

Name: \_\_\_\_\_

Period: \_\_\_\_\_

Unit 8 Chemical Reactions- Funsheets

**Part A- Balancing Equations and Types of Reactions**

Balance AND identify the following reactions:

Type:

- 1) \_\_\_\_ Mg + \_\_\_\_ Zn(NO<sub>3</sub>)<sub>2</sub> → \_\_\_\_ Zn \_\_\_\_ Mg(NO<sub>3</sub>)<sub>2</sub> \_\_\_\_\_
- 2) \_\_\_\_ Ba + \_\_\_\_ AgNO<sub>3</sub> → \_\_\_\_ Ag + \_\_\_\_ Ba(NO<sub>3</sub>)<sub>2</sub> \_\_\_\_\_
- 3) \_\_\_\_ NH<sub>3</sub> → \_\_\_\_ N<sub>2</sub> + \_\_\_\_ H<sub>2</sub> \_\_\_\_\_
- 4) \_\_\_\_ MgO → \_\_\_\_ Mg + \_\_\_\_ O<sub>2</sub> \_\_\_\_\_
- 5) \_\_\_\_ K + \_\_\_\_ Cl<sub>2</sub> → \_\_\_\_ KCl \_\_\_\_\_
- 6) \_\_\_\_ Al + \_\_\_\_ O<sub>2</sub> → \_\_\_\_ Al<sub>2</sub>O<sub>3</sub> \_\_\_\_\_
- 7) \_\_\_\_ HI → \_\_\_\_ H<sub>2</sub> + \_\_\_\_ I<sub>2</sub> \_\_\_\_\_
- 8) \_\_\_\_ C<sub>2</sub>H<sub>6</sub> + \_\_\_\_ O<sub>2</sub> → \_\_\_\_ CO<sub>2</sub> + \_\_\_\_ H<sub>2</sub>O \_\_\_\_\_
- 9) \_\_\_\_ Li<sub>2</sub>S + \_\_\_\_ AlP → \_\_\_\_ Al<sub>2</sub>S<sub>3</sub> \_\_\_\_ Li<sub>3</sub>P \_\_\_\_\_
- 10) \_\_\_\_ K<sub>2</sub>S + \_\_\_\_ PbO<sub>2</sub> → \_\_\_\_ K<sub>2</sub>O + \_\_\_\_ PbS<sub>2</sub> \_\_\_\_\_
- 11) \_\_\_\_ C<sub>6</sub>H<sub>14</sub> + \_\_\_\_ O<sub>2</sub> → \_\_\_\_ CO<sub>2</sub> + \_\_\_\_ H<sub>2</sub>O \_\_\_\_\_
- 12) \_\_\_\_ CaO + \_\_\_\_ H<sub>2</sub>O → \_\_\_\_ Ca(OH)<sub>2</sub> \_\_\_\_\_
- 13) \_\_\_\_ Al + \_\_\_\_ CuSO<sub>4</sub> → \_\_\_\_ Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub> + \_\_\_\_ Cu \_\_\_\_\_
- 14) \_\_\_\_ Cu + \_\_\_\_ S<sub>8</sub> → \_\_\_\_ Cu<sub>2</sub>S \_\_\_\_\_
- 15) \_\_\_\_ K + \_\_\_\_ H<sub>2</sub>O → \_\_\_\_ KOH + H<sub>2</sub> \_\_\_\_\_
- 16) \_\_\_\_ Br<sub>2</sub> + \_\_\_\_ NaF → \_\_\_\_ F<sub>2</sub> + \_\_\_\_ NaBr \_\_\_\_\_
- 17) \_\_\_\_ Li + \_\_\_\_ CuCO<sub>3</sub> → \_\_\_\_ Cu + \_\_\_\_ Li<sub>2</sub>CO<sub>3</sub> \_\_\_\_\_

- 18) Hydrogen gas reacts with iodine gas to produce hydroiodic acid.  
\_\_\_\_\_
- 19) Lithium metal reacts with hydrochloric acid to produce lithium chloride and hydrogen gas.  
\_\_\_\_\_
- 20) Sodium Carbonate decomposes to produce sodium oxide and carbon dioxide.  
\_\_\_\_\_
- 21) Mercury (II) oxide decomposes to produce mercury and oxygen gas.  
\_\_\_\_\_
- 22) Magnesium hydroxide decomposes to produce magnesium oxide and water.  
\_\_\_\_\_
- 23) Copper reacts with chlorine gas to produce copper (II) chloride.  
\_\_\_\_\_
- 24) Silver Sulfate reacts with sodium bromide to yield sodium sulfate and silver bromide.  
\_\_\_\_\_
- 25) Aluminum reacts with iron (III) oxide to yield aluminum oxide and iron.  
\_\_\_\_\_
- 26) Carbon tetrahydride burns in oxygen gas to produce carbon dioxide and water.  
\_\_\_\_\_
- 27) Aluminum sulfate reacts with calcium hydroxide to produce aluminum hydroxide and calcium sulfate.  
\_\_\_\_\_

**Part B- Double Displacement Reactions**

Indicate if the following are Soluble or Insoluble.

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- 1) Silver Chloride \_\_\_\_\_
- 2) Sodium Sulfate \_\_\_\_\_
- 3) Strontium phosphate \_\_\_\_\_
- 4) Potassium Peroxide \_\_\_\_\_
- 5) Iron (III) Bromide \_\_\_\_\_

- 6) Magnesium acetate \_\_\_\_\_
- 7) Rubidium Bromide \_\_\_\_\_
- 8) Lead (II) Iodide \_\_\_\_\_
- 9) Ammonium nitrate \_\_\_\_\_
- 10) Aluminum Perchlorate \_\_\_\_\_

Convert the following word equations to chemical formulas and balance them. Indicate the states of matter. If the reaction will not occur write NR after the reaction arrow.

- 11) Calcium Hydroxide reacts with hydrochloric acid to produce calcium chloride and water.  
\_\_\_\_\_
- 12) Phosphoric acid reacts with lithium hydroxide to produce lithium phosphate and water.  
\_\_\_\_\_
- 13) Iron (II) chloride reacts with sodium bromide to form sodium chloride and iron (II) bromide.  
\_\_\_\_\_
- 14) Nickel (I) carbonate reacts with sodium bromide to produce nickel (I) bromide and sodium carbonate.  
\_\_\_\_\_
- 15) Hydrosulfuric acid reacts with copper (III) oxide to produce water and copper (III) sulfide.  
\_\_\_\_\_

### Part C- Single Displacement Reactions

Rank the following in order of most reactive to least reactive.

- 1) Br, F, I, Cl \_\_\_\_\_
- 2) Fe, Sn, Na \_\_\_\_\_
- 3) Au, Mg, Al \_\_\_\_\_
- 4) Cr, H, Na \_\_\_\_\_
- 5) Pt, K, Sn \_\_\_\_\_
- 6) Mg, Na, Fe \_\_\_\_\_

Convert the following word equations to chemical formulas and then balance OR write NR for no reaction after the reaction arrow.

- 7) Solid magnesium reacts with aqueous zinc nitrate, magnesium nitrate is formed and zinc precipitates out of solution. \_\_\_\_\_
- 8) Solid sodium reacts with liquid water to form hydrogen gas and sodium hydroxide.  
\_\_\_\_\_
- 9) Hydrogen gas reacts with aluminum sulfate to form solid aluminum and sulfuric acid.  
\_\_\_\_\_
- 10) Chlorine gas reacts with aqueous potassium iodide, potassium chloride is produced and iodine gas bubbles out of solution. \_\_\_\_\_
- 11) Bromine gas reacts with potassium fluoride to produce fluorine gas and potassium bromide.  
\_\_\_\_\_

### Part D- Synthesis Reactions, Decomposition Reactions, and Combustion Reactions.

Convert the following word equations into balanced chemical equations.

- 1) Cobalt reacts with chlorine gas to produce cobalt (II) chloride.  
\_\_\_\_\_
- 2) Iron reacts with oxygen gas to produce Iron (III) oxide.  
\_\_\_\_\_

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3) Magnesium metal is burned in oxygen gas to produce magnesium oxide.

4) Sodium carbonate decomposes to produce sodium oxide and carbon dioxide.

5) Copper (II) hydroxide decomposes to produce copper (II) oxide and water.

6) Lead (II) carbonate decomposes to produce lead (II) oxide and carbon dioxide.

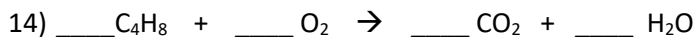
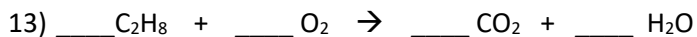
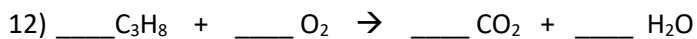
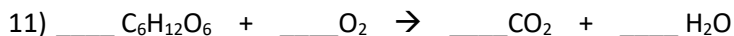
7) Tricarbon Octahydride is burned in oxygen gas to produce carbon dioxide and water.

8) Propane gas ( $C_3H_{12}$ ) is burned in oxygen gas to produce carbon dioxide and water.

9) Dicarbon tetrahydride reacts with oxygen gas to produce water and carbon dioxide.

10) Methane ( $CH_4$ ) reacts with oxygen to produce carbon dioxide and water.

Balance the following chemical equations.

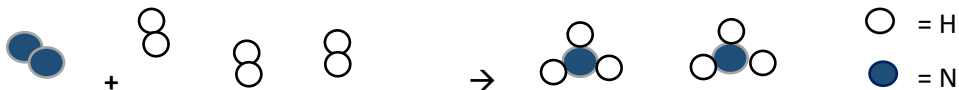


### Part E- Vocabulary

Answer the following questions. (Hint: refer to the PowerPoint if you are unsure of an answer.)

1) Write the balanced chemical equation for the reaction modeled below.

KEY




2) Model the following reaction (Include a key and be sure to balance):  $\underline{\hspace{1cm}} H_2O \rightarrow \underline{\hspace{1cm}} H_2 + \underline{\hspace{1cm}} O_2$

3) What is a chemical reaction?

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- 4) Use the collision theory to explain why a reaction would not occur between two chemicals in two separate flasks.
  
- 5) In lab, a student placed aluminum foil into a solution of copper (II) chloride and made the following observations: *The student stirred the solution and the aluminum began to dissolve. The solution began to bubble and became very warm. A reddish brown substance precipitated at the bottom of the solution.*  
What evidence of a chemical reaction did the student observe? What are additional evidence of a chemical reaction that was not observed (list at least 2)?
  
- 6) What is a precipitate?
  
- 7) Explain the difference in reactants and products.
  
- 8) What does this symbol mean  ?
  
- 9) What symbol is used to indicate a reaction that is reversible?
  
- 10) What does aqueous mean?
  
- 11) Explain the difference in subscripts and coefficients?
  
- 12) What is the Law of Conservation of Mass?
  
- 13) How is the Law of Conservation of Mass represented in a chemical equation?
  
- 14) What is a neutralization reaction? What type of reaction is a neutralization reaction?
  
- 15) What are the solubility rules?
  
- 16) What is the activity series?

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