

AP Chemistry Summer Assignment 2022-2023

I am so excited you have decided to join me in AP Chemistry next year! The summer assignment involves signing up for some sites that we will use regularly, and some content to start the journey. Some of the content is review from Honors Chemistry, and some is new. I have provided you with some resources. We will begin the school year reviewing the material from the assignment, but you should expect to be tested on the information within the first week of school.

Please let me know if you have any questions, need any more resources, or help with any of the questions.

Dr. Dobrin

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Google Classroom [code: sbstlgn]

Khan Academy [code: T64QSRFP]

- Complete “Atomic Structure and Properties” assignment
 - Both quizzes and the unit test must be completed on Khan Academy by the first day of school.
 - **Take notes as you go.** It is expected that you complete the entire assignment.

Lesson Outline - Atomic Structure and Properties

1. Moles and Molar Mass
 - a. Average atomic mass (video 8 min)
 - b. The mole and Avogadro's number (video 8 min)
 - c. Worked Example: Calculating molar mass and number of moles (video 5 min)
 - d. Moles and molar mass (4 practice questions)
2. Mass spectrometry of elements
 - a. Isotopes (video 5 min)
 - b. Mass spectrometry (video 4 min)
 - c. Isotopes and mass spectrometry (reading)
 - d. Worked example: Identifying an element from its mass spectrum (video 3 min)
 - e. Mass spectrometry of elements (4 practice questions)
3. Elemental composition of pure substances
 - a. Empirical, molecular, and structural formulas (video 6 min)
 - b. Worked example: calculating mass percent (video 5 min)
 - c. Worked example: Determining and empirical formula from percent composition (video 4 min)
 - d. Worked example: Determining an empirical formula from combustion data (video 10 min)

- e. Elemental composition of pure substances (4 practice questions)
- 4. Composition of Mixtures
 - a. Worked example: Calculating the mass of a substance in a mixture (video 5 min)
 - b. Worked example: Analyzing the purity of a mixture (video 5 min)
 - c. Composition of mixtures (4 practice questions)
- 5. Atomic structure and properties Quiz #1 (5 questions)**
- 6. Atomic structure and electron configuration
 - a. The periodic table, electron shells, and orbitals (reading)
 - b. Shells, subshells, and orbitals (video 9 min)
 - c. Introduction to electron configuration (video 5 min)
 - d. The Aufbau principle (video 7 min)
 - e. Valence electrons (video 5 min)
 - f. Electron configuration of ions (video 3 min)
 - g. Electron configuration of the 3d transition metals (video 12 min)
 - h. Atomic structure and electron configuration (practice 4 questions)
- 7. Periodic trends
 - a. Periodic trends and Coulomb's law (video 10 min)
 - b. Atomic and ionic radii (video 11 min)
 - c. Ionization energy: group trend (video 10 min)
 - d. Ionization energy: period trend (video 10 min)
 - e. First and second ionization energy (video 7 min)
 - f. Worked example: Identifying an element from successive ionization energies (video 2 min)
 - g. Electron affinity: period trend (video 13 min)
 - h. Electronegativity (video 9 min)
 - i. Periodic trends (practice 7 questions)
- 8. Valence electrons and ionic compounds
 - a. Valence electrons and ionic compounds (video 7 min)
 - b. Worked example: Finding the formula of an ionic compound (video 2 min)
 - c. Valence electrons and ionic compounds (practice 4 questions)
- 9. Photoelectron spectroscopy
 - a. Introduction to photoelectron spectroscopy (video 8 min)
 - b. Photoelectron spectroscopy (reading)
 - c. Photoelectron spectroscopy (practice 4 questions)
- 10. Atomic structure and properties Quiz #2 (5 questions)**
- 11. Atomic structure and properties Unit Test (9 questions)**

More Resources can be found here:

https://docs.google.com/document/d/1Z5jDwCnGX_ofGWpTGpl6xerLufvnmQvz8L7ize6WD0/edit?usp=sharing