

Honors Chemistry Stoichiometry Problems – Set II

Show All Work !

1. Translate the following word descriptions of reactions into balanced equations.

(a) Ethylene gas, C_2H_4 burns in air to produce carbon dioxide and water.

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(b) Iron reacts with chlorine gas to yield a white solid, iron (III) chloride.

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3. The following questions refer to this reaction: $Al_4C_3 + 12 F_2 \rightarrow 4 AlF_3 + 3 CF_4$

(a) If in an experiment an ace chemistry student produces 2 moles of CF_4 , how many moles of F_2 reacted?

answer _____ mol F_2

(b) In a second experiment an ace chemistry student reacts 28.8 g of Al_4C_3 . How many moles of each product are produced?

answer _____ mol AlF_3

answer _____ mol CF_4

(c) In a third experiment an ace chemistry student forgets to record the number of gram of reactants used in the reaction. At the end of the reaction he finds 8.4 g of AlF_3 in the reaction vessel. How many grams of Al_4C_3 was used?

answer _____ g Al_4C_3

2. Consider the following balanced equation: $4 \text{Li} + \text{O}_2 \rightarrow 2 \text{Li}_2\text{O}$

(a) Maintain the basic mole ratios established by this balanced and complete the following data table using the one piece of given information.

	mol Li	mol O ₂	mol Li ₂ O
exp. 1	0.2		
exp. 2		5.0	
exp. 3			1.2

(b) If 5 moles of lithium are reacted, how many grams of lithium oxide are made?

4. Consider the following reaction $4 \text{NH}_3 + 3 \text{O}_2 \rightarrow 2 \text{N}_2 + 6 \text{H}_2\text{O}$ and answer the following questions:

(a) If 0.5 mol of ammonia are reacted, how many moles of water are made?

answer _____ mol H₂O

(b) In another experiment an ace chemistry student reacts 6.8 g of NH₃. How many grams of N₂ are made?

answer _____ g N₂

(c) In a third experiment an ace chemistry student forgets to record the number of grams of reactants used in the reaction. At the end of the reaction he finds 10.8g of water in the reaction vessel. How many grams of NH₃ were used?

answer _____ g NH₃