Chemical Equations 2

Chemistry Name

1 Balance each of the following equations. Classify each reaction as combination, decomposition, single- displacement, or double-displacement.

(a) \_\_\_ H2 + \_\_\_ O2→\_\_\_ H2O (b) \_\_\_ C + \_\_\_ Fe2O3→\_\_\_ Fe + \_\_\_ CO

(c) \_\_\_ H2SO4 + \_\_\_ NaOH→\_\_\_ H2O + \_\_\_ Na2SO4 (d) \_\_\_ Al2(CO3)3 \_\_\_ Al2O3 + \_\_\_ CO2

(e) \_\_\_ NH4I + \_\_\_ Cl2→\_\_\_ NH4Cl + \_\_\_ I2 (f) \_\_\_ H2O2→\_\_\_ H2O + \_\_\_ O2

(g) \_\_\_ CrCl3 + \_\_\_ AgNO3→\_\_\_ Cr(NO3)3 + \_\_\_ AgCl (h) \_\_\_ Ba(ClO3)2 \_\_\_ BaCl2 + \_\_\_ O2

(i) \_\_\_ Al + \_\_\_ C\_\_\_ Al4C3 (j) \_\_\_ H2 + \_\_\_ Br2→\_\_\_ HBr

2 Balance the following equations:

(a) \_\_\_ Cu(NO3)2→CuO + \_\_\_ NO2 + \_\_\_ O2 (b) \_\_\_ FeS + \_\_\_ O2→\_\_\_ Fe2O3 + \_\_\_ SO2

(c) \_\_\_ HCN + \_\_\_ O2→\_\_\_ N2 + \_\_\_ CO2 + \_\_\_ H2O(d) \_\_\_ Al + \_\_\_ H2SO4→\_\_\_ Al2(SO4)3 + \_\_\_ H2

(e) \_\_\_ NO2 + \_\_\_ H2O→\_\_\_ HNO3 + \_\_\_ NO (f) \_\_\_Mg3N2 + \_\_\_H2O→\_\_\_Mg(OH)2 + \_\_\_NH3

(g) \_\_\_ B5H9 + \_\_\_ O2→\_\_\_ B2O3 + \_\_\_ H2O(h) \_\_\_ MnO2 + \_\_\_ CO→\_\_\_ Mn2O3 + \_\_\_ CO2

(i) \_\_\_ C3H5(NO3)3→\_\_\_ CO2 + \_\_\_ H2O + \_\_\_ N2 + \_\_\_ O2

3 Change these word equations into formula equations and balance them. Be sure to use the proper symbols to indicate the state of each substance, as given.

(a) Magnesium metal is placed into hydrobromic acid solution, forming hydrogen gas and aqueous magnesium bromide.

(b) When heated, solid calcium chlorate decomposes into calcium chloride solid, releasing oxygen gas.

(c) Lithium metal reacts with oxygen gas to form solid lithium oxide.

(d) Solutions of barium bromate and sodium phosphate combine to form solid barium phosphate and aqueous sodium bromate.

(e) Solutions of acetic acid and sodium carbonate are mixed together, forming a solution of sodium acetate, along with carbon dioxide gas and liquid water.

(f) Solutions of silver nitrate and aluminum iodide are mixed together, forming solid silver iodide and aqueous aluminum nitrate.

4 Balance the following reactions, and then add to their pictorial representations.

a) \_\_\_ CH4 + \_\_\_ O2 → \_\_\_ CO2 + \_\_\_ H2O

 

b) \_\_\_ H2 + \_\_\_ O2  → \_\_\_ H2O

 

5 Write balanced equations for the complete combustion of ethanol, C2H5OH. Then draw a picture of the reaction.