

Name _____

Period _____

Review for Ch. 7 Test 2013

OX. #, moles and ionic, covalent and acid nomenclature, ions and ionic compounds

1. Write the oxidation number for each element in the following compounds, first write the correct formula, then write the oxidation number above the element in the following compounds.

+1+5-2

Ex: H_3PO_4

a. Sulfuric acid H_2SO_4
 $\begin{matrix} +1 & +6 & -2 \\ H & S & O \end{matrix}$

b. $HClO_4$ $\begin{matrix} +1 & -8 \\ H & Cl & O \end{matrix}$ +7

2. How many oxygen atoms are in 25.00 g of Rubidium Hydroxide. Ans. 1.46e23 atoms Oxy

$25.00g Rb(OH)_2$ | $1.0 mol Rb(OH)_2$ | $1.0 mol Oxy$ | $1.022e23 atoms O$
 $102.5g Rb(OH)_2$ | $1.0 mol Rb(OH)_2$ | $1 mol Oxy atoms$

Fe^{+2}

3. What mono-atomic ion has 26 protons, 30 neutrons and 24 electrons?

4. Write correct name and formula for the two forms of Lead combining with hydroxide.

Lead II hydroxide $Pb(OH)_2$ & Lead IV hydroxide $Pb(OH)_4$

5. Write the correct formula for the combining of Mg with P?

Mg_3P_2

6. Write the correct formula for phosphate

PO_4^{3-}

Nitrate

NO_3^{-1}

Acetate

$C_2H_3O_2^{-1}$

7. Make the correct compound for these polyatomic ions with Aluminum

$Al(NO_3)_3$

$Al(C_2H_3O_2)_3$

$AlPO_4$

8. Fill in the following table:

Name	Formula	Name	Ionic or Covalent	Oxidation # for each element
Sodium iodide	NaI	$Na^{+1} I^{-1}$	I	uncpd
Carbon Dioxide	CO_2	$C^{+4} O^{-2}$	C	
Acetic acid	$HC_2H_3O_2$	omit	C	omit
Iron III sulfate	$Fe_2(SO_4)_3$	Fe^{+3}	I	$S^{+6} O^{2-}$
Aluminum iodide	AlI_3	$Al^{+3} I^{-1}$	I	
Carbon Dioxide				
Acetic acid				
Iron III sulfate	repeat			

9. List M and NM and Metal characteristics

Metals	Na Fe Cu	conduct heat elect	malleable ductile
Nonmetals	H Cl S	brittle	often gases or l. or Solid Insulators

10. Quantities



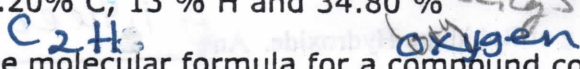
IV) What is the empirical formula for a compound containing:

1. 54% Fe and 46% S?

$$\frac{54.0g Fe}{55.85} \div 1.0 mol = 0.9669 mol Fe = 1 Fe \times 2$$

$$\frac{46.0g S}{32.0g S} \div 1.0 mol S = 1.4375 mol S = 1.55 \times 2$$

2. 52.20% C, 13% H and 34.80% O?



V) Find the molecular formula for a compound containing:

$$\frac{85.6g C}{12.0g C} \div 1.0 mol C = 7.133 mol C$$

1. 85.6% C and 14.36% H and formula mass of 42.08g

2. compound having an empirical formula of C₂HCl with a formula mass of 181.5g

$$\frac{181.5g}{60g} = 3 \rightarrow C_2HCl \times 3 = C_6H_3Cl_3$$

VI) Conversions:

1. How many grams of Al in 1.2 x 10²⁴ atoms of Al?

54.8g Al

2. How many moles in 1.2 x 10²⁴ atoms of Al?

2.0 moles Al

3. How many atoms of Al in 10 moles of Al?

6.022 x 10²⁴ atoms Al

4. How many a) atoms of oxygen in 36g H₂O

1,204 x 10²⁴ atoms O

b) atoms of hydrogen

5. How many grams of N₂ in 2.0 moles of N₂?

$$\frac{2.0 mol N_2}{1.0 mol N_2} \times 28.0g = 56.0g N_2$$

VII) Decide if the following are empirical or molecular formulas.

1. CH EF 5. C₂H₄O₆ MF

2. C₂H₈ MF 6. C₄H₁₀ MF

3. Hg₂O₂ MF 7. C₈H₁₂O₄ MF

4. NH₃ EF 8. CHO EF

some answers: Quantities Review:

IV. E.F. 1. Fe₂S₃ 2. C₂H₆O

V. M.F. 1. C₃H₆ 2. C₆H₃Cl₃

VI. Conversions 1. 53.82 g Al 2. 1.99 mol Al 3. 6.02 x 10²⁴ atoms Al 4. a. 1.204 x 10²⁴ atoms O b. 2.408 x 10²⁴ atoms H 5. 56.0 g N₂

Key to Ch7 Review

Work for a few problems

IV 2.

$$\frac{52.2 \text{ g C}}{12.0 \text{ g C}} \bigg| \frac{1.0 \text{ mol C}}{12.0 \text{ g C}} = \frac{4.35 \text{ mol C}}{2.175} = 2 \text{ C}$$

$$\frac{13.0 \text{ g H}}{1.0 \text{ g H}} \bigg| \frac{1.0 \text{ mol H}}{1.0 \text{ g H}} = \frac{13.0 \text{ mol H}}{2.175} = 5.9 \text{ H}$$

$$\frac{34.80 \text{ g O}}{16.0 \text{ g O}} \bigg| \frac{1.0 \text{ mol O}}{16.0 \text{ g O}} = \frac{2.175 \text{ mol O}}{2.175} = 1 \text{ O}$$



$$\text{IV 1b} \quad \frac{85.6 \text{ g C}}{12.0 \text{ g C}} \bigg| \frac{1.0 \text{ mol C}}{12.0 \text{ g C}} = 7.13 \text{ mol C} \rightarrow 1 \text{ C}$$
$$14.36 \text{ mol H} \quad 2 \text{ H}$$

$$\text{E.F. CH}_2 = 14 \text{ g}$$

$$\text{MF} \quad \frac{42}{14} = 3 \quad \therefore \text{CH}_2 \times 3 = \boxed{\text{C}_3 \text{H}_6}$$

