

## Worksheet 1: Word and Skeleton Equations

**Target: translate descriptions of chemical reactions to word equations and write correct skeleton (formula) equations. (Skill)**

- 1) *Use symbols and names of reactants and products to write the word equation for each chemical reaction - include states of matter. (See reminders below.)*
  - a. *metals and ionic compounds are solids at room temperature.*
  - b. *hydrogen, oxygen, nitrogen, and carbon dioxide are gases.*
  - c. *water is liquid but will exist as vapor (gas) at high temperatures.*
  - d. *all solutions in this unit will be aqueous (aq)*
- 2) *Write the skeleton (formula) equation.*
  - a. *formulas for acids are on the back of your gold periodic table.*
  - b. *hydrogen, oxygen, nitrogen and the elements in Group 17 are diatomic (H<sub>2</sub>, Cl<sub>2</sub>, etc)*
  - c. *be sure to identify ions before trying to write the formula for ionic compounds – formulas must have a neutral charge.*

### 1. Aqueous hydrogen peroxide breaks down into water vapor and oxygen gas.

*word equation*

*skeleton equation*

### 2. Solid silver chloride and an aqueous solution of nitric acid are produced when a solution of silver nitrate is reacted with a solution of hydrochloric acid.

*word equation*

*skeleton equation*

**3. When zinc is reacted with a solution of copper (II) sulfate, copper and a solution of zinc sulfate is formed.**

*word equation*

*skeleton equation*

**4. The fluoride in many toothpastes is tin(II) fluoride produced by the reaction of tin and gaseous hydrogen fluoride.**

*word equation*

*skeleton equation*

**5. Glass is often etched to provide a design. In this process the calcium silicate found in glass reacts with aqueous hydrofluoric acid to produce aqueous calcium fluoride, silicon tetrafluoride gas and liquid water.**

*word equation*

*skeleton equation*

**6. When an aqueous solution of hydrochloric acid is mixed with sodium hydroxide a solution of sodium chloride and water is produced.**

*word equation*

*skeleton equation*

**7. Gold (III) oxide decomposes completely at high temperatures to produce metallic gold and oxygen gas.**

*word equation*

*skeleton equation*

**8. For each of the following chemical formulas, determine if it is ionic or covalent and write the correct name for the compound represented.**

- a)  $\text{N}_2\text{O}$       \_\_\_\_\_
- b)  $\text{CuCO}_3$       \_\_\_\_\_
- c)  $\text{CS}_3\text{P}$       \_\_\_\_\_
- d)  $\text{FeCO}_3$       \_\_\_\_\_
- e)  $\text{MgSO}_4$       \_\_\_\_\_
- f)  $\text{CaO}$       \_\_\_\_\_

g)  $K_2S$  \_\_\_\_\_

h)  $SiCl_4$  \_\_\_\_\_

i)  $NH_4Br$  \_\_\_\_\_

**9. For each of the following compounds, determine if it is ionic or covalent and write the correct chemical formula. Remember to write the ions before writing an ionic formula.**

a)  $K^+ I^-$  potassium iodide      **Ionic**      KI  

b) dinitrogen pentachloride      \_\_\_\_\_

c) copper (II) carbonate      \_\_\_\_\_

d) magnesium nitrate      \_\_\_\_\_

e) barium nitride      \_\_\_\_\_

f) sulfur trioxide      \_\_\_\_\_

g) magnesium chloride      \_\_\_\_\_

h) tin (II) hydroxide      \_\_\_\_\_

i) oxygen difluoride      \_\_\_\_\_

j) silver chloride      \_\_\_\_\_

k) carbon monoxide      \_\_\_\_\_

l) dihydrogen monoxide      \_\_\_\_\_