Name:_____Period:____Date:_____
Ms. Randall Marine Science
Buoyant Boats

Introduction

In this activity, you will use the materials listed below to build a boat with the greatest buoyant force possible. The boats will be tested by floating the boat and adding mass; the boat that supports the greatest load wins. Buoyant force is the upward force that keeps things afloat. The buoyant force is equal to the weight of the water the boat displaces.

Objective: To design and build a boat with the greatest buoyant force.

Here are the rules of the game:

- You may use only the materials listed to build your boat.
- You may omit only one item from the listed materials. All others must be included.
- Your boat may be no larger than 50 cm in any dimension.
- When testing the boats, the last mass added to the boat (the one that makes it sink) must be removed from the boat before totaling the mass that the boat held.

Materials:

- Aluminum foil (1 meter)
- 4 craft sticks
- 4 toothpicks
- 2 straws
- 30 cm of tape
- Glue

Design notes:

Questions:

1. What was the mass of your boat before testing it?

2. How much mass did the boat hold before it sank?

3. What is the total mass of the boat and the added weight?

4. What was the total mass of the water displaced by your boat? (Hint: See Buoyancy Basics http://www.pbs.org/wgbh/nova/lasalle/buoybasics.html

5. How might you have improved the performance of your boat? What could you have changed, added, or deleted?

6. A barge filled with sand approaches a bridge over the river and cannot quite pass under it.

7. Should sand be added to or removed from the barge to get it under the bridge? Explain.