Teacher Name: Dibler Student Name: _____

Class : NGSS Chemistry

Period : Period 1

Assignment: Assignment Week 4

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

Stoichiometry (mole to mole ratios and simple one step problems)

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. Be sure your name is on all sheets of paper. Follow your individual teachers' instructions for turning in work

Submitted Work:

1) Reading notes from section 12.1 & 12.2
2) Completed practice problems and section assignments below

Questions:

1) Please send email as you have questions and/or attend virtual office hours.

Date	Activity
Monday (5/4)	Read Section 12.1 Take reading notes. Be able to work through all sample problems.
Tuesday (5/5)	Read Section 12.2 Take reading notes. Be able to work through all sample problems.
Wednesday (5/6)	Practice Problems 11 & 12 (page 360 of text) *show all of your work*
Thursday (5/7)	Practice Problems 13 & 14 (page 361 of text) *show all of your work*
Friday (5/8)	Practice Problems 15 & 16 (page 364 of text) *show all of your work*

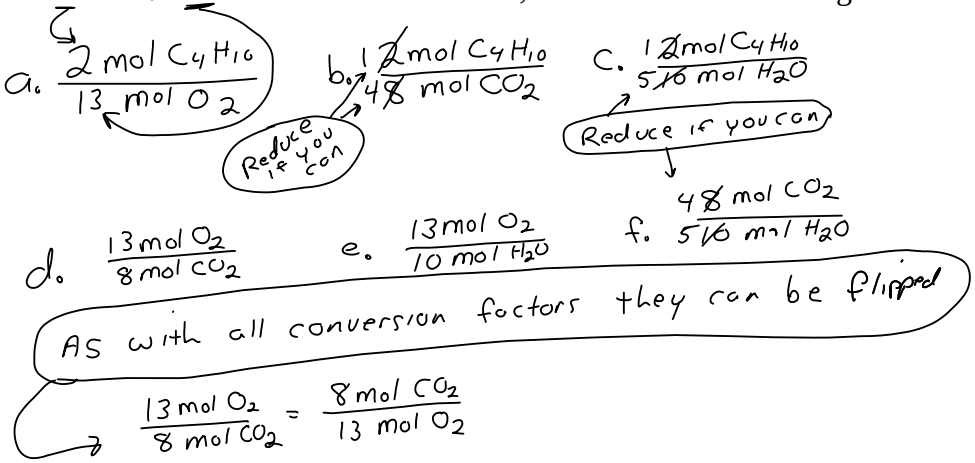
Answers to problems problems can be found in "appendix E" at the back of your book

Examples and set ups *(how to show your work)*

Mole ratios from a balanced equation

Given the following equation: $\mathbf{2C_4H_{10} + 13O_2 \rightarrow 8CO_2 + 10H_2O}$, show what the following molar ratios should be.

a. C_4H_{10} *and* O_2
b. C_4H_{10} *and* CO_2
c. C_4H_{10} *and* H_2O
d. O_2 *and* CO_2
e. O_2 *and* H_2O
f. CO_2 and H_2O



Mole to mole conversion from a balanced equation

Given the following **BALANCED** equation: **$2KClO_3 \rightarrow 2KCl + 3O_2$**

- How many moles of O_2 can be produced by letting 12.00 moles of $KClO_3$ react?

Inventory
asked = ? mol O_2
given = 12.00 mol $KClO_3$

Conversion factors
$\frac{2 \text{ mol } KClO_3}{3 \text{ mol } O_2}$

$?\text{ mol } O_2 = 12.00 \text{ mol } KClO_3 \times \frac{3 \text{ mol } O_2}{2 \text{ mol } KClO_3} = \frac{12.00 \times 3 \text{ mol } O_2}{2} = 18.00 \text{ mol } O_2$

4 sig fig; counted # so ∞ sig fig; 4 sig fig

Grams to grams conversion from a balanced equation *(will require 2 steps and molar masses)*

Given the following equation: **$2K + Cl_2 \rightarrow 2KCl$**

- How many grams of KCl is produced from 2.50 g of K and excess Cl_2.

Inventory
asked = ? g KCl
given = 2.50 g K

Conversion factors
$\frac{1 \text{ mol K}}{1 \text{ mol KCl}}$ (reduce) $\quad \frac{39.10 \text{ g K}}{1 \text{ mol K}}$ (from periodic table)

This tells me I have so much Cl_2 I don't have to worry about it

K = 39.10 g x 1 = 39.10 g K
Cl = 35.45 g x 1 = 35.45 g Cl
(from previous lessons)

$\frac{74.55 \text{ g KCl}}{1 \text{ mol KCl}}$ (molar mass)

$?\text{ g KCl} = 2.50 \text{ g K} \times \frac{1 \text{ mol K}}{39.10 \text{ g K}} \times \frac{1 \text{ mol KCl}}{1 \text{ mol K}} \times \frac{74.55 \text{ g KCl}}{1 \text{ mol KCl}} = \frac{2.50 \times 74.55 \text{ g KCl}}{39.10}$

asked; given; molar mass K; mole ratio from equation; molar mass KCl

$= 4.7666\ldots \text{ g KCl}$

3 sig fig → $= 4.77 \text{ g KCl}$

So.....

$?\text{ g KCl} = \text{g K} \rightarrow \text{mol K} \rightarrow \text{mol KCl} \rightarrow \text{g KCl}$

asked; given

each of these are conversion factors