

Name : Date :

Mole Particle Conversions Worksheet

Answer the following questions.

1. How many molecules are present in 4 moles of glucose? Also, how many carbon, hydrogen, and oxygen atoms are present?
2. How many molecules are present in 0.4 moles of N_2O_5 ? Also, how many nitrogen and oxygen atoms are present?
3. How many molecules are present in 5 moles of Fe_2O_3 ? Also, how many iron and oxygen atoms are present?
4. How many molecules are present in 0.64 moles of CO_2 ? Also, how many carbon and oxygen atoms are present?

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Answers

1. How many molecules are present in 4 moles of glucose? Also, how many carbon, hydrogen, and oxygen atoms are present?

Number of glucose ($C_6H_{12}O_6$) molecules = $4 \times 6.023 \times 10^{23}$ molecules
= 2.4×10^{24} molecules

Number of carbon (C) atoms = $6 \times 2.4 \times 10^{24}$ atoms = 1.4×10^{25} atoms

Number of hydrogen (H) atoms = $12 \times 2.4 \times 10^{24}$ atoms = 2.88×10^{25} atoms

Number of oxygen (O) atoms = $6 \times 2.4 \times 10^{24}$ atoms = 1.4×10^{25} atoms

2. How many molecules are present in 0.4 moles of N_2O_5 ? Also, how many nitrogen and hydrogen atoms are present?

Number of N_2O_5 molecules = $0.4 \times 6.023 \times 10^{23}$ molecules = 2.4×10^{23} molecules

Number of N atoms = $2 \times 2.4 \times 10^{23}$ atoms = 4.8×10^{23} atoms

Number of O atoms = $5 \times 2.4 \times 10^{23}$ atoms = 1.2×10^{24} atoms

3. How many molecules are present in 5 moles of Fe_2O_3 ? Also, how many iron and oxygen atoms are present?

Number of Fe_2O_3 molecules = $5 \times 6.023 \times 10^{23}$ molecules = 3.01×10^{24} molecules

Number of Fe atoms = $2 \times 3.01 \times 10^{24}$ atoms = 6.02×10^{24} atoms

Number of O atoms = $3 \times 3.01 \times 10^{24}$ atoms = 9.03×10^{24} atoms

4. How many molecules are present in 0.64 moles of CO_2 ? Also, how many carbon and oxygen atoms are present?

Number of CO_2 molecules = $0.64 \times 6.023 \times 10^{23}$ molecules = 3.85×10^{23} molecules

Number of C atoms = $1 \times 3.85 \times 10^{23}$ atoms = 3.85×10^{23} atoms

Number of O atoms = $2 \times 3.85 \times 10^{23}$ atoms = 7.7×10^{23} atoms