

Teacher Name: Coker

Student Name: \_\_\_\_\_

Class : Enhanced Chemistry / Enhanced Chemistry Academy

Period : 1, 2, 4, 5

Assignment: Assignment Week 3

**Due:** **Friday, 5/15**

## Chemical Quantities (Molar Mass)

### General Instructions:

Please do the activities for each day as indicated. You will work the problems on separate sheets of paper as necessary that you will attach to the completed packet that you submit.

### Submitted Work (Edmodo preferred):

- 1) Completed problems from Tuesday through Friday ONLY

### Questions:

- 1) Please send email as you have questions and/or attend virtual office hours (9:00 – 10:00 AM and 2:30 – 3:30 PM).

Date	Activity
Monday (4/27)	Read Section 7.3 Take reading notes. Be able to work through all sample problems.
Tuesday (4/28)	Do practice problem 1 (pg. 238), 1,2 (pg. 239), 1,2,3 (pg. 242)
Wednesday (4/29)	Molar Mass problems (below): 2-7
Thursday (4/30)	Mole Conversion Problems (below): 1-3
Friday (5/1)	Mole Conversion Problems (below): 4-6

## Molar Mass

Calculate the molar mass of the following compounds. Show all of your work as demonstrated in the example. This is as "short" of a shortcut you can do.

$\text{Cu}_3\text{P}$  = Copper (I) phosphide

$$\text{Cu} = 63.55 \text{ g} \times 3 = 190.65 \text{ g Cu}$$

$$\text{P} = 30.97 \text{ g} \times 1 = 30.97 \text{ g P}$$

$$\frac{221.62 \text{ g Cu}_3\text{P}}{1 \text{ mol Cu}_3\text{P}}$$

Must show a conversion factor

Must show all

2. $\text{SO}_2$	3. $\text{Fe}_2\text{O}_3$
4. $\text{Mg}_3\text{N}_2$	5. $\text{K}_2\text{SO}_4$
6. $\text{PbSO}_4$	7. $\text{CCl}_4$

## Mole Conversion Problems:

## One Step Conversion Problem

Convert 3.85 mol NaOH to grams NaOH.

Inventory

asked = ? g NaOH

given = 3.85 mol NaOH

Conversion factors

$$\text{Na} = 22.99 \text{ g} \times 1 = 22.99 \text{ g Na}$$

$$\text{O} = 16.00 \text{ g} \times 1 = 16.00 \text{ g O}$$

$$\text{H} = 1.01 \text{ g} \times 1 = 1.01 \text{ g H}$$

$$\frac{40.00 \text{ g NaOH}}{1 \text{ mol NaOH}}$$

$$? \text{ g NaOH} = 3.85 \text{ mol NaOH} \times \frac{40.00 \text{ g NaOH}}{1 \text{ mol NaOH}} = 154.00 \text{ g NaOH}$$

3 sig fig - 154. g NaOH

Must show all work

## Two Step Conversion Problem

convert 7.28 g MgCl<sub>2</sub> to molecules MgCl<sub>2</sub>

asked = ? molecules MgCl<sub>2</sub>

given = 7.28 g MgCl<sub>2</sub>

Conversion factors

$$\text{Mg} = 24.31 \text{ g} \times 1 = 24.31 \text{ g Mg}$$

$$\text{Cl} = 35.45 \text{ g} \times 2 = 70.90 \text{ g Cl}$$

$$\frac{95.21 \text{ g MgCl}_2}{1 \text{ mol MgCl}_2}$$

$$\frac{6.022 \times 10^{23} \text{ molecules MgCl}_2}{1 \text{ mol MgCl}_2}$$

yes I know... should be "formula-unit"

$$? \text{ molecules MgCl}_2 = 7.28 \text{ g MgCl}_2 \times \frac{1 \text{ mol MgCl}_2}{95.21 \text{ g MgCl}_2} \times \frac{6.022 \times 10^{23} \text{ molecules MgCl}_2}{1 \text{ mol MgCl}_2} =$$

$$= \frac{7.28 \times 6.022 \times 10^{23} \text{ molecules MgCl}_2}{95.21} = 0.460457 \times 10^{23} \text{ molecules MgCl}_2$$

correct sig fig and scientific notation

$$= \boxed{4.60 \times 10^{22} \text{ molecules MgCl}_2}$$

Complete the operations as indicated below. For gasses, assume STP unless otherwise specified.

1. Calculate the mass in grams of each of the following: a) 2.00 moles CO <sub>2</sub> b) 0.500 moles NH <sub>3</sub>	2. Calculate the # of molecules in each of the following: a) 3.00 moles H <sub>2</sub> O b) 3.50 moles CH <sub>4</sub>	3. Calculate the number of molecules in each of the following: a) 3.00 grams H <sub>2</sub> O <sub>2</sub> b) 5.00 grams H <sub>2</sub> CO <sub>3</sub>
4. Calculate the volume in liters for each of the following: a) 3.00 moles H <sub>2</sub> b) 5.00 grams O <sub>2</sub>	5. Calculate the mass in grams for each of the following: a) 9.28 x 10 <sup>23</sup> molecules CO <sub>2</sub> b) 5.00 x 10 <sup>23</sup> molecules NH <sub>3</sub>	6. Calculate the volume in liters for each of the following: a) 3.00 x 10 <sup>23</sup> molecules H <sub>2</sub> b) 5.00 x 10 <sup>23</sup> molecules CO <sub>2</sub>

Answer Key:	5) 174.26 g/mol	1b) 8.52 g	2b) 2.11 x 10 <sup>24</sup> molecules	3b) 2.91 x 10 <sup>22</sup> molecules	5a) 67.8 g
2) 64.06 g/mol	6) 303.26 g/mol	2a) 1.81 x 10 <sup>24</sup> molecules	3a) 5.31 x 10 <sup>22</sup> molecules	4a) 67.2 L	5b) 14.1 g
3) 159.70 g/mol	7) 153.81 g/mol			4b) 3.50 L	6a) 11.2 L
4) 100.95 g/mol	1a) 88.0 g				6b) 18.6 L