Handy Formulas

Metric System Prefixes

Mega	=	1,000,000	Deci	= 0.1	Tera (T)	=	10^{12}
kilo	=	1,000	Centi	= 0.01	Giga (G)	=	10^9
Hecto	=	100	Milli	= 0.001	Nano (N)	=	10^{-9}
Deka	=	10	Micro	= 0.000001	Pico (P)	=	10^{-12}

Angles

1 circle = 2π radians = 360 degrees
1 radian = 57.3 degrees
1 degree = 0.01745 radians

Exponents

The figures 10^{-1}, 10^{-2}, 10^{-3}, etc. denote 0.1, 0.01, 0.001, etc. respectively.
The figures 10^1, 10^2, 10^3, etc. denote 10, 100, 1000, etc. respectively.

Physical Constants

Avogadro's number	$N_A = 6.0221367 \times 10^{23}$ /mol
Electronic charge	$e = 1.6027733 \times 10^{-19}$C
Faraday constant	$F = 9.6485309 \times 10^4$ C/mol
Molar volume ideal gas, STP	$V_m = 0.02241410$ m³/mol
Plank's constant	$h = 6.6260755 \times 10^{-34}$ J · s
Speed of light	$c = 2.998 \times 10^9$ meters/sec
Speed of sound (in air at sea level)	= 1100 ft/sec

Geometric Figures

r = radius $\pi = 3.14159$ D = diameter

Circle, area of = $D^2 \times 0.7854 = \pi r^2$

Circle, circumference of = πD or $2\pi r$

Sphere, area of = $\pi D^2 = 4\pi r^2$

Sphere, volume of = $D^3 \times 0.5236 = 4/3\pi r^3$

Triangle, area of = 1/2 altitude x base

Cone, volume of = area of base x 1/3 altitude

Trapezoid, area of = 1/2 (sum of parallel sides)
x altitude Pyramid, volume of = area of base
x 1/3 altitude

Conversion Factors

1amu (Atomic mass unit)	= $1.6605402 \times 10^{-27}$ kg
1 Å (Angstrom)	= 10^{-10} m
1 L (Liter)	= 1 dm³ = 10^{-3} m³
1Pa (Pascal)	= 1 kg/(m · s²)
1 atm (Atmospher)	= 1.01325×10^5 Pa
	= 760 mmHg (torr)

Velocity

1 in/sec	=	0.0254 meter/sec
1 ft/sec	=	0.3048 meter/sec
1 ft/minute	=	0.00508 meter/sec
1 mile/hr	=	0.4470 meter/sec
1 kilometer/hr	=	0.2778 meter/sec
1 meter/sec	=	3.281 ft/sec
1 meter/sec	=	196.9 ft/min
1 meter/sec	=	2.237 mi/hr
1 meter/sec	=	3.60 km/hr

Multiply	By	To Obtain	Multiply	By	To Obtain
Acres	43,560	Square feet	Gallons water	8.3453	Pounds of water
Acres	4047	Square meters	Gauss	0.0796	Tesla
Atmospheres	29.92	Inchs of mercury	Grams	0.03527	Ounces
Atmospheres	14.70	Lbs./sq. inch	Inches	25.4	Millimeters
Bars	14.5	PSI	Liters	0.2642	Gallons
Barrels—oil	42	Gallons—oil	Meters	3.281	Feet
Board feet	144 sq. in. x 1"	Cubic inches	Meters/sec.	196.8	Feet/min.
British Thermal Units	0.2520	Kilogram—calories	Meters/sec.	3.281	Feet/sec.
Centigrams	0.01	Grams	Meters/sec.	39.37	Inches/sec.
Centiliters	0.01	Liters	Miles	5280	Feet
Centimeters	0.3937	Inches	Miles	1.609	Kilometers
Centimeters	0.01	Meters	Miles	1760	Yards
Centimeters	10	Millimeters	Miles/hr.	1.609	Kilometers/hr.
Centimtrs. of mercury	0.01316	Atmospheres	Millimeters	0.03937	Inches
Centimeters/sec	0.03281	Feet/sec	Ounces	28.340527	Grams
Degrees (angle)	60	Minutes	Pounds	0.4536	Kilogram
Degrees (angle)	0.01745	Radians	Tesla	12.56	Gauss
Degrees (angle)	3600	Seconds	Tons (long)	1016	Kilograms
Feet	0.3048	Meters	Tons (long)	2240	Pounds
Gallons	3.785	Liters	Tons (short)	907.18486	Kilograms
Gallons—Imperial	1.20095	U.S. gallons	Tons (short)	2000	Pounds
Gallons—U.S.	0.83267	Imperial gallons	Yards	0.9144	Meters