

Name: _____

?? Pts.

Chemistry Test: Chemical Equations

1. Answer each question in the space provided. (12pts.)
- _____ In a chemical reaction the coefficients represent relative: (Moles / Masses)
 - _____ Which are conserved in a chemical reaction? (Moles / Masses)
 - _____ 10.0g of NaCl is decomposed. How many grams of Na are formed if 6.1g of Cl is produced?
 - _____ How many atoms of O are indicated by 2Ba(OH)_2 ?
 - _____ According to appendix D, Fe(OH)_3 is listed as “l”, what phase notation should it have?
 - _____ According to appendix D, NH_4Cl is listed as “s”, what phase notation should it ha?
 - _____ What phase notation should CO_2 have?
 - _____ A sample of copper is dropped into a beaker of water. What phase notation should the Cu have?
 - _____ $\text{H}_2\text{O}_{(s)} \rightarrow \text{H}_2\text{O}_{(l)}$, endothermic or exothermic?
 - _____ $2 \text{SO}_{2(g)} + \text{O}_{2(g)} \rightarrow 2 \text{SO}_{3(g)}$, Name the product(s)
 - _____ Which type of container is better to transport HCl, hydrochloric acid in? Zn metal, or glass?
 - _____ In the reaction of NaCl with HCl, H_2O is a reactant o product?
2. Draw or sketch a balanced structural diagram that represents that synthesis of water from its elements. (8 pts.)
Include a “key” and a written balanced chemical equation.

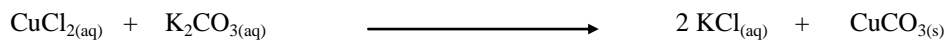
Key	Written balanced equation:
$\text{H}_2=$	
$\text{O}_2=$	
$\text{H}_2\text{O}=$	

3. Balance and Classify the following equations as either Synthesis, Decomposition, Single Displacement, or Double Displacement. (10 pts.)
- _____ $\text{Zn} + \text{H}_2\text{SO}_4 \longrightarrow \text{ZnSO}_4 + \text{H}_2$
 - _____ $\text{BaCl}_2 + \text{NaOH} \longrightarrow \text{Ba(OH)}_2 + \text{NaCl}$
 - _____ $\text{KClO}_3 \longrightarrow \text{KCl} + \text{O}_2$
 - _____ $\text{PbCO}_3 \longrightarrow \text{PbO} + \text{CO}_2$
 - _____ $\text{K}_2\text{O} + \text{H}_2\text{O} \longrightarrow \text{KOH}$
4. Given the reactants, predict the products and write a balanced chemical equation for these reactions. (6 pts.)

- $\text{K}_2\text{SO}_4 + \text{Pb(C}_2\text{H}_3\text{O}_2)_2 \longrightarrow$
- $\text{Fe(NO}_3)_3 + \text{Zn} \longrightarrow$
- $\text{Al} + \text{O}_2 \longrightarrow$

5. Analyse the reaction below and answer each question in the space to the left.

(7 pts.)



- _____ Classify as type of reaction. (i.e., syn., decomp., etc.)
- _____ Determine the charge on the copper reactant. (+1, +2, etc.)
- _____ Is the precipitate a reactant or product?
- _____ Name the precipitate.
- _____ Is potassium chloride soluble in water? (Yes or No)
- _____ How many atoms of carbon are represented on the reactant side?
- _____ If 5.00 grams of reactants was used, how many grams of products are formed?

6. Given the names of reactants, predict the products and write a balanced chemical equation for these reactions. (15 pts.)

a.) dichlorine monoxide

b.) nickel(III) chloride + zinc

c.) sodium + chlorine

d.) iron(II) nitrate + potassium hydroxide

e.) iron(III) oxide + aluminum

7. Below are three descriptions of chemical reactions, write a complete balanced chemical equation that includes phase notation. (12 pts.)

a.) A piece of copper wire is added to a solution of silver nitrate.

b.) An electrical current is sent through 1200 ml of water. Bubbles are formed as the water decomposes.

c.) 1.5 g of copper(II) sulfate is added to a beaker and dissolved in water. In another beaker, 2.1 grams of barium chloride is dissolved into water. These two solutions are added together and a precipitate is formed. The precipitate is known to contain barium.