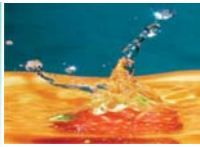
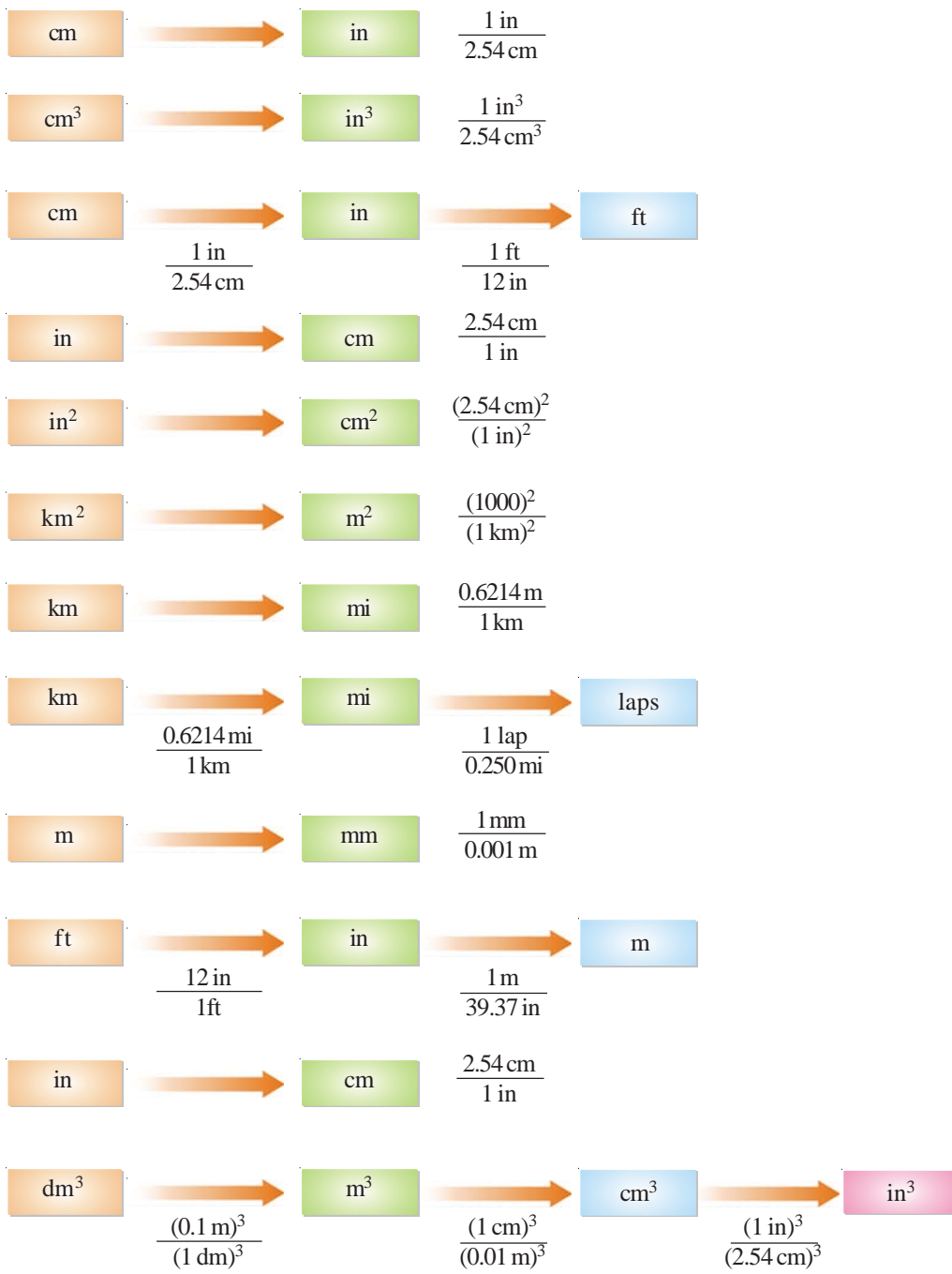


Physical Constants

Quantity	Symbol	Traditional units	SI units
Atomic mass unit ($\frac{1}{12}$ th mass of ^{12}C atom)	amu	1.6606×10^{-24} g	1.6606×10^{-27} kg
Avogadro's number	N	6.022×10^{23}	6.022×10^{23} particles/mol
Bohr radius	a_0	0.52918 Å	5.2918×10^{-13} m
Boltzmann constant	k	1.3807×10^{-16} erg/K	1.3807×10^{-23} J/K
Charge-to-mass ratio of electron	e/m	1.7588×10^8 Coulomb/g	1.7588×10^{11} C/kg
Electron rest mass	m_e	9.1095×10^{-28} g	9.1095×10^{-31} kg 0.00054859 amu
Faraday constant	F	96,487 coulombs/mole $^{-1}$	96,487 J/V mol $^{-1}$
Gas constant	R	$0.08206 \frac{\text{L atm}}{\text{mol K}}$	$8.3145 \frac{\text{Pa dm}^3}{\text{mol K}}$
Gravitational acceleration	g	980.6 cm/s 2	9.906 m/s 2
Molar volume (STP)	V_m	22.414 L/mol	22.414×10^{-3} m 3 /mol
Neutron rest mass	m_n	1.67495×10^{-24} g	1.67495×10^{-27} kg 1.008665 amu
Planck's constant	h	6.6262×10^{-27} erg sec	6.6262×10^{-27} J sec
Proton rest mass	m_p	1.6726×10^{-27} erg sec	1.6726×10^{-27} kg 1.007277 amu
Velocity of light (in vacuum)	c	2.9979×10^{10} cm/s 186,281 miles/s	2.9979×10^8 m/s
Rydberg constant	R_z	3.289×10^5 cycles/s 2.1799×10^{-11} erg	1.0974×10^7 m $^{-1}$ 2.1799×10^{-18} J

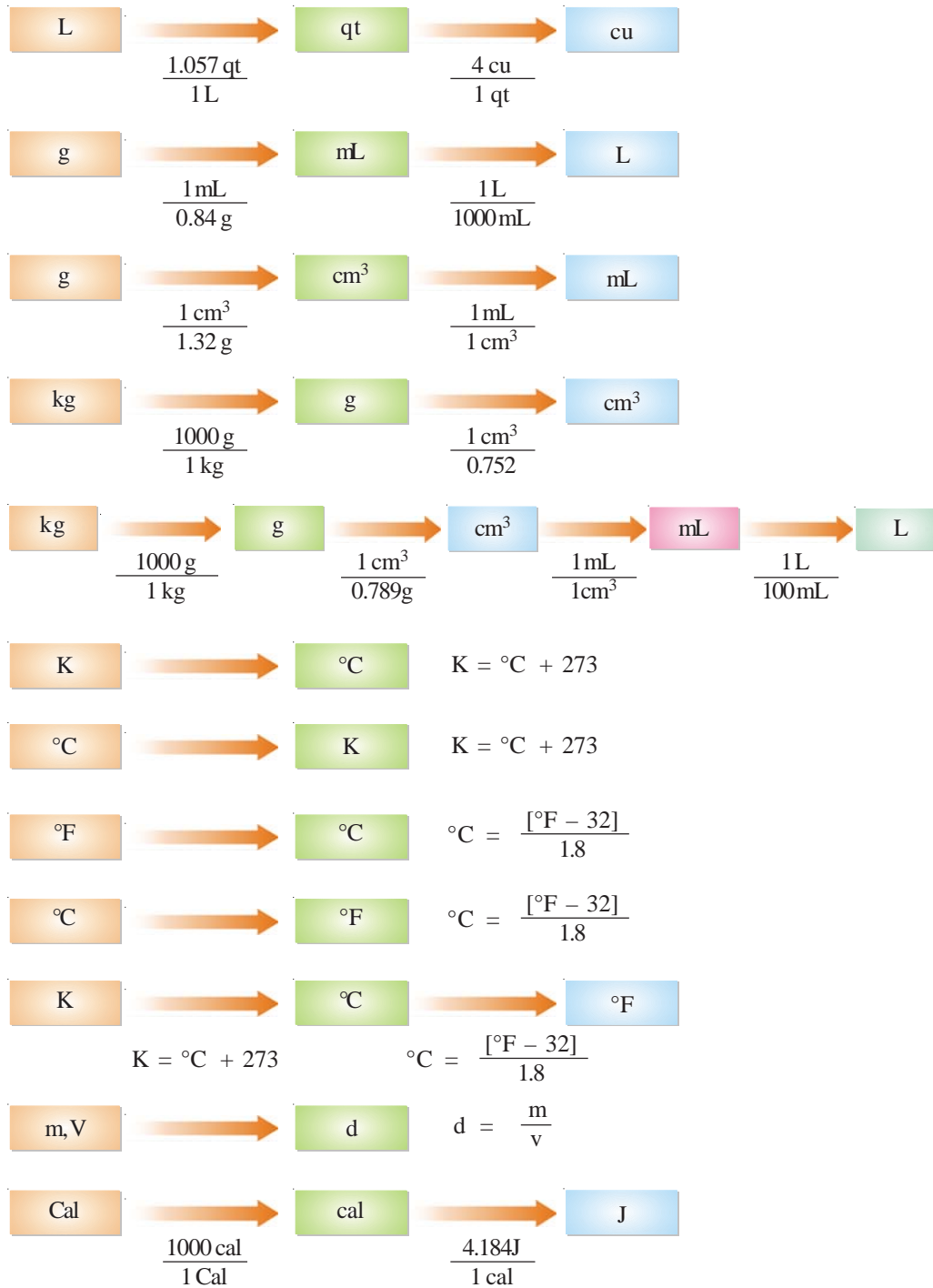


Conversion Factors





Appendix B





Dissociation constants of acids at 25°C

Name	Formula	K _{a1}	K _{a2}	K _{a3}
Acetic acid	CH ₃ COOH	1.8 × 10 ⁻⁵		
Arsenic acid	H ₃ AsO ₄	5.6 × 10 ⁻³	1.0 × 10 ⁻⁷	3.0 × 10 ⁻¹²
Arsenious acid	H ₃ AsO ₃	6.0 × 10 ⁻¹⁰		
Benzoic acid	C ₆ H ₅ COOH	6.5 × 10 ⁻⁵		
Boric acid	H ₃ BO ₃	5.8 × 10 ⁻¹⁰		
Carbonic acid	H ₂ CO ₃	4.3 × 10 ⁻⁷	5.6 × 10 ⁻¹¹	
Chloroacetic acid	ClCH ₂ COOH	1.4 × 10 ⁻³		
Formic acid	HCOOH	1.8 × 10 ⁻⁴		
Hydrocyanic acid	HCN	4.9 × 10 ⁻¹⁰		
Hydrofluoric acid	HF	6.8 × 10 ⁻⁴		
Hydrogen peroxide	H ₂ O ₂	2.4 × 10 ⁻¹²		
Hydrogen sulphate ion	HSO ₄ ⁻	1.2 × 10 ⁻²		
Hydrogen sulphide	H ₂ S	5.7 × 10 ⁻⁸		
Hypobromous acid	HBrO	2.0 × 10 ⁻⁹		
Hypochlorous acid	HClO	3.0 × 10 ⁻⁸		
Hypoiodous acid	HIO	2.0 × 10 ⁻¹¹		
Lactic acid	CH ₃ (OH)COOH	1.4 × 10 ⁻⁴		
Malonic acid	CH ₃ (OH)COOH	1.4 × 10 ⁻⁴		
Malonic acid	CH ₂ (COOH) ₂	1.5 × 10 ⁻³	2.0 × 10 ⁻⁶	
Nitrous acid	HNO ₂	4.5 × 10 ⁻⁴		
Oxalic acid	(COOH) ₂	5.9 × 10 ⁻²	6.4 × 10 ⁻⁵	
Phenol	C ₆ H ₅ OH	1.3 × 10 ⁻¹⁰		
Phosphoric acid	H ₃ PO ₄	7.5 × 10 ⁻³	6.2 × 10 ⁻⁸	4.2 × 10 ⁻¹³
Propionic acid	CH ₃ CH ₂ COOH	1.3 × 10 ⁻⁵		
Sulphuric acid	H ₂ SO ₄	strong acid	1.2 × 10 ⁻²	
Sulphurous acid	H ₂ SO ₃	1.7 × 10 ⁻²	6.4 × 10 ⁻⁸	
Tartaric acid	(CHOHCOOH) ₂	1.0 × 10 ⁻³	4.6 × 10 ⁻⁵	