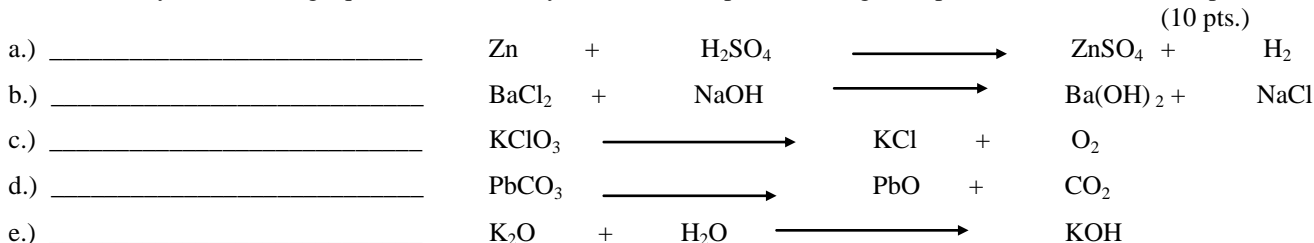


## Chemistry Prac Test: Chemical Equations

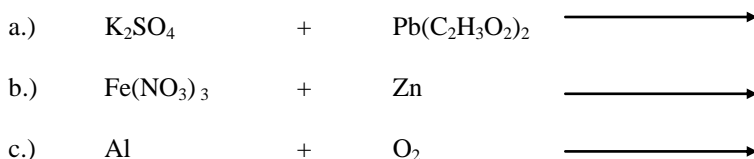
### Check answers

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 2 Ba(OH)<sub>2</sub>?
  - \_\_\_\_\_ According to appendix D, Fe(OH)<sub>3</sub> is listed as “i”, what phase notation should it have?
  - \_\_\_\_\_ According to appendix D, NH<sub>4</sub>Cl is listed as “s”, what phase notation should it have?
  - \_\_\_\_\_ What phase notation should CO<sub>2</sub> have?
  - \_\_\_\_\_ A sample of copper is dropped into a beaker of water. What phase notation should the Cu have?
  - \_\_\_\_\_ H<sub>2</sub>O<sub>(s)</sub> → H<sub>2</sub>O<sub>(l)</sub>, endothermic or exothermic?
  - \_\_\_\_\_ 2 SO<sub>2(g)</sub> + O<sub>2(g)</sub> → 2 SO<sub>3(g)</sub>, 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<sub>2</sub>O is a reactant or product?

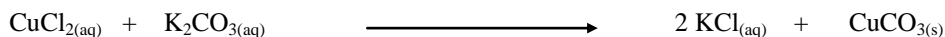
2. Balance and Classify the following equations as either Synthesis, Decomposition, Single Displacement, or Double Displacement. (10 pts.)



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



4. 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?

5. 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

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

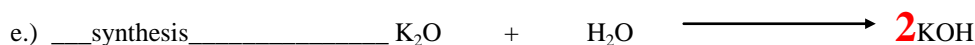
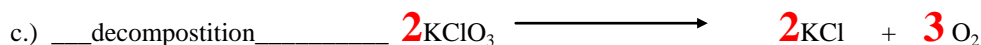
- a.) A piece of copper wire is added to a solution of silver nitrate.
- b.) An electrical current is sent through 1200 ml of water. Bubbles are formed as the water decomposes.
- c.) 1.5 g of copper(II) sulfate is added to a beaker and dissolved in water. In another beaker, 2.1 grams of barium chloride is dissolved into water. These two solutions are added together and a precipitate is formed. The precipitate is known to contain barium.

### Answers

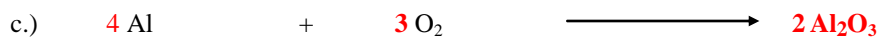
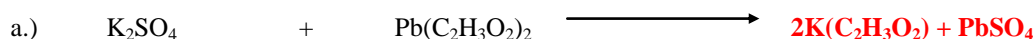
1. Answer each question in the space provided. (12pts.)
- a) Moles In a chemical reaction the coefficients represent relative: (Moles / Masses )
  - b) Masses Which are conserved in a chemical reaction? ( Moles / Masses )
  - c) 3.9 g 10.0g of NaCl is decomposed. How many grams of Na are formed if 6.1g of Cl is produced?
  - d) 4 atoms H How many atoms of O are indicated by 2 Ba(OH)<sub>2</sub>?
  - e) (s) According to appendix D, Fe(OH)<sub>3</sub> is listed as “i”, what phase notation should it have?
  - f) (aq) According to appendix D, NH<sub>4</sub>Cl is listed as “s”, what phase notation should it have?
  - g) g What phase notation should CO<sub>2</sub> have?
  - h) s A sample of copper is dropped into a beaker of water. What phase notation should the Cu have?
  - i) endothermic H<sub>2</sub>O<sub>(s)</sub> → H<sub>2</sub>O<sub>(l)</sub>, endothermic or exothermic?

- j) **sulphur trioxide**  $2 \text{SO}_{2(g)} + \text{O}_{2(g)} \rightarrow 2 \text{SO}_{3(g)}$ . Name the product(s)
- k) **glass** Which type of container is better to transport HCl, hydrochloric acid in? Zn metal, or glass?
- l) **product** In the reaction of NaCl with HCl, H<sub>2</sub>O is a reactant or product?

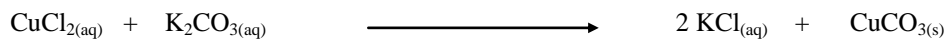
2. Balance and Classify the following equations as either Synthesis, Decomposition, Single Displacement, or Double Displacement. (10 pts.)



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



4. Analyse the reaction below and answer each question in the space to the left. (7 pts.)



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

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

- a.) dichlorine monoxide  
 $2\text{Cl}_2\text{O} \rightarrow 2\text{Cl}_2 + \text{O}_2$
- b.) nickel(III) chloride + zinc  
 $\text{NiCl}_3 + \text{Zn} \rightarrow \text{ZnCl}_2 + \text{Ni}$
- c.) sodium + chlorine  
 $2\text{Na} + \text{Cl}_2 \rightarrow 2\text{NaCl}$
- d.) iron(II) nitrate + potassium hydroxide  
 $\text{Fe(NO}_3)_2 + 2\text{KOH} \rightarrow \text{Fe(OH)}_2 + 2\text{KNO}_3$
- e.) iron(III) oxide + aluminum  
 $\text{Fe}_2\text{O}_3 + 2\text{Al} \rightarrow \text{Al}_2\text{O}_3 + 2\text{Fe}$

6. 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) 1.5g 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.

