EngineeringRise

Units, SI system, significant figures and errors

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

Result	Formula	Units or note
SI base units	m, kg, s, A, K, mol, cd	length, mass, time, current, temperature, amount, luminous intensity
Vernier least count	LC = 1 MSD - 1 VSD = MSD/N Valid when: vernier scale where N vernier divisions equal N-1 main-scale divisions	mm or cm
Screw gauge least count	LC = pitch/number of circular divisions Valid when: screw gauge; pitch in mm, divisions on the circular scale	mm
Corrected reading	MSR + n x LC - zero error (signed) Valid when: zero error taken with sign: positive if gauge reads above zero when closed	mm
Sum or difference	dZ = dA + dB Valid when: Z = A + B or A - B; maximum-error method, absolute errors add	same unit as Z
Product or quotient	dZ/Z = dA/A + dB/B Valid when: Z = A x B or A/B; maximum-error method, fractional errors add	dimensionless
Power law	Z = A^p B^q / C^r: dZ/Z = p dA/A + q dB/B + r dC/C Valid when: Z is a product of powers; maximum-error method, small errors, exponents taken as positive	dimensionless
Mean absolute error and percentage error	mean of |x_i - mean|; 100 x that/mean Valid when: repeated readings of the same quantity	unit of x; percent
Significant figures: sum and product	sum: fewest decimal places; product: fewest significant figures	n/a (rule)

Full lesson with worked examples:
https://www.engineeringrise.in/learn/learn/jee-main/physics/units-and-measurements/units-si-system-significant-figures-and-errors

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