**Stoichiometry Test Review**

**Vocabulary**

* Actual Yield
* Coefficient
* Excess reactant
* Limiting reactant
* Mole ratio
* Percent Yield
* Stoichiometry
* Theoretical Yield

1. In the following reaction, 4C3H5(NO3)3 -----> 12CO2 + 10H2O + 6N2 + O2, what is the mole ratio between: *(reduce when appropriate)*
   1. Carbon dioxide & water \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Water & oxygen \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. Carbon dioxide & nitrogen \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. **2 C7H6O2 + 15 O2 🡪 14 CO2 + 6 H2O**
   1. If 10 moles of C7H6O2 react, how many moles of water will form?
   2. How many moles of CO2 will form if 244 grams of C7H6O2 react?
   3. If 488 grams of C7H6O2 react with 480 grams of O2, how many grams of water will form?
   4. If 480 grams of O2 react and 100 grams of water form, what is my percent yield?
3. **Fe2(SO4)3 + 6 KOH 🡪 3K2SO4 + 2Fe(OH)3**
   1. How many moles of K2SO4 will form if 10 moles of Fe2(SO4)3 react?
   2. How many grams of KOH are needed to form 10 moles of K2SO4?
   3. If 10 moles of KOH react with 10 moles of Fe(SO4)3, what is the limiting reactant?
   4. If 90 grams of KOH react with 400 grams of Fe2(SO4)3, how many grams of can Fe(OH)3 form?
4. **2Al + 6HCl 🡪 2AlCl3 + 3H2**
5. If 10 **moles** of Aluminum react in the equation above, how many **moles** of hydrogen gas will form?
6. If 10 **grams** of Aluminum react, how many **moles** of hydrogen will form?
7. If 15 **moles** of HCl react, how many **grams** of aluminum are needed to completely react?
8. If 55 **grams** of aluminum react, how many **grams** of hydrogen gas will form?
9. If 55 **grams** of aluminum react and only 5 **grams** of hydrogen gas was produced, what is my percent yield?
10. If 55 grams of aluminum reacted and my percent yield was 90%, how much hydrogen gas did I produce?
11. I have 15 moles of aluminum and 20 moles of HCl, what is my limiting reactant?
12. \_\_\_\_\_KClO3 🡪 \_\_\_\_\_\_ KClO4 + \_\_\_\_\_\_ KCl
    1. If 20 moles of KClO3 react, how many moles of KCl will form?
    2. If 245 grams of KClO3 react, how many moles of KClO4 will form?
13. \_\_\_\_\_\_ Sb + \_\_\_\_\_\_ O2 🡪 \_\_\_\_\_\_\_ Sb4O6
    1. If 100 grams of Sb react with excess O2, how many grams of Sb4O6 will be formed?
    2. If 100 grams of Sb and 100 grams of O2 react, what would be the limiting reactant?
14. \_\_\_\_\_ N2 + \_\_\_\_\_ O2 🡪 \_\_\_\_\_N2O
    1. If 50 grams of N2 react, how many grams of N2O would form?
    2. If 50 grams of O2 react, how many grams of N2O would form?
15. What would be the limiting reactant in the equation below if 85.3 grams of aluminum and 68 grams of O2 reacted?

\_\_\_\_\_\_ Al + \_\_\_\_\_\_\_\_ O2 🡪 \_\_\_\_\_\_Al2O3

1. Consider the following reaction, **P4 + 5O2 🡪 2 P2O5**

Arlene combines 86 grams of phosphorous with excess oxygen and obtains an 83% yield of P2O5. What mass of P2O5 did she produce?

1. Consider the following reaction, 2HgO 🡪2Hg + O2

Carlos decomposed 90 grams of HgO and produced 6 grams of oxygen. What was his percent yield?

1. In a reaction a student predicts based on his calculations that when he runs a certain chemical reaction he should be able to produce 37.4 grams of H2O. When the student performs the reaction in a lab the amount of H2O produced was 30.8 grams. What was the student’s percent yield for this experiment?
2. During an experiment, 83.0 grams of potassium hydroxide are produced in a reaction between potassium oxide and water. The theoretical yield of potassium hydroxide is 88.3 grams. What is the percent yield? (Hint: You do not need a chemical equation to solve this problem.)
3. A scientist stated that he had gotten a 98.0% yield of iron in a reaction between iron (III) oxide and carbon monoxide. How many grams of iron did he get during his experiment if the theoretical yield was 210 grams? (Hint: You can do this without writing the balanced equation.)
4. Balance the equation below and answer the following questions.

*Potassium oxide and water react to form potassium hydroxide*

* 1. If 10 grams of potassium oxide and 10 grams of water react, what would be the limiting reactant?
  2. How much potassium hydroxide (in grams) could be formed.
  3. A student runs this reaction and produces 11 grams of potassium hydroxide. What is his percent yield?