AP CHEMISTRY Summer Assignment 19-20 **Name: _____**

*All parts of this AP CHEMISTRY Summer Assignment are to be done individually.
*Contact Mr. Dorenkamper at kdorenkamper@mchs.net with questions.

Join our Google Classroom AP CHEMISTRY 19-20 **code: 9gc2l8**

Part I: *Getting to know the AP CHEMISTRY EXAM*
Go to: the AP CHEMISTRY student site https://apstudent.collegeboard.org/apcourse/ap-chemistry/course-details
At the right of the page under **Course Resources**, click the link to PDFs named "AP Chemistry Course Exam and Description". Open the PDF; it is a 177-page document. Download this file for quick reference. Each bullet point below requires a written response.

- Read pg 5-7 the AP Chemistry Curriculum and Framework of the course and the course objectives
  - Create a flow chart that outlines course concepts
- List all 6 "Big Idea" concepts that will be covered in AP CHEMISTRY
- Read pg 82-86 on the 7 scientific practices.
  - Summarize each scientific practice in 1-2 sentences.
  - Briefly describe an experiment you performed in chemistry or biology that included at least 3 of the Scientific Practices. Explain how those scientific practices were involved in the experiment.
- Read pg 113-115 on the exam format.
  - How will you be assessed in Section I and Section II of the exam?
- Read and print out pg 160-162 The Periodic Table and "Appendix B: AP Chemistry Equations and Constants"
  - You will need to bring these to class to use when working on class work.

Part II: *Getting a refresher on the basic chemistry concepts. Complete the questions below using resources collected from chemistry class. If you struggle with any section, you can find resources online for the* ***bold*** *categories.*

Significant Figures (Sig Figs)

1. How many sig figs are in the following numbers?

a) 0.0450 _____

b) 790 _____

c) 32.10 _____

2. Solve the following problems. Round your answer to the correct number of sig figs (and use the correct unit on your answer).

a) 825 cm x 32 cm x 0.248 cm _____

b) 15.68 g 2.885 mL _____

Density (round your answers to correct number of sig figs and show all work with units)

3. A cube of ruthenium metal 1.5 cm on a side has a mass of 42.0 g. What is the density in g/cm^3? Will ruthenium metal float on water? (Density of water is 1 g/cm^3)

4. The density of bismuth metal is 9.8 g/cm^3. What is the mass of a sample of bismuth that displaces 65.8 mL of water?

Conversions (round answers correctly and show work with units)

5. Make the following conversions:

a) 16.2 m to km

b) 5.44 nL to mL

c) 45.7 mL/s to kL/hr

Chemical Reactions

6. Balance the following and equations and tell what type of reaction it is (synthesis, decomposition, single replacement, double replacement, or combustion)

a) ___ KNO_3 → ___ KNO_2 + ___ O_2 Type: _____

b) ___ $AgNO_3$ + ___ K_2SO_4 → ___ Ag_2SO_4 + ___ KNO_3 Type: _____

c) ___ CH_4 + ___ O_2 → ___ CO_2 + ___H_2O Type: _____

d) ___ N_2O_5 + ___ H_2O → ___HNO_3 Type: _____

e) ___ Na + ___ $Zn(NO_3)_2$ → ___ Zn + ___ $NaNO_3$ Type: _____

7. What are diatomic molecules? List the 7.

Moles

8. Calculate the number of moles of the following: (SHOW WORK)

a) 42.8 g of KNO_3

b) 155.7 L of CO_2 at STP

c) 9.25 x 10^{26} molecules of $CaCl_2$

Stoichiometry

9. Using the following equation: $2\ NaOH + H_2SO_4 \rightarrow 2\ H_2O + Na_2SO_4$
How many grams of sodium sulfate will be formed if you start with 200 grams of sodium hydroxide and you have an excess of sulfuric acid?

10. Using the following equation: $Pb(SO_4)_2 + 4\ LiNO_3 \rightarrow Pb(NO_3)_4 + 2\ Li_2SO_4$
How many grams of lithium nitrate will be needed to make 250 grams of lithium sulfate, assuming that you have an adequate amount of lead (IV) sulfate to do the reaction?

11. Using the following equation: $Fe_2O_3 + 3\ H_2 \rightarrow 2\ Fe + 3\ H_2O$ Calculate how many grams of iron can be made from 16.5 grams of Fe_2O_3.

Nomenclature

12. *Complete the empty boxes within the table below.*

Identify the type of chemical (Choose the best choice) ***Ionic Compound, Covalent Compound, or Element***	**Name of the chemical**	**Formula for the chemical**
	Magnesium hydroxide	
		H_2
	Lead (IV) bromide	
		H_2CO_3
		CBr_4
		NCl_3
		$AlCl_3$
	Sulfur hexafluoride	
	Manganese (IV) chloride	
		Ba_3N_2
		N_2O_3
	Helium	
	Ammonia	
		$Sn(ClO_3)_4$

Part III: Memorize all the ions. Most of these you already know but we will start the year with the assumption that you know these.