Name_____   Date_____
Lab # _____

Hey Gumshoe!

Lab: Mass and measurement of chewing gum

Problem: How does the amount of time gum is chewed affect its mass?

Objectives: By completing this activity, the students will:
1. Observe how the mass of gum is affected by the amount of time it is chewed.
2. Practice using a triple beam balance.
3. Practice using stopwatches and/or timers.
4. Organize and analyze their data as well as data collected from other groups.

Background Information: Doing science is somewhat like solving a mystery. Any great mystery sleuth comes up with a scenario to solve the crime. In science, investigators (scientists) come up with a Hypothesis and then test it out to see if they are correct. Many time detectives follow leads to a dead end, as do scientists often find that they prove their hypothesis to be wrong. These "dead ends" are also very important to rule out possibilities and narrow the search for the truth. Never change your hypothesis to have it agree with your conclusion. A hypothesis that proves itself incorrect is just as good as one that proves itself correct. Good science is careful truthful science.
It is your duty to find the relationship between chewing time and mass with a pack of gum. Before you begin you must first develop a hypothesis statement, materials list, and procedure that you are to follow in your investigation. Your hypothesis must be in a statement form and discuss the relationship between gum time chewed and mass of the gum. For example: As the time chewing the gum increases the mass of the gum will _____ because _____. Fill in the blanks before doing the experiment.

Things to consider:
How are you going to measure the gum's mass and keep it sanitary to chew?
How are you going to make sure you are only measuring the mass of the gum?

Directions:
1. On a clean sheet of paper place your full heading, title, and problem for your lab.
2. Design a hypothesis that states your opinion about the problem.
3. Make a materials list of all the things that you need to solve the problem.
4. Make a list of **Procedures** that you will follow to do your investigation.
    Note: write in complete sentences and in numbered sequence.
5. Make a data table for the data you will collect.
    Note: you should be measuring the mass of the gum every 2 minutes for at least 10 minutes.
6. Have your Hypothesis – Procedure checked by your teacher.
7. Do your experiment and collect your data.
8. Make a line graph of your data. Plot time chewed on the x-axis and gum mass on the y-axis.
    Note: Be sure to make your scale to use as much of the graph paper as possible.
9. Write a paragraph **conclusion** based on your data. Did your conclusion support your hypothesis? Why or why not? What is the relationship between the variables? Why do you believe this relationship exists?
10. Answer analysis and conclusion questions.

Analysis and Conclusion Questions: Answer on a separate sheet of paper.

1. How does the variable of time chewed affect the mass of gum?
2. What happens to the mass that is "lost"?
3. Does gum lose mass at a steady rate when it is chewed?
4. Explain how you know this by **using your graph**.
5. Will the mass of gum remain constant while being chewed?   Why or why not? Again use your graph.
6. Which brand of gum lost the most mass? Least mass? Why?
7. How did the taste of the gum change as it was being chewed?
8. Is there a correlation between taste of the gum and mass?
9. Explain how to use a triple beam balance.
10. How could chewing gum affect someone on a strict diet? Explain both benefits and drawbacks.