Ex: $(NO_3)_2$
N: 1·2=2
O: 3·2=6

Name ______________________________ Period ________

College Prep Chemistry of the Earth

Assignment 5Q – Unit 5 Review – Stoichiometry 30 Points

For the following calculate the molar mass and convert the following measurements

$Na_1O_1H_1$
(MM from PT!)
No # in formula = # 1

~~Aluminum~~ Sodium Hydroxide [NaOH]		
Element	#	Molar Mass
Sodium (Na)	1 ×	22.99 g
Oxygen (O)	+ 1 ×	16.00 g
Hydrogen (H)	+ 1 ×	1.01 g
Sodium Hydroxide (NaOH)	40.00 g/mol	

$Cu_2 | (C_2O_4)_3$
2 1
$(C_2O_4)_3$
C: 2·3
O: 4·3

Copper(III)Oxalate [$Cu_2(C_2O_4)_3$]		
Element	#	Molar Mass
Copper (Cu)	2	63.55 g/mol
Carbon (C)	6	12.01 g/mol
Oxygen (O)	12	16.00 g/mol
Copper(III)Oxalate $Cu_2(C_2O_4)_3$	391.16 g/mol	

Two Problems
mass → mol
mol → mass
(mol) (g)
Always 1!

mass → mol

Convert 394.0g NaOH to mol NaOH	
394.0 g NaOH ×	1* mol NaOH
Conversion 1	40.00 g NaOH
mol NaOH	9.85 mol NaOH

mol → mass → g

Convert 1.73mol $Cu_2(C_2O_4)_3$ to mass $Cu_2(C_2O_4)_3$	
1.73 mol $Cu_2(C_2O_4)_3$	391.16 g $Cu_2(C_2O_4)_3$
Conversion 3	1* mol $Cu_2(C_2O_4)_3$
mass $Cu_2(C_2O_4)_3$	676.71 g $Cu_2(C_2O_4)_3$

For the following chemical reactions, complete the chart and perform the following conversions

Molar Ratio
6NaOH
→ 6

Chemical Equation	$6NaOH + Cu_2(C_2O_4)_3 \rightarrow 3Na_2C_2O_4 + 2Cu(OH)_3$						
Molar Ratio	6	mol :	1	mol :	3	mol :	2 mol

Two Step
mol A → mass B

Convert 6.62mol $Cu(OH)_3$ to mol NaOH	
6.62 mol $Cu(OH)_3$	6 mol NaOH
Conversion 2	2 mol $Cu(OH)_3$
mol NaOH =	19.86 mol NaOH

Convert mol NaOH to mass NaOH	
19.82 mol NaOH	40.00 g NaOH
Conversion 3	1 mol NaOH
mass NaOH =	792.80 g NaOH

Two Step
mass A → mol B

Convert 359.2g $Cu_2(C_2O_4)_3$ to mol $Cu_2(C_2O_4)_3$	
g $Cu_2(C_2O_4)_3$	mol $Cu_2(C_2O_4)_3$
Conversion 1	g $Cu_2(C_2O_4)_3$
mol $Cu_2(C_2O_4)_3$ =	g $Cu_2(C_2O_4)_3$

Convert mol $Cu_2(C_2O_4)_3$ to mol $Cu(OH)_3$	
mol $Cu_2(C_2O_4)_3$	mol $Cu(OH)_3$
Conversion 2	mol $Cu_2(C_2O_4)_3$
mol $Cu(OH)_3$ =	mol $Cu(OH)_3$

Three Step

$mass_A \rightarrow mass_B$

For the following chemical reactions, complete the chart and perform the following conversions

Chemical Equation	$Fe_3P_2 + V_2(SO_4)_3 \rightarrow 3FeSO_4 + 2VP$							
Molar Ratio	1	mol Fe_3P_2	1	mol $V_2(SO_4)_3$	3	mol $FeSO_4$	2	mol VP

MM Fe_3P_2	229.49g/mol	MM VP	81.91g/mol

Convert 392.27g Fe_3P_2 to mol Fe_3P_2	
392.27g Fe_3P_2	1 mol Fe_3P_2
Conversion 1	229.49g Fe_3P_2
mol Fe_3P_2 =	1.71 mol Fe_3P_2

Convert mol Fe_3P_2 to mol VP	
1.71 mol Fe_3P_2	2 mol VP
Conversion 2	1 mol Fe_3P_2
mol VP =	3.42 mol VP

Convert mol VP to mass VP	
3.42 mol VP	81.91g VP
Conversion 3	1 mol VP
mass VP =	280.13g VP

Conv. 1

$$\frac{1\ mol_A}{MM_A}$$

Conv. 3

$$\frac{MM_B}{1\ mol_B}$$

Always use "1"!!!

MM = Molar Mass (g)

Chemical Equation	$PbBr_4 + Cl_2 \rightarrow PbCl_4 + Br_2$

$1PbBr_4 + 2Cl_2 \rightarrow 1PbCl_4 + 2Br_2$

MM $PbBr_4$	526.08g/mol	~~MM Br_2~~ Molar Volume	~~159.80g/mol~~ 22.4L/mol

Convert 659.5g $PbBr_4$ to mol $PbBr_4$	
659.5g $PbBr_4$	1 mol $PbBr_4$
Conversion 1	526.08g $PbBr_4$
mol $PbBr_4$ =	1.25 mol $PbBr_4$

Convert mol $PbBr_4$ to mol Br_2	
1.25 mol $PbBr_4$	2 mol Br_2
Conversion 2	1 mol $PbBr_4$
mol Br_2 =	2.50 mol Br_2

Volume Conv. (1 and 3)

Conv. 1

$$\frac{1\ mol\ A}{22.4\ L\ A}$$

Conv. 3

$$\frac{22.4\ L\ B}{1\ mol\ B}$$

Convert mol Br_2 to volume Br_2 → L	
2.50 mol Br	22.4 L Br_2
Conversion 3 (Volume)	1 mol Br_2
volume Br_2 =	56.00 L Br_2