

CONSTRUCTING AN ALUMINUM FOIL BOAT

Forces in Fluids Unit

Objective

- Measure the mass and volume of different objects and calculate their densities.
- Given the provided materials, design and construct a boat that will hold the most amount of pennies and still float.

Rules

- Using the aluminum foil and tape, you need to construct a boat that will float on water and hold a load of pennies.
- You do not have to use all the materials, but you may not use any more than listed.
- The boat that holds the most pennies wins
- The penny that causes the boat to sink does not count.

Required Materials

- Pencil
- 5 squares of Aluminum Foil (13 cm X 13 cm)
 - 3 squares will be used in building boats
- Scotch Tape (30 cm)
- Container Filled w/ Water
- Pennies (100 max)
- Electronic Scale
- Graduated Cylinder (100 mL)

Pre-Lab Questions

- Make sure to answer all pre-lab questions.
- You may use your notes to help you answer the questions
- Make sure to answer **ALL** questions in complete sentences

Part A

- 1. Crumble up one sheet of aluminum foil into a ball and drop it into the container of water.
- 2. Now, lay a flat piece of aluminum foil on the surface of the water.

Part B

- Find the mass, volume, and density of each of the objects/ substances in each of the tables below and record these values.
- Density of Water
- Density of Pennies - Use your data from the Coin Density Lab
- Density of Aluminum

Part C

- Sketch out 3 possible designs that you could use to construct a boat that you feel can carry a load of 100 pennies without sinking.
- Predict the number of pennies that each of your boat designs will hold before sinking, and write this number in the spaces below.
- Once you are satisfied with your designs, construct your foil boat and test it by placing one penny at a time into the boat (Note: Spread your pennies out evenly so that not all the weight is on one side of the boat, which will cause it to sink.). Remember, you do not have to use all the materials, but you may not use any more than listed. If your boat sinks prematurely, make adjustments to your existing design and retest.
- Continue to make adjustments until your boat holds the most amounts of pennies possible.

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