

Name : _____

Date : _____

MOLE CALCULATIONS

PRACTICE WORKSHEET



Answer the following questions.

- 1) How many molecules are in 25 grams of NH_3 ?

- 2) How many grams are in 8.2×10^{22} molecules of N_2I_6 ?

- 3) How many molecules are present in 23 moles of oxygen?

- 4) How much does 0.5 moles of CuBr_2 weigh?

- 5) How many molecules are present in 12.5 grams of NH_3 ?

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Answers

1) How many molecules are in 25 grams of NH_3 ?

Molar mass of $\text{NH}_3 = 17 \text{ g/mol}$

25 g of NH_3 consists of $(25/17) \times 6.023 \times 10^{23} = 8.85 \times 10^{23}$ molecules

2) How many grams are in 8.2×10^{22} molecules of N_2I_6 ?

Molar mass of $\text{N}_2\text{I}_6 = 789.44 \text{ g/mol}$

6.023×10^{23} molecules of N_2I_6 weigh 789.44 grams

8.2×10^{22} molecules of N_2I_6 weigh $789.44 \times [(8.2 \times 10^{22}) / (6.023 \times 10^{23})] = 107.47$ grams

3) How many molecules are present in 23 moles of oxygen?

1 mole of oxygen represents 6.023×10^{23} molecules

23 moles of oxygen represent $23 \times 6.023 \times 10^{23}$ molecules = 138.5×10^{23} molecules ~ 1.385×10^{25} molecules

4) How much does 0.5 moles of CuBr_2 weigh?

Molar mass of $\text{CuBr}_2 = 223.37 \text{ g/mol}$

1 mole of CuBr_2 weighs 223.37 grams

0.5 moles of CuBr_2 weigh = 0.5×223.37 grams = 111.68 grams

5) How many molecules are present in 12.5 grams of NH_3 ?

Molar mass of $\text{NH}_3 = 17 \text{ g/mol}$

1 mole of NH_3 weighs 17 grams

12.5 grams of NH_3 are represented by $(12.5/17) = 0.73$ moles