Triple Beam Balance – Mass Lab

Directions:

1. Move all the **riders** to zero. The **pointer** should now be at **zero**.
2. Choose an object from your table and place it onto the **pan**.
3. Starting with the largest **rider**, determine the possible range for the mass.
4. Continue moving all the **riders** until the **pointer** points to **zero** again.
5. Record your mass to the nearest **10th** of a gram.

Object	Grams			
	Hundreds	Tens	Ones	Mass
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

Analysis Questions: use complete sentences

1. In your lab journal, draw a sketch of the TBB and label the following parts: **pan, riders, beams, & pointer**.
2. Why should your balance read **zero** before you place an object on the pan?
3. What object had the **largest** mass? How many grams?
4. What object had the **smallest** mass? How many grams?
5. Was it easier to find the mass of an object with a lot of mass or a little amount of mass? Explain why.

Conclusions: 2-3 sentences on what you learned

Length, Width, and Height

Procedure:

1. **At each station, find the length, width, and height of the objects.**
2. **Record your measurements in cm.**
3. **Once you have all your measurements, calculate the volume using the formula length x width x height = cm^3.**

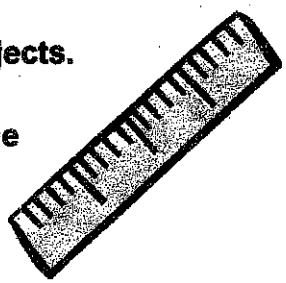
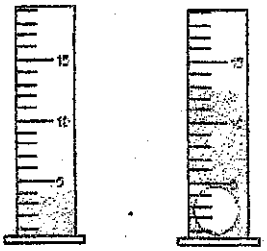


Table 1: Volume of Regular Shaped Objects

Object	Length	Width	Height	Volume
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				

Water Displacement

1. 

Volume of graduate with object:
Volume of graduate without object:

Volume of object:

Procedure:

1. **Add water to the graduated cylinder. Record the # of mL.**
2. **Drop one object into the graduated cylinder.**
3. **Record the new level of water in mL.**
4. **Subtract the starting mL from the final mL to find the volume (mL) of the object.**

Table 2: Volume of Irregularly Shaped Objects

Object	Starting mL	Ending mL	Volume
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

STATION # _____ GRAPHING

Graphing is used by scientists to display the data that is collected during a controlled experiment. Line graphs, bar graphs, and circle or pie graphs can be used. An incorrect graph often leads to the acceptance of an incorrect hypothesis.

A line graph should contain the five major parts listed below:

1. **THE TITLE**: shows what the graph is about and should be placed above the graph.

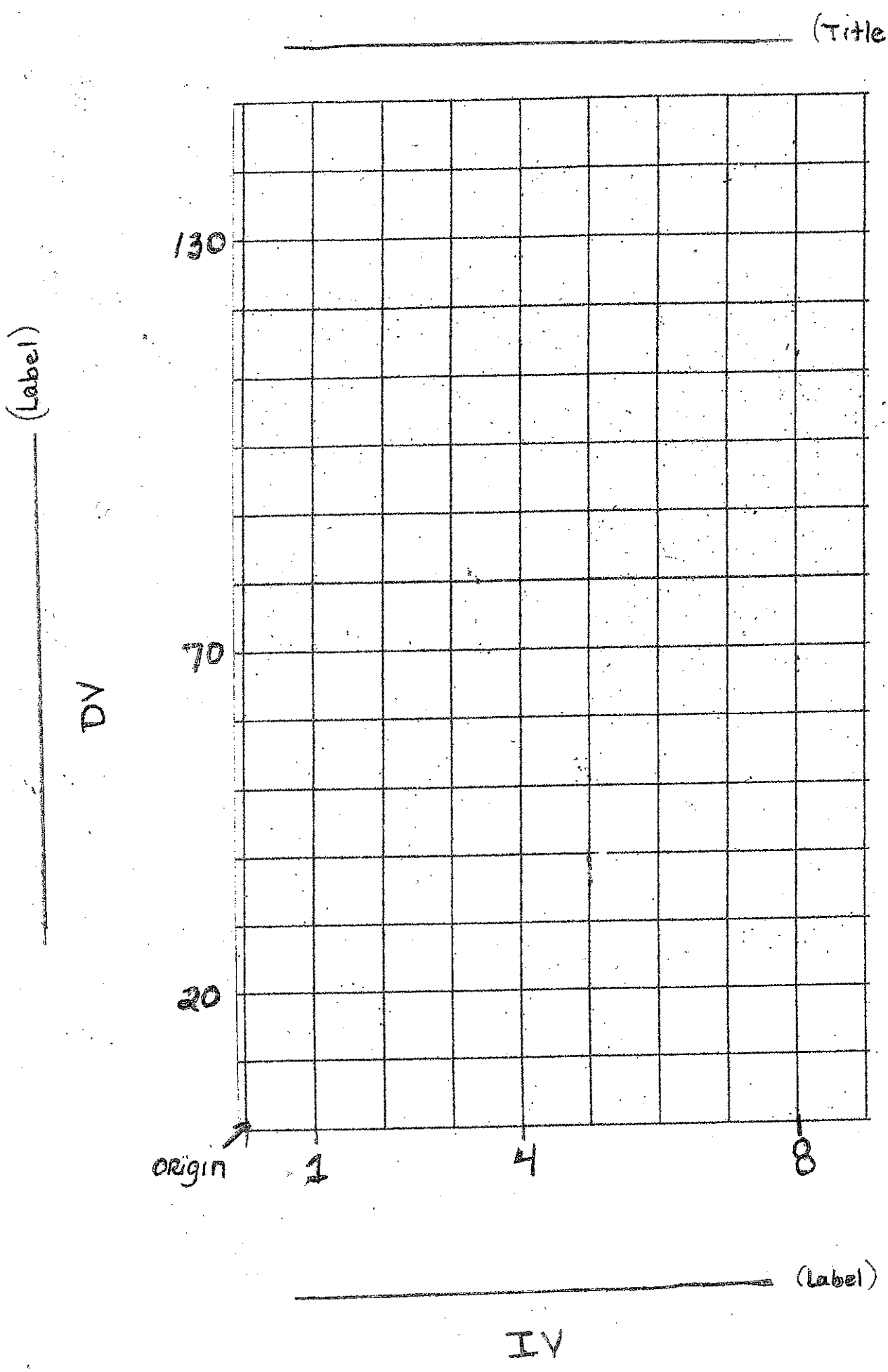
2. **THE INDEPENDENT VARIABLE**: is the variable (CHANGED ON PURPOSE) that can be controlled or **manipulated** by the experimenter. The **IV** is placed on the horizontal or X axis.

3. **THE DEPENDENT VARIABLE**: is the variable directly affected by the **IV** and is the result of what happens because of the **IV.** This variable is placed on the vertical or Y axis. **(responding)**

4. **THE SCALES FOR EACH VARIABLE**: aid in plotting the data points and must include all points. Each block on the graph should represent a consistent amount or increment on a particular axis and should be easy to manage. For example, multiples of 5, 10, etc. are good while multiples of 1.22 are not. The graph should use the space available.

5. **THE LEGEND/KEY**: is a short descriptive narrative concerning the data and should be placed near the graph.

SOOOO by using the information provided your task is to produce a line graph. No need to color, just think, label and plot. SOME HELP HAS BEEN PROVIDED ☺


(Title)
(Label)
DV
130
70
20
origin
1
4
8
(Label)
IV

Part I:

1. Determine the mass of 5 marbles on the balance. Mass = _____ g
2. Fill the graduated cylinder to the 50 mL mark with water. Carefully add the 5 marbles to the cylinder. Do not allow any water to splash out.
3. Observe the new level of the water.
   a. New level of water = _____ mL
   b. Original level of water = _____ mL
   c. Volume of the 5 marbles = _____ mL
4. Density = $\frac{\text{Mass}}{\text{Volume}}$ = $\frac{\text{_____ g}}{\text{mL}}$ = _____

Part II

1. Repeat all steps in Part I with the 20 pennies.

   a. Mass of 20 pennies = _____ g
   b. New level of water = _____ mL
   c. Original level of water = _____ mL
   d. Volume of the 20 pennies = _____ mL
2. Density = $\frac{\text{Mass}}{\text{Volume}}$ = $\frac{\text{_____ g}}{\text{mL}}$ = _____

Directions: Using the instruments in your area and the questions below, find and understand the different temperature scales. ANSWER ALL QUESTIONS BY PLACING THE NUMBER AND THEN YOUR RESPONSE ON YOUR PAPER. Please remember to keep your paper **organized and labeled**.

1. What is the name of the instrument used to measure temperature?
2. Measure the air temperature in the room by holding the instrument firmly by the top. Record the temperature in both units. LABEL EACH
3. Hold the instrument between both of your hands (NOT TOO MUCH PRESSURE PLEASE). Again record the temp. by labeling each number.
4. Search the room to locate another instrument that performs the same measurement. What does it read? Do any of your numbers match?

DIRECTIONS: Take this paper to an open desk along with a SCIENCE text book. Turn to page NOS 13 and examine the data in the table. Answer the questions below. Please remember to keep your paper organized and labeled.

1. **What are the six metric prefixes listed on the page?**
2. **If you had a kilo of something, how many would you have?**
3. **What is the base unit for length, volume, and mass?**
4. **Which prefix would make measuring the following objects easier?**
    a. **A football field**
    b. **Distance to Washington DC from GMS**
    c. **Amount of soda that would fit in the school**
    d. **Length of your finger**
    e. **Width of one of the hairs on your arm**
5. **Think of something in this room you would like to measure using the prefixes in the metric system. Record that object and your guess as to its size on your paper. NOW measure it to check your hypothesis. RECORD YOUR ANSWER.**

Remember to return your textbook. THANK YOU