AP Chemistry Summer Assignment

This summer assignment is designed to be sure you are ready to go in September. A quiz covering this material will be given within the first week of school. There are many tutorials on the web that you may find useful such as www.sparknotes.com/chemistry   or https://www.khanacademy.org/science/chemistry . Feel free to email me at patterson.colleen@whrsd.org for help. I check my email most days and will respond as soon as I can. Good luck and I can't wait to get started on August 28th!

I Memorize the following polyatomic ions. You will be quizzed on these ions, the diatomic elements, and the strong acids and bases the first week back at school. You must know both the formula and the name. I recommend making flashcards.

Acetate	$C_2H_3O_2^-$
Nitrate	NO_3^-
Cyanide	CN^-
Hydroxide	OH^-
Permanganate	MnO_4^-
Chlorate	ClO_3^-
Sulfate	SO_4^{2-}
Carbonate	CO_3^{2-}
Chromate	CrO_4^{2-}
Dichromate	$Cr_2O_7^{2-}$
Phosphate	PO_4^{3-}
Ammonium	NH_4^+

II Know the seven diatomic elements: H_2, N_2, O_2, F_2, Cl_2, Br_2, I_2

Memorize the strong acids: HCl, HBr, HI, HNO_3, H_2SO_4, $HClO_4$

Memorize the strong bases: LiOH, NaOH, KOH, $Ca(OH)_2$, $Sr(OH)_2$, $Ba(OH)_2$

III Watch the Following Bozeman videos at http://www.bozemanscience.com/ap-chemistry/ and answer the questions. Please complete them on a separate piece of paper so you have room to show all of the work.

Watch Bozeman – Molecules and Elements
1. Complete the graphic organizer Mr. Anderson asks you to complete toward the end of the video.

Watch Bozeman – Chemical Analysis
2. Complete the graphic organizer Mr. Anderson asks you to complete toward the end of the video.
3. Find the empirical formula of the compound with the following mass spectrometer data:
    0.274 g Na, 0.012 g H, 0.143 g C, 0.571 g O

Watch Bozeman – The Mole
4. Complete the graphic organizer Mr. Anderson asks you to complete toward the end of the video.
5. Find the number of molecules in 5.72 g of $C_6 H_{12} O_6$.
6. Find the number of grams of 4.65×10^{22} formula units of NH_4Cl.

Watch Bozeman – Symbolic Representations
7. Represent the following symbolic representation into a particulate representation.
    $N_2 + 3 H_2 \rightarrow 2 NH_3$
8. In the above reaction, if 0.56 g of N_2 reacts to form 0.68 g of NH_3, what mass of hydrogen reacted?

Watch Bozeman – Conservation of Atoms
9. In the reaction $2AgNO_3 + CaCl_2 \rightarrow 2 AgCl + Ca(NO_3)_2$ how much $AgNO_3$ was originally present if 5.71 g of AgCl was formed?
10. For the titration $2NaOH + H_2C_2O_4 \rightarrow 2H_2O + Na_2C_2O_4$, what mass of the analyte ($H_2C_2O_4$) is present if 25.0 mL of 0.50 M NaOH is required to reach the equivalence point?

Watch Bozeman – Molecular, Ionic, and Net Ionic Equations
11. Write the molecular, complete ionic, and net ionic equation for: a solution of silver nitrate reacts with a solution of sodium sulfide to form a precipitate of silver sulfide and a solution of sodium nitrate.
12. Make a particulate representation of the complete ionic equation.

Watch Bozeman – Stoichiometry

13. For the reaction $C_3H_8 + 5O_2 \rightarrow 3CO_2 + 4H_2O$,

    a. what is the limiting reactant if 12.0 g of C_3H_8 and 12.0 g of O_2 react?

    b. How much CO_2 is formed?

    c. If 8.0 g of CO_2 is formed, what is the percent yield?

Watch Bozeman – Significant Digits at http://www.bozemanscience.com/chemistry/ .

14. How many significant figures are in each of the following numbers?

    a. 0.05730

    b. 8760

    c. 0.00073

    d. 40.007

    e. 8.750×10^{-2}

15. Perform the following calculations to the correct number of significant figures. Include the correct units.

    a. 61.2 m + 9.37 m + 8.6 m =

    b. 34.61 g – 17.2 g =

    c. 8.3 cm x 2.22 cm =

    d. 8.432 g / 12.5 mL =