Chemistry SL IB Summer '22 Assignment

Welcome to Chemistry SL IB!! This summer assignment is intended to better prepare you for this course and help you to be more successful. The assignment will be collected for credit the first week of school in August. Be prepared to take a Summer Assignment exam during the first week of the Fall semester as well. Students are encouraged to work on this throughout the summer break. Try not to procrastinate!! Good luck and we look forward to seeing you in August!

Assignment:

1. Memorize the attached sheet of polyatomic ions
2. Complete the Worksheet entitled Nomenclature.
3. Complete the Worksheet entitled Quantitative Chemistry.

Polyatomic Ion List—*MUST MEMORIZE AND KNOW!!!!!!*

NH_4^+ Ammonium

NO_2^- Nitrite

NO_3^- Nitrate

SO_3^{2-} Sulfite

SO_4^{2-} Sulfate

HSO_4^- Hydrogen sulfate (or bisulfate)

OH^- Hydroxide

CN^- Cyanide

PO_4^{3-} Phosphate

HPO_4^{2-} Hydrogen phosphate

$H_2PO_4^-$ Dihydrogen phosphate

CO_3^{2-} Carbonate

HCO_3^- Hydrogen carbonate (or bicarbonate)

ClO^- Hypochlorite

ClO_2^- Chlorite

ClO_3^- Chlorate

ClO_4^- Perchlorate

$C_2H_3O_2^-$ Acetate

MnO_4^- Permanganate

$Cr_2O_7^{2-}$ Dichromate

CrO_4^{2-} Chromate

O_2^{2-} Peroxide

Name: _____ Date: _____

Nomenclature Worksheet

Directions: Give the name of the following compounds.

1. Na_2O
2. NaCl
3. P_2S_6
4. CO_2
5. CuO
6. K_3N
7. Cu_2SO_4
8. AgCl
9. $FePO_4$
10. BaS

Directions: Name the compound or give the chemical formula.

11. Acetic acid
12. Cobalt (III) sulfide
13. $Cu(NO_3)_2$
14. CuCl
15. Aluminum sulfite
16. Magnesium hydroxide
17. ZnS
18. Sodium dihydrogen phosphate
19. Hg_2Cl_2
20. Sulfur hexafluoride

Name: _____ Date: _____

Quantitative Chemistry Worksheet

Directions: Convert the following to the appropriate quantity.

1. 4.24g C_6H_6 to moles

2. .224 mol H_2O to g

3. 2.71×10^{22} molecules of CO_2 to atoms

4. Determine the percentage composition of magnesium carbonate.

5. What is the difference between relative atomic mass and relative molecular mass?

6. What is the difference between relative molecular mass and molar mass of a compound?

7. What mass of hydrogen peroxide must decompose to produce 1.77g of water?

8. What mass of sodium chloride is produced when chlorine reacts with 0.39g of sodium iodide?

9. Identify the limiting reactant when 5.68g of iron (II) reacts with 3.88g of S to produce FeS.

10. What mass of sulfur dioxide is produced from the reaction between 23.5g of S_8 and 10.75g of O_2?

11. Determine the percent yield for the reaction between 15.8g NH_3 and excess oxygen to produce 21.8g NO gas and water.

12. How many liters are in one mole of any gas at STP?

13. Write the formulas of the following gas laws:
    a. Boyle's Law

    b. Charles' Law

    c. Gay-Lussac's Law

    d. Combined Gas Law

    e. Avogadro's Law

    f. Ideal Gas Law

14. A balloon filled with helium is held at 25 degrees Celsius. It has a volume of 20.0dm^3. The pressure within the balloon reaches 2.07 atm. How many moles of helium can be found in the balloon? What is the mass of this helium?