



Boat Buoyancy Lab

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Science
Grades 6–8



Introduction

Students will be exploring the world of boating and buoyancy in this lab. The students will design various prototypes of boats in order to determine what design can hold the most passengers. Students will need to determine the criteria and constraints that are in place for this lab. At the end, the lab groups will create their final prototype to see which group's vessel can hold the most passengers without sinking! This is a fun hands-on activity for the students to use critical thinking skills with.

Learning Objectives

Students will use the engineering design process to create boats and demonstrate buoyancy.

Materials Needed

- Bin $\frac{3}{4}$ full of water
- Pennies
- Pre-measured and cut 5"x5" aluminum foil squares
- [Boat Buoyancy Lab Report](#)
- Paper towels
- Engineering Design Process anchor chart

Procedure

1. Prior to the start of the class, the teacher should prepare the appropriate amount of stations with: water bins, paper towels (for water spills), pre-cut 5"x5" foil squares, and pennies. It would be helpful to have an anchor chart with the Engineering Design Process on it as a reference to use throughout the lab.
2. Pass out the lab to the students.
3. Brainstorm the answer to the first question on the lab report. Have students work in small teams with students nearby to activate prior knowledge of boats. After two or three minutes, create a list on the board and have students add to their individual ones.
4. Walk through the lab with the students. Go over each question and the expectation for each question. The lab report will walk the students through the investigation. Explain that the value of each step in the lab is right next to the question. Review terms such as: buoyancy, constraints, and criteria. Break students into groups of three or four and review Science Lab Expectations.

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5. It is important to remind students to add one penny at a time into each boat and to keep accurate count. It is a good idea to bullet point key points such as this on the board as a reminder for students.
6. Monitor and help students as needed through this lab. You may need to guide groups or help students to work together to engineer the boats.
7. After students create their fourth prototype, they should clean up their lab space and complete the lab report with their teams. It may take a second class period to complete the lab report and to have the class “competition” to see which group created the boat with the most buoyancy! Have the students gather in a circle around you and announce each boat name before setting it into the water. Add one penny at a time and have the class help you keep count. There should be one student designated as the recorder to keep track of how many passengers (pennies) each boat will hold.

Evaluation

The Lab Report will be evaluated based on the point values located next to each question.