EngineeringRise

Dimensional analysis and its applications

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

Result	Formula	Units or note
Velocity, acceleration	[L T^-1], [L T^-2]	m/s (m/s^2)
Force, momentum	[M L T^-2], [M L T^-1]	N (kg m/s)
Work, energy, torque	[M L^2 T^-2]	J (N m)
Power	[M L^2 T^-3]	W
Pressure, stress, modulus	[M L^-1 T^-2]	Pa
Surface tension, spring constant	[M T^-2]	N/m
Viscosity, Planck constant, G	[M L^-1 T^-1], [M L^2 T^-1], [M^-1 L^3 T^-2]	Pa s (J s, N m^2/kg^2)
Homogeneity	every term in an equation has equal dimensions	n/a (rule)
Unit conversion	n2 = n1 (M1/M2)^a (L1/L2)^b (T1/T2)^c Valid when: converting one quantity of dimensions M^a L^b T^c between two unit systems	pure number

Full lesson with worked examples:
https://www.engineeringrise.in/learn/learn/jee-main/physics/units-and-measurements/dimensional-analysis-and-its-applications

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