Descriptive Abbreviations

(_____) _____

(_____) _____

(_____) _____

(_____) _____

Determining State at Room Temperature

- All _____ are solids except for _____, which is a _____.
- Most _____ are _____ with these exceptions:
  a) liquid – _____
  b) solids – _____, _____, _____, _____, _____, and _____
- All _____ are solids.
- _____ compounds are _____, unless stated otherwise.
- _____ compounds are _____, unless stated otherwise.

When heated, solid mercury(II)oxide yields mercury and oxygen gas.

Classifying Reactions

1. Synthesis:
   - _____ or _____ substances combine to form a more _____ substance.
   - _____ → _____
   - Fe *(s)* + _____ → _____
   - H_2O *(l)* + _____ → _____
2. Decomposition
   - A _____ substance is _____ _____ into _____ or more _____ substances.
   - AB → _____
   - $2H_2O$ *(l)* → _____ + _____
   - _____ → _____ + _____
3. Single Replacement
   - A free _____ replaces a _____ _____ element in a _____.
   - A + BY → _____ + _____
   - Zn *(s)* + _____ → _____ + _____
   - 2Al *(s)* + _____ → _____ + _____
   - Cu *(s)* + $MgCl_2$ *(aq)* → _____
     - Activity Series: an _____ of elements in the order of their _____ to _____

4. Double Replacement
   - The _____ of reacting _____ _____ each other.
   - Normally takes place in an _____ _____.
   - Also called _____ reactions
   - AX + BY → _____ + _____
   - 2KI *(aq)* + _____ → _____ + _____
     - <u>Precipitate</u>
       - an _____ _____
       - may be _____ in an equation by _____ or _____
   - NaCl *(aq)* + _____ → _____ + _____

5. Combustion
   - Involves the _____ of a substance with _____.
   - Often called _____.
   - The _____ _____ of a _____ produces _____ and _____.
   - $C_xH_y + O_2$ → _____ + _____
   - C_3H_8 *(g)* + $5O_2$ *(g)* → _____ + _____
   - CH_4 *(g)* + _____ → _____ + _____

Worksheet: Writing and Identifying Equations **Name** _____

Directions: a) Write balanced equations for the following word equations.
b) In the blank to the left of the equation, tell if the equation is synthesis (S), decomposition (D), combustion (C), single replacement (SR), or double replacement (DR).

1. _____ potassium chloride + silver nitrate yields potassium nitrate + silver chloride

2. _____ iron metal + copper (II) sulfate yields iron (II) sulfate + copper metal

3. _____ sodium chlorate yields sodium chloride + oxygen gas

4. _____ sodium bicarbonate yields sodium carbonate + carbon dioxide + water

5. _____ beryllium fluoride + magnesium yields magnesium fluoride + beryllium

6. _____ aluminum sulfate + barium chloride yields aluminum chloride + barium sulfate

7. _____ zinc metal + oxygen gas yields zinc oxide

8. _____ ethane + oxygen gas yields carbon dioxide and water

Worksheet: More Fun with Equations **Name** _____

Directions: a) Substitute symbols and formulas for names being sure to denote phases.
b) Balance each equation.
c) Identify the type equation as synthesis, decomposition, single replacement, double replacement, or combustion.

1. Aluminum metal reacts with aqueous zinc chloride to produce zinc metal and aqueous aluminum chloride.

   Type: _____

2. Iron and sulfur combine and form iron (II) sulfide.

   Type: _____

3. Solid diphosphorus pentoxide can be produced from the elements oxygen and phosphorus. (Note: Solid elemental phosphorus contains 4 atoms per molecule; it is written P_4.)

   Type: _____

4. When solid potassium nitrate is heated, it forms solid potassium nitrite and oxygen gas.

   Type: _____

5. When hydrogen sulfide gas is passed over solid hot iron (III) hydroxide, it reacts to form solid iron (III) sulfide and water vapor.

   Type: _____

Worksheet: Even More Fun with Equations! **Name** _____

Directions: 1) Substitute symbols and formulas for words.
2) Predict the products.
3) Include abbreviations to denote physical state.
4) Balance each equation.

1. When heated, solid silver oxide decomposes into its elements.

2. Solutions of potassium chloride and silver nitrate are mixed to produce a potassium compound, which dissolves, and a silver compound, which is insoluble.

3. Write the equation for the synthesis reaction between magnesium metal and oxygen gas.

4. A piece of copper metal is placed into a solution of zinc nitrate.

5. Write the equation for the combustion of propane gas.

1. Magnesium bromide + chlorine

2. Aluminum + iron (III) oxide

3. Silver nitrate + zinc chloride

4. Hydrogen peroxide (catalyzed by manganese dioxide)

5. Zinc + hydrochloric acid

6. Sulfuric acid + sodium hydroxide

7. Sodium + Hydrogen

8. Acetic acid + copper

Activity Series of Metals