

Percent Sugar in Bubble Gum Lab Name: _____

How much sugar is in your gum? What percent of the total amount of gum is actually sugar?

Materials:

- 1 piece of bubble gum per lab group member of each type (3 types)
- 3 paper cups per group
- electronic balance

Procedure: **To be repeated for each type of gum.**

1. Use a balance to determine the mass of a clean paper cup. Record the mass in your data table.
2. Unwrap bubble gum and place them in the cup.
3. Determine the mass of the cup and the gum. Record the mass in your data table.
4. Each person in the group should chew a piece of gum to remove the sugar.
5. After about 5 minutes, collect the chewed gum in the massed cup. Try to suck most of your saliva off of the gum before placing it in the cup, only touch your own gum. Wash your hands.
6. Determine the mass of the cup and gum. Record it in your data table.
7. Calculate the mass of sugar dissolved from the gum (original mass of gum – final mass of gum). Record the answer in your data table.
8. Calculate the percentage of sugar in the gum by dividing the mass of the dissolved sugar by the mass of the unchewed gum and multiply by 100. Record the answer in your data table.
9. Throw out all gum and cups at the end of the lab.

A SAMPLE data table is provided, modify it if necessary. Remember you have 3 types of gum so you will need a larger data table.

Sample Data Table:

Mass of Paper Cup	Mass of Cup + Gum	Mass of Unchewed Gum	Mass of Cup + Chewed Gum	Mass of Chewed Gum	Mass of sugar	Percent of Sugar

Questions:

1. What is the percent of sugar in each type of gum? (**Show your work**)
2. What is the molar mass of the sugar, $C_{12}H_{22}O_{11}$? (**Show your work**)
3. Convert the mass of dissolved sugar to moles for each type. (**Show your work**)
4. How many molecules of sugar are in the dissolved sugar? (**Show your work**)
5. Obtain the actual amount of sugar from the package labels; compare this to your results for each type. Calculate your percent error by taking the absolute value of the mass of sugar you calculated to be in each piece of gum minus the actual amount from the label divided by the actual amount according to the label and multiplying by 100 to convert to a percent.

$$\% \text{ error} = \frac{|\text{your result} - \text{accepted value}|}{\text{accepted value}} * 100$$

6. List at least 2 potential sources of error that could have influenced your calculations and if they would have made your calculated value of sugar too high or too low.