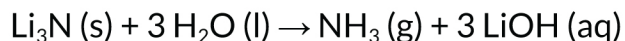


MASS TO MASS

STOICHIOMETRY WORKSHEET

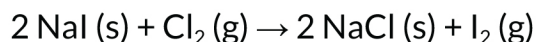
1. Consider the following balanced reaction:



a. What mass of lithium hydroxide is produced when 0.38 g of lithium nitride react?

b. How many grams of lithium nitride would react with 4.05 g of H₂O?

2. Balance the following reaction and answer the given questions.

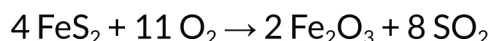


a. What mass of sodium chloride is produced when 0.294 g of sodium iodide react?

b. If 5.80 g of iodine is formed, what is the mass of sodium iodide that reacted?

3. In the combustion of 54.5 g of butane (C₄H₁₀), how many grams of CO₂ are produced?
Write and balance the equation before solving.

4. Complete the following unbalanced reaction and answer the given questions.



a. How many grams of iron (IV) sulfide are used when 9 g of O₂ react?

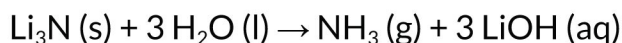
b. How much iron (III) oxide is produced when 25 g of iron (IV) sulfide are used?

MASS TO MASS

STOICHIOMETRY WORKSHEET

Answers

1. Consider the following balanced reaction:



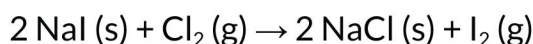
a. What mass of lithium hydroxide is produced when 0.38 g of lithium nitride react?

$$0.38 \text{ g Li}_3\text{N} \times (1 \text{ mol Li}_3\text{N}/34.7 \text{ g Li}_3\text{N}) \times (3 \text{ mol LiOH}/1 \text{ mol Li}_3\text{N}) \\ \times (23.9 \text{ g LiOH}/1 \text{ mol LiOH}) = 0.79 \text{ g LiOH}$$

b. How many grams of lithium nitride would react with 4.05 g of H₂O?

$$4.05 \text{ g H}_2\text{O} \times (1 \text{ mol H}_2\text{O}/18 \text{ g H}_2\text{O}) \times (1 \text{ mol Li}_3\text{N}/3 \text{ mol H}_2\text{O}) \times (34.7 \text{ g Li}_3\text{N}/1 \text{ mol Li}_3\text{N}) \\ = 2.6 \text{ g Li}_3\text{N}$$

2. Balance the following reaction and answer the given questions.



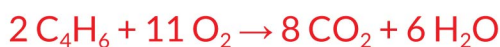
a. What mass of sodium chloride is produced when 0.294 g of sodium iodide react?

$$0.294 \text{ g NaI} \times (1 \text{ mol NaI}/149.9 \text{ g NaI}) \times (2 \text{ mol NaCl}/2 \text{ mol NaI}) \\ \times (58.5 \text{ g NaCl}/1 \text{ mol NaCl}) = 0.115 \text{ g NaCl}$$

b. If 5.80 g of iodine is formed, what is the mass of sodium iodide that reacted?

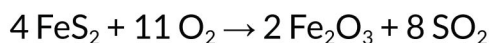
$$5.8 \text{ g I}_2 \times (1 \text{ mol I}_2/253.8 \text{ g I}_2) \times (2 \text{ mol NaI}/1 \text{ mol I}_2) \times (149.9 \text{ g NaI}/1 \text{ mol NaI}) = \\ 6.85 \text{ g NaI}$$

3. In the combustion of 54.5 g of butane (C₄H₆), how many grams of CO₂ are produced? Write and balance the equation before solving.



$$54.5 \text{ g C}_4\text{H}_6 \times (1 \text{ mol C}_4\text{H}_6/54 \text{ g C}_4\text{H}_6) \times (8 \text{ mol CO}_2/2 \text{ mol C}_4\text{H}_6) \times (44 \text{ g CO}_2/1 \text{ mol CO}_2) = \\ 178 \text{ g CO}_2$$

4. Complete the following unbalanced reaction and answer the given questions.



a. How many grams of iron (IV) sulfide are used when 9 g of O₂ react?

$$9 \text{ g O}_2 \times (1 \text{ mol O}_2/32 \text{ g O}_2) \times (4 \text{ mol FeS}_2/11 \text{ mol O}_2) \times (120 \text{ g FeS}_2/1 \text{ mol FeS}_2) = 12 \text{ g FeS}_2$$

b. How much iron (III) oxide is produced when 25 g of iron (IV) sulfide are used?

$$25 \text{ g FeS}_2 \times (1 \text{ mol FeS}_2/120 \text{ g FeS}_2) \times (2 \text{ mol Fe}_2\text{O}_3/4 \text{ mol FeS}_2) \\ \times (159.6 \text{ g Fe}_2\text{O}_3/1 \text{ mol Fe}_2\text{O}_3) = 16.6 \text{ g Fe}_2\text{O}_3$$