

Name: _____ Period: _____ Date: _____

Aluminum Foil Penny Boat Lab

Using Archimedes' Principle and Buoyancy

Hint: Remember that Archimedes' Principle tells us the buoyant force on an object is equal to the weight of the fluid displaced by that object. This means that if you are trying to carry as much weight as possible in a boat, you are trying to have the most buoyant force.

Instructions:

1. Form groups of three.
2. Obtain a 10cm x 10cm piece of aluminum foil. Your group will receive only one piece of foil, so be careful with it.
3. Decide on a name for your boat. It must be school appropriate.
4. Fold, bend, cut or modify your aluminum foil into a boat. It may be any shape. Your goal is to make a shape that can hold as many pennies as possible without sinking.
5. When you have finished creating your boat, write your boat's name on the board.
6. Once each group is finished (or after 15 minutes), Mr. Lorich will test each boat's penny capacity.
7. You will earn 3 points for each penny your boat holds without sinking.

Questions (10 points each):

1. What shape of boat was the most successful? Why?

2. The mass of a penny is 2.5g. If a boat can hold 22 pennies before sinking, what is the mass of the water it displaces? (The density of water is 1.0 g/cm³)

3. If you are told that a boat can displace 75 mL of water, how many pennies can it hold before sinking?

4. Mercury, a metal that is liquid at room temperature, has a density 13.5 times the density of water. How many pennies could your boat hold if we were floating it in mercury instead of water?

Name of your boat: _____

How many pennies did your boat hold? _____