

Name : _____



Date : _____



1. In photosynthesis, water reacts with carbon dioxide to give oxygen and glucose ($C_6H_{12}O_6$). Write and balance the chemical equation. How many moles of CO_2 are required to make 120 g of glucose?

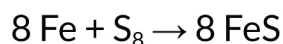
2. Balance the following reaction and answer the given questions.



a. How many grams of NaCl are produced when 20 mol of $NaClO_3$ react?

b. How many moles of O_2 are produced when 40 g of NaCl are formed?

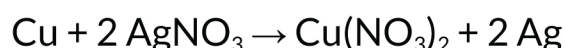
3. Consider the following reaction:



How many moles of FeS are produced when 0.93 g of S_8 react?

4. Write a balanced chemical equation to represent the combustion of decane ($C_{10}H_{22}$). How many moles of water will form with the combustion of 540.4 g of decane?

5. Consider the following reaction:



How many moles of Cu are needed to react with 3.5 g of $AgNO_3$?

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Answers

1. In photosynthesis, water reacts with carbon dioxide to give oxygen and glucose ($C_6H_{12}O_6$). Write and balance the chemical equation. How many moles of CO_2 are required to make 120 g of glucose?



$$120 \text{ g } C_6H_{12}O_6 \times (1 \text{ mol } C_6H_{12}O_6 / 180 \text{ g } C_6H_{12}O_6) \times (6 \text{ mol } CO_2 / 1 \text{ mol } C_6H_{12}O_6) = 4 \text{ mol } CO_2$$

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



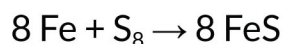
a. How many grams of NaCl are produced when 20 mol of $NaClO_3$ react?

$$20 \text{ mol } NaClO_3 \times (2 \text{ mol } NaCl / 2 \text{ mol } NaClO_3) \times (58.5 \text{ g } NaCl / 1 \text{ mol } NaCl) = 1170 \text{ g } NaCl$$

b. How many moles of O_2 are produced when 40 g of NaCl are formed?

$$40 \text{ g } NaCl \times (1 \text{ mol } NaCl / 58.5 \text{ g } NaCl) \times (3 \text{ mol } O_2 / 2 \text{ mol } NaCl) = 1.03 \text{ mol } O_2$$

3. Consider the following reaction:



How many moles of FeS are produced when 0.93 g of S_8 react?

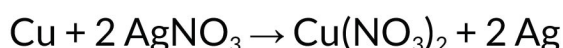
$$0.93 \text{ g } S_8 \times (1 \text{ mol } S_8 / 256.8 \text{ g } S_8) \times (8 \text{ mol } FeS / 1 \text{ mol } S_8) = 0.029 \text{ mol } FeS$$

4. Write a balanced chemical equation to represent the combustion of decane ($C_{10}H_{22}$). How many moles of water will form with the combustion of 540.4 g of decane?



$$540.4 \text{ g } C_{10}H_{22} \times (1 \text{ mol } C_{10}H_{22} / 142 \text{ g } C_{10}H_{22}) \times (22 \text{ mol } H_2O / 2 \text{ mol } C_{10}H_{22}) = 41.86 \text{ mol } H_2O$$

5. Consider the following reaction:



How many moles of Cu are needed to react with 3.5 g of $AgNO_3$?

$$3.5 \text{ g } AgNO_3 \times (1 \text{ mol } AgNO_3 / 169.9 \text{ g } AgNO_3) \times (1 \text{ mol } Cu / 2 \text{ mol } AgNO_3) = 0.0103 \text{ mol } Cu$$