**AP Chemistry Chapter 1 and 2 Objectives**

After completing Chapter 1 and Chapter 2 the student should be able to:

I. Differentiate between the three states of matter.

II. Understand the difference between elements, compounds, and mixtures.

III. Describe techniques used to separate components of a mixture.

IV. Distinguish between physical and chemical properties and changes.

V. Define intensive and extensive property and provide an example of each.

VI. Be familiar with the units of the metric system of measurement and be able to convert measurements within the metric system by using dimensional analysis.

VII. Determine the number of significant figures in a measurement and be able to express the results of a calculation with the proper number of significant figures.

VIII. Distinguish between precision and accuracy.

IX. Convert temperatures between the Celsius and Kelvin scales.

X. Perform calculations involving density.

XI. State Dalton’s atomic theory.

XII. State the law of constant composition and the law of conservation of mass.

XIII. Be familiar with the experiments of Thomson, Millikan, and Rutherford.

XIV. Distinguish between protons, neutrons, and electrons, and be able to describe the composition of an atom of any particular element in terms of these subatomic particles.

XV. Write the chemical symbol for an element, having been given its mass number and atomic number, and perform the reverse operation.

XVI. Know the difference between an atom, an ion, and a molecule.

XVII. Write the symbol and charge for an atom or ion having been given the number of protons, neutrons, electrons and perform the reverse operation.

XVIII. Have a basic knowledge of the periodic table, which includes being able to predict whether an element is a metal, nonmetal or metalloid, and what will be the probable charge of its ion.

XIX. Distinguish between empirical, molecular, and structural formulas.

XX. Write the names and the formulas of inorganic compounds (ionic, acids, binary molecular).

**Section 1: AP Chemistry Chapters 1 & 2 Summer Assignment**

Note: Written Work NOT required for Chapter 1 & 2.

**Chapter 1 Introduction: Matter and Measurement**

1. Read Chapter 1 - pages 1-31

2. Review section 1.4 (Units and Measurement) and do all the odd numbered problems (these would the red ones – the answers to these are on the back of the text book)

3. Review section 1.5(Uncertainty in measurement) and do all the odd numbered problems

(These would the red ones – the answers to these are on the back of the text book)

4. Review section 1.6 (Dimensional Analysis) and do all the odd numbered problems (these would the red ones – the answers to these are on the back of the text book)

**Chapter 2 Atoms, Molecules, and Ions**

1. Read Chapter 2 - pages 37-64

2. Review section 2.3-2.4 (Modern view of atomic structure) and do all the odd numbered problems (these would the red ones – the answers to these are on the back of the text book)

3. Review section 2.5 (The Periodic Table; Molecules and ions) and do all the odd numbered problems (these would the red ones – the answers to these are on the back of the text book)

4. Review section 2.8-2.9 (Naming Inorganic Compounds; Organic Molecules) and do all the odd numbered problems (these would the red ones – the answers to these are on the back of the text book)

*Scroll down for Chapter 3 Assignment*

**AP Chemistry Chapter 3 Stoichiometry Summer Assignment**

NOTE: Written work **IS** required for this assignment. - All work will be collected on the first day of class.

1. Read Chapter 3 - pages 71-99
2. Review section 3.1 (Chemical equations) and do all the odd numbered problems (these would the red ones – the answers to these are on the back of the text book)
3. Review section 3.2 (Patterns of chemical reactivity) and do all the odd numbered problems(these would the red ones – the answers to these are on the back of the text book)
4. Review section 3.3 (Atomic and molecular weights) and do all the odd numbered problems(these would the red ones – the answers to these are on the back of the text book)
5. Review section 3.4 (Avogadro’s number and the mole) and do problems 3.27, 3.29 and 3.33 (these would the red ones – the answers to these are on the back of the text book)
6. Review section 3.5 (Empirical Formulas) and do problems 3.45, 3.47, 3.49, 3.51. (these would the red ones – the answers to these are on the back of the text book)
7. Review section 3.6 (Quantitative Information from balanced Equations) and do problems 3.55, 3.57, 3.59, 3.61 (these would the red ones – the answers to these are on the back of the text book)
8. Review section 3.7 (Limiting Reactants) and do problems 3.67, 3.69, 3.71, 3.73 (these would the red ones – the answers to these are on the back of the text book)
9. ADDITIONAL EXCERCISES – Page 104-105 do problems 3.100, 3.102 (these would the red ones – the answers to these are on the back of the text book)

**Hints for Success:**

I have given you entire sections of Chapters 1 and 2 that you can use to practice your chemistry skills – this does *not* mean that everyone *needs* to do *every single problem*. Work on it till you feel confident – test yourself and then move on. (Knowing what you know and being confident of your knowledge is also a skill you need to develop)

Study the Sample Exercises **BEFORE** you attempt each of the assigned exercises

For Chapter 3 **- Show all work for each exercise** and **circle your final answer**. **Label all answers with appropriate units**. Exercises must be completed in the order assigned and you need to include the page and number for each exercise that you complete.

No credit will be given if your work does not support your final answer. All answers are in the back of the text book or are provided below

**Note: 2 TESTS**, based on Chapters 1, 2, 3, and 7 will be given when you return to class. You will have an opportunity to receive some clarification on concepts in these two chapters prior to taking the test. But the tests will be spaced very close together.

Please keep in mind that these are basic chemistry concepts and that these chapters will NOT be taught in class. Please note that the AP Chemistry curriculum is extensive, and in order to complete the curriculum by May 2nd, and to spend more time on more difficult topics, time has to be managed in this way. AP chemistry is one of the more difficult AP exams and part of it is because of the sheer volume of content knowledge you’re required to know. It is what it is. Be prepared for a very intense year when you walk in to class.

Test 1: Chapters 1, 2, 7 – mostly multiple choice questions, maybe some short answers (I

have not decided yet)

Test 2: Chapter 3 – Problem solving based on content from chapter 3