**Chemistry**

**YOUR CHOICES + YOUR ACTIONS = YOUR FUTURE!!!**

**Packet# 5**

**Stoichiometry Review**

 (BRING THIS WITH YOU TO EVERY CLASS)

*“Success is not the result of spontaneous combustion. You must set yourself on fire.”*

Class Website: http://mrgchem.weebly.com

Mr. Gutierrez’s email: mr.brgutierrez@gmail.com



*Note: You are expected to work on this packet during the allotted class practice time.*

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| **Packet** | **Followed All Classroom Policies** | **Class work Participation** |
| /35 | Completed Class Notes | /20 | Monday | /20 |
| /35 | Completed Classwork | /20 | Tuesday | /20 |
| /5 | Writing Name on Every Page | /20 | Wednesday | /20 |
| /25 | Handed Packet in on Time  | /20 | Thursday | /20 |
| /100 | Total Points | /20 | Friday | /20 |
|  |  | /100 | Total Points | /100 |

Name of Chemist:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Period: \_\_\_\_\_\_\_\_\_\_\_

*\*All Classnotes + Questions MUST be finished for HOMEWORK if not done in class (whether we got through it all or not).\**

***DUE Wednesday 2/29/12***

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| **Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Objective: SWBAT calculate the molar mass and percentage composition of a compound.** **SWBAT calculate the empirical formula and molecular formula of a compound.** |
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Class Notes:

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| **Molar Mass**Examples:1. Calculate the molar mass of H2O.
2. Calculate the molar mass of Helium.

**Percentage Composition**Examples:1. Calculate the percentage composition of barium hydroxide.

**Empirical Formula**How to Calculate an Empirical Formula1. Convert the percentage composition values to mass. (If mass is already given, skip to step#2.)
2. Determine the number of moles of each element in the compound.
3. Identify the smallest number of moles and divide that by all the other moles to find the ratios.
4. Round the ratio to the nearest whole number. This ratio is now your subscript. (If you cannot round the ratio to a whole number, multiply by 2 and then round to a whole number as needed.)

Example of an empirical formula: CH2O.**Molecular Formula**1. Calculate the empirical molar mass. This is the molar mass calculated from the **empirical formula**.
2. Divide the **molecular molar mass (formula mass)** by the empirical formula mass to obtain a factor, x as shown in the equation below.

x= (molecular molar mass)/(empirical molar mass)  3. Multiply the value of x by the subscripts of the empirical formula to get your molecular formula.Example of a molecular formula: C6H12O6. |

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| **Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Objective: SWBAT calculate the molar mass and percentage composition of a compound.** **SWBAT calculate the empirical formula and molecular formula of a compound.** |

Class Work: **Mixed Review**

SHOW ALL YOUR WORK. DO NOT FORGET YOUR UNITS.

1. Calculate the molar mass of the following:
2. H2O
3. K3PO4
4. Copper (II) sulfate
5. Calculate the percentage composition of the following compounds.
6. Mg(OH)2
7. C12H24O6
8. Determine the empirical formula of a compound found to contain 52.11% carbon, 13.14% hydrogen, and 34.75% oxygen.
9. A compound is found to have an empirical formula of NO2 and molecular molar mass of 92 g/mol. What is its molecular formula?
10. Analysis if a compound reveals that it is made up of 63.50% silver, 8.25% nitrogen, and the rest oxygen. Experimentation shows that the molecular molar mass of the compound is 414 g/mol.
11. Determine the empirical formula of the compound.
12. Determine the molecular formula of the compound.
13. Consider the empirical formula of water: H2O. From this chemical formula, it is said that the hydrogen to oxygen ratio is 2 to 1. Given this information, which of the following empirical formulas shows the nitrogen to oxygen ratio is 3 to 6? (Remember that the empirical formula is the simplest whole number ratio.)
14. N3O6 c. N6O3
15. NO3 d. NO
16. How many grams are there in 4.5 moles of diarsenic pentoxide?
17. A street apothecary needs 10.7 moles of aluminum phosphate to make her customers a compound called “Happy Sleep.” What is the mass of aluminum phosphate does she need to add to her reaction?
18. Which of the following chemical formulas is an example of an empirical formula?
19. C12H24O12 c. C4H8
20. N2O4 d. CH2O
21. How many moles are there in 435.345 grams of sodium chloride?

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| **Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Objectives: SWBAT perform conversions involving moles and Avogrado’s Number.** |

**The Mole and Avogrado’s Number**

**1 mole of a substance =** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **atoms, particles, or molecules**. This number is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

How to Convert from **Moles to Number of Atoms/Molecules** Using Avogradro’s Number:

How to Convert from **Number of Atoms/Molecules Moles to Moles** of Using Avogradro’s Number:

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| **Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Objective: SWBAT perform conversions involving moles and Avogrado’s Number.** |

Class Work:

1. 1 mole of Carbon has how many atoms?
2. 1 mole of CO2 has how many molecules?
3. Convert the following moles to atoms or molecules using Avogradro’s Number. SHOW ALL YOUR WORK. No credit will be given if you write your answers only.
4. 2.45 moles of H3PO4 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ molecules
5. 9.44 moles of H2O = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ molecules
6. 3.87 moles of C = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ atoms
7. 4.45 moles of O = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ atoms
8. How many moles are there in 2.54 x 1023 atoms of Bromine?
9. How many moles are there in 3.94 x 1023 molecules of HCl?
10. How many moles are there in 5.98 x 1056 molecules of calcium phosphate?

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| **Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Objective: SWBAT perform conversions using mass and Avogradro’s number.** |

Class Notes:

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| **The Mole, Avogradro’s Number, and Mass**How to Convert Number of Molecules to Mass Using Avogradro’s Number: How to Convert Mass to Number of Molecules Using Avogradro’s Number: |

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| **Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Objective: SWBAT perform conversions using mass and Avogradro’s number.** |

Class Work:

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| 1. How many molecules are there in 989 g of Ba(NO3)2
2. How many molecules are there in 89 g HF?
3. How many atoms are there in 945.43 g of S?
4. Express 9.9 x 1023 atoms of Carbon in grams.
5. Convert 9.0 x 1025 atoms of Nitrogen in grams.
6. What is the mass of 7.8 x 1023 molecules of CO2?
7. How many molecules are there in 987.493 grams of K3PO4
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**Make sure Mr. Gutierrez stamps/signs this by the end of the period. You CANNOT get the stamp/signature for a day later on. It is your responsibility to remind Mr. Gutierrez. You will NOT receive a stamp if you did not follow all classroom policies or actively work on the practice problems during the allotted class time.**

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| **Followed All Classroom Policies****(Be respectful, on time, prepared and engaged…)** | **Class work Participation****(Working on packet during allotted time)** |
| /20 | Monday | /20 |
| /20 | Tuesday | /20 |
| /20 | Wednesday | /20 |
| /20 | Thursday | /20 |
| /20 | Friday | /20 |