

# WATER ROCKETS

## Description:

Prior to the tournament, contestants use 2-liter plastic soda/pop bottles to build one or more rockets propelled by air pressure and water. The rocket that stays aloft for the longest time will win.

Number of Participants: 1-3

Approximate Time: 10 minutes

## Construction:

1. Rockets must be made from a 2-liter soda/pop bottle used to hold water and air pressure that propels the rocket when released. The bottle itself must not be altered in any way. (e.g., holes, scratches, increasing the volume, restricting the bottle's opening).
2. Fins, parachutes and other items may be added to the outside of the bottle to increase the time aloft. Commercially made rocket components, sharp/pointed objects, parts made from glass and metal (except for a small snap swivel for attaching parachutes) and adhesives, such as super glue (cyanoacrylate) and high temperature hot glue that weakens the bottle is not allowed.
3. Rocket(s) must fit on the launch pad provided by the event supervisor and have a straw attached vertically to one side of the bottle to keep the rocket vertical during launch.
4. Energy to propel the rocket must come only from the water and air pressure in the bottle. Other sources of potential or kinetic energy are not allowed. Only plain tap water may be used in the rocket. No other material of any type may be put in the bottle or added to the water. A water level line may be marked on the bottle to aid in adding water.
5. Parts of the rocket may separate during flight, but they must remain attached together by a string/lanyard.
6. The school name and team number must be clearly marked on all rockets and parachutes.

## The Competition:

1. Contestants may bring repair kits containing tools, spare parts and extra parachutes. The rocket(s) and repair kits must be brought for inspection 15 minutes prior to your scheduled launch. Any parts found to be dangerous (e.g. glass or metal), illegal (e.g. commercially made rocket parts), or that prevent a rocket fitting on the launch pad must be removed before the rocket can be launched. Rockets that are changed to meet the construction requirements will not be penalized. Rockets without the straw, those that cannot be made to fit on the launcher, or those that, in the event supervisor's judgment, are unsafe will not be launched.
2. Two launches will be allowed. Different rockets may be used for each launch. Contestants must use the water, launch pad, and source of pressure provided by the event supervisor. The contestants will add the desired amount of water to the rocket



before each flight and may make alterations or repairs to rockets between launches. Outside assistance/coaching from the sidelines is not permitted.

3. The judges will pressurize the rocket to 75 psi and launch it. Anyone within 10 meters of a pressurized rocket must wear eye protection. Contestants may not hold their rocket during pressurization. Please do not exceed this pressure when practicing. Only the coaches should pressurize the rocket.
4. Once a rocket has been pressurized it must be launched. In case of high winds, the supervisors will launch the rocket as quickly as possible. It will be the supervisors' decision whether the flight should be considered as unofficial due to the weather conditions.

### **Scoring:**

1. Judges will measure and record the time aloft for each flight. Time starts when the rocket is launched and stops when any part of the rocket touches the ground, or any object in contact with the ground. (e.g. tree, building). Teams will be scored using only the flight that will produce the better score/rank.
2. Flights of rockets whose parts do not remain attached together during the entire flight, or that cannot be changed to meet the construction requirements, will be ranked, by their time aloft, behind all flights of rocket's without construction violations and whose parts remain attached.
3. Teams whose rockets cannot be launched for any reason will receive participation points only.
4. The longest time aloft wins. Ties will be broken using the team's lesser flight times. Teams with two flights will win ties over teams with only one flight.

