

## Summer Assignment for AP Chemistry at Tesla STEM H.S.

Welcome to AP Chemistry for the 2021-2020 school year. Due to the nature of the class and the sheer quantity of information to be covered, we will need to hit the ground running when school starts in September. Regardless of your background you should expect to work very hard this next year.

**Assignment 1: Create an account and familiarize yourself with MasteringChemistry.** *Note: registration is open from 6/17 until 8/31. **DON'T** wait until the last minute, though.*

1. Go to <https://www.pearson.com/mastering>.
2. Under Register, select **Student**.
3. Confirm you have the information needed, then select **OK! Register now**.
4. Enter your instructor's course ID: **herzog64695**, and **Continue**.
5. Enter your existing Pearson account **username** and **password** to **Sign In**. You have an account if you have ever used a MyLab or Mastering product.
- If you don't have an account, select **Create** and complete the required fields. Please use your **school email** for your login, and your **school ID number** for your password. Do NOT lose your login information!
6. Select an access option. Enter one of the following access codes. If the first one doesn't work, try the second. Each is limited to just 50 students:
  - **SSSRCC-WHIRR-ALARY-CADET-BUSBY-EANES**
  - **SSSRCC-WHIRR-ALARY-CADET-BUSBY-CHEWA**
7. From the You're Done! page, select **Go To My Courses**.
8. On the My Courses page, select the course name **STEM-AP Chemistry 2021** to start your work.

**To sign in later:**

1. Go to **www.masteringchemistry.com** and select **Sign In**.
2. Enter your Pearson account **username** and **password** from registration, and select **Sign In**.

If you forgot your username or password, select **Forgot your username or password?**

Once you are "in", complete the "Introduction to MasteringChemistry" and "Chemistry Primer – Semester 1" assignments. These will count for points – the only assignments that will be just a completion grade – but the purpose is to get everyone up to speed on using this homework system.

**Assignment 2: Review basic first-year material in preparation for our first test.**

The intent of this assignment is to make sure everyone is equipped with the necessary math skills and chemistry fundamentals. I will not collect or grade anything for this assignment but I will test you on the material during the first week back to school. Look over the **study guide on the next page**. The numbers on the right refer to the chapter and section of the textbook that covers that particular topic.

How you do **Assignment 2** is up to you. Depending on your background and comfort level, you may find that most of this is really easy and all you need to do is skim through the textbook or through your notes from first year chemistry to prepare. Others may find the need to read through each chapter and work through the relevant problems. Or, you may find yourself somewhere in between. AP chemistry is a class for students who are self-motivated so I will leave it up to you how much (or how little) you actually do. Just make sure you are ready for the start of school.

**Textbook:** A digital version of the text is available on MasteringChemistry. You may also check out a hard copy of the book. The study guide below has the topic and the textbook section in which that topic is addressed.

I look forward to working with you and getting to know you this coming school year. Feel free to email me if you have any questions. I will check my LWSd email at least weekly, with a few exceptions when I may have limited internet access.

## AP Chemistry Summer Assignment Test Study Guide

Be able to:

1. Use scientific notation – write in, manipulate, do quick calcs without a calculator, etc. This is not covered in the textbook but see <a href="http://www.khanacademy.org/math/cc-eighth-grade-math/cc-8th-numbers-operations/cc-8th-scientific-notation/v/scientific-notation">http://www.khanacademy.org/math/cc-eighth-grade-math/cc-8th-numbers-operations/cc-8th-scientific-notation/v/scientific-notation</a>	
2. Use dimensional analysis to set up and solve a multi-step conversion calculation (including converting units).	1.6
3. Know and use metric prefixes from femto- to peta- ( <b>note:</b> you'll need to look up a couple of these elsewhere)	1.4
4. Calculate density	
5. Determine the proper number of sig figs	1.5
6. Identify metals, non-metals, & metalloids on the PT	2.5
7. Locate the following groups of elements on the Periodic Table: alkali metals, alkaline earth metals, halogens, Noble gases, transition metals)	
8. Find the atomic number, and atomic mass of an element on the Periodic Table	
9. Describe atomic structure in terms of protons, neutrons, and electrons (know the location, charge, <b>relative</b> mass of each particle)	2.2 & 2.3
10. Write & use standard isotope notation	2.3
11. Predict the type of ion that will form from a given neutral atom (don't worry about transition metals yet)	2.7
12. Calculate the average atomic mass from a list of isotope masses and percent abundance data	2.4
13. Write the chemical formula of a compound/determine the number of atoms of each element in a compound based on the chemical formula – both empirical and molecular formula	2.6
14. Name elements, covalent compounds, ionic compounds, & inorganic acids from the formulas	2.8
15. Write the formulas of elements, covalent compounds, ionic compounds, & inorganic acids from the name	
16. Calculate moles from mass and mass from moles, moles from number of particles and number of particles from moles, moles from volume of gas at STP and volume of gas at STP from moles.	3.4
17. Determine percent composition from a molecular formula and determine the empirical formula from percent composition data.	3.3 & 3.5
18. Write out a chemical equation and balance it	3.1
19. Use proper stoichiometry to find mole to mole relationships	3.6
20. Use molar mass and the stoichiometric ratios to determine mass to mass relationships	3.6
21. Calculate percent yield	3.7
22. Find the limiting reagent and excess reagent and calculate the amount of excess reagent remaining.	
23. Find the molarity of a solution and use molarity & volume to find moles of solute	4.5
24. Perform dilution calculations using $M_1V_1 = M_2V_2$	4.5
25. Determine the molarity with respect to a specific ion if given the molarity of the ionic compound	4.1 & 4.5

Know:

1. Definitions of the following terms: atomic mass unit (amu), Anion, cation, period, group, element, compound, mixture, molecule, ionic compound, homogeneous, heterogeneous, solid, liquid, gas, aqueous, product, reactant, mole, molar mass, STP, empirical formula, molecular formula, percent composition, molarity, solute, solvent, solution, stoichiometry	Various – use the glossary as your guide.
2. Which elements are diatomic	2.6
3. Dalton's Atomic Theory	2.1