

Eq. ID	Formula	Symbols	SI Derived Unit		SI Unit		Properties		Distributions	
			Unit	Unit	Original	Ours	Original	Ours		
I.8.14	$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$	$d$	Distance	$m$	$m$	V, F, P	V, F, NN	N/A	N/A	
		$x_2$	Position	$m$	$m$	V, F, P	V, F	$U(1, 5)$	$U_{\log}(10^{-1}, 10^1)$	
		$x_1$	Position	$m$	$m$	V, F, P	V, F	$U(1, 5)$	$U_{\log}(10^{-1}, 10^1)$	
		$y_2$	Position	$m$	$m$	V, F, P	V, F	$U(1, 5)$	$U_{\log}(10^{-1}, 10^1)$	
		$y_1$	Position	$m$	$m$	V, F, P	V, F	$U(1, 5)$	$U_{\log}(10^{-1}, 10^1)$	
I.10.7	$m = \frac{m_0}{\sqrt{1 - \frac{v^2}{c^2}}}$	$m$	Mass	$kg$	$kg$	V, F, P	V, F, P	N/A	N/A	
		$m_0$	Invariant mass	$kg$	$kg$	V, F, P	V, F, P	$U(1, 5)$	$U_{\log}(10^{-1}, 10^1)$	
		$v$	Velocity	$m/s$	$m \cdot s^{-1}$	V, F, P	V, F, P	$U(1, 2)$	$U_{\log}(10^5, 10^8)$	
		$c$	Speed of light	$m/s$	$m \cdot s^{-1}$	V, F, P	C, F, P	$U(3, 10)$	$2.998 \times 10^8$	
		$A$	Inner product	1	1	V, F, P	V, F	N/A	N/A	
I.11.19	$A = x_1y_1 + x_2y_2 + x_3y_3$	$x_1$	Element of a vector	1	1	V, F, P	V, F	$U(1, 5)$	$U_{\log}(10^{-1}, 10^1)$	
		$y_1$	Element of a vector	1	1	V, F, P	V, F	$U(1, 5)$	$U_{\log}(10^{-1}, 10^1)$	
		$x_2$	Element of a vector	1	1	V, F, P	V, F	$U(1, 5)$	$U_{\log}(10^{-1}, 10^1)$	
		$y_2$	Element of a vector	1	1	V, F, P	V, F	$U(1, 5)$	$U_{\log}(10^{-1}, 10^1)$	
		$x_3$	Element of a vector	1	1	V, F, P	V, F	$U(1, 5)$	$U_{\log}(10^{-1}, 10^1)$	
		$y_3$	Element of a vector	1	1	V, F, P	V, F	$U(1, 5)$	$U_{\log}(10^{-1}, 10^1)$	
		$F$	Electrostatic force	$N$	$kg \cdot m \cdot s^{-2}$	V, F, P	V, F	N/A	N/A	
I.12.2	$F = \frac{q_1q_2}{4\pi\epsilon r^2}$	$q_1$	Electric charge	$C$	$s \cdot A$	V, F, P	V, F	$U(1, 5)$	$U_{\log}(10^{-1}, 10^1)$	
		$q_2$	Electric charge	$C$	$s \cdot A$	V, F, P	V, F	$U(1, 5)$	$U_{\log}(10^{-1}, 10^1)$	
		$r$	Distance	$m$	$m$	V, F, P	V, F, P	$U(1, 5)$	$U_{\log}(10^{-1}, 10^1)$	
		$\epsilon$	Vacuum permittivity	$F/m$	$kg^{-1} \cdot m^{-3} \cdot s^4 \cdot A^2$	V, F, P	C, F, P	$U(1, 5)$	$8.854 \times 10^{-12}$	
		$F$	Force	$N$	$kg \cdot m \cdot s^{-2}$	V, F, P	V, F	N/A	N/A	
I.12.11	$F = q(E + Bv \sin(\theta))$	$q$	Electric charge	$C$	$s \cdot A$	V, F, P	V, F	$U(1, 5)$	$U_{\log}(10^{-1}, 10^1)$	
		$E$	Electric field	$V/m$	$kg \cdot m \cdot s^{-3} \cdot A^{-1}$	V, F, P	V, F, P	$U(1, 5)$	$U_{\log}(10^{-1}, 10^1)$	
		$B$	Magnetic field strength	$T$	$kg \cdot s^{-2} \cdot A^{-1}$	V, F, P	V, F, P	$U(1, 5)$	$U_{\log}(10^{-1}, 10^1)$	
		$v$	Velocity	$m/s$	$m \cdot s^{-1}$	V, F, P	V, F, P	$U(1, 5)$	$U_{\log}(10^{-1}, 10^1)$	
		$\theta$	Angle	$rad$	1	V, F, P	V, F, NN	$U(1, 5)$	$U(0, \frac{\pi}{2})$	
		$K$	Kinetic energy	$J$	$kg \cdot m^2 \cdot s^{-2}$	V, F, P	V, F, P	N/A	N/A	
		$m$	Mass	$kg$	$kg$	V, F, P	V, F, P	$U(1, 5)$	$U_{\log}(10^{-1}, 10^1)$	
I.13.4	$K = \frac{1}{2}m(v^2 + u^2 + w^2)$	$v$	Element of velocity	$m/s$	$m \cdot s^{-1}$	V, F, P	V, F	$U(1, 5)$	$U_{\log}(10^{-1}, 10^1)$	
		$u$	Element of velocity	$m/s$	$m \cdot s^{-1}$	V, F, P	V, F	$U(1, 5)$	$U_{\log}(10^{-1}, 10^1)$	
		$w$	Element of velocity	$m/s$	$m \cdot s^{-1}$	V, F, P	V, F	$U(1, 5)$	$U_{\log}(10^{-1}, 10^1)$	
		$u$	Element of velocity	$m/s$	$m \cdot s^{-1}$	V, F, P	V, F	$U(1, 5)$	$U_{\log}(10^{-1}, 10^1)$	
		$U$	Potential energy	$J$	$kg \cdot m^2 \cdot s^{-2}$	V, F, P	V, F	N/A	N/A	
I.13.12	$U = Gm_1m_2 \left( \frac{1}{r_2} - \frac{1}{r_1} \right)$	$G$	Gravitational constant	$m^3 \cdot kg^{-1} \cdot s^{-2}$	$kg^{-1} \cdot m^3 \cdot s^{-2}$	V, F, P	C, F, P	$U(1, 5)$	$6.674 \times 10^{-11}$	
		$m_1$	Mass (The Earth)	$kg$	$kg$	V, F, P	V, F, P	$U(1, 5)$	$U_{\log}(10^{-2}, 10^0)$	
		$m_2$	Mass	$kg$	$kg$	V, F, P	V, F, P	$U(1, 5)$	$U_{\log}(10^{-2}, 10^0)$	
		$r_2$	Distance	$m$	$m$	V, F, P	V, F, P	$U(1, 5)$	$U_{\log}(10^{-2}, 10^0)$	
		$r_1$	Distance	$m$	$m$	V, F, P	V, F, P	$U(1, 5)$	$U_{\log}(10^{-2}, 10^0)$	
I.15.10	$p = \frac{m_0v}{\sqrt{1 - v^2/c^2}}$	$p$	Relativistic momentum	$kg \cdot m/s$	$kg \cdot m \cdot s^{-1}$	V, F, P	V, F, P	N/A	N/A	
		$m_0$	Rest Mass	$kg$	$kg$	V, F, P	V, F, P	$U(1, 5)$	$U_{\log}(10^{-2}, 10^0)$	
		$v$	Velocity	$m/s$	$m \cdot s^{-1}$	V, F, P	V, F	$U(1, 2)$	$U_{\log}(10^5, 10^7)$	
		$c$	Speed of light	$m/s$	$m \cdot s^{-1}$	V, F, P	C, F, P	$U(3, 10)$	$2.998 \times 10^8$	
		$v_1$	Velocity	$m/s$	$m \cdot s^{-1}$	V, F, P	V, F	N/A	N/A	
I.16.6	$v_1 = \frac{u+v}{1 + uv/c^2}$	$u$	Velocity	$m/s$	$m \cdot s^{-1}$	V, F, P	V, F	$U(1, 5)$	$U_{\log}(10^5, 10^8)$	
		$v$	Velocity	$m/s$	$m \cdot s^{-1}$	V, F, P	V, F	$U(1, 5)$	$U_{\log}(10^5, 10^8)$	
		$c$	Speed of light	$m/s$	$m \cdot s^{-1}$	V, F, P	C, F, P	$U(1, 5)$	$2.998 \times 10^8$	
		$r$	Center of gravity	$m$	$m$	V, F, P	V, F	N/A	N/A	
		$m_1$	Mass	$kg$	$kg$	V, F, P	V, F, P	$U(1, 5)$	$U_{\log}(10^{-1}, 10^1)$	
I.18.4	$r = \frac{m_1r_1 + m_2r_2}{m_1 + m_2}$	$r_1$	Position	$m$	$m$	V, F, P	V, F	$U(1, 5)$	$U_{\log}(10^{-1}, 10^1)$	
		$m_2$	Mass	$kg$	$kg$	V, F, P	V, F, P	$U(1, 5)$	$U_{\log}(10^{-1}, 10^1)$	
		$r_2$	Position	$m$	$m$	V, F, P	V, F	$U(1, 5)$	$U_{\log}(10^{-1}, 10^1)$	
		$E$	Energy	$J$	$kg \cdot m^2 \cdot s^{-2}$	V, F, P	V, F, P	N/A	N/A	
		$m$	Mass	$kg$	$kg$	V, F, P	V, F, P	$U(1, 3)$	$U_{\log}(10^{-1}, 10^1)$	
I.24.6	$E = \frac{1}{4}m(\omega^2 + \omega_0^2)x^2$	$\omega$	Angular velocity	$rad/s$	$s^{-1}$	V, F, P	V, F	$U(1, 3)$	$U_{\log}(10^{-1}, 10^1)$	
		$\omega_0$	Angular velocity	$rad/s$	$s^{-1}$	V, F, P	V, F	$U(1, 3)$	$U_{\log}(10^{-1}, 10^1)$	
		$x$	Position	$m$	$m$	V, F, P	V, F	$U(1, 3)$	$U_{\log}(10^{-1}, 10^1)$	
		$k$	Wavenumber	$1/m$	$m^{-1}$	V, F, P	V, F, P	N/A	N/A	
		$\omega$	Frequency of electromagnetic waves	$rad/s$	$s^{-1}$	V, F, P	V, F, P	$U(1, 10)$	$U_{\log}(10^9, 10^{11})$	
I.29.4	$k = \frac{\omega}{c}$	$c$	Speed of light	$m/s$	$m \cdot s^{-1}$	V, F, P	C, F, P	$U(1, 10)$	$2.998 \times 10^8$	
		$P$	Radiant energy	$W$	$kg \cdot m^2 \cdot s^{-3}$	V, F, P	V, F, P	N/A	N/A	
		$q$	Electric charge	$C$	$s \cdot A$	V, F, P	V, F	$U(1, 5)$	$U_{\log}(10^{-3}, 10^{-1})$	
		$a$	Magnitude of direction vector	$m/s^2$	$m \cdot s^{-2}$	V, F, P	V, F, P	$U(1, 5)$	$U_{\log}(10^5, 10^7)$	
		$\epsilon$	Vacuum permittivity	$F/m$	$kg^{-1} \cdot m^{-3} \cdot s^4 \cdot A^2$	V, F, P	C, F, P	$U(1, 5)$	$8.854 \times 10^{-12}$	
I.34.8	$\omega = \frac{qvB}{p}$	$c$	Speed of light	$m/s$	$m \cdot s^{-1}$	V, F, P	C, F, P	$U(1, 5)$	$2.998 \times 10^8$	
		$q$	Angular velocity	$rad/s$	$s^{-1}$	V, F, P	V, F	N/A	N/A	
		$\omega$	Electric charge	$C$	$s \cdot A$	V, F, P	V, F	$U(1, 5)$	$U_{\log}(10^{-11}, 10^{-9})$	
		$v$	Velocity	$m/s$	$m \cdot s^{-1}$	V, F, P	V, F	$U(1, 5)$	$U_{\log}(10^5, 10^7)$	
		$B$	Magnetic field	$T$	$kg \cdot s^{-2} \cdot A^{-1}$	V, F, P	V, F	$U(1, 5)$	$U_{\log}(10^1, 10^3)$	
I.34.10	$\omega = \frac{\omega_0}{1 - v/c}$	$p$	Angular momentum	$J \cdot s$	$kg \cdot m^2 \cdot s^{-1}$	V, F, P	V, F	$U(1, 5)$	$U_{\log}(10^9, 10^{11})$	
		$\omega$	Frequency of electromagnetic waves	$rad/s$	$s^{-1}$	V, F, P	V, F, P	N/A	N/A	
		$\omega_0$	Frequency of electromagnetic waves	$rad/s$	$s^{-1}$	V, F, P	V, F, P	$U(1, 5)$	$U_{\log}(10^9, 10^{11})$	
		$v$	Velocity	$m/s$	$m \cdot s^{-1}$	V, F, P	V, F	$U(1, 2)$	$U_{\log}(10^5, 10^7)$	
		$c$	Speed of light	$m/s$	$m \cdot s^{-1}$	V, F, P	C, F, P	$U(3, 10)$	$2.998 \times 10^8$	
I.34.27	$W = \frac{h}{2\pi}\omega$	$W$	Energy	$J$	$kg \cdot m^2 \cdot s^{-2}$	V, F, P	V, F, P	N/A	N/A	
		$h$	Planck constant	$J \cdot s$	$kg \cdot m^2 \cdot s^{-1}$	V, F, P	C, F, P	$U(1, 5)$	$6.626 \times 10^{-34}$	
		$\omega$	Frequency of electromagnetic waves	$1/s$	$s^{-1}$	V, F, P	V, F, P	$U(1, 5)$	$U_{\log}(10^9, 10^{11})$	
		$r$	Bohr radius	$m$	$m$	V, F, P	V, F, P	N/A	N/A	
		$\epsilon$	Vacuum permittivity	$F/m$	$kg^{-1} \cdot m^{-3} \cdot s^4 \cdot A^2$	V, F, P	C, F, P	$U(1, 5)$	$8.854 \times 10^{-12}$	
I.38.12	$r = 4\pi\epsilon \frac{(h/(2\pi))^2}{mq^2}$	$h$	Planck constant	$J \cdot s$	$kg \cdot m^2 \cdot s^{-1}$	V, F, P	C, F, P	$U(1, 5)$	$6.626 \times 10^{-34}$	
		$m$	Mass	$kg$	$kg$	V, F, P	V, F, P	$U(1, 5)$	$U_{\log}(10^{-28}, 10^{-26})$	
		$q$	Electric charge	$C$	$s \cdot A$	V, F, P	V, F, P	$U(1, 5)$	$U_{\log}(10^{-11}, 10^{-9})$	
		$U$	Internal energy	$J$	$kg \cdot m^2 \cdot s^{-2}$	V, F, P	V, F, P	N/A	N/A	
		$P$	Pressure	$Pa$	$kg \cdot m^{-1} \cdot s^{-2}$	V, F, P	V, F, P	$U(1, 5)$	$U_{\log}(10^4, 10^6)$	
I.39.10	$U = \frac{3}{2}PV$	$V$	Volume	$m^3$	$m^3$	V, F, P	V, F, P	$U(1, 5)$	$U_{\log}(10^{-5}, 10^{-3})$	
		$U$	Energy	$J$	$kg \cdot m^2 \cdot s^{-2}$	V, F, P	V, F, P	N/A	N/A	
		$\gamma$	Heat capacity ratio	1	1	V, F, P	V, F, P	$U(2, 5)$	$U(1, 2)$	
		$P$	Pressure	$Pa$	$kg \cdot m^{-1} \cdot s^{-2}$	V, F, P	V, F, P	$U(1, 5)$	$U_{\log}(10^4, 10^6)$	
		$V$	Volume	$m^3$	$m^3$	V, F, P	V, F, P	$U(1, 5)$	$U_{\log}(10^{-5}, 10^{-3})$	
I.43.31	$D = \mu kT$	$D$	Diffusion coefficient	$m^2/s$	$m^2 \cdot s^{-1}$	V, F, P	V, F, P	N/A	N/A	
		$\mu$	Viscosity	$Pa \cdot s$	$kg \cdot m^{-1} \cdot s^{-1}$	V, F, P	V, F, P	$U(1, 5)$	$U_{\log}(10^{13}, 10^{15})$	
		$k$	Boltzmann constant	$J/K$	$kg \cdot m^2 \cdot s^{-2} \cdot K^{-1}$	V, F, P	C, F, P	$U(1, 5)$	$1.381 \times 10^{-23}$	
		$T$	Temperature	$K$	$K$	V, F, P	V, F, P	$U(1, 5)$	$U_{\log}(10^1, 10^3)$	
		$\kappa$	Thermal conductivity	$W/(m \cdot K)$	$kg \cdot m \cdot s^{-3} \cdot K^{-1}$	V, F, P	V, F, P	N/A	N/A	
I.43.43	$\kappa = \frac{1}{\gamma - 1} \frac{kv}{\sigma_c}$	$\gamma$	Heat capacity ratio	1	1	V, F, P	V, F, P	$U(2, 5)$	$U(1, 2)$	
		$k$	Boltzmann constant	$J/K$	$kg \cdot m^2 \cdot s^{-2} \cdot K^{-1}$	V, F, P	C, F, P	$U(1, 5)$	$1.381 \times 10^{-23}$	
		$v$	Velocity	$m/s$	$m \cdot s^{-1}$	V, F, P	V, F, P	$U(1, 5)$	$U_{\log}(10^2, 10^4)$	
		$\sigma_c$	Molecular collision cross section	$m^2$	$m^2$	V, F, P	V, F, P	$U(1, 5)$	$U_{\log}(10^{-21}, 10^{-19})$	
		$E$	Energy	$J$	$kg \cdot m^2 \cdot s^{-2}$	V, F, P	V, F, P	N/A	N/A	
I.48.2	$E = \frac{mc^2}{\sqrt{1 - v^2/c^2}}$	$m$	Mass	$kg$	$kg$	V, F, P	V, F, P	$U(1, 5)$	$U_{\log}(10^{-29}, 10^{-27})$	
		$c$	Speed of light	$m/s$	$m \cdot s^{-1}$	V, F, P	C, F, P	$U(3, 10)$	$2.998 \times 10^8$	
		$v$	Velocity	$m/s$	$m \cdot s^{-1}$	V, F, P	V, F, P	$U(1, 2)$	$U_{\log}(10^5, 10^8)$	
		$\phi$	Electric potential	$V$	$kg \cdot m^2 \cdot s^{-3} \cdot A^{-1}$	V, F, P	V, F	N/A	N/A	
		$\epsilon$	Vacuum permittivity	$F/m$	$kg^{-1} \cdot m^{-3} \cdot s^4 \cdot A^2$	V, F, P	C, F, P	$U(1, 3)$	$8.854 \times 10^{-12}$	
II.6.11	$\phi = \frac{1}{4\pi\epsilon} \frac{p \cos \theta}{r^2}$	$p$	Electric dipole moment	$C \cdot m$	$m \cdot s \cdot A$	V, F, P	V, F	$U(1, 3)$	$U_{\log}(10^{-22},$	