Trinity Catholic High School

Advanced Placement Summer Work

AP Chemistry

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AP Chemistry

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First, you have taken on a class that is worthwhile and beneficial but is also difficult and hard. You will spend many nights studying, reviewing, practicing, calculating, and memorizing. The reward on the other side of these long, arduous nights is a passing score on the AP Chemistry exam and an A in my class. The benefits don't stop there! You will be more prepared for college having already taken a rigorous course!

Second, you will have one or two mornings a month that will be dedicated to a lab day. This day will stay constant throughout the year unless a schedule change occurs at which time, I will give you ample time to change around your schedule. These sessions will start at 7 a.m. Some weeks will have no labs.

Third, as we get to March and April, we will begin after school review sessions/practice tests. The lab days will stop and these will begin. You are required to attend one a week unless it is an excused absence.

Fourth, you have a summer assignment to review some general chemistry learned in your sophomore year chemistry class. Science is ever changing, so more and more material is added onto the AP exam. For us to finish all the material, you must have a solid grasp on the concepts covered in the summer assignment. The summer assignment consists of videos and questions. Please watch the videos and take notes as if I was lecturing you in class. Once you have taken sufficient notes, answer the questions attached. I will be collecting both the notes and the worksheet for credit.

Fifth, you must email me at least THREE SEPARATE TIMES throughout the summer asking me questions on the material – preferably questions you don't know the answer to. This shows me that you can communicate well, you are working on the assignment, and you're ready for the rigor of AP. I would rather you work on this assignment 20 minutes a day until you finish, but I understand that we have summer vacations that get in the way. Do not wait until the last few days of summer to start this assignment. This assignment is due August 10 when you walk into class.

Finally, AP Chemistry becomes a family throughout this whole process. So really decide if you're willing and ready to be part of this awesome AP Chem family.

AP Chemistry

Watch the following videos:

Protons, Neutrons, & Electrons: https://expl.ai/THMMBNA

Naming Compounds: https://expl.ai/TSEPHRG

Molar Mass: https://expl.ai/XRRBHGN

Predicting Products: https://expl.ai/VCUBQXB

Balancing Equations: https://expl.ai/SQUXQCT

Electron Configurations: https://expl.ai/MSVDJFN

Stoichiometry:
https://www.educreations.com/lesson/view/stoichiometry-study-guide/58843207/?s=poa014&ref=link

Empirical Formula:

https://www.educreations.com/lesson/view/empirical-formula-video-lesson/53434714/?s=LanM92&ref=link

Molecular Formula:

https://www.educreations.com/lesson/view/molecular-formula-video-lesson/53774858/?s=gB8B0g&ref=link

Percent Composition:

https://www.educreations.com/lesson/view/percent-composition-video-lesson/53109739/?s=KHYjGG&ref=link

Name _____ Block _____ Date _____

AP Chemistry Summer Work

1. List all the diatomic molecules.

2. How many grams are 0.5 moles of $(NH_4)_2CO_3$?

3. How many moles are in 3.5×10^{23} atoms of helium?

4. How many moles are in 4.6×10^{25} atoms of argon?

5. What is the percent composition of each element in Na_2O?

6. What is the percent composition of each element in $CaCl_2$?

7. A piece of iron ore is found to contain a compound containing 72.3% iron and 27.7% percent oxygen.
   a. Determine the empirical formula of this iron ore.

   b. The iron ore has a molar mass of 231.4 g/mol. Determine the molecular formula of the ore.

8. A major textile dye manufacturer developed a new yellow dye. The dye has a percent composition of 75.95% C, 17.72% N, and 6.33% H by mass.
   c. Determine the empirical formula of this new yellow dye.

   d. The yellow dye has a molar mass of about 240 g/mol. Determine the molecular formula of the dye.

9. Hexane (C_6H_{14}) burns in oxygen to produce carbon dioxide and water. How many moles of water are produced from 8.8 g of hexane?

$$2C_6H_{14} + 19O_2 \text{ -----> } 12CO_2 + 14H_2O$$

10. If 4.2 g Ag and 4.8 g Cl_2 are mixed together and heated, which substance will limit the reaction?

$$2Ag + Cl_2 \text{ ----> } 2AgCl$$

11. What mass of aluminum bromide ($AlBr_3$) is produced from the combination reaction between 16.5 g aluminum chloride ($AlCl_3$) and 84.5 Br_2?

$$2AlCl_3 + 3Br_2 \text{ ----> } 2AlBr_3 + 3Cl_2$$

12. Write the electron configuration for the following elements:
    a. Helium

    b. Phosphorus

    c. Argon

    d. Calcium

Predict the products and balance the equation.

13. ____Al + ____$NiCl_2$ ⟶

14. ____Zn + ____HCl ⟶

15. ____ Cl_2 + ____NaBr ⟶

16. ____Na_2CO_3 + ____$BaSO_4$ ⟶

17. ____C_4H_8 + ____O_2 ⟶

18. ____Li + ____AgBr ⟶

19. ____$Zn_3(PO_4)_2$ + ____$NiCl_2$ ⟶