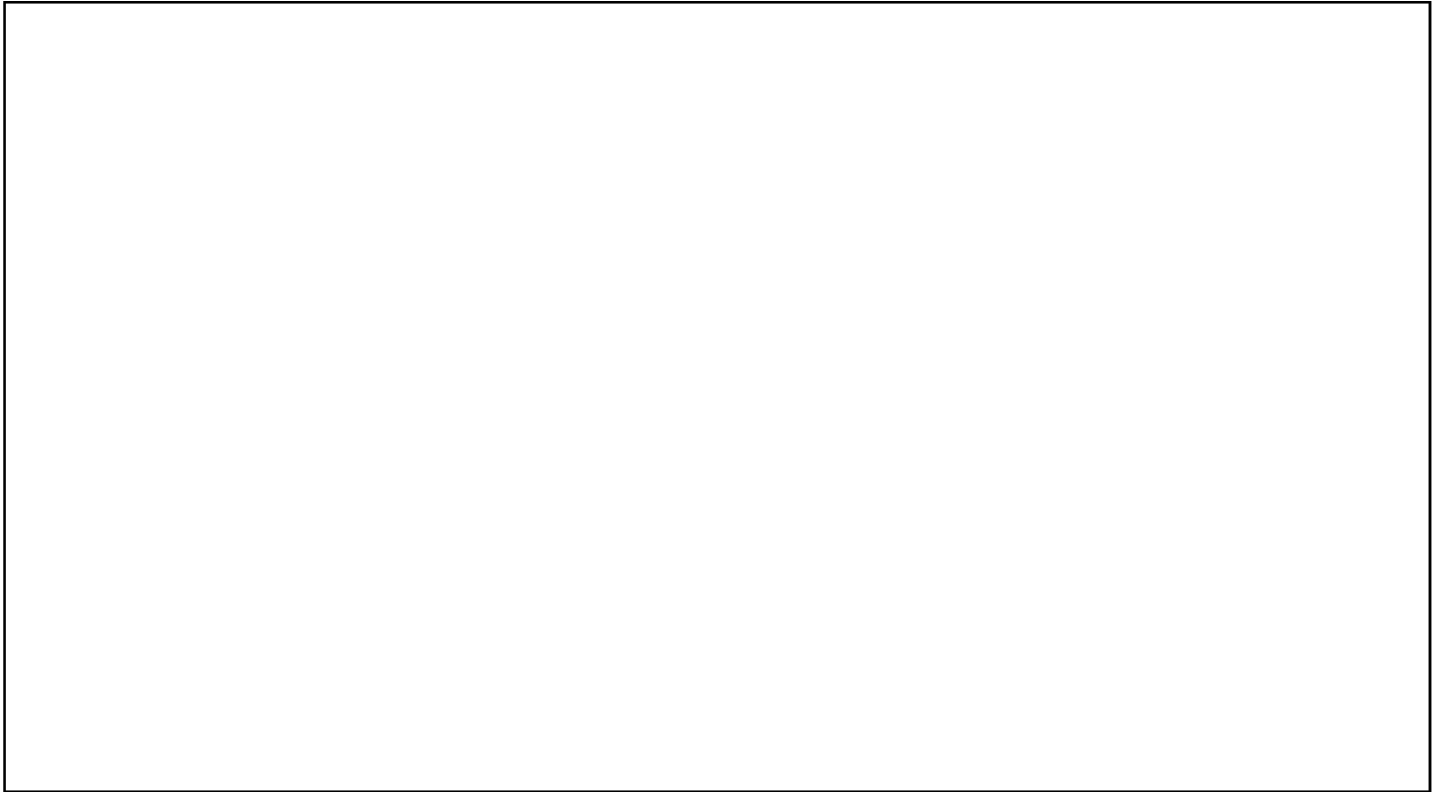


# Lab: Clay Boats

ARCHIMEDE'S PRINCIPLE

**The challenge:** Your job will be to design a boat that will float in water and hold the most amount of weight (pennies). You will be given a measured amount of clay (**50 grams**), a **container of water**, and **pennies**. You will have approximately 30 minutes to work with the clay and test out your designs. At the end of that time you will be asked to demonstrate in front of the class the number of "**weights**" (pennies) the boat can hold. Extra credit will be given for the most weight floated, longest boat, and most innovative. When you have completed the competition, answer the questions below.



1. Draw design of your boat below. Give dimensions in cm (length, width, and height)
2. How many pennies did your boat hold? How many did the winning boat hold?
3. What characteristics seemed to produce the "best" boat (hold most weight)?

4. Primitive peoples must have made their boats of wood. Could they have conceived of an iron ship? We don't know. The idea of floating iron might have seemed strange. Using what you have learned today, explain how a boat made of iron could float. (use complete sentences)

5. The Greek philosopher **Archimedes** (third century B.C.) discovered an interesting principle concerning the relationship between buoyancy and displaced liquid. It is stated as follows:

*An immersed object is buoyed up by a force equal to the weight of the fluid it displaces*

This relationship is called **Archimedes' principle**. Using this relationship, explain why the winning boat was able to hold up the most weight. (*If you don't know the meaning of the words **buoyancy** or **displaced**, look them up in the dictionary before you begin*).