EngineeringRise

Chemical equations and stoichiometry

Formulas and units, JEE Main. Status: Reviewed on 2026-11-20.

Result	Formula	Units or note
Mole ratio	n(B) = n(A) x (coefficient of B / coefficient of A) Valid when: balanced equation; reaction goes to completion for the reagent used	mol
Extent of reaction	extent = n(reactant) / coefficient, smallest value is the limiting reagent Valid when: balanced equation; all reactants considered together	mol
Product amount	n(product) = coefficient x extent Valid when: balanced equation; reaction goes to completion by the extent	mol
Mass of product	m = n x M	g
Percentage yield	actual / theoretical x 100 Valid when: actual and theoretical both in the same unit	percent
Reactant needed with yield	theoretical = actual / (yield / 100) Valid when: yield given as percent of theoretical; asked for the reactant needed	g or mol
Gas volume at STP	V = n x V_m (V_m as given in the stem, for example 22.4 L/mol) Valid when: gas at STP; use the molar volume given in the stem	L
Excess reagent left	n(left) = n(initial) - coefficient x extent Valid when: balanced equation; reaction has gone to completion	mol

Full lesson with worked examples:
https://www.engineeringrise.in/learn/learn/jee-main/chemistry/some-basic-concepts-of-chemistry/chemical-equations-and-stoichiom

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