Class :   Enhanced NGSS Chemistry

Period :   Period 1

Assignment: Assignment Week 4

Due: *Friday, 5/15*

Stoichiometry *(mole to mole ratios and simple one and two 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 9.1 & 9.2
2) Completed practice problems and section assignments for each day given below

Questions:

1) Please send email as you have questions and/or attend virtual office hours.
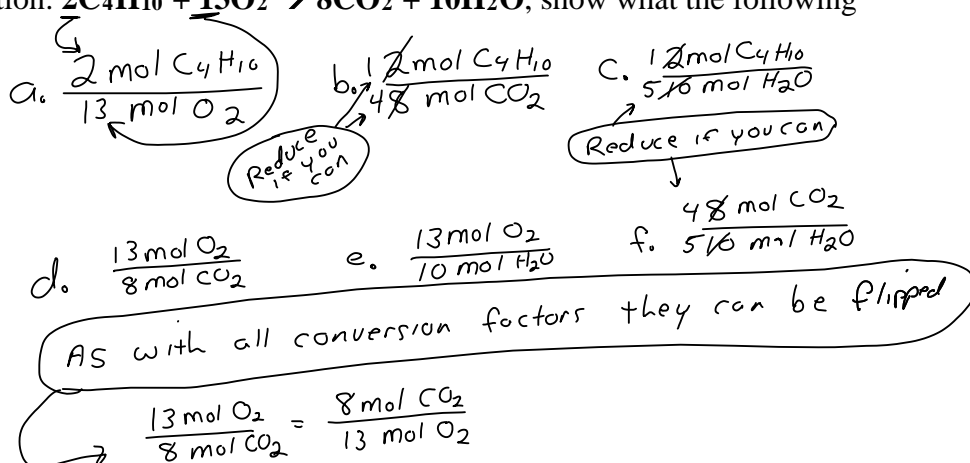
Date	Activity
Monday (5/4)	Read Section 9.1 Take reading notes. Be able to work through all sample problems. Do section review #2
Tuesday (5/5)	Read Section 9.2 Take reading notes. Be able to work through all sample problems.
Wednesday (5/6)	Practice Problems 1 & 2 (page 306 of text) *show all of your work* Practice Problems 1& 2 (page 308 of text) show all of your work
Thursday (5/7)	Practice Problems 1 & 2 (page 309 of text) *show all of your work*
Friday (5/8)	Practice Problems 1, 2, 3 (page 311 of text) *show all of your work* Section Review Problems 2 & 3 (page 311 of text) *show all of your work*

Teacher eddition of book to check your answers:
   http://rdibler.net/Chemistry/Distance%20Learning/Modern%20Chem%20Ch%209%20Teacher.pdf

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

Mole ratios from a balanced equation

Given the following equation: $2C_4H_{10} + 13O_2 \rightarrow 8CO_2 + 10H_2O$, 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

a. $\dfrac{2 \text{ mol } C_4H_{10}}{13 \text{ mol } O_2}$ Reduce if you can

b. $\dfrac{2 \text{ mol } C_4H_{10}}{48 \text{ mol } CO_2}$ Reduce if you can

c. $\dfrac{12 \text{ mol } C_4H_{10}}{510 \text{ mol } H_2O}$ Reduce if you can → $\dfrac{48 \text{ mol } CO_2}{510 \text{ mol } H_2O}$

d. $\dfrac{13 \text{ mol } O_2}{8 \text{ mol } CO_2}$

e. $\dfrac{13 \text{ mol } O_2}{10 \text{ mol } H_2O}$

f. $\dfrac{48 \text{ mol } CO_2}{510 \text{ mol } H_2O}$

AS with all conversion factors they can be flipped

$\dfrac{13 \text{ mol } O_2}{8 \text{ mol } CO_2} = \dfrac{8 \text{ mol } CO_2}{13 \text{ mol } O_2}$

Mole to mole conversion from a balanced equation

Given the following **BALANCED** equation: $2KClO_3 \rightarrow 2KCl + 3O_2$
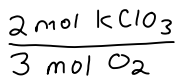
➢ How many moles of O_2 can be produced by letting 12.00 moles of $KClO_3$ react?

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

Conversion factors

$\dfrac{2 \text{ mol } KClO_3}{3 \text{ mol } O_2}$

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

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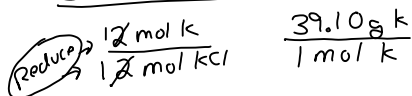
Given the following equation: $2K + Cl_2 \rightarrow 2KCl$

➢ How many grams of KCl is produced from 2.50 g of K and excess Cl_2.
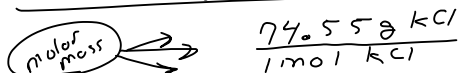
Inventory
asked = ? g KCl
given = 2.50 g K

(from periodic Table)

Conversion factors

(Reduce) $\dfrac{2 \text{ mol } K}{2 \text{ mol } KCl}$ $\dfrac{39.10 \text{ g } K}{1 \text{ mol } K}$

(This tells me I have Cl₂ so much Cl₂ I don't have To worry about it)

$K = 39.10 \text{ g} \times 1 = 39.10 \text{ g } K$
$Cl = 35.45 \text{ g} \times 1 = 35.45 \text{ g } Cl$

(from previous Lessons)

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

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

(asked) (given) (molar mass k) (mole Ratio from equation) (molar mass KCl)

= 4.7666... g KCl

(3 sig fig) → $\boxed{= 4.77 \text{ g } KCl}$

So.....

? g KCl = g K → mol K → mol KCl → g KCl

(asked) (given)

each of these are conversion factors