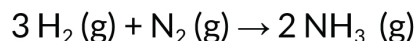


STOICHIOMETRY Worksheet

1. Ammonia is made industrially by reacting nitrogen and hydrogen under high pressure and in the presence of a catalyst. The equation is:



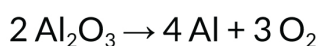
If 4.0 mol of H_2 react, how many moles of NH_3 will be produced?

2. Potassium chlorate is sometimes decomposed in the laboratory to generate oxygen. The reaction is:

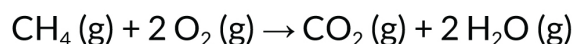


What mass of KClO_3 do you need to produce 0.5 mol of O_2 ?

3. How many moles of aluminum will be produced from 30.0 g of Al_2O_3 in the following reaction?

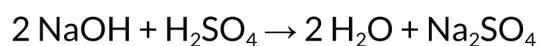


4. Methane burns in air by the following reaction:



What mass of water is produced by burning 500 g of methane?

5. Using the following equation:

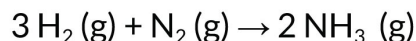


How many grams of sodium sulfate will be formed if you start with 200 grams of sodium hydroxide and excess sulfuric acid?

STOICHIOMETRY Worksheet

Answers

1. Ammonia is made industrially by reacting nitrogen and hydrogen under high pressure and in the presence of a catalyst. The equation is:



If 4.0 mol of H_2 react, how many moles of NH_3 will be produced?

$$4.0 \text{ mol H}_2 \times (2 \text{ mol NH}_3 / 3 \text{ mol H}_2) = 2.67 \text{ mol NH}_3$$

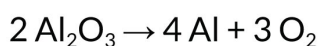
2. Potassium chlorate is sometimes decomposed in the laboratory to generate oxygen. The reaction is:



What mass of KClO_3 do you need to produce 0.5 mol of O_2 ?

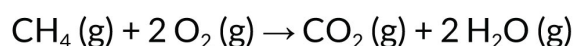
$$0.5 \text{ mol O}_2 \times (2 \text{ mol KClO}_3 / 3 \text{ mol O}_2) \times (122.5 \text{ g KClO}_3 / 1 \text{ mol KClO}_3) = 40.8 \text{ g KClO}_3$$

3. How many moles of aluminum will be produced from 30.0 g of Al_2O_3 in the following reaction?



$$30 \text{ g Al}_2\text{O}_3 \times (1 \text{ mol Al}_2\text{O}_3 / 101.96 \text{ mol Al}_2\text{O}_3) \times (4 \text{ mol Al} / 2 \text{ mol Al}_2\text{O}_3) = 0.588 \text{ mol Al}$$

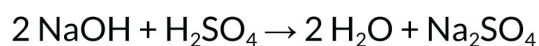
4. Methane burns in air by the following reaction:



What mass of water is produced by burning 500 g of methane?

$$500 \text{ g CH}_4 \times (1 \text{ mol CH}_4 / 16.01 \text{ g CH}_4) \times (2 \text{ mol H}_2\text{O} / 1 \text{ mol CH}_4) \times (18.02 \text{ g H}_2\text{O} / 1 \text{ mol H}_2\text{O}) = 1126 \text{ g H}_2\text{O}$$

5. Using the following equation:



How many grams of sodium sulfate will be formed if you start with 200 grams of sodium hydroxide and excess sulfuric acid?

$$200 \text{ g NaOH} \times (1 \text{ mol NaOH} / 40 \text{ g NaOH}) \times (1 \text{ mol Na}_2\text{SO}_4 / 2 \text{ mol NaOH}) \times (142.04 \text{ g Na}_2\text{SO}_4 / 1 \text{ mol Na}_2\text{SO}_4) = 355 \text{ g Na}_2\text{SO}_4$$