

### **Decomposition and Synthesis Reactions Worksheet**

Complete each of the following equations, write formulas for and balance the chemical reaction equation.

**Synthesis Reaction:  $A + B \rightarrow AB$**

- 1) Barium oxide + Carbon dioxide  $\rightarrow$
- 2) Silver + oxygen  $\rightarrow$
- 3) Aluminum oxide + water  $\rightarrow$
- 4) Hydrogen + Oxygen  $\rightarrow$
- 5) Hydrogen + Nitrogen  $\rightarrow$

**Decomposition Reaction:  $AB \rightarrow A + B$**

- 6) Potassium chlorate  $\rightarrow$
- 7) Calcium carbonate  $\rightarrow$
- 8) Mercury (II) oxide  $\rightarrow$
- 9) Aluminum hydroxide  $\rightarrow$
- 10) Copper (I) bromide  $\rightarrow$

**Predict the products of the word equations and identify which type of reaction the equation demonstrates (Synthesis, Decomposition, Single Replacement, Double Replacement, Acid/Base, or Combustion Reactions) and place in the blank on the right. Write formulas for each, and balance.**

- 11) sodium + Oxygen  $\rightarrow$  \_\_\_\_\_
- 12) Lithium + Sodium chloride  $\rightarrow$  \_\_\_\_\_
- 13) Sodium chloride  $\rightarrow$  \_\_\_\_\_
- 14) Potassium chlorate  $\rightarrow$  \_\_\_\_\_
- 15) Copper (II) + Oxygen  $\rightarrow$  \_\_\_\_\_
- 16) Aluminum + Hydrogen chloride  $\rightarrow$  \_\_\_\_\_
- 17) Hydrochloric acid + Magnesium hydroxide  $\rightarrow$  \_\_\_\_\_
- 18) Silver + Chlorine  $\rightarrow$  \_\_\_\_\_
- 19) Aluminum oxide  $\rightarrow$  \_\_\_\_\_
- 20) Hydrogen carbonate + Sodium  $\rightarrow$  \_\_\_\_\_
- 21) Sodium chloride + Silver nitrate  $\rightarrow$  \_\_\_\_\_
- 22) Hydrogen + Oxygen  $\rightarrow$  \_\_\_\_\_
- 23) Potassium iodide + Chlorine  $\rightarrow$  \_\_\_\_\_
- 24) Aluminum + Hydrogen chloride  $\rightarrow$  \_\_\_\_\_
- 25) Calcium carbonate  $\rightarrow$  \_\_\_\_\_
- 26) Iron (IV) sulfide + Oxygen  $\rightarrow$  \_\_\_\_\_
- 27) Sulfuric acid + Potassium hydroxide  $\rightarrow$  \_\_\_\_\_
- 28) Sodium chloride  $\rightarrow$  \_\_\_\_\_
- 29) Potassium hydroxide + Hydrogen nitrate  $\rightarrow$  \_\_\_\_\_
- 30) Calcium + Sulfur  $\rightarrow$  \_\_\_\_\_
- 31) Potassium + Silver chloride  $\rightarrow$  \_\_\_\_\_
- 32) Iron + Sulfur  $\rightarrow$  \_\_\_\_\_
- 33) Hydrogen carbonate + Sodium  $\rightarrow$  \_\_\_\_\_
- 34) Barium oxide + Hydrogen sulfate  $\rightarrow$  \_\_\_\_\_
- 35) Iron (II) oxide  $\rightarrow$  \_\_\_\_\_
- 36) (complete) Tricarbon octoxide + Oxygen  $\rightarrow$  \_\_\_\_\_
- 37) (partial) Tricarbon octoxide + Oxygen  $\rightarrow$  \_\_\_\_\_
- 38) Phosphoric acid + Sodium hydroxide  $\rightarrow$  \_\_\_\_\_