

# Appendix 4: Units, Conversions, and Constants

**Table A4.1** Factors for Conversion from Imperial to SI Units

Parameter	Symbol	Imperial Unit	Equivalent SI Unit
Mass	$m$	1 slug	14.594 kg
Length	$l$	1 ft	0.3048 m
Velocity	$V$	1 ft/s	0.3048 m/s
Acceleration	$a$	1 ft/s <sup>2</sup>	0.3048 m/s <sup>2</sup>
Force	$F$	1 Lb	4.448 N
Moment	$M$	1 Lbft	1.356 Nm
Density	$\rho$	1 slug/ft <sup>3</sup>	515.383 kg/m <sup>3</sup>
Inertia	$I$	1 slugft <sup>2</sup>	1.3558 kgm <sup>2</sup>

**Table A4.2** Useful Constants

Constant	Symbol	Imperial Unit	SI Unit
1 knot	kt	1.689 ft/s	0.515 m/s
Sea level air density	$\rho_0$	0.00238 slug/ft <sup>3</sup>	1.225 kg/m <sup>3</sup>
Speed of sound at sea level	$a_0$	1116.44 ft/s	340.29 m/s
Radian	rad	57.3 deg	57.3 deg
Gravitational acceleration	$g$	32.17 ft/s <sup>2</sup>	9.81 m/s <sup>2</sup>