Stoichiometry Worksheet II

For the given combustion reaction of **octane**, **C8H18**, answer the following questions: (Answers to the questions are given in parenthesis.)

a. Write all possible molar ratios from this equation.

- b. How many moles of CO₂ would be produced by reacting 0.67 moles of octane with excess of oxygen? (Amount of oxygen is not involved in the calculation) (5.4 mol CO₂)
- c. How many moles of H₂O would be produced by reacting 0.67 moles of octane with excess of oxygen? (6.0 mol H₂O)
- d. If we react 225 g of octane C₈H₁₈ with oxygen, how many moles of O₂ are required? (24.7 mol O₂)
- e. If we react 225 g of octane C₈H₁₈ with excess oxygen, how many moles of CO₂ are produced? (15.8 mol CO₂)

2 C8H₁₈ + 25 O₂ ----> 16 CO₂ + 18 H₂O

- f. If we react 225 g of octane C_8H_{18} with excess oxygen, how many moles of H_2O are produced? (17.8 mol H_2O)
- g. If we wish to make 7.5 mol CO2, how many grams of C8H18 will be used? (110 g C8H18)
- h. If we wish to make 7.5 mol CO2, how many grams of O2 do we need ? (380 g O2)
- i. If we wish to make 7.5 mol CO₂, how many grams of H₂O will be produced? (150 g H₂O)
- j. If we have 3.56 g C8H₁₈, how many grams of O₂ do we need to react with it ? (12.5 g O₂)
- k. If we have 3.56 g C₈H₁₈, how many grams of CO₂ will be produced? (11.0 g CO₂)
- I. If we have 3.56 g C₈H₁₈, how many grams of H₂O will be produced? (5.06 g H₂O)
- m. Using the answers from j, k, and I for burning of 3.56 g of octane, check if the law of conservation of mass is obeyed or not.