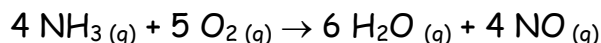


Chemistry 11

Stoichiometry Worksheet #2

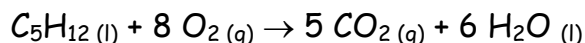
Directions: Answer in the space provided. Be sure to show ALL your work. Please highlight your answer for each question. Watch for sig figs...and Darth Vader ;)

1. Consider the reaction:

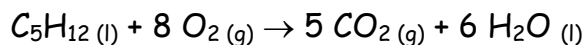


- What mass of $\text{NO}(g)$ is produced when 2.00 mol of $\text{NH}_3(g)$ are reacted with an excess of $\text{O}_2(g)$?
- What mass of $\text{H}_2\text{O}(g)$ is produced when 4.00 mol of $\text{O}_2(g)$ are reacted with an excess of $\text{NH}_3(g)$?
- What volume of $\text{NH}_3(g)$ at STP is required to react with 3.00 mol of $\text{O}_2(g)$?
- What volume of $\text{NH}_3(g)$ at STP is required to produce 0.750 mol of $\text{H}_2\text{O}(g)$?

2. Pentane, $\text{C}_5\text{H}_{12}(l)$, burns according to the reaction:



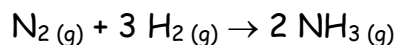
- What mass of H_2O is produced when 100.0 g of C_5H_{12} is burned? Assume an excess of O_2 .
- What mass of C_5H_{12} is required to produce 90.0 L of CO_2 at STP? Assume an excess of O_2 .



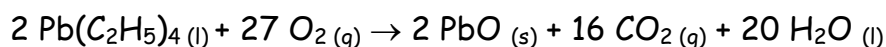
c. What volume of O_2 at STP is required to produce 70.0 g of CO_2 ? Assume an excess of C_5H_{12} .

3. How many litres of hydrogen gas will be produced by 5.72 g of zinc in the single replacement reaction of zinc and hydrochloric acid at STP?

4. Calculate the number of grams of nitrogen gas required to make 1.22 L of ammonia at STP. Assume an excess of H_2 .

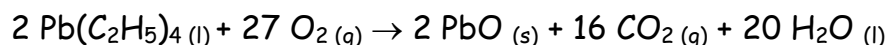


5. Tetraethyl lead, $\text{Pb}(\text{C}_2\text{H}_5)_4(\text{l})$, is an "anti-knock" ingredient, which was added to some gasoline's. Tetraethyl lead burns according to the equation:



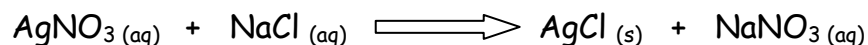
a. What volume of $\text{O}_2 (\text{g})$ at STP is consumed when 100.0 g of $\text{PbO}(\text{s})$ are formed?

b. How many molecules of CO_2 are formed when 1.00×10^{-6} g of tetraethyl lead is burned? Assume an excess of O_2 .

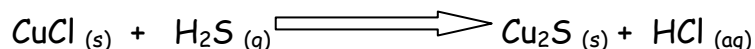


- c. What volume of $\text{O}_2(\text{g})$ at STP, in milliliters, is required to react with 1.00×10^{15} molecules of tetraethyl lead?

6. How many grams of Silver chloride can be produced from 34.0 g of Silver nitrate?
ASSume an excess of NaCl.



7. How many grams of Copper (I) sulphide could be produced from 19.8 g of Copper (I) chloride reacting with an excess of Hydrogen Sulphide gas?



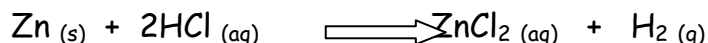
8. Chlorine gas reacts with sodium metal to produce sodium chloride. What mass of Chlorine will be needed to react with 12.30 g of Sodium?

9. Calcium phosphate and water react to form Calcium hydroxide and Phosphoric acid. How many grams of Calcium phosphate will be needed if 72.0 g of water react?

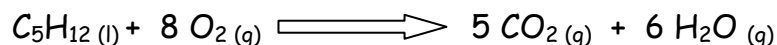
10. What mass of PbO is obtained by heating 100.0 g of PbCO₃ according to the following equation:



11. How much zinc is required to produce 10.00 g of ZnCl₂ according to the following equation:

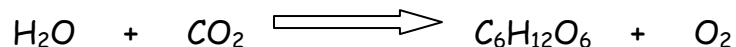


12. Pentane burns according to the reaction:

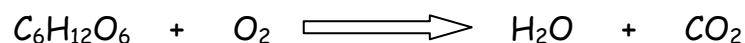


- a. What volume in ml of CO₂ (g) at S.T.P is produced when 100.0 g of C₅H₁₂ (l) is burned? (Assume an excess of O₂).
- b. How many molecules of C₅H₁₂ (l) would burn if only 50.0 g of O₂ (g) is available?

13. The net reaction for photosynthesis is water and carbon dioxide combining to form oxygen gas and glucose ($C_6H_{12}O_6$). How many grams of carbon dioxide must a plant take in through its leaves to make 60.0 g of glucose? (Balanced? ☺...ASSume an excess of water)



14. Animals require glucose for energy which is released in a combustion reaction. Balanced?

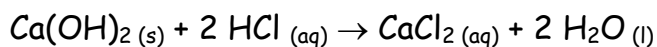


- a. What mass of O_2 is required to burn 75.0 g of glucose?

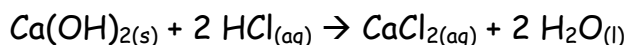
- b. What mass of water will be produced?

- c. What volume, in ml's, of $CO_2(g)$ will be produced at S.T.P?

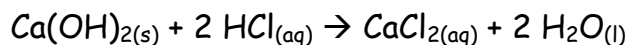
15. How many litres of 0.100 M HCl would be required to react completely with 5.00 grams of calcium hydroxide?



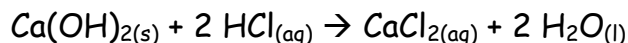
For the following questions, please use this reaction:



16. How many liters of 0.100 M HCl would be required to react completely with 5.00 grams of calcium hydroxide?



17. How many grams of calcium hydroxide are needed to react with 69.50 ml of 0.350 M hydrochloric acid?



18. If 350.0 ml's of 0.250 M Calcium chloride were produced, what mass of Calcium hydroxide was required? (Assume an excess of HCl)

