



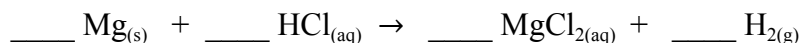
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Stoichiometry WS #2

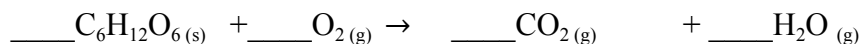
Directions: Balance the chemical reactions. Use Stoichiometry to solve the following problems. Show all work with units. Box the final answer.

1. Magnesium reacts with hydrochloric acid according to the following chemical equation (balance):



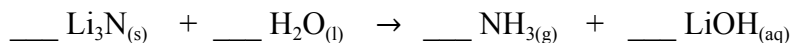
If 2.20 moles of hydrochloric acid react with excess magnesium, how many moles of hydrogen gas will be produced?

2. Glucose ($\text{C}_6\text{H}_{12}\text{O}_6$) combines with oxygen in the body in a combustion reaction to form carbon dioxide and water. Balance the reaction.



How many moles of oxygen are needed to react with the 29.88 grams of glucose in a Milky Way candy bar?

3. Determine the mass of lithium hydroxide produced when 0.38 grams of lithium nitride reacts with excess water according to the following chemical equation:



4. Aluminum reacts with HCl to produce aluminum chloride and hydrogen gas.
- Write a balanced equation for the reaction.
 - Calculate the mass of aluminum chloride produced if 13.456 g of Al reacts to completion.
 - Calculate the mass of HCl required to produce 18.560 g aluminum chloride.
 - Calculate the volume of gas produced if 42.68 g HCl reacts to completion at STP.
5. What mass of sodium chloride is produced when excess chlorine gas reacts with 0.29 grams of sodium iodide? The **unbalanced** chemical equation is given below:
- $$\text{_____ NaI}_{(s)} + \text{_____ Cl}_{2(g)} \rightarrow \text{_____ NaCl}_{(s)} + \text{_____ I}_{2(s)}$$
6. Butane (C₄H₁₀) undergoes a combustion reaction with oxygen to produce carbon dioxide and water.
- Write the balanced chemical equation.

- b. Determine the mass of carbon dioxide produced when all 0.85 grams of butane reacts.
 - c. Determine the mass of butane required if 64.98 L of O_2 is produced at STP.
7. Hydrogen peroxide *decomposed* to produce oxygen gas and water.
- a. Write a balanced chemical equation.
 - b. What mass of hydrogen peroxide (H_2O_2) must decompose to produce 0.77 grams of water?
8. Nickel (II) nitrate reacts with sodium hydroxide in a precipitation reaction.
- a. Write a balanced chemical equation.
 - b. If 0.73 grams of nickel (II) nitrate is used in the reaction, determine the mass of sodium nitrate produced.
 - c. Determine the mass of the solid produced if 4.688 g nickel (II) nitrate reacts to completion.