TABLE F.1 Formulas for Unit Conversions*

Name, Symbol, Dimensions			Conversion Formula
Length	L	L	**1 m** = 3.281 ft = 1.094 yd = 39.37 in = km/1000 = 10^6 μm **1 ft** = 0.3048 m = 12 in = mile/5280 = km/3281 **1 mm** = m/1000 = in/25.4 = 39.37 mil = 1000 μm = 10^7 Å
Speed	V	L/T	**1 m/s** = 3.600 km/hr = 3.281 ft/s = 2.237 mph = 1.944 knots **1 ft/s** = 0.3048 m/s = 0.6818 mph = 1.097 km/hr = 0.5925 knots
Mass	m	M	**1 kg** = 2.205 lbm = 1000 g = slug/14.59 = (metric ton or tonne or Mg)/1000 **1 lbm** = lbf · s²/(32.17 ft) = kg/2.205 = slug/32.17 = 453.6 g = 16 oz = 7000 grains = short ton/2000 = metric ton (tonne)/2205
Density	ρ	M/L^3	**1000 kg/m³** = 62.43 lbm/ft³ = 1.940 slug/ft³ = 8.345 lbm/gal (US)
Force	F	ML/T^2	**1 lbf** = 4.448 N = 32.17 lbm · ft/s² **1 N** = kg · m/s² = 0.2248 lbf = 10^5 dyne
Pressure, Shear Stress	p, τ	M/LT^2	**1 Pa** = N/m² = kg/m · s² = 10^{-5} bar = 1.450 × 10^{-4} lbf/in² = inch H_2O/249.1 = 0.007501 torr = 10.00 dyne/cm² **1 atm** = 101.3 kPa = 2116 psf = 1.013 bar = 14.70 lbf/in² = 33.90 ft of water = 29.92 in of mercury = 10.33 m of water = 760 mm of mercury = 760 torr **1 psi** = atm/14.70 = 6.895 kPa = 27.68 in H_2O = 51.71 torr
Volume	~~V~~	L^3	**1 m³** = 35.31 ft³ = 1000 L = 264.2 U.S. gal **1 ft³** = 0.02832 m³ = 28.32 L = 7.481 U.S. gal = acre-ft/43,560 **1 U.S. gal** = 231 in³ = barrel (petroleum)/42 = 4 U.S. quarts = 8 U.S. pints = 3.785 L = 0.003785 m³
Volume Flow Rate (Discharge)	Q	L^3/T	**1 m³/s** = 35.31 ft³/s = 2119 cfm = 264.2 gal (US)/s = 15850 gal (US)/m **1 cfs** = 1 ft³/s = 28.32 L/s = 7.481 gal (US)/s = 448.8 gal (US)/m
Mass Flow Rate	$\dot{m}$	M/T	**1 kg/s** = 2.205 lbm/s = 0.06852 slug/s
Energy and Work	E, W	ML^2/T^2	**1 J** = kg · m²/s² = N · m = W · s = volt · coulomb = 0.7376 ft · lbf = 9.478 × 10^{-4} Btu = 0.2388 cal = 0.0002388 Cal = 10^7 erg = kWh/3.600 × 10^6
Power	P, $\dot{E}$, $\dot{W}$	ML^2/T^3	**1 W** = J/s = N · m/s = kg · m²/s³ = 1.341 × 10^{-3} hp = 0.7376 ft · lbf/s = 1.0 volt-ampere = 0.2388 cal/s = 9.478 × 10^{-4} Btu/s **1 hp** = 0.7457 kW = 550 ft · lbf/s = 33,000 ft · lbf/min = 2544 Btu/h
Angular Speed	ω	T^{-1}	**1.0 rad/s** = 9.549 rpm = 0.1591 rev/s
Viscosity	μ	M/LT	**1 Pa · s** = kg/m · s = N · s/m² = 10 poise = 0.02089 lbf · s/ft² = 0.6720 lbm/ft · s
Kinematic Viscosity	ν	L^2/T	**1 m²/s** = 10.76 ft²/s = 10^6 cSt
Temperature	T	Θ	**K** = °C + 273.15 = °R/1.8 **°C** = (°F − 32)/1.8 **°R** = °F + 459.67 = 1.8 K **°F** = 1.8°C + 32

*A useful online reference is www.onlineconversion.com