1st, 2nd, and 3rd place.
5. Ground rules
 - The liftoff time is determined automatically. The landing time is determined by the judges.
 - Landing time is determined by when the 2-liter bottle portion of the rocket hits the ground or otherwise ceases to fall. In the event the rocket lands on the roof, in a tree, or is otherwise prevented from reaching the ground, the landing time will be recorded as the time that the rocket stopped falling.
 - If a rocket lands out of sight of the judges, the judge will use his/her best judgment as to when the rocket landed to determine flight time.
 - In the case of high winds or bad weather, the launching may be suspended.
 - Multiple stage rockets are permitted (two or more pressurized bottles coupled together). The landing time of a multiple stage rocket will be determined by the landing time of the uppermost stage of the rocket.
6. Once a rocket has been placed on the launcher and pressurized, no one will be allowed to touch the rocket. Example: If the nose cone of the rocket is blown off

by wind, the rocket will be launched as is. This is a safety requirement and no exceptions will be made.

7. Rockets that are deemed unsafe to launch in the opinion of the judges will be disqualified.
8. The decisions of the judging team are final. Rules are subject to change. There is no process of appealing judges' decision.
9. Rockets must be constructed to fully meet the ROCKET REQUIREMENTS.
10. Students are responsible for preparing their rockets for launch. This includes filling rocket with an optimum amount of water.

SUGGESTIONS:

1. There are multiple websites available that discuss construction techniques for 2-Liter bottle rockets. Using the Internet search term "2-liter bottle rocket" will yield several links. The contest website (<http://ww2.nsc.edu/rocketcontest/>) also has some useful links.
2. Teams are encouraged to build a launcher and test their rocket designs. Internet resources can be used to obtain designs for launchers. Each rocket, depending on the method of construction, will require a different amount of water in order to obtain maximum height. Students are encouraged to experiment.