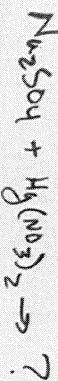
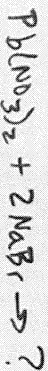
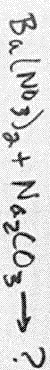


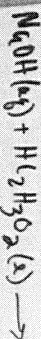
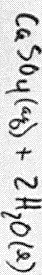
Chem 8 1-23-18

Chen 7

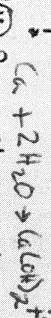
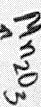
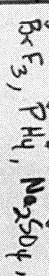
1) Write net ionic equation, identify solid:



2) Write net ionic equation:



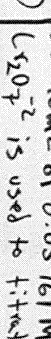
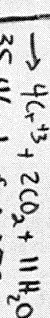
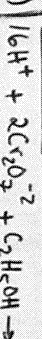
3) Calc oxidation # of designated atom:



4) Re-write equation on board. Identify OX # of all atoms.

5) Identify reactant OX and Red.

6) Given:

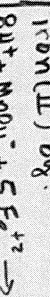
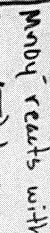


a) Calc mass % $\text{C}_2\text{H}_5\text{OH}$ in blood.

b) Calc OX # of Cr and C in $\text{Cr}_2\text{O}_7^{2-}$ and $\text{C}_2\text{H}_5\text{OH}$.

c) Identify what's OX and Red.

7) 25 mL of 0.15M MnO_4^- reacts with iron(II) by:



Calc mass Fe^{2+} reacted.

8) Calc molecules in 0.3 mole MgCl_2 .

9) Calc total atoms in $\text{CH}_3\text{CH}_2\text{CH}_2\text{Cl}$.

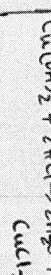
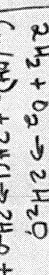
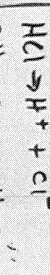
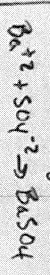
10) Calc molecules in 2g Na_2SO_4 .

11) 0.755g $\text{CuSO}_4 \cdot \text{XH}_2\text{O}$ is heated. After heating, the mass is 0.483g. Find X.

12) Select the acid: NaOH , SO_4^{2-} , NH_3 , HClO_4

13) Select the base: Al^{3+} , HCl , H_2SO_4 , NH_3

14) Select the neutralization equation:



15) Given: $\text{C}_4\text{H}_{10}\text{O}_3 + \text{C}_4\text{H}_{10}\text{O}_3 \rightarrow \text{C}_4\text{H}_{10}\text{O}_4 + \text{C}_2\text{H}_{10}\text{O}_2$

2g of $\text{C}_4\text{H}_{10}\text{O}_3$ react with 4g of $\text{C}_4\text{H}_{10}\text{O}_3$.

a) Find L.R

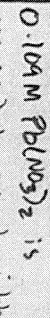
b) Calc mass $\text{C}_4\text{H}_{10}\text{O}_4$

c) If actual yield is 2.10g, calc % yield.

16) Given: $3\text{H}_2\text{O} + 4\text{H}^+ + 3\text{As}_2\text{O}_3 + 4\text{NO}_3^- \rightarrow 4\text{NO} + 6\text{H}_3\text{AsO}_4$

Identify molecule OX and Red.

17) What volume of 0.104M $\text{Pb}(\text{NO}_3)_2$ is required to react with 20 mL of 0.21M NaCl ?



18) Calc mass CaCl_2 needed to make 200 mL of 0.1M CaCl_2 .

19) 4g BaCl_2 is combined with 4g Na_2SO_4 .

a) Bal eq

b) Find L.R

c) Calc mass solid

d) Write net ionic equation

20) Given: $\text{Na} + 3\text{H}_2 \rightarrow 2\text{NH}_3$

The ratio reactants are combined:

Draw box that shows prod. and remaining reactants.

21) A compound contains 34.03g C, 8.70g H, 17.27g N. The M_w is 162.12. Find EF and MF.

22) Given: $3\text{NaOH}(\text{aq}) + \text{FeCl}_3(\text{aq}) \rightarrow \text{Fe}(\text{OH})_3(\text{s}) + 3\text{NaCl}(\text{aq})$

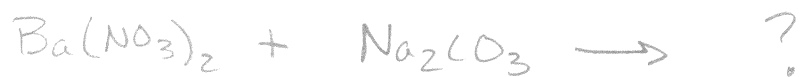
Identify the spectator ions.

23) A white powder is 43.64% P and 56.36% O. The M_w is 283.88. Find EF and MF.

24) Given: $\text{A} + 4\text{B} \rightarrow 3\text{C}$

The M_w of C is 46. If the rxn produces 90g when 1 mole A reacts, Calc % yield.

1 write net ionic equation, identify solid:



2 write net ionic equation:

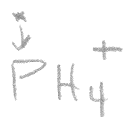


3 cal ox # of designated element:



$$\text{Br} - 3 = 0$$

$$\text{Br} = +3$$



$$\text{P} + 4 = +1$$

$$\text{P} = -3$$



$$\text{S} - 8 = -2$$

$$\text{S} = +6$$



$$2\text{Mn} - 6 = 0$$

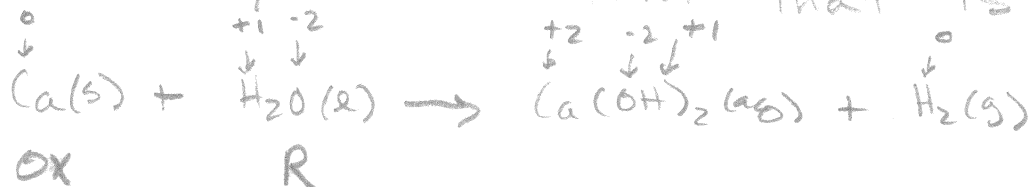
$$2\text{Mn} = 6$$

$$\text{Mn} = +3$$

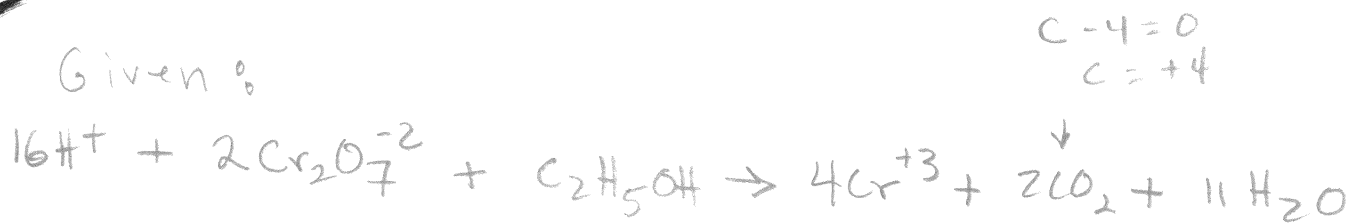
Rewrite equation,

Identify ox #s all elements

Identify the reactant that is oxidized:



5 Given:



35.46 mL, 0.05961 M $\text{Cr}_2\text{O}_7^{2-}$ is used to titrate 28g of blood plasma.

1) calc mass percent of alcohol ($\text{C}_2\text{H}_5\text{OH}$) in blood.

2) calc ox # Cr in $\text{Cr}_2\text{O}_7^{2-}$ and C in $\text{C}_2\text{H}_5\text{OH}$

3. Identify what's OX + R.

$$0.03546 \text{ L} \times \frac{0.05961 \text{ mole } \text{Cr}_2\text{O}_7^{2-}}{\text{L}} = 0.00211 \text{ mole } \text{Cr}_2\text{O}_7^{2-} \times \frac{1 \text{ C}_2\text{H}_5\text{OH}}{2 \text{ Cr}_2\text{O}_7^{2-}}$$

$$= 0.001056 \text{ mole } \text{C}_2\text{H}_5\text{OH} \times \frac{46 \text{ g}}{\text{mole}} = 0.0486 \text{ g } \text{C}_2\text{H}_5\text{OH}$$

$$2\text{Cr} - 14 = -2$$

$$2\text{Cr} = 12$$

$$\text{Cr} = +6$$

$$6 + 2\text{C} - 2 = 0$$

$$2\text{C} = 4$$

$$\text{C} = +2$$

$$\text{C}_2\text{H}_5\text{OH} = \text{OX} \quad \text{Cr}_2\text{O}_7^{2-} = \text{R}$$

$$\times 100 = 0.173\% \text{ C}_2\text{H}_5\text{OH}$$

Magnesium reacts with HCl to produce gas. 0.1648g of the gas is collected in 2L at 1atm and 25°C, what is the ident of gas CO_2 , H_2 , O_2 , CH_4

25mL of of a 0.15M soln of permanganate reacts with an excess of hydrogen ion and iron (II) by the following rxn:



Calc mass of iron (II) reacted.

$$0.025\text{L} \times \frac{0.15\text{mole MnO}_4^-}{\text{L}} = 0.00375\text{mole MnO}_4^-$$

$$0.00375\text{mole MnO}_4^- \times \frac{5\text{Fe}^{+2}}{1\text{MnO}_4^-} = 0.01875\text{mole Fe}^{+2}$$

$$\times \frac{55.85\text{g}}{\text{mole}} = 1.047\text{g Fe}^{+2}$$

5.2g ✓
FeSO₄ (m)
278

White Board

~~13~~ ~~14~~ ~~15~~ ~~16~~ ~~17~~ ~~18~~ ~~19~~ ~~20~~ ~~21~~ ~~22~~ ~~23~~ ~~24~~ ~~25~~ ~~26~~ ~~27~~ ~~28~~ ~~29~~ ~~30~~ ~~31~~ ~~32~~ ~~33~~ ~~34~~ ~~35~~ ~~36~~ ~~37~~ ~~38~~ ~~39~~ ~~40~~ ~~41~~ ~~42~~ ~~43~~ ~~44~~ ~~45~~ ~~46~~ ~~47~~ ~~48~~ ~~49~~ ~~50~~ ~~51~~ ~~52~~ ~~53~~ ~~54~~ ~~55~~ ~~56~~ ~~57~~ ~~58~~ ~~59~~ ~~60~~ ~~61~~ ~~62~~ ~~63~~ ~~64~~ ~~65~~ ~~66~~ ~~67~~ ~~68~~ ~~69~~ ~~70~~ ~~71~~ ~~72~~ ~~73~~ ~~74~~ ~~75~~ ~~76~~ ~~77~~ ~~78~~ ~~79~~ ~~80~~ ~~81~~ ~~82~~ ~~83~~ ~~84~~ ~~85~~ ~~86~~ ~~87~~ ~~88~~ ~~89~~ ~~90~~ ~~91~~ ~~92~~ ~~93~~ ~~94~~ ~~95~~ ~~96~~ ~~97~~ ~~98~~ ~~99~~ ~~100~~

Calc molecules in 0.3 mole $MgCl_2$

$$0.3 \text{ mole } MgCl_2 \times \frac{6.022 \times 10^{23} \text{ molec}}{1 \text{ mole}} = 1.8 \times 10^{23} \text{ molec}$$

Calc total atoms in $CH_3CH_2OCH_2CCl_3$

15

Calc molecules in 2g Na_2SO_4

$$2g Na_2SO_4 \times \frac{1 \text{ mole}}{142g} = 0.014084 \text{ mole } Na_2SO_4 \times N_A$$
$$= 8.5 \times 10^{21} \text{ molecules}$$

Calc atoms of C in 20 molecules of C_6H_6 . (120 atoms C)

A 0.755g $CuSO_4 \cdot xH_2O$ is heated releasing all the water. The mass of remaining $CuSO_4$

is 0.483g.

$$\frac{0.483g}{159.55} = 0.003027 \text{ moles } CuSO_4$$

$$\frac{0.01511 \text{ mole } H_2O}{0.003027 \text{ mole } CuSO_4} = 4.99$$

$$0.755 - 0.483 = 0.272g H_2O$$

WB Acids/Bases

~~10~~ ~~13~~ ~~14~~ ~~15~~ ~~16~~ ~~17~~ ~~18~~ ~~19~~ ~~20~~ ~~21~~ ~~22~~ ~~23~~ ~~24~~ ~~25~~ ~~26~~ ~~27~~ ~~28~~ ~~29~~ ~~30~~ ~~31~~ ~~32~~ ~~33~~ ~~34~~ ~~35~~ ~~36~~ ~~37~~ ~~38~~ ~~39~~ ~~40~~ ~~41~~ ~~42~~ ~~43~~ ~~44~~ ~~45~~ ~~46~~ ~~47~~ ~~48~~ ~~49~~ ~~50~~ ~~51~~ ~~52~~ ~~53~~ ~~54~~ ~~55~~ ~~56~~ ~~57~~ ~~58~~ ~~59~~ ~~60~~ ~~61~~ ~~62~~ ~~63~~ ~~64~~ ~~65~~ ~~66~~ ~~67~~ ~~68~~ ~~69~~ ~~70~~ ~~71~~ ~~72~~ ~~73~~ ~~74~~ ~~75~~ ~~76~~ ~~77~~ ~~78~~ ~~79~~ ~~80~~ ~~81~~ ~~82~~ ~~83~~ ~~84~~ ~~85~~ ~~86~~ ~~87~~ ~~88~~ ~~89~~ ~~90~~ ~~91~~ ~~92~~ ~~93~~ ~~94~~ ~~95~~ ~~96~~ ~~97~~ ~~98~~ ~~99~~ ~~100~~ ~~101~~ ~~102~~ ~~103~~ ~~104~~ ~~105~~ ~~106~~ ~~107~~ ~~108~~ ~~109~~ ~~110~~ ~~111~~ ~~112~~ ~~113~~ ~~114~~ ~~115~~ ~~116~~ ~~117~~ ~~118~~ ~~119~~ ~~120~~ ~~121~~ ~~122~~ ~~123~~ ~~124~~ ~~125~~ ~~126~~ ~~127~~ ~~128~~ ~~129~~ ~~130~~ ~~131~~ ~~132~~ ~~133~~ ~~134~~ ~~135~~ ~~136~~ ~~137~~ ~~138~~ ~~139~~ ~~140~~ ~~141~~ ~~142~~ ~~143~~ ~~144~~ ~~145~~ ~~146~~ ~~147~~ 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414 Given:



(a) Calc L.R

(b) Calc mass $\text{C}_9\text{H}_8\text{O}_4$ (Theoretical)

If the actual yield of $\text{C}_9\text{H}_8\text{O}_4$ is 2.10g, what is the % yield?

$$\begin{array}{l} \text{Lim R} \\ 2.00\text{g C}_7\text{H}_6\text{O}_3 \times \frac{1\text{mole}}{138.12} = 0.01448\text{mole C}_7\text{H}_6\text{O}_3 \times \frac{1\text{C}_9\text{H}_8\text{O}_4}{1\text{C}_7\text{H}_6\text{O}_3} = 0.01448\text{mole C}_9\text{H}_8\text{O}_4 \end{array}$$

$$4.00\text{g C}_4\text{H}_6\text{O}_3 \times \frac{1\text{mole}}{102.09} = 0.03918\text{mole C}_4\text{H}_6\text{O}_3 \times \frac{1\text{C}_9\text{H}_8\text{O}_4}{1\text{C}_4\text{H}_6\text{O}_3} = 0.03918\text{mole C}_9\text{H}_8\text{O}_4$$

$$\downarrow$$
$$0.01448\text{C}_9\text{H}_8\text{O}_4 \times \frac{180.15\text{g C}_9\text{H}_8\text{O}_4}{\text{mole}} = 2.609\text{g C}_9\text{H}_8\text{O}_4$$

$$\% \text{ yield} = \frac{2.10\text{g}}{2.609\text{g}} \times 100 = 80.49\%$$

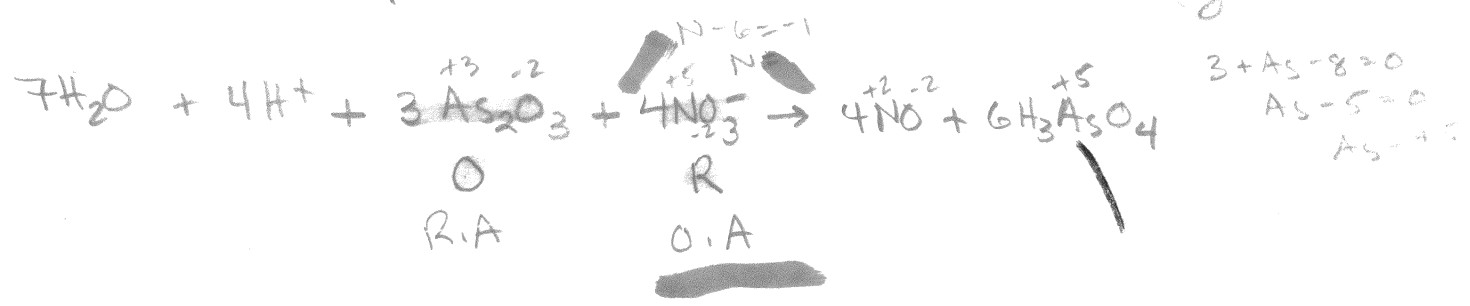
~~7/15~~

$$2As - 6 = 0$$

$$2As = 6 \div 2$$

$$As = +3$$

which species acts as an O. Agent



9.



In the rxn above, the species that act as bases include: NH_3, OH^-

The species that act as acids include: H_2O, NH_4

~~7/15~~

5. which of the following form solutions that ^{highly} support an electrical current.

~~a. HCl~~

b. $HC_2H_3O_2$

c. $PbCl_2$

d. HNO_2

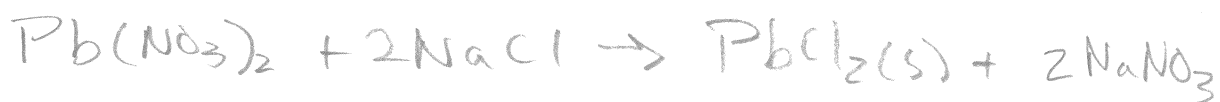
e. Hg_2Cl_2

f. Na_2SO_4 ~~$NaNO_3$~~

what volume of 0.109M $\text{Pb}(\text{NO}_3)_2$

is required to react entirely with

20mL 0.21M NaCl



0.109M

20mL

0.21M

0.0042 moles NaCl

$$0.0042 \text{ moles NaCl} \times \frac{\text{Pb}(\text{NO}_3)_2}{2 \text{ NaCl}} = 0.0021 \text{ moles Pb}(\text{NO}_3)_2$$

4-22

0.0021 moles $\text{Pb}(\text{NO}_3)_2$

0.109 mole

L

0.01926 L

19.3 mL

~~6/4~~

17

A Scientist needs 200 mL of

0.1 M CaCl_2 . Calc mass CaCl_2

needed.

$$0.2 \text{ L} \times 0.1 \text{ M CaCl}_2 \times 110.99 =$$

$$= 2.2198 \text{ g CaCl}_2$$

~~6/51~~

~~17~~

A Scientist needs a 100 mL of

1 M Na_2SO_4 . There is a 4M stock
 Na_2SO_4 in lab. Calc mLs stock
needed and mLs H_2O .

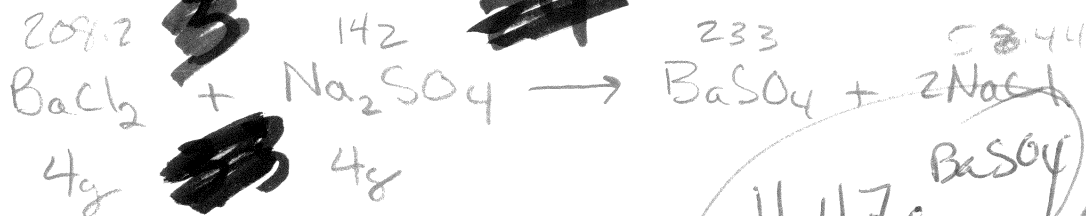
$$(4 \text{ M})(V_1) = (1 \text{ M})(0.1 \text{ L})$$

$$0.025 \text{ L or } 25 \text{ mL}$$

4M Stock

75 mL H_2O

Two mols of NaCl in mass



$$4\text{g BaCl}_2 \times \frac{1 \text{ mole}}{208.2} = 0.019212296 \text{ mole BaCl}_2$$

$$\times \frac{2 \text{ NaCl}}{1 \text{ BaCl}_2} = 0.03842459 \text{ mole NaCl}$$

$$4\text{g Na}_2\text{SO}_4 \times \frac{1 \text{ mole}}{142} = 0.0281690 \text{ mole Na}_2\text{SO}_4 \times \frac{2 \text{ NaCl}}{1 \text{ BaCl}_2} = 0.056338 \text{ mole NaCl}$$

Remaining Reactant



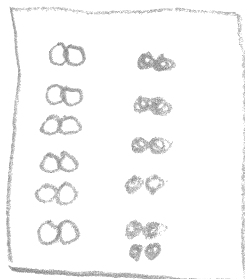
$$0.019212296 \text{ mole BaCl}_2 \times \frac{1 \text{ Na}_2\text{SO}_4}{1 \text{ BaCl}_2} = 0.019212296 \text{ mole Na}_2\text{SO}_4$$

$$\times \frac{142 \text{ g}}{\text{mole}} = 2.728 \text{ g Na}_2\text{SO}_4 \text{ used}$$

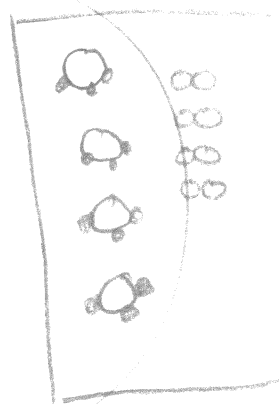
Remain

$$1.27 \text{ g}$$

(M)



Draw a box for the products. It contains the correct # NH₃ and left-over reactant.



$$6\text{N}_2 \times \frac{2\text{NH}_3}{1\text{N}_2} = 12\text{NH}_3$$

$$6\text{H}_2 \times \frac{2\text{NH}_3}{3\text{H}_2} = 4\text{NH}_3$$

$$6\text{H}_2 \times \frac{1\text{N}_2}{3\text{H}_2} = 2\text{N}_2 \text{ used}$$

~~21~~ given moles

Given 0.01950 mole of Ba and 0.03899 mole Br
find EF

$$\frac{0.01950 \text{ mole Ba}}{0.01950} = 1 \text{ Ba}$$

$$\frac{0.03899 \text{ mole Br}}{0.01950} = 1.999 \text{ Br}$$



~~21~~ 20

$$M_m = 162.12$$

$$74.03 \text{ g C} \times \frac{1 \text{ mole}}{12.01} = \frac{6.164 \text{ mol C}}{1.233 \dots} = 4.999 = 5 \text{ C}$$

$$8.70 \text{ g H} \times \frac{1 \text{ mole}}{1.008} = \frac{8.63 \text{ mol H}}{1.233 \dots} = 6.999 = 7 \text{ H}$$

$$17.27 \text{ g N} \times \frac{1 \text{ mole}}{14.01} = \frac{1.233 \text{ mole N}}{1.233 \dots} = 1 \text{ N}$$

$$\frac{162.12}{81.16} = 1.998 = \underline{2}$$



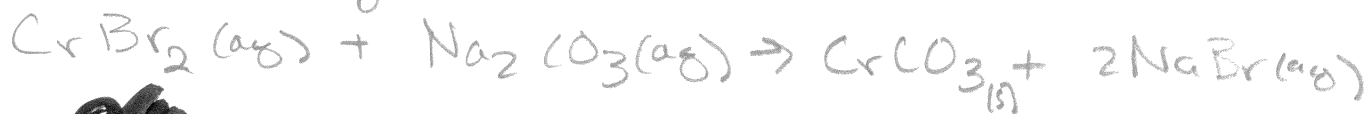
$$\begin{aligned} &60.05 \quad 7.056 + 14.01 \\ &5(12.01) + 7(1.008) + 14.01 = \\ &= 81.16 \end{aligned}$$

C
12.01

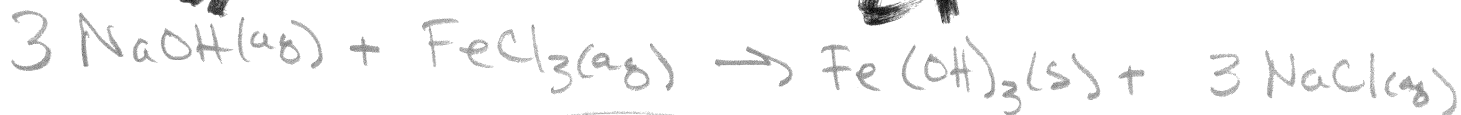
H
1.008

N
14.01

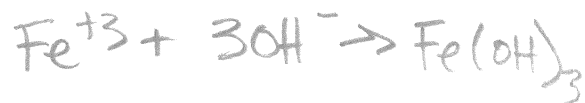
Identity Spectator ions



Na^+, Br^-



Na^+, Cl^-



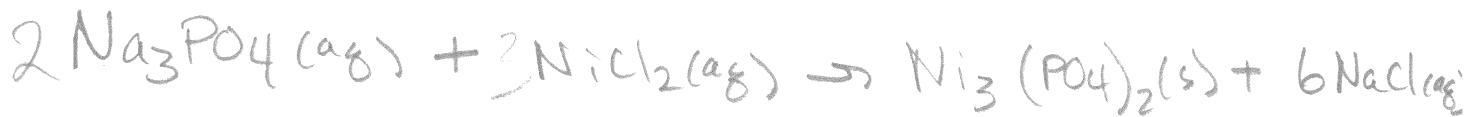
$\text{Na}^+, \text{C}_2\text{H}_3\text{O}_2^-$



$\text{NH}_4^+, \text{NO}_3^-$



$\text{Mg}^{2+}, \text{Cl}^-$



Na^+, Cl^-

~~10~~ Nylon is 63.68% C, 12.38% N, 9.8% H and 14.14% O. Calculate EF

~~8~~ $63.68g C \times \frac{1}{12.01} = 5.295587 - 5.99$

~~8~~ $12.38g N \times \frac{1}{14.01} = 0.883655 - 1$

~~8~~ $9.8g H \times \frac{1}{1.008} = 9.722222 - 11$

$14.14g O \times \frac{1}{16.00} = 0.88375 - 1$



✓ ~~10~~ Osmium

A compound contains 0.0113684 moles of osmium and 0.045625 moles of oxygen. Calculate the EF, OsO_4

✓ ~~10~~ Thiocyanate

What is the weight percent of carbon in the thiocyanate ion? (SCN^-) 20.68%
58.08



1 mole

90g = actual

If the rxn produces 90g when 1 mole A is reacted, what is the percent yield of the rxn? 65%
1 mole A $\times \frac{90}{138} = 65\%$