

2014 Key

Learning Target 1 – I can count the number of significant figures in a measurement.
 Review Reading: Zumdahl 9th Ed. Pg 14-17 Wikipedia: Significant Figures

1) Count the number of significant figures in the following measurements:

- a) 2.71 g 3 b) 0.00047 kg 2 c) 7.0×10^5 m 2 d) 1,030 L 3
 e) 150 pencils 2 f) 37500 g 3 g) 0.1010 cm 4

Learning Target 2 – I can convert numbers to scientific notation while applying significant figures.
 Review Reading: Zumdahl 9th Ed. Pg 14-17 Wikipedia: Significant Figures

2) Express each of the following in proper scientific notation (Pay attention to sig figs and units)

- a) 0.000125 m 1.25×10^{-4} m b) 155.0 mL 1.550×10^2 mL
 c) 123,030,000 kg 1.2303×10^8 kg d) 481.9×10^{-9} cm 4.819×10^{-7} cm

Learning Target 3 – I can add, subtract, multiply, and divide with the correct number of significant figures.
 Review Reading: Zumdahl 9th Ed. Pg 14-17 Wikipedia: Significant Figures

3) Calculate the correct answer with proper units and sig figs for each of the following:

- a) $12 \text{ g} + 0.677 \text{ g} + 86.33 \text{ g} =$ 99 g
 b) $(355.78 \text{ g}) / (0.056 \text{ g}) =$ 6,400 g
 c) $97.34 \text{ mL} - 34.1 \text{ mL} =$ 63.2 mL
 d) $14.68 \times 5 =$ 70

4) Perform the following calculations involving scientific notation. Report your answer with the correct number of significant figures. **P E M D A S**

- a) $0.14 \times (6.02 \times 10^{23}) =$ 8.4×10^{22}
 b) $\frac{(9.875 \times 10^4) - (9.795 \times 10^4)}{9.875 \times 10^4} \times 100\% =$ 0.8101 (assume 100 is exact)
 c) $\frac{(3.8 \times 10^{-12} + 4.0 \times 10^{-13})}{(4 \times 10^{12} + 6.3 \times 10^{13})} =$ $\frac{4.2 \times 10^{-12}}{6.7 \times 10^{13}} = 6.3 \times 10^{-26} = 6 \times 10^{-26}$

Learning Target 4 – I can use conversions to solve dimensional analysis problems.

Review Reading: Zumdahl 9th Ed. Pg 18-22 Google: Dimensional Analysis links 3 or 4

5) Solve the following problems using conversions and dimensional analysis.

- a) A large railroad car is filled with 1745 gallons of milk. The car springs a leak in the bottom, and milk starts dripping out at a rate of 204.84 mL/sec. If the train is traveling at a speed of 65.4 miles per hour, calculate how many miles it will travel before all the milk has drained out of the car. (1 gal = 3.78 L, 1 mile = 5280 ft, 1 in = 2.54 cm)

$$\frac{(1745 \text{ gal})}{1} \times \frac{3.78 \text{ L}}{1 \text{ gal}} \times \frac{1000 \text{ mL}}{1 \text{ L}} \times \frac{1 \text{ sec}}{204.84 \text{ mL}} \times \frac{1 \text{ hr}}{3600 \text{ s}} \times \frac{65.4 \text{ miles}}{1 \text{ hr}} = 584.989 \text{ miles}$$

= 585 miles

- b) The world record for the hundred meter dash is 9.77 seconds. What is the corresponding average speed in units of m/sec, km/hr, ft/sec, and miles/hr?

$$\frac{100 \text{ m}}{9.77 \text{ sec}} = 10.25 \text{ m/s}$$

$$\frac{10.25 \text{ m}}{1 \text{ s}} \times \frac{3600 \text{ sec}}{1 \text{ hr}} \times \frac{1 \text{ km}}{1000 \text{ m}} = 36.9 \text{ km/hr}$$

$$\frac{10.25 \text{ m}}{1 \text{ s}} \times \frac{3.281 \text{ ft}}{1 \text{ meter}} = 33.6 \text{ ft/s}$$

$$\frac{33.6 \text{ ft}}{1 \text{ s}} \times \frac{1 \text{ mi}}{5280 \text{ ft}} \times \frac{3600 \text{ sec}}{1 \text{ hr}} = 22.9 \text{ mi/hr}$$

Learning Target 5 – I can explain density and use the density equation to find an unknown.

Review Reading: Zumdahl 9th Ed. Pg 26-27

Wikipedia: Density

- 6) A rectangular block has dimensions of 2.9 cm x 3.5 cm x 10.0 cm. The mass of the block is 615.0 grams. What are the volume and the density of the block?

$$\text{Volume} = (2.9 \text{ cm}) \times (3.5 \text{ cm}) \times (10.0 \text{ cm}) = 101.5 \text{ cm}^3$$

$$\text{Density} = \frac{615.0 \text{ g}}{101.5 \text{ cm}^3} = 6.1 \text{ g/cm}^3$$

- 7) The density of pure silver is 10.5 g/mL at 20°C. If 5.25 grams of pure silver pellets are added to a graduated cylinder containing 11.2 mL of water, to what volume will the water in the cylinder rise?

$$D = \frac{m}{V} \quad 10.5 \frac{\text{g}}{\text{mL}} = \frac{5.25 \text{ g}}{V} \quad V = 0.5 \text{ mL displaced}$$

$$11.2 \text{ mL} + 0.5 \text{ mL} = 11.7 \text{ mL H}_2\text{O}$$

Learning Target 6 – I can define and explain terms that identify physical/chemical characteristics of matter.

Review Reading: Zumdahl 9th Ed. Pg 27-30

Wikipedia: Matter or Wikipedia any of the terms below

Volume, density, mass, color, bp, mp, od or flammability, reactivity
texture, solubility

- 8) Identify the following as a physical property, physical change, chemical property, or chemical change:

a) Ethanol has a density of 0.697 g/mL. physical property

b) The solution turns blue upon mixing water and food coloring. physical change

* c) Wood burns in an oven. chemical change (wood actually burning)

d) Methyl alcohol is highly flammable. chemical property

e) Ice melts in a beaker. physical change

f) Methyl ethanoate smells like apples. physical property

g) A car crashes into a wall. physical change

h) Sugar dissolves in water. physical change

* The property of wood being flammable would be chem. property

Learning Target 7 – I can identify the number of protons, neutrons, and electrons in atoms and isotopes.

Review Reading:

Zumdahl 9th Ed. Pg 47-57

Wikipedia: Isotopes

- 9) What number of protons and neutrons are contained in the nucleus of each of the following atoms?
Assuming each atom is uncharged, what number of electrons are present?

	Protons	Neutrons	Electrons
a) $^{235}_{92}\text{U}$	92	143	92
b) $^{13}_6\text{C}$	6	7	6
c) $^{57}_{26}\text{Fe}$	26	31	26
d) $^{208}_{82}\text{Pb}$	82	126	82

- 11) Complete the following table:

Name	Mass #	Atomic #	# of Protons	# of Neutrons	# of Electrons	Symbol
Gallium	70	31	31	39	31	Ga
Phosphorus	31	15	15	16	15	$^{31}_{15}\text{P}^{-3}$
Strontium-80	80	38	38	42	38	$^{80}_{38}\text{Sr}$
Manganese	55	25	25	30	23	$^{55}_{25}\text{Mn}^{+2}$

Learning Target 8 – I can define and use the Law of Definite Proportions and the Law of Multiple Proportions.

Review Reading: Zumdahl 9th Ed. Pg 44-47

Google: Law of Definite Proportions, Law of Multiple Proportions

- 12) Explain:

- a) Law of Definite Proportions:

Chemical compounds always have a fixed ratio of elements (by mass)

- b) Law of Multiple Proportions:

When 2 elements combine to form compounds the ratio of the mass of 1 element combined w/ mass of the other will be a fixed ratio (whole #)

13) Solve the following problem:

	Tin - Oxygen compound	Tin % by mass	Oxygen % by mass	
$\text{Sn}^{+2} \rightarrow$	Stannous oxide	88.10%	11.90%	SnO
$\text{Sn}^{+4} \rightarrow$	Stannic oxide	78.70%	21.30%	SnO_2

Tin - Oxygen compound	Tin mass	Oxygen mass
Stannous oxide	100.0 grams	13.51 g
Stannic oxide	100.0 grams	21.06 g

- a) Use the Law of Definite Proportions to determine the mass of oxygen needed to combine with the given masses of tin for stannous oxide and stannic oxide.

Stannous oxide $\rightarrow .881 \text{ g} = 100 \quad y = 13.51 \times .119 = \boxed{13.51 \text{ g O}}$

Stannic oxide $\rightarrow .787 \text{ g} = 100 \quad y = 21.06 \times .213 = \boxed{27.06 \text{ g O}}$

- b) Does the Law of Multiple Proportions hold true in this case? Explain (why) or why not.

Yes, In chart #1 combining only Sn and O you see the % by mass is different as the # of molecules O change in the compounds.

Learning Target 9 – I can name and write formulas for ionic compounds.

Review Reading:

Zumdahl 9th Ed. Pg 60-70

Wikipedia: IUPAC nomenclature of inorganic compounds

14) Name or give the formula for the following compounds:

Name	Formula
Sodium fluoride	NaF
Potassium oxide	K_2O
Calcium phosphate	$\text{Ca}_3(\text{PO}_4)_2$
Iron III chloride	FeCl_3
Iron (II) chloride	FeCl_2
Mercury I oxide	Hg_2O
Sodium sulfate	Na_2SO_4
Calcium Carbonate	CaCO_3
Lithium phosphate	Li_3PO_4
Sulfur dioxide	SO_2
Calcium hydroxide	$\text{Ca}(\text{OH})_2$
Sulfuric acid	H_2SO_4

Learning Target 10 – I can write and balance equations.

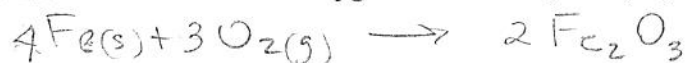
Review Reading:

Zumdahl 9th Ed. 103-108

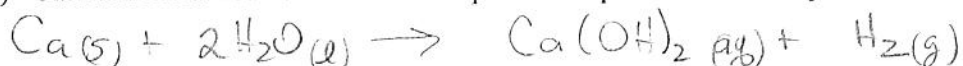
www.chymist.com/Equations.pdf

Write and balance the following equations:

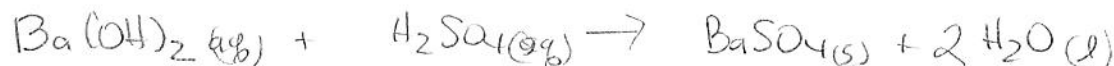
- a) Iron metal reacts with oxygen to form rust, iron (III) oxide.



- b) Calcium metal reacts with water to produce aqueous calcium hydroxide and hydrogen gas.



- c) Aqueous barium hydroxide reacts with aqueous sulfuric acid to produce solid barium sulfate and water.



Learning Target 11 – I can do conversions associated with moles.

Review Reading:

Zumdahl 9th Ed. 85-92

Google: Mole Calculations

15) Solve the following problems:

- a) Calculate the mass of 500 atoms of iron (Fe).

$$\frac{500 \text{ atoms}}{1} \left(\frac{1 \text{ mol Fe}}{6.02 \times 10^{23} \text{ atoms}} \right) \left(\frac{55.845 \text{ g}}{1 \text{ mol Fe}} \right) = 4.638 = 5 \times 10^{-20} \text{ g}$$

- b) How many formula units are present in 87.2 grams of lead (IV) carbonate?

$$\frac{87.2 \text{ g Pb}}{1} \left(\frac{1 \text{ mol Pb}}{327.2 \text{ g}} \right) \left(\frac{6.02 \times 10^{23} \text{ form. units}}{1 \text{ mol}} \right) = 1.60 \times 10^{23} \text{ form. units}$$

- c) Aspartame is an artificial sweetener that is 160 times sweeter than sucrose (table sugar) when dissolved in water. Aspartame is marketed as Nutra-Sweet. The molecular formula of aspartame is $\text{C}_{14}\text{H}_{18}\text{N}_2\text{O}_5$.

- i. Calculate the molar mass of aspartame.

$$14(12.01) + 18(1.01) + 2(14.01) + 5(16.0) = 294.32 \text{ g/mol}$$

- ii. Calculate the mass, in grams, of 1.56 mol of aspartame.

$$\frac{1.56 \text{ mol asp}}{1} \left(\frac{294.32 \text{ g}}{1 \text{ mol}} \right) = 459 \text{ g asp}$$

- iii. How many molecules are in 5.0 mg of aspartame?

$$\frac{0.005 \text{ g}}{1} \left(\frac{1 \text{ mol}}{294.32 \text{ g}} \right) \left(\frac{6.02 \times 10^{23} \text{ molecules}}{1 \text{ mol}} \right) = 1.0 \times 10^{19} \text{ molecules}$$

- iv. How many atoms of nitrogen are in 1.2 g aspartame?

$$\frac{1.2 \text{ g}}{1} \left(\frac{1 \text{ mol asp}}{294.32 \text{ g}} \right) \left(\frac{6.02 \times 10^{23} \text{ mol}}{1 \text{ mole}} \right) \left(\frac{2 \text{ mol N}}{1 \text{ mol asp}} \right) = 4.9 \times 10^{21} \text{ atoms N}$$

- v. What is the mass of one molecule of aspartame?

$$\left(\frac{294.32 \text{ g}}{\text{mole}} \right) \left(\frac{1 \text{ mol}}{6.02 \times 10^{23} \text{ molecule}} \right) = 4.8 \times 10^{-22} \text{ g/molecule}$$

Learning Target 12 – I can calculate percent by mass for an element in a compound.

Review Reading:

Zumdahl 9th Ed. 94-96

Google: percent mass

16) Calculate the percent by mass for each element in aspartame from the previous problem.

$$\begin{aligned} \text{C: } \frac{14(12.01)}{294.32} &= .5713 \times 100 = \boxed{57.1\% \text{ C}} \\ \text{H: } \frac{18(1.01)}{294.32} &= .06177 \times 100 = \boxed{6.18\% \text{ H}} \\ \text{N: } \frac{2(14.01)}{294.32} &= .09520 \times 100 = \boxed{9.52\% \text{ N}} \\ \text{O: } \frac{5(16.00)}{294.32} &= .2718 \times 100 = \boxed{27.2\% \text{ O}} \end{aligned}$$

Learning Target 13 – I can calculate the average atomic mass of an isotope using percent abundance.

Review Reading:

Zumdahl 9th Ed. 83-85

Google: average atomic mass

17) An element consists of 1.40% of an isotope with a mass of 203.973 amu, 24.10% of an isotope with mass 205.9745 amu, 22.10% of an isotope with mass 206.9759 amu, and 52.40% of an isotope with mass 207.9766 amu. Calculate the average atomic mass and identify the element.

$$(203.973)(.014) + (205.9745)(.2410) + (206.9759)(.2210) + (207.9766)(.5240) =$$

$$2.856 + 49.64 + 45.74 + 108.98 = \boxed{207.22 \text{ amu}}$$

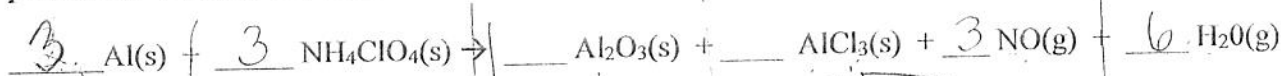
Learning Target 14 – I can solve stoichiometry problems, include those with limiting and excess reagents.

Review Reading:

Zumdahl 9th Ed. 108-123

Google: stoichiometry problems

18) The reusable booster rockets of the U.S. space shuttle employs a mixture of aluminum and ammonium perchlorate for fuel. A possible reaction for this is:



#g	4g a) Balance the following reaction:	15g	5.69g	133.33	0.427	0.427	0.427	0.427
molar mass	26.98	117.49	133.33	133.33	0.427	0.427	0.427	0.427
#mol	1148	128	0.427	0.427	0.427	0.427	0.427	0.427
1 unit	104g	0.427	0.427	0.427	0.427	0.427	0.427	0.427

b) If 4.0 g of aluminum reacted with 15.0 g of ammonium perchlorate, what would be the limiting reactant? How much excess of the other reactant would you have?

Limiting $\rightarrow \text{NH}_4\text{ClO}_4$

Excess $\rightarrow .0063 \text{ mol Al}$ or $\boxed{0.17 \text{ g remains}}$

c) Using the previous information, calculate the number of grams of aluminum chloride produced.

$$\left(\frac{0.0427 \text{ mol AlCl}_3}{1} \right) \left(\frac{133.33 \text{ g}}{1 \text{ mol AlCl}_3} \right) = \boxed{5.7 \text{ g AlCl}_3}$$

d) If you actually collected 4.18 g of aluminum chloride what would be the percent yield?

$$\frac{4.18 \text{ g}}{5.7 \text{ g}} \times 100 = 73.3\% = \boxed{73\%}$$

19) You add aluminum to a solution of copper (II) chloride and it reacts exothermically. Write and balance the equation here:



a) If you react 1.25 g of Al, how much copper (II) chloride do you need to add for the Al to fully react?

$$\left(\frac{1.25 \text{ g Al}}{1} \right) \left(\frac{1 \text{ mol Al}}{26.98 \text{ g}} \right) \left(\frac{3 \text{ mol CuCl}_2}{2 \text{ mol Al}} \right) \left(\frac{134.45 \text{ g}}{1 \text{ mol CuCl}_2} \right) = \boxed{9.13 \text{ g CuCl}_2}$$

mol mass					
# mol	.046	.0693	.0693	.046	$\text{Cu} = 4.4 \text{ g}$
unit	.0231	.0231	.0231	.0231	$\text{AlCl}_3 = 6.1 \text{ g}$

20) When 125.0 g of ethylene (C_2H_4) burns in 60.0 grams of oxygen to give carbon dioxide and water, how many grams of CO_2 are formed? (Hint: balance the equation and determine limiting reactant first)

(over) on back

Learning Target 15 – I can determine the empirical and molecular formula by calculation.

Review Reading:

Zumdahl 7th Ed. 99-103

Google: empirical formula

21) Phenol is a compound that contains 76.57% carbon, 6.43% hydrogen, and 17.0% oxygen.

a) Calculate the empirical formula.

$$\text{C: } \frac{76.57}{12.01} = \frac{6.4}{1.06}$$

$$\text{O: } \frac{17.0}{16.0} = \frac{1.06}{1.06}$$

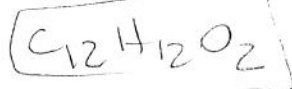


$$\text{H: } \frac{6.43}{1.01} = \frac{6.4}{1.06}$$

b) If the molecular weight of phenol is 188 g/mol, what would be its molecular formula?

$$12(6) + 6(1.0) + 16 = 94 \text{ mol mass of emp. formula}$$

$$\frac{188}{94} = 2x \text{ so double \# atoms in molecule}$$





Learning Target 16 - I can calculate the empirical formula of an unknown hydrocarbon using a combustion reaction and calculation.

Review Reading:

Zumdahl 7th Ed. 99-103

Google: combustion analysis

22) One killer of a problem – a GOLD STAR if you can get this one: (X)

Menthol, the substance we can smell in mentholated cough drops, is composed of carbon, hydrogen, and oxygen. A 0.1005 gram sample of menthol is combusted producing 0.2829 g of CO_2 and 0.1159 g of H_2O . What is the empirical formula for menthol? Show work.

①

$$\left(\frac{0.2829 \text{ g CO}_2}{1}\right) \left(\frac{1 \text{ mol CO}_2}{44.01 \text{ g CO}_2}\right) = 0.006430 \text{ mol CO}_2 \times \frac{1 \text{ mol C}}{1 \text{ mol CO}_2} = 0.006430 \text{ mol C}$$

$$\left(\frac{0.1159 \text{ g H}_2\text{O}}{1}\right) \left(\frac{1 \text{ mol H}_2\text{O}}{18.02 \text{ g H}_2\text{O}}\right) = 0.006439 \text{ mol H}_2\text{O} \times \frac{2 \text{ mol H}}{1 \text{ mol H}_2\text{O}} = 0.01288 \text{ mol H}$$

$$\left(\frac{0.00643 \text{ mol C}}{1}\right) \left(\frac{12.01 \text{ g C}}{1 \text{ mol C}}\right) = 0.07716 \text{ g C}$$

$$\left(\frac{0.01288 \text{ mol H}}{1}\right) \left(\frac{1.01 \text{ g H}}{1 \text{ mol H}}\right) = 0.01288 \text{ g H}$$

Learning Target 17 - I can calculate the concentration of solutions

Review Reading:

Zumdahl 9th Ed. 145-149

Google: molarity

23) Calculate the molarity of the following solutions:

a) 28.92 g of HNO_3 in enough water to make 250 mL of solution

$$\frac{28.92}{0.250} = 1.18 \text{ M}$$

b) 57.61 g of KOH in enough water to make 1250 mL of solution

$$\frac{57.61}{1.250} = 0.0461 \text{ M}$$

24) Describe how to prepare the following solutions from solid reagents and water:

a) 750 mL of 0.5 M $\text{K}_2\text{Cr}_2\text{O}_7$

$$0.5 \text{ M} = \frac{x}{0.750}$$

$$x = 110.325 \text{ g} = 110 \text{ g}$$

b) 1 L of 6.0 M Na_2SO_4

$$6.0 \text{ M} = \frac{x}{1} = 852 \text{ g} = 800 \text{ g}$$

Add 110 g $\text{K}_2\text{Cr}_2\text{O}_7$ to vol. flask

Add water to 750 mL mark

Add 852 g Na_2SO_4 to vol. flask
Add H_2O to 1 L mark.

25) Describe how to make one concentration from another solution:

a) Make 50 mL of 1.0 M NaCl from 12.0 M NaCl

$$C_1 V_1 = C_2 V_2$$

$$(x)(12 \text{ M}) = (1.0 \text{ M})(50 \text{ mL})$$

$$x = 0.042 \text{ L} = 42 \text{ mL}$$

Add 42 mL of 12 M NaCl to vol. flask. Add H_2O to 50 mL mark

b) Make 350 mL of 0.15 M FeSO_4 from 4.0 M FeSO_4

$$(x)(4.0 \text{ M}) = (0.15 \text{ M})(350 \text{ mL})$$

$$x = 13 \text{ mL}$$

Add 13 mL of 4.0 M FeSO_4 to vol. flask. Add H_2O to the 350 mL mark

$\text{Ag}^+, \text{Pb}^{2+}, \text{Hg}_2^{2+} \rightarrow \text{insoluble}$ $\text{Cl}^- \rightarrow \text{soluble except } \text{AgCl}, \text{PbCl}_2, \text{Hg}_2\text{Cl}_2$

$\text{Ba}^{2+}, \text{Pb}^{2+}, \text{Ag}^+ \rightarrow \text{SO}_4^{2-}$

Learning Target 18 - I can determine substances that will precipitate in a solution.

Review Reading:

Zumdahl 9th Ed. 153-158

Google: solubility rules

26) A solution contains Pb^{2+} , Ag^+ and Fe^{3+} . You want to selectively precipitate the Pb^{2+} . Describe a procedure that will allow you to separate ALL the ions from the sample:

(HINT: Think about the SOLUBILITY RULES and your Quantitative analysis lab!!)

• Add HCl - Fe^{3+} remains in soln; ppt out Ag and Pb

• Add hot H_2O to ppt (PbCl_2 soluble in hot H_2O / AgCl is not)
 AgCl remains as ppt / PbCl_2 in soln.

Learning Target 19 - I can write net ionic equations.

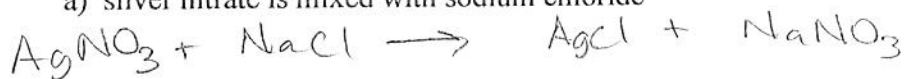
Review Reading:

Zumdahl 9th Ed. 158-160

Google: net ionic equations

27) Write molecular equations, predicting the expected products for the following:

a) silver nitrate is mixed with sodium chloride



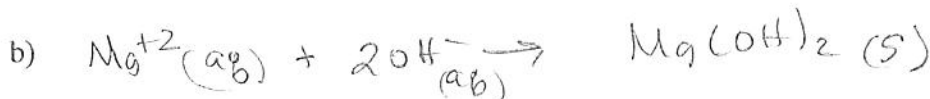
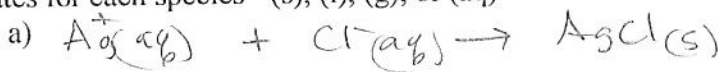
b) magnesium nitrate combines with sodium hydroxide



c) solid zinc is mixed with hydrochloric acid



28) Write net ionic equations for the preceding examples in question #5. Include symbols indicating the states for each species- (s), (l), (g), or (aq)



Learning Target 20 - I can calculate stoichiometry problems for basic precipitation reactions.

Review Reading:

Zumdahl 9th Ed. 160-162

Google: Stoichiometry of reactions in solutions

29) Calculate the mass of solid NaCl that must be added to 1.50 L of a 0.100 M AgNO_3 solution to precipitate all the Ag^+ ions in the form of AgCl .

over

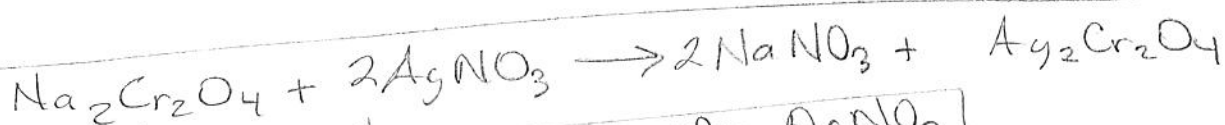
30) What mass of $\text{Na}_2\text{Cr}_2\text{O}_4$ is required to precipitate all of the silver ions from 75.0 mL of a 0.100M AgNO_3 ?

over. $\text{Na}_2\text{Cr}_2\text{O}_4$ oops...
typo of sodium chromate

(29) $\text{NaCl} + \text{AgNO}_3 \rightarrow \text{AgCl} + \text{NaNO}_3$		#29!
#gr	?	*
mol, mass	58.45	*
#mol	0.15 mol	0.15 mol.
mol Ratio 1 unit	0.15 mol	0.15 mol

(*) $(1.502 \text{ L}) \left(\frac{100 \text{ mol}}{\text{L}} \right) = 0.15 \text{ mol AgNO}_3$

Need 8.77 g of NaCl to complete this rxn



(20) $(0.075 \text{ L}) \left(\frac{100 \text{ mol}}{\text{L}} \right) = 0.0075 \text{ moles AgNO}_3$

#30

$$\left(\frac{0.0075 \text{ mol AgNO}_3}{1} \right) \left(\frac{1 \text{ mol Na}_2\text{Cr}_2\text{O}_4}{2 \text{ mol AgNO}_3} \right) \left(\frac{214 \text{ g Na}_2\text{Cr}_2\text{O}_4}{1 \text{ mol Na}_2\text{Cr}_2\text{O}_4} \right) = 0.802 \text{ g Na}_2\text{Cr}_2\text{O}_4$$

(OK)

$\text{Na}_2\text{Cr}_2\text{O}_4 + 2\text{AgNO}_3 \rightarrow \text{Ag}_2\text{Cr}_2\text{O}_4 + 2\text{NaNO}_3$	
#gr	0.802 g
mol, mass	214 g
#moles	0.00375
1 unit	1
Sum	0.00375