Exercise 9.1a

Mole Ratios in Stoichiometry

Name: _____

Date: _____ Per: _____

DIRECTIONS: Answer each set of questions in the space provided.

Balance the following equations

1. ____ $FeCl_3(aq)$ + ____ $KOH(aq)$ → ____ $Fe(OH)_3(s)$ + ____ $KCl(aq)$
2. ____ $Pb(C_2H_3O_2)_2(aq)$ + ____ $KI(aq)$ → ____ $PbI_2(s)$ + ____ $KC_2H_3O_2(aq)$
3. ____ $P_4O_{10}(s)$ + ____ $H_2O(l)$ → ____ $H_3PO_4(aq)$
4. ____ $Li_2O(s)$ + ____ $H_2O(l)$ → ____ $LiOH(aq)$

Find the mole ratio of:

5. KO_2 to KOH in $4KO_2(s) + 2H_2O(l) \rightarrow 4KOH(aq) + 3O_2(g)$ _____
6. $BaCl_2$ to $NaCl$ in $BaCl_2(aq) + Na_2SO_4(aq) \rightarrow BaSO_4(s) + 2NaCl(aq)$ _____
7. H_2O_2 to O_2 in $2H_2O_2(aq) \rightarrow 2H_2O(l) + O_2(g)$ _____

Given the following unbalanced equations:

8. ____ $MnO_2(s)$ + ____ $C(s)$ → ____ $Mn(s)$ + ____ $CO_2(g)$

   What is the mole ratio of MnO_2 to CO_2? | |

9. ____ $Sb(s)$ + ____ $Cl_2(g)$ → ____ $SbCl_3(s)$

   What is the mole ratio of Sb to Cl_2? | |

10. ____ $CH_4(g)$ + ____ $H_2O(g)$ → ____ $CO(g)$ + ____ $H_2(g)$

    How many moles of H_2 would be produced from:

    a. 2 moles of CH_4? _____
    b. 4 moles of H_2O? _____
    c. 3 moles of CH_4? _____
    d. 0.5 moles of H_2O? _____

11. ____ $Zn(s)$ + ____ $CrCl_3(aq)$ → ____ $CrCl_2(aq)$ + ____ $ZnCl_2(aq)$

    How many moles of $CrCl_2$ would be produced from:

    a. 2 moles of Zn? _____
    b. 3 moles of Zn? _____
    c. 4 moles of $CrCl_3$? _____
    d. 2.5 moles of $CrCl_3$? _____

12. ____ $FeS(s)$ + ____ $HCl(aq)$ → ____ $FeCl_2(aq)$ + ____ $H_2S(g)$

    a. How many moles of HCl are required to react with 1.5 moles of FeS? _____
    b. How many moles of FeS are required to react with 3 moles of HCl? _____
    c. How many moles of HCl are required to produce 1.5 moles of $FeCl_2$? _____
    d. How many moles of HCl are required to produce 0.5 moles of H_2S? _____
    e. How many moles of FeS are required to produce 3 moles of H_2S? _____