SNC 1DI   Date: _____

Activity: Relating Mass and Volume

Purpose: To determine how the mass and volume of a substance are related to each other

PART 1

Materials: electronic balance, ruler, 3 samples of same metal or wood

Procedure:

1. For each sample, use the balance to measure the mass.
2. Record the mass in you observation table.
3. Determine the volume of each sample using the formula:
         Volume = length (cm) x width (cm) x height (cm)
4. Record the volume in your observation table

Observations:

Sample	Mass (g)	Volume (cm^3)
1		
2		
3		

PART 2

Materials: 100mL graduated cylinder, electronic balance, samples of water

Procedure:

1. Add 20mL of water to the graduated cylinder and measure the mass of the water. Record in your observation table.
2. Add 40mL of water to the graduated cylinder and measure the mass of the water. Record in your observation table.
3. Add 60mL of water to the graduated cylinder and measure the mass of the water. Record in your observation table.

Observations:

Sample	Mass (g)	Volume (mL)
1		20
2		40
3		60

PART 3

Materials: 3 irregular shapes of the same substance, overflow can, graduated cylinder,
               electronic balance

Procedure:

1. Determine the volume of each irregular shape using the overflow can. Record results.
2. Determine the mass of each irregular shape using the electronic balance. Record results.

Observations:

Sample	Mass (g)	Volume (mL)
1		
2		
3		

Analysis: (answer on graph page)

1. On a separate sheet of graph paper, create a line graph showing the relationship between the mass and the volume of the objects used in <u>Part 1</u>. Plot the mass on the y-axis and the volume on the x-axis. Create a line of best fit.
2. Calculate the slope of the line and record in the data table below.
3. Use your data from <u>Part 2</u> to create a line of best fit on the graph.
4. Calculate the slope of the line and record in the data table below.
5. Use your data from <u>Part 3</u> to create a line of best fit on the graph.
6. Calculate the slope of the line and record in the data table below.

Part	Slope
1	
2	
3	

Discussion:

1. What did the slope of each line represent? _____
2. What is the definition of this variable? _____
3. What are three possible units used for this variable? _____

Conclusion:

Write a statement which summarizes what you learned in this activity.