Chapter 1 Worksheet and Study Guide

Purpose: This is a guide for your as you work through the chapter. The major topics are provided so that you can write notes on each topic and work the corresponding problems.

This should serve a s a study guide as you go on to do the problems in Sapling and take the quizzes and exams.

Topics and Space for Notes

1. State the postulates of Dalton's atomic theory

   Explain the laws of definite and multiple proportions

   Summarize and interpret the results of the experiments of Thomson, Millikan, and Rutherford

   Describe the three subatomic particles that compose atoms

   Define isotopes and give examples for several elements

2. (A) Define the atomic mass unit and average atomic mass

   (B) Understand average atomic mass and isotopic abundance

   (B) Represent the bonding arrangement of atoms within molecules using structural formulas

3. (A) State the periodic law and explain the organization of elements in the periodic table

(B) Predict the general properties of elements based on their location within the periodic table

(C) Identify metals, nonmetals, and metalloids by their properties and/or location on the periodic table

4. (A) Define ionic and molecular (covalent) compounds

(B) Predict the type of compound formed from elements based on their location within the periodic table

(C) Determine formulas for simple ionic compounds

(D) Derive names for common types of inorganic compounds using a systematic approach

Problems:

1. **Fill in the table.. Write and interpret symbols that depict the atomic number, mass number, and charge of an atom or ion**

Symbol of isotope	Name of element	# of Protons	# of neutrons	# of electrons
^{138}Ba				
		13	12	13
	Silver		60	
			45	35

2. Using the following data, calculate the average atomic mass of Neon.

Isotope	mass in amu	% abundance
^{20}Ne	19.992439	90.92
^{21}Ne	20.993845	0.26
^{22}Ne	21.991384	8.82

3. (A) Symbolize the composition of molecules using molecular formulas and empirical formulas

Determine the empirical formulas for the following compounds:

(a) acetic acid, $C_2H_4O_2$

(b) citric acid, $C_6H_8O_7$

(c) hydrazine, N_2H_4

(d) nicotine, $C_{10}H_{14}N_2$

(e) butane, C_4H_{10}

4. Name the following

MgS _____

Co_2S_3_____

$FeCl_2$ _____

LiBr _____

LiH _____

Cs_3N _____

K_2O _____

5. Write formulas for:

Calcium chloride_____

Zinc sulfide _____

Mercury (II) iodide_____

silver hydride _____

Sodium fluoride _____

Barium selenide _____

6. Name the following.

(A) $Pb(SO_3)_2$

_____

(B) Ag_2CO_3

_____

(C) Al_2S_3

_____

(D) $H_3PO_4(aq)$

_____

(E) $Cr(C_2H_3O_2)_3$

_____

(F) NH_4Cl

_____

(G) $CuHPO_4$

_____

(H) $NaNO_3$

_____

(I) P_2S_5

_____

7. Write the formulas for the following.

(A) potassium permanganate

_____

(B) barium hydroxide

_____

(C) hypochlorous acid

_____

(D) calcium iodate

_____

(E) iron (III) hydrogen carbonate

_____

(F) mercury (II) cyanide

_____

(G) cesium nitride

_____

(H) nickel (II) chromate

_____

(I) Carbonic acid

_____