

# Chewing Gum Lab



**Purpose:** To determine which brand of chewing gum contains the most sugar.

**Background:**

A “mole” is a counting unit that is used in Chemistry. 1 mole =  $6.02 \times 10^{23}$  molecules. By using Dimensional Analysis we can convert from grams  $\rightarrow$  moles  $\rightarrow$  molecules. In this lab you will weigh gum before chewing and after chewing to figure out how much sugar dissolved in your mouth.

**Materials:**

Various types of gum such as Double Bubble Gum, Gum Balls, Juicy Fruit Gum, Trident Gum, paper cups, balance.

**Procedure:** Do the procedure for one of the types of gum on your station. Then repeat for the second type of gum on your station. You will need to collect the data from other groups since you will not be testing every type of gum yourself.

1. Use the balance to record the mass of the EMPTY CUP.
2. Add the **unchewed** pieces of gum. Record the mass of the CUP+UNCHEWED GUM
3. Chew up the gum for at least 5 minutes.
4. Spit the gum into the paper cup. Try to minimize the amount of saliva that goes in the cup!
5. Weigh and record the mass of the CUP+CHEWED GUM
6. **THROW THE CUP+CHEWED GUM IN THE TRASH CAN!!!!**
7. Repeat with the next type of gum.

Name:	
Period:	Seat #:

*Once your paper is graded,  
you may glue it into your notebook*

**HYPOTHESIS: Which gum do you think has the most sugar? The least amount of sugar?**

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**YOUR DATA --- Type of Gum #1:**

Mass of EMPTY CUP	Mass of CUP+UNCHEWED GUM	Mass of UNCHEWED GUM	Mass of CUP+CHEWED GUM	Mass of CHEWED GUM	Mass of SUGAR per piece of gum

**YOUR DATA --- Type of Gum #2: TRIDENT**

Mass of EMPTY CUP	Mass of CUP+UNCHEWED GUM	Mass of UNCHEWED GUM	Mass of CUP+CHEWED GUM	Mass of CHEWED GUM	Mass of SUGAR per piece of gum

<b>OTHER GROUP'S DATA --- Type of Gum #3:</b>					
Mass of EMPTY CUP	Mass of CUP+UNCHEWED GUM	Mass of UNCHEWED GUM	Mass of CUP+CHEWED GUM	Mass of CHEWED GUM	Mass of SUGAR per piece of gum

<b>OTHER GROUP'S DATA --- Type of Gum #4:</b>					
Mass of EMPTY CUP	Mass of CUP+UNCHEWED GUM	Mass of UNCHEWED GUM	Mass of CUP+CHEWED GUM	Mass of CHEWED GUM	Mass of SUGAR per piece of gum

**Do you notice anything interesting about the differences between the gums? Does anything stand out as unusual? Any types of gum drastically different from the others?**

**Using the nutrition labels for the different types of gum, try to explain the results you discussed in the box above.**

**What is the molar mass of the sugar,  $C_{12}H_{22}O_{11}$ ? (Show your work below.)**

**Now show how to convert from MASS to MOLECULES in ONE DIMENSIONAL ANALYSIS CALCULATION!**

Type of Gum #1	
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Type of Gum #2 TRIDENT	
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Type of Gum #3	
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Type of Gum #4	
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**Which type of gum had the most sugar per piece? The least? Does this match your hypothesis?**

**What are some possible sources of error in your lab? How accurate do you think your answers are? Why would they be wrong?**