Dougherty Valley HS Chemistry
Stoichiometry – Chewing Gum Lab

Name: **Period:**   **Seat#:**

Required Sections: (Refer to R-5 for guidelines and requirements. Make note of any specific changes given by your teacher in class)
         Prelab: *All written in your lab notebook* – Answer Pre-Lab Questions, Hypothesis (If, Then, Because!), Materials,
                  Procedures, Data Table pre-written in your lab notebook on a separate page from the rest of prelab
         Post-lab: - Calculations, Post Lab Two Pager, Discussion Questions section

Purpose:
Determine how many molecules of sugar are in different types of gum. Determine which has the most sugar per piece, which has the least. The different types of gum will be: Double Bubble, Gum Balls, Juicy Fruit, and Trident.

Pre-Lab Questions:
1) What is the name of the conversion factor that allows you to go from grams to moles?
2) What is the name of the conversion factor that allows you to go from moles to molecules?
3) What is Avogadro's number? Explain it and give the number with units.
4) What is the molar mass of table sugar $C_{12}H_{22}O_{11}$? Show work.
5) Read this lab handout and watch the video listed in the procedure section. Summarize what the video was about as Pre-Lab Question #5 so I know you watched it – it is important!

Hypothesis:
Answer the purpose – which gum do you think will have the most sugar per piece, which will have the least sugar per piece? It should be in an "If, Then, Because" format. Talk with your classmates, think about what we already know, etc.

Materials:
Digital Balance	Double Bubble Gum	Juicy Fruit
Paper cup	Gum Balls	Trident

Procedure:
- You will need to figure out the procedure yourself! Yes! For real. No I am not joking. ;-)
- All I am telling you is that you will be given the materials listed above.
- Think about what you are trying to do, think about the pieces of data you will need, what measurements you will need to take, what calculations you will need to do etc.
- You need to include EXACT DETAILED steps – if I were to take your procedure and follow it word for word would it work? Watch this video to see what I mean about being careful to write good detailed steps…
  o https://tinyurl.com/yxlhcaeb
- Make sure you try and think about potential sources of error that could occur. Build in steps or tips into your procedure to try and lesson the likelihood of sources of error.
- Make sure your instructions talk about cleanup!

Data Table:
- You will need to figure out what to include in the data table yourself! Yes! For real. No I am not joking. ;-)

Calculations (to be done on your Post Lab Two Pager):
- Show any and all calculations going from your collected data to the number of molecules in sugar for each type of gum used. Include units, box final answers, etc.
- YOU MUST USE DIMENSIONAL ANALYSIS LINE METHOD OR NO POINTS! That is the standard that you are being assessed on!
- Make sure things are well spaced out, clearly labeled, etc.

Discussion Questions:
1) Do you notice anything interesting about the differences between the gums? Does anything stand out as unusual? Any type(s) of gum seem drastically different from the others?
2) Using the nutrition labels for the different types of gum, try to explain the results you discussed in Q#1.
3) Which type of gum had the most sugar per piece? The least? Does this match your hypothesis?
4) What are some possible sources of error in your lab? How would these errors affect your final results – would your number of molecules be too high or too low for each source of error? You need to list a minimum of two sources of error because I can think of two very big issues with this lab! Yes there are more, but you should be able to identify the big giant two that I am thinking of!