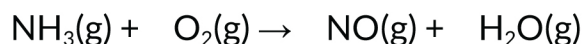


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Chemistry Worksheet : Stoichiometry

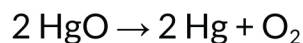
1. Balance the following chemical reaction and then answer the given questions.



a. How many moles of NO are formed if 824 g of NH_3 react?

b. How many grams of water are formed if 2.55 mol of ammonia are oxidized?

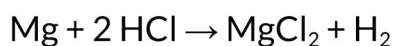
2. Mercury (II) oxide decomposes into mercury and oxygen gas as follows:



a. How many moles of mercury (II) oxide are needed to produce 125 g of oxygen?

b. How many grams of mercury are produced if 2.45 moles of mercury (II) oxide decompose?

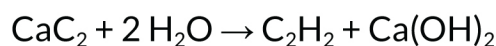
3. Consider the following reaction:



a. How many grams of HCl are consumed by the reaction of 2.5 moles of magnesium?

b. What is the mass in grams of H_2 gas when 4 moles of HCl is added to the reaction?

4. Acetylene (C_2H_2) gas is produced as a result of the following reaction:



a. If 3.2 moles of CaC_2 are consumed in this reaction, how many grams of H_2O are needed?

b. How many grams of $\text{Ca}(\text{OH})_2$ would be formed with 3.2 moles of CaC_2 ?

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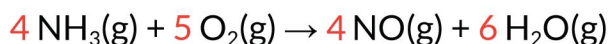
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Chemistry Worksheet :

Stoichiometry

Answers

1. Balance the following chemical reaction and then answer the given questions.



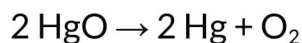
a. How many moles of NO are formed if 824 g of NH₃ react?

$$824 \text{ g NH}_3 \times (1 \text{ mol NH}_3 / 17 \text{ g NH}_3) \times (4 \text{ mol NO} / 4 \text{ mol NH}_3) = 48.5 \text{ mol NO}$$

b. How many grams of water are formed if 2.55 mol of ammonia are oxidized?

$$2.55 \text{ mol NH}_3 \times (6 \text{ mol H}_2\text{O} / 4 \text{ mol NH}_3) \times (18 \text{ g H}_2\text{O} / 1 \text{ mol H}_2\text{O}) = 68.85 \text{ g H}_2\text{O}$$

2. Mercury (II) oxide decomposes into mercury and oxygen gas as follows:



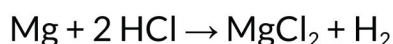
a. How many moles of mercury (II) oxide are needed to produce 125 g of oxygen?

$$125 \text{ g O}_2 \times (1 \text{ mol O}_2 / 32 \text{ g O}_2) \times (2 \text{ mol HgO} / 1 \text{ mol O}_2) = 7.81 \text{ mol HgO}$$

b. How many grams of mercury are produced if 2.45 moles of mercury (II) oxide decompose?

$$2.45 \text{ mol HgO} \times (2 \text{ mol Hg} / 2 \text{ mol HgO}) \times (200.6 \text{ g Hg} / 1 \text{ mol Hg}) = 491 \text{ g Hg}$$

3. Consider the following reaction:



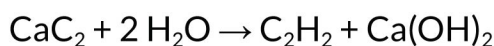
a. How many grams of HCl are consumed by the reaction of 2.5 moles of magnesium?

$$2.5 \text{ mol Mg} \times (2 \text{ mol HCl} / 1 \text{ mol Mg}) \times (36.5 \text{ g HCl} / 1 \text{ mol HCl}) = 180 \text{ g HCl}$$

b. What is the mass in grams of H₂ gas when 4 moles of HCl is added to the reaction?

$$4 \text{ mol HCl} \times (1 \text{ mol H}_2 / 2 \text{ mol HCl}) \times (2 \text{ g H}_2 / 1 \text{ mol H}_2) = 4 \text{ g H}_2$$

4. Acetylene (C₂H₂) gas is produced as a result of the following reaction:



a. If 3.2 moles of CaC₂ are consumed in this reaction, how many grams of H₂O are needed?

$$3.2 \text{ mol CaC}_2 \times (2 \text{ mol H}_2\text{O} / 1 \text{ mol CaC}_2) \times (18 \text{ g H}_2\text{O} / 1 \text{ mol H}_2\text{O}) = 115.2 \text{ g H}_2\text{O}$$

b. How many grams of Ca(OH)₂ would be formed with 3.2 moles of CaC₂?

$$3.2 \text{ mol CaC}_2 \times (1 \text{ mol Ca}(\text{OH})_2 / 1 \text{ mol CaC}_2) \times (74 \text{ g Ca}(\text{OH})_2 / 1 \text{ mol Ca}(\text{OH})_2) = 236.8 \text{ g Ca}(\text{OH})_2$$