

Name _____ Date _____ Period _____

Using the Triple Beam Balance

Purpose: In this lab you will learn how to use the triple beam balance to measure the average mass of a penny, a nickel and a dime. You will then solve a simple problem.

Problem to solve: Is the mass of 8 pennies more similar to the mass of 15 dimes or 4 nickels?

Hypothesis: (state your hypothesis here) **If** the masses of 8 pennies is measured **then** this mass will be the same as the mass of _____.

Materials: A Triple Beam Balance, three pennies, three nickels and three dimes.

Procedure:

- 1.) Place the balance on a flat horizontal surface.
- 2.) Push all of the “sliders” to the far left of the balance so that they each read zero.
- 3.) Check the pointer on the right side. It should be pointing at the zero mark on the small scale. If the pointer is moving slightly up and down wait for it to stop. Check to see that it points to exactly zero.
- 4.) If the pointer does not point to zero turn the adjustment screw $\frac{1}{2}$ turn clockwise to make the pointer move down slightly or $\frac{1}{2}$ turn counterclockwise to make it move up slightly. Continue turning the knob $\frac{1}{2}$ turn (or less) at a time until the pointer points to zero. **DO NOT FORCE THE ADJUSTMENT KNOB. IF IT DOES NOT TURN EASILY STOP! AND ASK FOR HELP.**
- 5.) Place a penny on the balance pan. The pointer will rise above the zero mark on the scale. How much do you think it weighs?
- 6.) Move the appropriate slider slightly until the pointer begins to move down toward the zero mark. If the pointer moves below the zero mark you moved the wrong slider or you moved the slider to far to the right.
- 7.) Continue moving the slider until you get the pointer set to zero.
- 8.) Read the markings on the slider scale to determine the mass of the penny to the nearest $\frac{1}{10}^{\text{th}}$ of a gram.
- 9.) Record your results in the data table.
- 10.) Repeat the procedure with a second and then a third penny.
- 11.) Record each result in your data table.
- 12.) Repeat the above procedure (steps 1-11) with a set of nickels.
- 13.) Repeat the above procedure (steps 1-11) with a set of dimes.
- 14.) Average your results for all 3 pennies, then all 3 nickels, then all 3 dimes
- 15.) Determine the answer to your question “Is the mass of 8 pennies more similar to the mass of 15 dimes or 4 nickels?” Write your answer in the conclusion section at the end of the lab.

Data Table 1 Mass of each item in grams

Item	Trial #1	Trial #2	Trial #3	Average	
Penny	Penny #1	Penny #2	Penny #3		What would be the mass of 8 pennies?
Nickel	Nickel #1	Nickel #2	Nickel #3		What would be the mass of 4 nickels?
Dime	Dime #1	Dime #2	Dime #3		What would be the mass of 15 dimes?

Analysis: For this section answer the following questions **in complete sentences** (or no credit will be given)

- 1.) Why is it best to take the average of several measurements rather than just using one measurement?

- 2.) What is the most difficult part about using the triple beam balance?

- 3.) Why do you have to adjust the pointer to read exactly zero before you measure the mass of an item?

- 4.) Was this lab written to follow the scientific method? (Hint: look up Scientific Inquiry in your book on pages 10-13) How do you know?

- 5.) In the space below write a conclusion that includes 1.) a restatement of your hypothesis, 2.) supporting results and 3.) your answer to your hypothesis.

Conclusion: