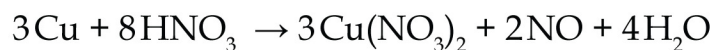


Determining Mole Ratios Worksheet

Answers

Here is a balanced chemical reaction.



With regards to it, answer the following questions.

a) How many moles of HNO_3 are used to produce 1 mole of H_2O ?

8 moles of HNO_3 produce 4 moles of H_2O

Number of moles of HNO_3 needed to produce 1 mole of $\text{H}_2\text{O} = (8/4) \times 1 \text{ moles} = 2 \text{ moles}$

b) How many moles of NO are produced by 1.5 moles of Cu ?

3 moles of Cu produce 2 moles of NO

Number of moles of NO produced by 1.5 moles of $\text{Cu} = (2/3) \times 1.5 \text{ moles} = 1 \text{ mole}$

c) How many moles of $\text{Cu}(\text{NO}_3)_2$ are produced by 4.50 moles of HNO_3 ?

3 moles of $\text{Cu}(\text{NO}_3)_2$ are produced by 8 moles of HNO_3

4.5 moles of HNO_3 produce = $(8/3) \times 4.5 \text{ moles} = 12 \text{ moles}$

d) How many moles of $\text{Cu}(\text{NO}_3)_2$ are produced alongside 0.2 moles of NO ?

3 moles of $\text{Cu}(\text{NO}_3)_2$ are produced alongside 2 moles of NO

Number of moles of $\text{Cu}(\text{NO}_3)_2$ produced alongside 0.2 moles of $\text{NO} = (3/2) \times 0.2 = 0.3 \text{ moles}$

e) How many moles of Cu were needed to produce 9 g of water?

Molar mass of water = 18 g/mol

1 mole of H_2O weighs 18 g

In this reaction, 4 moles, i.e., 72 g of water, are produced by 3 moles of Cu

So 9 g of water are produced by 0.375 moles of Cu