Date\_\_\_\_\_Pd\_\_\_\_

## **UNIT 1 CP WORKSHEET 2 - Graphing & Interpreting Data**

Graph the data in each problem and use the graph to answer the question below it. Assume that the data in the first column is the independent variable and the data in the second column, the dependent variable. When plotting a graph, take the following steps:

- ✓ Choose a convenient scale to make your graph as large as possible.
- $\checkmark$  Graph the independent variable on the x-axis.
- $\checkmark$  Label axes with variable and units.
- ✓ Title your graph.
- ✓ Plot your points.
- $\checkmark$  Draw a best fit line through data with a ruler (do not connect point to point).
- 1. When the density (mass/volume) of a boat is less than the density of water, the boat will float. If you add too much cargo to the boat, increasing it density to more than that of water, it will sink. In this exercise, you will graph the density of a vessel (boat) vs its mass as you add cargo. You will then use this graph to predict the mass of the vessel that will make it sink.

## **Procedure:**

- Go to the <u>Buoyancy Tutorial</u>. (<u>http://www.mhhe.com/physical/giambattista/buoyancy/buoyancy.html</u>)
- Click "water" for the medium. Record the density of water.
- Click "Start". Record the density of the vessel next to its initial mass (5.0 kg).
- Using the slider under "Next Mass", change it to 1 kg. Click "Add Cargo" five times. Each time, record the density of the vessel for each mass.

## Data:

```
density of water =  ____ g/cm^3
```

mass of vessel (g)	density of vessel (g/cm <sup>3</sup> )
5.0	
6.0	
7.0	
8.0	
9.0	
10.0	

Make a graph of your data on the grid below and draw a "best-fit" line through your points.



Density of vessel vs Mass of vessel

What is the value of the mass for which the density of the vessel is the same as the density of water?

Predict how much mass will make the vessel sink. \_\_\_\_\_g

Go back to the simulation and test your answer. Were you right? If not, what is the correct answer?

2. Data below were taken for several buildings in a prominent city.

Number of Stories	Height of Building (m)
7	21
12	35
5	16
3	10
9	26

Using your graph and best-fit line, how many stories would you predict a 30m tall building to have?

3. Data below were taken for the number of students taking science at various schools and the number of science classes taught at those schools..

# of Classes	# of Students
4	126
1	35
8	265
5	166
9	290


Using your graph and best-fit line, how many students would you expect to be taking science at a school where there are 7 science classes being taught?