AP Chemistry Summer Requirements 2020-2021

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Dear Student,

Thank you for your interest in chemistry! We are excited to work with you and to help you reach an even greater understanding of this vital science.

Below, you will find the requirements for AP Chemistry *prior to the first day of school*. Very little of the reading and work should be new material for you if you learned what your teacher taught in your sophomore chemistry course. A few things *are* new, and thus we will be covering those in depth during the course. **Still, you are expected to read them and try to learn about them so you’ll be exposed to it before we get to it in class.**

1. Purchase Barron’s AP Chemistry guide; *this must be 8th edition* or newer (one may come out before next school year. You can likely find it on Amazon.com for a lower-than-retail-price price. Mr. P bought his for about $11, whereas the price you’ll pay at Barnes & Noble is about $20; B&N usually carries it, though.

For the actual work you’ll be doing, if it is your book you should feel free to write in it as much as you like. ***If you borrow one of Mr. P’s, do NOT write in it or treat it poorly or else he will require a replacement.***

Your assignment is: for each topic below (in chapters 1, 2, and 4 only!!), I need you to write, on separate paper, what concepts you feel the strongest on and which ones you feel the weakest on. You also need to explain why you think you’re strong it in or what you think the trouble you’re having is related to. For example, if you are having a hard time understanding NET IONIC EQUATIONS, you need to explain which step or steps you get confused during and why. **Be aware that we need details, so one or two sentences will not suffice; please explain your position in enough detail that we clearly understand what you know and do not know.**

2. Browse the introductory chapter. It explains the course in general as well as the examination. Speaking of which, our exam is *always* the first week in May, which means you have the least amount of time to study for the chemistry exam than most other AP courses you have.

3. Read all of PART 1: Chapters 1 (Structure of the Atom) and 2 (The Periodic Table), and **not 3** (Nuclear Chemistry is not a focus on the exam). Do all of the exercises throughout the chapters and only the multiple choice at the end. We will focus primarily on free-response in class; there is a particular style of doing this that needs to be taught to you and I’d like you to come in with an open mind. **Again, do ONLY the multiple choice questions, not the free-response questions, at the end of the chapter. Make a table to organize the following for the MC questions: “I said \_\_\_\_”; “The correct answer is \_\_\_\_\_”; did I get it right? (Check or X). *We will not grade you based on how well or poorly you do answering these questions, but please have integrity and really tell us your own answer!!***

4. Read all of PART 2: Chapter 4 (Ionic Compounds, Formulas, and Reactions) only. Again, do the exercises throughout the chapter and **only the multiple choice at the end. Do not answer the free response.**

ON THE FIRST DAY OF SCHOOL, you are expected to hand in pages that list each topic (all topics are listed at the very beginning of each chapter in a bulleted list) with “I understand \_\_\_\_ because…” or “I don’t understand \_\_\_\_\_ because…” that goes with each topic.

**Special Note: The way information has been organized in the past by College Board for this course will be abandoned and a new sequence of content will be coming from CB. Barron’s Guide authors (surely) know this and will likely reorganize their book to match what College Board publishes. Only the sequence of content is changing, not what content is taught throughout the year, so any version 8th edition or newer will still have the content you need (plus they always seem to include stuff that isn’t part of your essential knowledge standards per CB, but they include it anyway…we’ll be ignoring that!). For safety’s sake, please see the list of topics we need you to seek out and respond to.**

Looking forward to seeing you!!

***Mr. P and Coach Lasseter***

P.S. If you didn’t figure it out from reading the above instruction: if you can’t afford a guide, Mr. P’s students can borrow one of his. He has 23 to lend out. See him before you leave for summer break!!

P.P.S. Here are the topics:

**“Chapter 1”**

* Atomic Theory
* Models of the Atom
* Structure of the Atom
* Protons, Electrons, and Neutrons
* Isotopes
* Atomic Spectra
* Wave-Mechanical Model of the Atom
* Energy Levels
* Electronic Structure
* Electron Configurations
* Valence Electrons
* Hund’s Rule
* Orbital (filling) Diagrams
* Pauli Exclusion Principle

🡪OMIT QUANTUM NUMBERS. You don’t need this for the exam and this doesn’t enhance your learning of these topics.

**“Chapter 2”**

* Periodic Table
* Atomic Symbols
* Atomic Masses
* Isotope Masses, Mass Number
* Metals, Nonmetals, and Metalloids
* Ionization Energy (We will study this more in-depth during the course.)
* Electron Affinity/Electronegativity
* Diagonal Variations of Physical Properties

**“Chapter 4”**

* Chemical Formulas
* Empirical Formulas
* Structural Formulas
* Molecular Formulas
* Chemical Reactions
* Equation Balancing
* Combustion Reactions
* Neutralization Reactions
* Single-replacement Reactions
* Double-replacement Reactions
* Formation Reactions
* Addition Reactions
* Decomposition Reactions
* Ionic Bonding
* Electron Configurations (yes, again)
* Formation of Cations and Anions
* Polyatomic Ions
* Constructing Ionic Formulas
* Naming Ionic Compounds
* Solutions of Ionic Compounds
* Solubility of Ionic Compounds
* Predicting Chemical Reactions
* Chemical Driving Forces
* Predicting Redox Reactions (More during the year)