1. 12-1.03

EARTH

Ocean water
2.2 – 2.9 Crust
3.4 – 4.4 Upper mantle
4.5 – 5.6 Lower man...
9.9 – 12.2 Outer co...
12.8 – 13.1 Inner core

Densities in g/cm³

# Density & Design 2
Density = mass/volume   D = m/v
Buoyancy
Science 8   February 2019   Mrs. Plyter   plyter.com/science

Name   Period

Barge: Flat bottomed boat for cargo

12   **13**   **14**   **15**

Density Lab

Float Challenge

Barge

Online

Figure your Grade!

For Last Week:
How many points did you get for last week?
Calendar _____
Density Lab _____
Online _____
Quizzes _____
Total = _____

Required Points for last week:
Calendar 7
Density Lab 50
Online 25
Quizzes 40
Total = 122
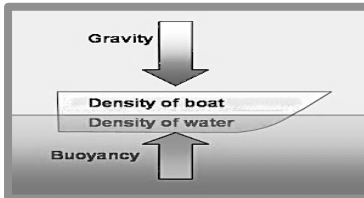
Divide to get your %-age
Yours / Required X 100
Your % = _____
90=A 80=B 70= C 6-=D

For Semester Grade:
Your points / Total Points X 100
_____
How many points to get to the next grade? _____

12

Gravity
Density of boat
Density of water
Buoyancy

Float Challenge:
__1. Obtain 3 test tubes and place in test tube holder.
__2. In Tube 1: Obtain < ½ tube colored water. Write color _____
__3. In Tube 2: Obtain < ½ tube of colored salt water . Write color _____
__3. **Layer** liquids in Tube 3 by slanting tubes and pouring slowly:
    a) __Salt Water
    b) __Plain water
    c) __Alcohol
__4. Draw and Label.↗
__5. More **Layers:** Find and add tiny pieces of substances. Try to get at least one to float on each liquid and one to sink.
__6. ↗Draw. #↗ Label. ↗
__ 7. Have checked.

13

Label & # each and then write the number of substances you have.

#_____Check_____

14

Design & Build a Barge
Move Cargo
_____

15

buoyant force
weight
gravitational force

Central Science Page   www.plyter.com/science
Have Screen Check, Screenshot or Photo.
Physical Science→
Discovery→
   1) Music Video: Sinking and Floating _____

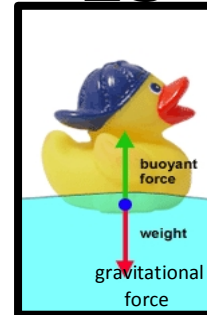   **2) Gravity and Buoyancy** – Fill in as you go.
a) A push or a pull is _____
b) A force that pulls 2 objects toward each other. _____
c) The force of a fluid (gas or liquid) pushing up against an object is _____
d) The force that slows things down is _____ _____

   3) Hot Air Balloons _____

   4) Explaining Buoyancy _____

   5) Experimenting with Buoyance _____

Quizzes:
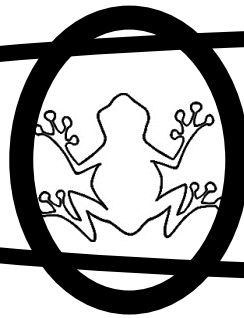Use color.   Initial.

Mon _____
Tue _____
Wed _____
Thu _____
Fri _____

Total_____

OBJECTIVE:

Write the Formula for finding Density in words and as a math formula:
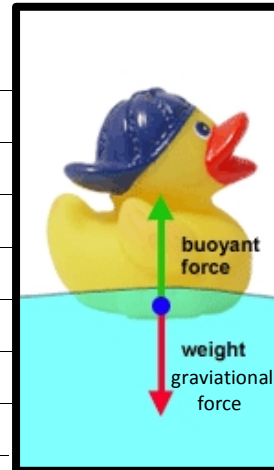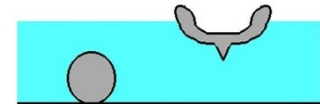
Density = _____   D = _____

Write the Objective:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Archimedes Principle: the buoyant force on a submerged object is equal to the weight of the fluid (water) that is displaced by the object. Buoyancy is the ability of an object to float in water or air. By adding air to objects, we get more buoyant force.
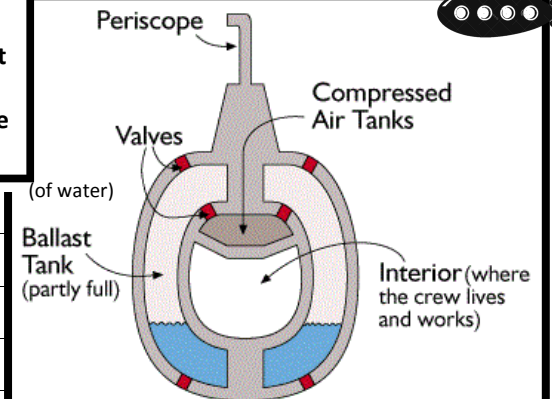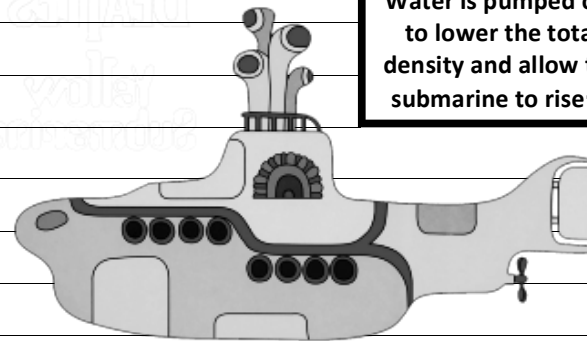
Archimedes' Principle explains why steel ships float when solid steel spheres do not float. Because of all the air in the hull, the overall density is less than that of water, therefore, it floats- the buoyant force <u>equals</u> **the weight as the ship floats on the surface of the ocean.**

ball: displaced water weighs less than ball
hull: displaced water weight = hull weight

buoyant force

weight
graviational force

Submarine:
Water is pumped out to lower the total density and allow the submarine to rise→

Periscope

Compressed Air Tanks

Valves

(of water)

Ballast Tank (partly full)

Interior (where the crew lives and works)

OBJECTIVE:

Design (using dry calculations as evidence), build and demonstrate, an object that uses air to reduce overall density, carries cargo and is buoyant (floats) in water. 6.1P.1