Name _____

Date _____ Period _____

Stoichiometry WS # 1: Stoichiometric Conversions

1. Copper I oxide solid is produced in a combination reaction with solid copper and oxygen gas
a. Write a balanced chemical equation for this reaction.

b. How many moles of copper are needed to produce 13 moles of copper I oxide?

c. How many moles of copper I oxide would be produced if only .25 moles of oxygen were available?

d. You produced 11.7 grams of copper I oxide. How many grams of oxygen did you need?

2. Iron III oxide will decompose in the presence of hydrogen gas and heat to produce free iron and water.
a. Write a balanced equation for the reaction.

b. What mass of iron is produced when 450.0 grams of iron III oxide decomposes?

c. How many moles of hydrogen gas are needed to produce 90.0 grams of iron?

d. How many grams of water will be produced when .01 moles of iron III oxide decomposes?

3. Solid calcium combines with oxygen gas to form solid calcium oxide.
a. Write a balanced equation for the reaction.

b. How many moles of calcium oxide would be produced if only .33 moles of oxygen were available?

c. If 4.5 grams of oxygen were used, how many grams of calcium are needed for the reaction to go to completion?

4. The combustion of butane gas (C_4H_{10}) is used in many hand held lighters
a. Write a balanced chemical equation for the reaction.

b. How many moles of oxygen are required to burn 4.8 moles of butane completely?

c. How many grams of CO2 are produced when 88g of O2 react with an excess of butane?

6 Sodium Chloride can be split into its elements by electrolysis.
a. Write a balanced chemical equation for this reaction.

b. How many moles of chlorine gas are produced when 40.0g of salt is split by electrolosis?

c. How many moles of sodium is produced when 5 moles of NaCl is split?

7. The complete combustion of liquid ethanol, C_2H_5OH, is used in alcohol burners.
a. Write a balanced chemical equation for this reaction.

b. How many grams of water are produced in the complete combustion of 100.0 grams of ethanol?

c. In the complete combustion of ethanol, how many moles of oxygen are necessary to produce 18 moles of carbon dioxide?

d. In the complete combustion of ethanol, how many grams of carbon dioxide are produced when 1.2 moles of water is produced?

8. Aqueous solutions of barium nitrate and ammonium carbonate react in a double replacement reaction.
a. Predict the products and write the balanced equation for the reaction.

b. How many moles of ammonium nitrate will be produced form 110.0 grams of ammonium carbonate?

c. How many moles of barium carbonate would be produced from 6 moles of ammonium carbonate?

d. How many grams of barium nitrate are needed to react with 220.0 grams of ammonium carbonate?