**Homework Packet #10**

*Identify each reaction as synthesis, decomposition, single replacement, double replacement, or combustion. Correctly balance each equation, then list the order of the coefficients.*

|  |  |  |
| --- | --- | --- |
| **Type of Reaction** | **Balanced Equation** | **Order of Coefficients** |
| *Ex. Decomposition* | 2Ag2O 🡪 4Ag + O2 | *2, 4, 1* |
| 1. | \_\_ Zn + \_\_ HCl 🡪 \_\_ ZnCl2 + \_\_H2 |  |
| 2. | \_\_ KClO3 🡪 \_\_ KCl + \_\_ O2 |  |
| 3. | \_\_ AgNO3 + \_\_ MgCl2 🡪 \_\_ AgCl + \_\_ Mg(NO3)2 |  |
| 4. | NaCl + F2 🡪 NaF + Cl2 |  |
| 5. | N2 + H2 🡪 NH3 |  |
| 6. | CH4 + O2 🡪 CO2 + H2O |  |
| 7. | AlBr3 + K2SO4 🡪 KBr + Al2(SO4)3 |  |
| 8. | C3H8 + O2 🡪 CO2 + H2O |  |
| 9. | P + O2 🡪 P2O5 |  |
| 10. | Na + H2O 🡪 NaOH + H2 |  |
| 11. | Ag2O 🡪 Ag + O2 |  |
| 12. | NaOH + H2SO4 🡪 Na2SO4 + H2O |  |
| 13. | C8H18 + O2 🡪 CO2 + H2O |  |
| 14. | K + MgBr2 🡪 KBr + Mg |  |
| 15. | Al2(SO4)3 + CaCl2 🡪 AlCl3 + CaSO4 |  |
| 16. | Al + HCl 🡪 H2 + AlCl3 |  |
| 17. | H2O 🡪 O2 + H2 |  |
| 18. | KMnO4 + Ni(NO3)2 🡪 KNO3 + Ni(MnO4)2 |  |

*For each of the following:*

1. *Write the chemical equation*
2. *Balance the reaction*
3. *Identify the type of reaction.*
4. calcium chloride and chromium (III) nitrate yield calcium nitrate and chromium (III) chloride.
5. iron (III) hydroxide yield iron (III) oxide and water.
6. calcium oxide reacts with hydrochloric acid to produce calcium chloride and water.
7. iron and chloride yield iron (III) chloride.
8. arsenic and oxygen yield diarsenic trioxide.
9. aluminum chloride and ammonium fluoride yield aluminum fluoride and ammonium chloride.
10. calcium carbonate decomposes to form calcium oxide and carbon dioxide.
11. potassium fluoride and barium bromide form barium fluoride and potassium bromide.
12. copper (II) nitrate and ammonium hydroxide yield copper (II) hydroxide and ammonium nitrate.
13. Aluminum metal reacts with aqueous zinc chloride to produce zinc metal and aqueous aluminum chloride.
14. The reaction between magnesium and hydrochloric acid produces magnesium chloride and hydrogen.
15. Methane (CH4) burns in the presence of oxygen to produce water and carbon dioxide.

*Use the activity series to determine if the following single replacement reactions occur. If they do, write the equation (reactants and products) and balance. If the reaction does not occur, write the reactants, the yield sign, and No Reaction.*

1. calcium and hydrochloric acid

2. silver and tin (IV) bromide

3. zinc and copper (II) nitrite

4. sodium and silver sulfide

5. bromine and gold (I) chloride

6. chromium (III) oxide and potassium

7. lithium and sulfuric acid

8. mercury and nickel (II) carbonate

9. fluorine and potassium chloride

10. barium iodide and bromine

*Write the products of the following double replacement reactions. Both reactants will be in aqueous solutions. Use the solubility chart to determine if any of the products are precipitates. If so, mark them with a (s). Mark all soluble products with (aq).*

1. magnesium nitrate + calcium iodide

2. sodium hydroxide + barium sulfate

3. potassium iodide + sodium carbonate

4. silver nitrate + lithium chloride

5. phosphoric acid + aluminum acetate

6. acetic acid + calcium bromide

7. copper (II) sulfate + zinc chloride

8. tin (IV) iodide + potassium sulfate

9. chromium (III) oxide + hydrochloric acid

10. silver chlorate + aluminum fluoride

*Predict the products of each combustion reaction. Balance the equation.*

1. C2H6 + O2 🡪

2. C3H6 + O2 🡪

3. C4H10 + O2 🡪

4. C2H4 + O2 🡪

*Identify the reaction as either synthesis or decomposition, predict the products, and balance the equation.*

1. potassium chloride 🡪
2. calcium and oxygen 🡪
3. sodium and chlorine 🡪
4. calcium phosphide 🡪
5. fluorine plus calcium 🡪
6. barium nitride 🡪
7. water 🡪
8. sodium sulfide 🡪