

Chapter 2 HW

- 3
- a) Calcium chloride = pure substance compound
 - b) Sulfur = pure substance compound of an element
 - c) mixture
 - d) pure substance compound

4 \nearrow

- 9
- a) element = green
compound = yellow + blue
compound = yellow + blue + yellow

- b) element = black
compound = black + black - diatomic element
compound = black + orange

- c) compound = red + red - diatomic element
compound = red + red + red

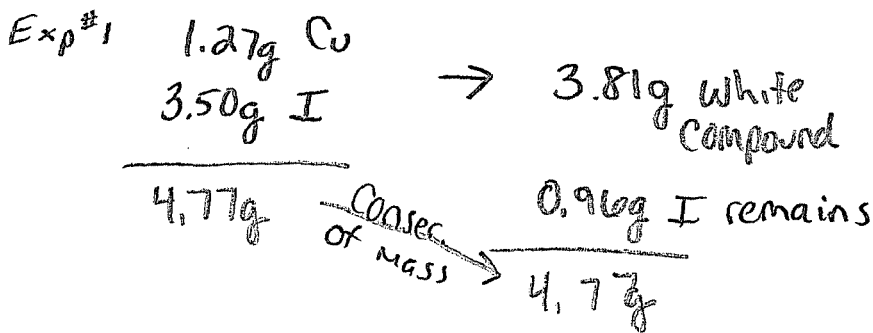
15 Law of Multiple Proportions

- a) Cl_2 = green + green
 O_2 = red + red
 ClO_2 = red + green + red

- ClO_2 red + green + red
 OCl_2 green + red + green

- c) Cl_2 green + green
 O_2 red + red

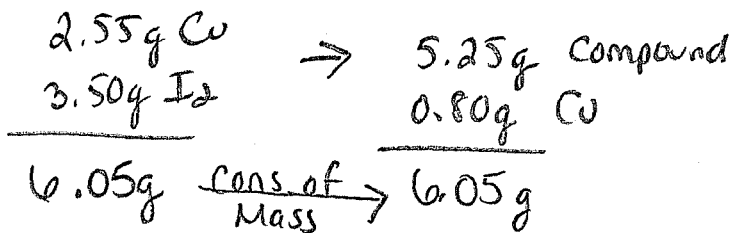
19 Mass Law in experiment



$$\frac{1.27g \text{ Cu reacted}}{2.54g \text{ I}} = 0.5$$

same ratio =
definite
composition

Exp #2



$$\frac{1.75 \text{ Cu}}{3.50 \text{ I}} = 0.5$$

~~27 Demo Law of Multiple Proportion~~

~~★ work on
explanation~~

~~Comp #1 77.6% Xe
22.4% F~~

~~Comp #2 63.3% Xe
36.7% F~~

~~3.46:1~~

~~1.72:1~~

~~$\frac{3.46}{1.72} = 2:1 \text{ ratio}$~~

SKIP

25

63.94g Cs	51.15%
61.06g I	48.85%
125g total	

If have sample weighing 38.77g,
how many grams of Cs?

$$0.5115(38.77) = 19.83g \text{ Cs}$$

of I ?

$$0.4885(38.77) = 18.94g \text{ I}$$

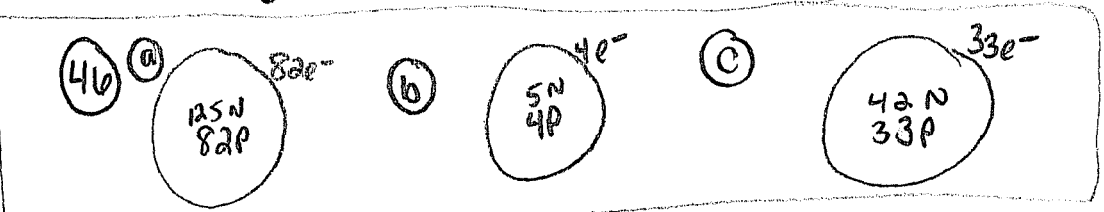
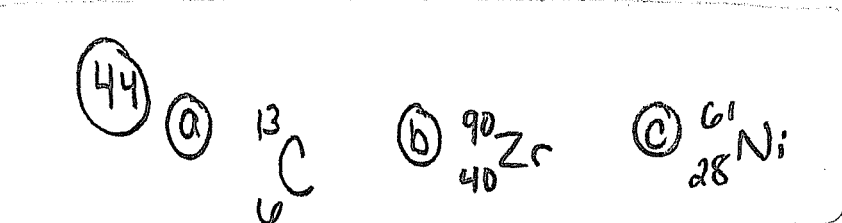
- 30) ① We know atoms of same element can have different masses
 " atoms can be divided
 " atoms can be converted to new atoms \rightarrow nuclear rxns

- 33) $-3.204 \times 10^{-19} \text{ C}/2$
 $-4.806 \times 10^{-19} \text{ C}/3$ * whole # multiple of minimum charge
 $-8.010 \times 10^{-19} \text{ C}/4$
 $-1.442 \times 10^{-18} \text{ C}/5$

★ NOT SUPER IMPORTANT EXPLAINS HOW EXPERIMENTS WORK

$-1.602 \times 10^{-19} \text{ C}$
 \downarrow
 actual charge on an electron

40)	^{35}Cl	+ ^{37}Cl
Mass #	35	37
#p	17	17
#n	18	20
#e	17	17



48) $0.7899(23.9850) + 0.10(24.9858) + 0.1101(25.9826) = 24.31 \text{ amu}$
 \downarrow \downarrow
 % atomic mass

50) $63.546 = (1-x)(62.9296) + (x)(64.9278)$

$63.546 = 62.9296 + 62.9296(x) + 64.9278(x)$

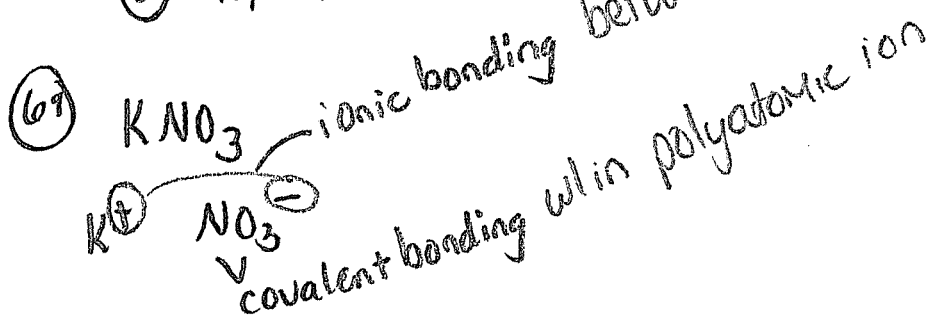
$0.6164 = 1.9982(x)$

$x = 0.3084$

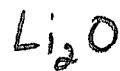
$\text{Cu-65} = 30.84\%$
 $\text{Cu-63} = 69.16\%$

- 57) a) $Z=33$ arsenic Metalloid
 b) $Z=20$ calcium Metal
 c) $Z=35$ bromine nonmetal
 d) $Z=19$ potassium Metal
 e) $Z=13$ aluminum Metal

- 59) a) Xe, 54
 b) Y group 3
 c) Po, 84
 d) K, 19



- 77) Li = 76pm
 Mg = 72pm



Coulomb's Law **IMPORTANT**
 ★ higher charge, smaller radius =
 stronger ionic attraction

- 85) a) CsBr cesium bromide
 b) BaS barium sulfide
 c) CaF_2 calcium fluoride

89) (a) Na_2HPO_4 sodium hydrogen phosphate

(b) potassium carbonate dihydrate $\text{K}_2\text{CO}_3 \cdot 2\text{H}_2\text{O}$

(c) NaNO_2 sodium nitrite

(d) ammonium perchlorate NH_4ClO_4

90) (a) $\text{Sn}(\text{SO}_3)_2$ tin(IV) sulfite

(b) potassium dichromate $\text{K}_2\text{Cr}_2\text{O}_7$

(c) FeCO_3 iron(II) carbonate

(d) copper(II) nitrate $\text{Cu}(\text{NO}_3)_2$

91) (a) PbO PbO_2

(b) Li_3N LiNO_2 LiNO_3

(c) SrH_2 $\text{Sr}(\text{OH})_2$

(d) MgO MnO

99) Cl_2O dichlorine monoxide

101) (a) iron(III) oxide Fe_2O_3

(b) chloric acid HClO_3

(c) mercuric oxide HgO
 Hg^{2+}

(d) potassium iodide KI

103 (a) sodium dichromate
 $\text{Na}_2\text{C}_2\text{O}_7$ molar mass = 261.98 g/mol

(b) ammonium perchlorate
 NH_4ClO_4 molar mass = 117.49 g/mol

(c) magnesium nitrite trihydrate
 $\text{Mg}(\text{NO}_2)_2 \cdot 3\text{H}_2\text{O}$ molar mass = 170.38 g/mol

105 (a) iron(II) acetate tetrahydrate
 $\text{Fe}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot 4\text{H}_2\text{O}$ molar mass = 246.00 g/mol

(b) sulfur tetrachloride
 SCl_4 molar mass = 173.86 g/mol

(c) potassium permanganate
 KMnO_4 molar mass = 158.04 g/mol

107 (a) N_2O dinitrogen monoxide molar mass = 44.02 g/mol

(b) C_2H_6 ethane molar mass = 30.07 g/mol

110 (a) $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ copper(II) sulfate pentahydrate

(b) $\text{Ca}(\text{OH})_2$ calcium hydroxide

(c) H_2SO_4 sulfuric acid

(d) Na_2CO_3 sodium carbonate

(e) HCl hydrochloric acid

(f) $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ magnesium sulfate

(g) CaCO_3 calcium carbonate

(h) CO_2 carbon dioxide

(i) NaHCO_3 sodium hydrogen carbonate

(j) NaOH sodium hydroxide

113 (a) N_2O dinitrogen monoxide molar mass = 44.02 g/mol

(b) Cl_2O dichlorine monoxide molar mass = 86.90 g/mol

116 (a) OJ hetero w/ pulp

(b) veg. soup = hetero

(c) cement = hetero

(d) compound = $CuSO_4$

(e) tea = homogeneous

120 Strongest bond MgO
weakest RbI

★ Important

129 Law of Conservation of Mass
Law of Definite Composition

135 (a) 4 nonmetals Black, red, green, purple

(b) 2 metals Brown, blue

(c) 3 gases at room temp
red
green
purple

(d) 3 solids at room temp
brown
blue
black

(e) pr. to form covalent

(f) pr. to form covalent
black + red
black + green
red + green

(g) MX brown + green

(h) MX blue + red

(i) M_2X brown + red
or
blue + black

(j) MX_2 blue + green

(k) won't form compounds purple

(l) pr. elements w/ multiple proportions
black + red
red + green
black + green