What Is Stoichiometry?

Worksheet

Stoichiometry uses the coefficients in balanced equations to relate moles of reactants and products. Molar ratios allow conversions: moles A moles B using the ratio of coefficients.

Questions

1. In 2H + O 2HO, the molar ratio is

A) H:HO = 1:2
B) H:HO = 2:2 = 1:1
C) H:O = 2:1
D) All equal

2. If 3 moles of A react via 2A 3B, moles of B formed?

A) 2 mol
B) 3 mol
C) 4.5 mol
D) 6 mol

3. Converting grams to moles requires

A) Balanced equation only
B) Molar mass of the substance
C) Empirical formula
D) Reaction rate

4. The limiting reactant is

A) The excess reactant
B) The one that runs out first
C) The one with the largest coefficient
D) Always O

5. Balanced equation: 2H + O 2HO. If 4 moles of H react, how many moles of HO form?

6. From 2C + O 2CO, if 12 g of C (molar mass 12 g/mol) reacts, how many moles of CO form?

7. From 4Fe + 3O 2FeO, if 2 moles of FeO form, how many moles of O were used?

8. Define: What is stoichiometry?

9. Define: What do coefficients represent in a balanced equation?

10. Define: How do you convert moles of A to moles of B?

Answer Key

1. B) H:HO = 2:2 = 1:1 - From the balanced equation: 2 mol H produces 2 mol HO, so the ratio is 1:1.

2. C) 4.5 mol - 3 mol A (3 mol B / 2 mol A) = 4.5 mol B

3. B) Molar mass of the substance - Molar mass (g/mol) is used to convert between grams and moles.

4. B) The one that runs out first - The limiting reactant determines how much product can form because it is consumed first.

5. Molar ratio from equation: 2 mol H : 2 mol HO = 1:1 Moles HO = 4 mol H (2 mol HO / 2 mol H) = 4 mol HO

6. Moles C = 12 g 12 g/mol = 1 mol C Molar ratio: 2 mol C : 2 mol CO = 1:1 Moles CO = 1 mol C (2 mol CO / 2 mol C) = 1 mol CO

7. Molar ratio: 3 mol O : 2 mol FeO Moles O = 2 mol FeO (3 mol O / 2 mol FeO) = 3 mol O

8. The quantitative relationship between reactants and products based on coefficients in a balanced equation.

9. The molar ratio of reactants to products.

10. Multiply moles of A by the ratio of coefficients: (coeff_B / coeff_A).