

# Bubble Gum Lab

Percent Composition by Mass of Sugar in Bubble Gum name: \_\_\_\_\_

Introduction: Read this whole lab BEFORE you commence with your experiments.

BACKGROUND: Packaged foods, such as bubble gum, are required by law to list all ingredients but not the exact amounts of each. The first ingredient makes up the largest part of the food, but the actual amounts of each ingredient are protected as business secrets.

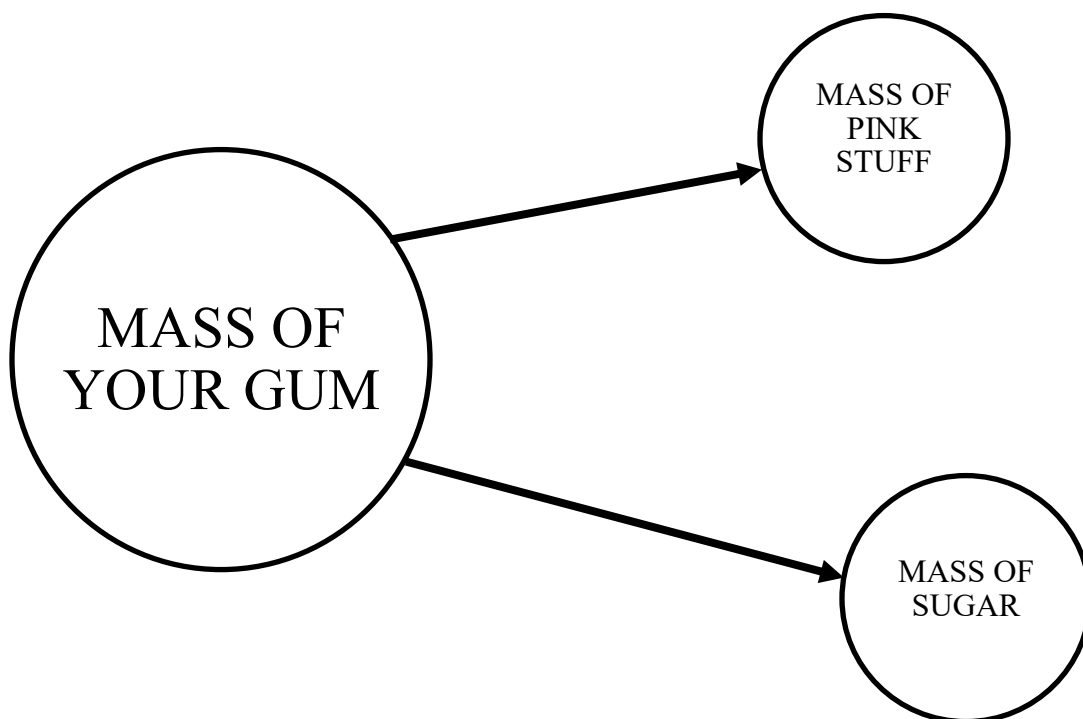
In this lab experiment you will determine the ACTUAL mass of sugar in your bubble gum, and then the PERCENT COMPOSITION BY MASS of sugar in your gum.



SAFETY: no goggles required,  
do not put gum in mouth if it gets unclean.

Procedure:

1. Get one piece of Dubble Bubble bubble gum.
2. Mass the gum inside the wrapper (in grams only)
3. Mass just the wrapper (hold gum safely in hand)
4. Use the data table showing number of chews and mass of gum (next page)
5. Chew gum 25 times, mass the chewed gum (ZERO out the wrapper each time, then put the gum on the wrapper, do not put gum onto scale)
6. Mass gum again and again and again after every 25 chews. Keep chewing until the mass stops changing - or 600 chews, whichever comes first.
7. You may keep the gum, or dispose of it PROPERLY



Make sure your end mass (pink stuff) and mass of missing sugar (you ate it) equals the mass of the gum at the start.

•

Measures	grams
gum in wrapper	
Mass of just the wrapper	
Subtract to get mass of just gum	

Number of Chews	Mass in grams
0	grams
25	grams
50	grams
75	grams
100	grams
125	grams
150	grams
175	grams
200	grams
225	grams
250	grams
275	grams
300	grams
325	grams
350	grams
375	grams
400	grams
425	grams
450	grams
475	grams
500	grams
525	grams
550	grams
575	grams
600	grams

### Data Analysis

1. You will need to draw a graph plotting mass in grams as a function of the number of chews.
2. Do not connect the dots—rather, draw a smooth curved line that will best approximate your data points, which will show **THE TREND OF THE DATA**, not the tiny errors in measuring.
3. This full sized graph must have an excellent title, axis labels with units, and be neat. Make no breaks.
4. Start at 0,0  
NO BREAKS ALLOWED IN GRAPH

The Lab problems—Do on white paper. Formulas count, so do SF and units!

1. Calculate the % Composition by mass of sugar in the gum (show formula + math) (2)
2. Calculate the % Composition by mass of pink stuff in the gum (show formula + math) (2)
3. The gum is actually 71.5% sugar. Calculate your percent error? (write the formula) (2)
4. How many chews did it take for all the sugar to be removed from the gum and how can you be pretty sure that this is true? (2)
5. What is the percent composition by mass of calcium in the compound calcium hydroxide? (2)
6. What is the percent composition by mass composition of carbon in the compound  $C_7H_{14}$ ? (2)
7. What is the % composition by mass of phosphorous in ammonium phosphate? (2)
8. Write empirical formulas for these compounds:  $C_8H_{14}$   $C_6H_{12}O_6$   $C_6H_{12}$  (3 = 1 each)

Page Number	What is included	Total Points
1	Cover page - descriptive title for lab report, describe in a sentence what this experiment is about, and what you did. <u>Do NOT conclude here.</u>	1
2	Graph: on graph paper, include title, units, labels, and the data table in an appropriate place.  <u>Title must be descriptive of what the graph shows.</u>	graph = 2
many as you need	Lab Problems (above)	17 total
Last	<p>Conclusion - Clearly state using your data                      What did you measure? The mass of the gum, the pink stuffy, the sugar.                      What did you calculate? The % comp of sugar in your gum, and the % comp of pink stuff in your gum.                      What is your percent error for % comp by mass of sugar in the gum                      What can you conclude, or say that you learned about chemistry because of this lab experiment.</p> <p>You must include YOUR numbers! Your Details! All of the Facts!                      In your mind, this is being written for a stranger. They didn't do the lab, they need to understand what you did, but they have the handout. Not every detail is needed. Wrapper mass, for instance, is not important, but the mass of the gum to start is very important. Tell the science and good stuff, leave the fluff for creative writing class.</p>	5
THIS LAB IS DUE ON: _____		25 maximum