Limiting Reactant and Theoretical Yield Practice   Name:_____
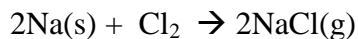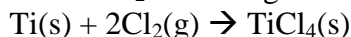
1. When 7.25mol of the Na reacts with 4.25mol of Cl_2 according to the following equation:

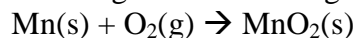$$2Na(s) + Cl_2 \rightarrow 2NaCl(g)$$

    a. What is the limiting reactant?

    b. What is the theoretical yield of NaCl produced in moles?

2. If 4.0mol of Ti is combined with 4.0mol Cl_2 according to the following equation:
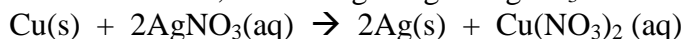
$$Ti(s) + 2Cl_2(g) \rightarrow TiCl_4(s)$$

    a. What is the limiting reactant?

    b. What is the theoretical yield of $TiCl_4$ in moles?

3. If 4mol Mn reacts with 7mol O_2 according to the following equation:

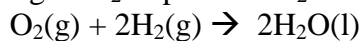$$Mn(s) + O_2(g) \rightarrow MnO_2(s)$$

    a. What is the limiting reactant?

    b. What is the theoretical yield of MnO_2 in grams?

4. If 100g of Cu are added to a solution, containing 100g of $AgNO_3$:

$$Cu(s) + 2AgNO_3(aq) \rightarrow 2Ag(s) + Cu(NO_3)_2 (aq)$$
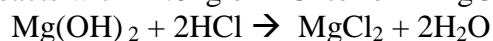
    a. What is the limiting reactant?

    b. What is the theoretical yield of Ag metal in grams?

5. When 1.22g of O_2 reacts with 1.05g of H_2 to produce H_2O:
$$O_2(g) + 2H_2(g) \rightarrow 2H_2O(l)$$
   a. What is the limiting reactant?
   b. What is the theoretical yield of H_2O in grams?

6. When 5.87g of $Mg(OH)_2$ reacts with 12.84g of HCl to form $MgCl_2$ and water.
$$Mg(OH)_2 + 2HCl \rightarrow MgCl_2 + 2H_2O$$
   a. What is the limiting reactant?
   b. What is the theoretical yield of $MgCl_2$ in grams?

7. When 6.25g of $AgNO_3$ reacts with 4.12g of NaCl to form $NaNO_3$ and AgCl:
$$AgNO_3 + NaCl \rightarrow NaNO_3 + AgCl$$
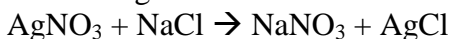
   a. What is the limiting reactant?
   b. What is the theoretical yield of $NaNO_3$ in grams?
   c. What is the theoretical yield of AgCl in grams?

8. When 6.33g of H_2SO_4 reacts with 5.92g of NaOH to produce $NaSO_4$ and water:
$$H_2SO_4 + NaOH \rightarrow NaSO_4 + H_2O$$
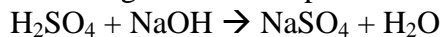
   a. What is the limiting reactant?
   b. What is the theoretical yield of $NaSO_4$ in grams?
   c. What is the theoretical yield of H_2O in grams?