Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ AP Chemistry

**Unit 1 Roadmap: Measurement and Stoichiometry**

**Week 1:**

|  |  |  |
| --- | --- | --- |
| **Date** | **Objectives** | **Textbook\*** |
| Mon, 8/26 | * Understand the importance of the AP Chemistry Frameworks * Understand how to write column notes * Be able to explain why significant figures are important for laboratory measurements * Given a particular measurement, be able to identify the number of significant figures * Be able to explain the difference between precision and accuracy, and be able to explain why each is important in Chemistry. | Chapter 1  Sec. 1.3 – 1.4  pgs. 8 - 14 |
| Tues, 8/27 | * Understand how to conduct dimensional analysis to convert between different units or values * Understand how to determine the number of significant figures in a calculation. * Be able to measure percent error for a calculation | Chapter 1  Sec. 1.5 – 1.6  Pgs. 14 – 22 |
| Wed, 8/28 | * Be able to measure mass and volume using different laboratory techniques, and compare and contrast the effectiveness of techniques * Be able to compare precision and accuracy of different measurements * Be able to determine the density of a substance based on mass and volume data * Be able to conduct an independent laboratory investigation * Be able to calculate percent error for different laboratory measurements | Chapter 1  Sec. 1.8 – 1.9 (some review)  Pgs. 25 – 30 |
| Thurs, 8/29 | * Be able to define molar mass and calculate molar mass for different compounds * Be able to describe and defend the Law of Multiple Proportions * Be able to calculate average atomic mass * Be able to convert between moles, molar mass, and mass for different substances | Chapter 3  Sec. 3.1 – 3.3  Pgs. 81 - 90 |
| Fri,  8/30 | * Be able to show the relationship between moles, particles, molar mass, and mass using particle diagrams * Be able to convert between moles, particles, molar mass, and mass * Compare and contrast homework answers with classmates | See Thurs. |
| **Week 1 HW problems\*:** Ch. 1 #s 4, 26, 30, 54, 71, 74, 78, 80, 82; Ch. 3 #s 18, 22, 32, 34, 36, 38, 40  Homework is due the Friday of each week. **These are graded for EFFORT and COMPLETION**. You will get full credit for showing your work and your answer for each problem, even if your answer is incorrect. **A list of answers with no work shown will receive a maximum grade of 50%.**  **EXTRA CREDIT OPPORTUNITY:** Bring in column notes for Chapter 3 on Monday. | | |

**Week 2:**

|  |  |  |
| --- | --- | --- |
| **Date** | **Objectives** | **Textbook\*** |
| Mon, 9/2 | * Be able to defend the Law of Conservation of Mass in relation to chemical equations * Be able to interpret a chemical equation: products, reactants, and mole ratios * Be able to balance a chemical equation | Ch. 3  Sec. 3.6 – 3.7  pgs 102 – 108 |
| Tues, 9/3 | * Be able to use stoichiometric calculations to convert between products and reactants in a chemical reaction * Be able to explain why stoichiometric calculations are necessary in chemical analysis * Be able to use particle representations to describe what happens in a chemical reaction | Ch. 3  Sec. 3.8 – 3.9  Pgs 108 - 120 |
| Wed, 9/4 | POGIL: Stoichiometry (reinforcing ideas from Tuesday) | Sec. 3.8 – 3.9  Pgs 108 - 120 |
| Thurs, 9/5 | REVIEW (see all objectives before this) |  |
| Fri, 9/6 | Unit 1 Quizzam |  |

**Week 2 homework problems: Ch. 3 #s 1, 2, 4, 5, 76, 78, 80, 86, 88, 92**

**Essential Knowledge – Unit 1**

**Essential knowledge 1.A.1:** Molecules are composed of specific combinations of atoms; different molecules are composed of combinations of different elements and of combinations of the same elements in differing amounts and proportions.

**Essential knowledge 1.A.3:** The mole is the fundamental unit for counting numbers of particles on the macroscopic level and allows quantitative connections to be drawn between laboratory experiments, which occur at the macroscopic level, and chemical processes, which occur at the atomic level.

**Essential knowledge 1.E.1:** Physical and chemical processes can be depicted symbolically; when this is done, the illustration must conserve all atoms of all types.

**Essential knowledge 1.E.2:** Conservation of atoms makes it possible to compute the masses of substances involved in physical and chemical processes. Chemical processes result in the formation of new substances, and the amount of these depends on the number and the types and masses of elements in the reactants, as well as the efficiency of the transformation.

**Essential knowledge 3.A.2:** Quantitative information can be derived from stoichiometric calculations that utilize the mole ratios from the balanced chemical equations. The role of stoichiometry in real-world applications is important to note, so that it does not seem to be simply an exercise done only by chemists.

**Learning Objectives:**

**LO 1.1:** You can justify the observation that the ratio of the masses of the constituent elements in any pure sample of that compound is always identical on the basis of the atomic molecular theory.

**LO 1.4:** The student is able to connect the number of particles, moles, mass, and volume of substances to one another, both qualitatively and quantitatively.

**LO 1.7:** The student is able to express the law of conservation of mass quantitatively and qualitatively using symbolic representations and particulate drawings.

**LO 1.18:** The student is able to apply conservation of atoms to the rearrangement of atoms in various processes.

**LO 3.1:** Students can translate among macroscopic observations of change, chemical equations, and particle views.