Stoichiometry Worksheet (Answers)

1. Glucose is used as a source of energy by the human body. The reaction in the body is $C_6H_{12}O_6+6O_2 \rightarrow 6CO_2+6H_2O$

Calculate the number of grams of oxygen needed to oxidize 12.5 g of glucose to carbon dioxide and water. 13.32 g O_2

- Ammonia is synthesized from hydrogen and nitrogen according to the following equation. N₂ + 3H₂ ---→ 2NH₃
 If an excess of nitrogen is reacted with 3.41 g of hydrogen, how many grams of ammonia can be produced?
 19.2 g NH₃
- 3. Assume that in the decomposition of potassium chlorate, KClO₃, 80.5 g of O₂ form. How many grams of potassium chloride, the other product would be formed? 125 g KCl
- 4. In a single displacement reaction, 9.23 g of aluminum react with excess hydrochloric acid. How many grams of hydrogen will be produced? 1.04 g H_2
- 5. The compound "cisplatin" PtCl₂(NH₃)₂, has been found to be effective in treating some types of cancer. It can be synthesized using the following reaction K_2 PtCl₄ + 2NH₃ ----→ 2KCl + PtCl₂(NH₃)₂
 - a. How much "cisplatin" can be produced from 2.50 g K_2 PtCl₄ and excess NH₃? 1.08g
 - b. How much NH₃ would be needed? 0.205 g NH₃
- 6. In the decomposition of sodium chlorate, 31.7 g of O₂ are formed. How many grams of sodium chloride are produced? 77.2 g NaCl
- 7. The action of carbon monoxide on iron(III) oxide can be represented by the equation, i. $Fe_2O_3(s) + 3CO(g) \rightarrow 2Fe(s) + 3CO_2(g)$.

What is the minimum amount of carbon monoxide used if 57.5 grams of iron were produced? 43.3 g CO

8. Claude-Louis Berthollet first prepared ethyne (acetylene) by sparking carbon electrodes in hydrogen gas.

 $2C + H_2 -> C_2H_2$

How many grams of carbon electrode will be consumed when 59.8 grams of acetylene are produced? $55.2\ g$

9. In space vehicles, air purification for the crew is partly accomplished with the use of lithium peroxide, Li₂O₂. It reacts with waste CO₂ in the air according to the reaction $2\text{Li}_2\text{O}_2 + 2\text{CO}_2 \rightarrow 2\text{Li}_2\text{CO}_3 + \text{O}_2$.

How many grams of oxygen are released by the reaction of 0.905g CO₂? 0.329 g O_2