Name:_____ **Stoich Review**

1. Which sample contains a mole of atoms?

   A) 23 g Na B) 24 g C
   C) 42 g Kr D) 78 g K

2. What is the total mass in grams of 0.75 mole of SO_2?

   A) 16 g B) 24 g C) 32 g D) 48 g

3. The empirical formula of a compound is CH_3. The molecular formula of this compound could be

   A) CH_4 B) C_2H_4 C) C_2H_6 D) C_3H_6

4. What is the percent composition by mass of sulfur in the compound $MgSO_4$ (gram-formula mass = 120. grams per mole)?

   A) 20% B) 27% C) 46% D) 53%

5. Given the balanced equation:

   $CaCO_3(s) + 2HCl(aq) \rightarrow CaCl_2(aq) + H_2O(\ell) + CO_2(g)$

   What is the total number of moles of CO_2 formed when 20. moles of HCl is completely consumed?

   A) 5.0 mol B) 10. mol
   C) 20. mol D) 40. mol

6. Given the unbalanced equation:

   $\_\_ Al(s) + \_\_ O_2(g) \rightarrow \_\_ Al_2O_3(s)$

   When this equation is correctly balanced using smallest whole numbers, what is the coefficient of O_2 (g)?

   A) 6 B) 2 C) 3 D) 4

7. What is the total number of moles of sulfur atoms in 1 mole of $Fe_2(SO_4)_3$?

   A) 1 B) 15 C) 3 D) 17

8. A hydrate is a compound that includes water molecules within its crystal structure. During an experiment to determine the percent by mass of water in a hydrated crystal, a student found the mass of the hydrated crystal to be 4.10 grams. After heating to constant mass, the mass was 3.70 grams. What is the percent by mass of water in this crystal?

   A) 90.% B) 11%
   C) 9.8% D) 0.40%

9. A substance has an empirical formula of CH_2 and a molar mass of 56 grams per mole. The molecular formula for this compound is

   A) CH_2 B) C_4H_6 C) C_4H_8 D) C_8H_4

10. Given the balanced equations representing two chemical reactions:

    $$Cl_2 + 2NaBr \rightarrow 2NaCl + Br_2$$
    $$2NaCl \rightarrow 2Na + Cl_2$$

    Which type of chemical reactions are represented by these equations?

    A) single replacement and decomposition
    B) single replacement and double replacement
    C) synthesis and decomposition
    D) synthesis and double replacement