

# National Engineers' Week Student Competitions

UAA Engineering & Computing Building, Anchorage, AK

Saturday February 18, 2017; 10:00 am - 2:30 pm

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## Floatable Moatable Marble Competition

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**Objective:** Using materials provided at the start of the competition time, design and build a free floating “boat” that can be loaded with a large number of marbles (and still float) in a five-minute time frame. The winning entry will be the one that holds the most marbles without sinking before the end of the loading period.

This competition is designed to let young engineers experience extemporaneous (i.e. "on-the-spot") design. Your Team of 4 or 5 members will be issued a kit one hour prior to testing time and be allowed to construct a winning craft and a device for loading it with marbles from a distance. Official float construction kits (containing things like baggies, tape, paper clips, card stock, string, etc.) will be issued the day of the competition.



### Procedures and Specifications:

- a. Register for a starting time at the registration table located at the competition site on the day of the competition.
- b. Your team will have exactly one hour to invent and make a floatation structure and a marble-loading device using only the official contest materials kit provided. You are not required to use ALL of the materials provided. Every idea is a good idea.
- c. Your floatation structure must be free-floating. This means your floatation structure must be made so it moves freely around the tank, and not affixed inside or outside the tank in any way. You may try out your design at any time at one of the practice tanks provided.
- d. After exactly one hour, STOP work; and your team will be given five minutes to place your floatation structure in the storage waiting area until your contest time comes. No more work on your floatation structure will be permitted.
- e. When your team is called for the contest, you will have FIVE minutes to get your floatation structure from storage, set it up, and organize your team. Then, when the contest begins, you will have FIVE minutes get as many marbles as possible into your floatation structure. No leaning over the table will be permitted.

**Remember, if your Flotation Structure sinks, your Team is out of the competition!**

- f. After FIVE minutes, the competition time is over. Your floatation structure must still be floating to remain in the competition. If your floatation structure sinks, or has sunk, your

team will be out of the competition. The number of marbles in the floatation structure will be counted. Any marbles which have fallen onto the table, the floor, or the tank will be subtracted from your team's total.

Teachers, you are encouraged to get your teams together and practice group activities prior to the official contest. Structure your activity similar to the actual contest by gathering a kit (paper, baggies, tape, scissors, etc.) of approximately 10 to 15 items and constructing a floating device in a given time period. Then give the team 5 minutes to fill it up. Your design must also include a device for getting the marbles into the floating structure because leaning over the table is not permitted.