Design Challenge Remix: Battle of the Buoyant Boats

Participate in Design Challenge: Battle of the Buoyant Boats at the 2012 Science Festival. There are two separate divisions in this team competition – teams who participated at the Washington Pavilion on April 21st and teams who are competing in this challenge for the first time. We encourage those who competed in this spring's Pavilion event to learn from their experience in April and adjust their boats for a second round of competition.

Design Challenge is an annual Pavilion program that aims to motivate and inspire innovation in students through a large hands-on project they must develop, document and design themselves. The challenge changes every year and requires students to tap into the worlds of science, technology, engineering, and math and channel their inner Einsteins.

Date

Saturday, July 28, 2012 starting at 10 a.m.

How to Get Involved

Participation is as simple as registering and then letting us know you're in! There is no cost involved. Schools, community groups, or families are all able to register teams.

We ask that you fill out the attached registration form and submit it to the Pavilion by July 1st. Schedules for July 28th and set-up details will be mailed to teams during the middle of July.

Age Categories

Competitors will be grouped according to grade level. If team members span multiple age groups the team will be placed according to its oldest member: 3rd – 5th, 6th – 8th, 9th – 12th
**Team Size**

Teams should have at least 2 and up to 5 individuals.

**Expectations**

**The Vessel**

The rules of the competition are simple. Students must construct a boat with maximum buoyancy in mind. The width and height of the vessel must not exceed 1 foot and the length must not exceed 2 feet – in other words vessels should fit into a box 2x1x1ft. In addition the vessel must have an eye bolt attached firmly to the bottom of the craft: the eye bolt can extend past the 2x1x1ft dimensions. Finally, your vessel must be capable of holding three (3) full 2-liter bottles of soda. During the competition, the Pavilion will be providing the bottles for evaluation. Your bottles may be arranged however you choose and can extend past the 2x1x1ft dimensions.

However, they must sit within the hull of the boat, no hanging the cargo overboard or dangling them in the water. During the competition a clip will be attached to your eye bolt and weight will be added incrementally until no part of your boat breaks the surface of the water, your craft drops any one of its three soda bottle cargo, or the eye bolt becomes detached from your vessel. Your score will be tallied based on the total amount of weight withstood. It would be wise to construct a boat that not only is maximally buoyant but also one that can hold up to the pulling force on the eye bolt.

The eye bolt MUST have a wire diameter of .300, a 13/16” closed eye, and have a load capacity of 250lbs. If we can’t attach our pulley system to your boat, you will be unable to compete. The cost of this bolt should be very minimal and will be available at most local hardware stores, if there is any confusion on obtaining this part please do not hesitate to contact Janelle Whitlock (jwhitlock@washingtonpavilion.org).

The point of the Design Challenge is to design and construct your own vessel. With this in mind we are banning any type of premade haul. A team cannot merely enter an unmodified cooler. Basically, the primary construction of your boat must be designed and constructed by you. Incorporating premade elements into your design is great; incorporating your design into a premade vessel is not. Since this leaves room for a lot of grey area do not hesitate to e-mail pictures or descriptions of items in question to Janelle Whitlock (jwhitlock@washingtonpavilion.org).

During the competition vessels will be evaluated in a tank with a pulley system.
Cost

There is no cost to participants in the Design Challenge. Project costs should be low. The investment should be primarily in time and effort.

Rules of the Challenge:

At the Battle of Buoyant Boats participants will be assigned a testing order time during registration. In order to keep the competition moving we are allowing 5 minutes per team to set up and test their boat. The soda bottle placement will be performed by each team. Once the craft is afloat with the three bottles a cable will be attached to the eye-bolt. Judges will attach the weight cord to your eye bolt. The score will be the total amount of weight the craft can withhold. As soon as one team is finished the team “on deck” will start their 5 minute set up and test window. Once every team has had an opportunity to test their boat, judges will tabulate the final buoyancy scores based on total weight held.

Removable accessories (flags, sails, etc) can be utilized but must be removed during the testing.

The ruling of the judges is final.
Judging

Age groups will be competing and awarded for buoyancy.

A grand prize winner will be awarded to the team with the greatest score of the day. All prizes and awards will be presented immediately after the competition.

Check list:

- I have submitted our team registration form by July 1, 2012.
- My vessel has dimensions no larger than $2\times1\times1$ ft.
- My vessel has a closed eye bolt located on the bottom center of my boat capable of withstanding the force required to sink my boat.
- My vessel has enough cargo space to house three (3) full 2-liter bottles of soda.
2012 Science Festival

Design Challenge: Battle of the Buoyant Boats II

TEAM REGISTRATION FORM

Each team should fill out the following form which should then be returned via e-mail or regular mail to the Washington Pavilion by July 1, 2012. Thank you! Please print or type.

Team Name ____________________________________________

Age Category ________

Individuals on Team (2-5 permitted)

Name: ___________________________ Grade: _____ Age: _____
Name: ___________________________ Grade: _____ Age: _____
Name: ___________________________ Grade: _____ Age: _____
Name: ___________________________ Grade: _____ Age: _____
Name: ___________________________ Grade: _____ Age: _____

Adult Team Leader Name: ____________________________________________

Leader E-mail Address: ____________________________________________

Leader Phone Number: ____________________________________________

Leader Street Address: ____________________________________________

City: ______________________ State: ______ Zip: __________

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