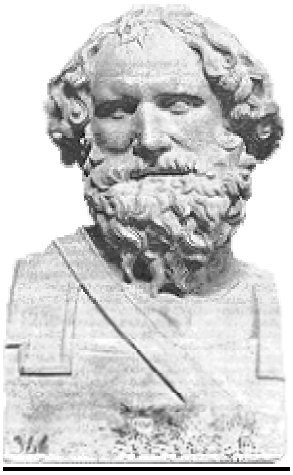
Archimedes Principle (sample activity 1)



Theory:

mass = density x volume
or
m = pV

Archimedes (ca. 287-212 B.C.) discovered a simple principle that relates the buoyant force acting on an obect submerged (or floating) in a fluid to the density of the fluid that the object is in. Simply stated Archimedes' Principle states: **The buoyant force acting on an object *equals* the weight of fluid displaced by the object.**

Warm up questions using $m = pV$: Hint: In this activity you will be calculating several things. Make sure to include **units to all answers** (if they are not already provided) and make sure to express you answer to the appropriate number of significant figures (for this lab no more than three).

Question 1: ***Water has a density of 1.0 g/cm^3***. If an object of volume 4.0 cm^3 is completely submerged in water, what mass of water is displaced by this object?

What is the buoyant force (mass in this case) acting on the object (see Archimedes' Principle)?

Question 2: When a 10.0 g object is completely submerged in water, its apparent mass is 6.0 g.
What is the mass of water displaced by this object?

What must be the volume of the object?

What is the density of this object?