

Table A-1
Some Converting Factors for Common Units of Measurement

A. Length

	mm.	cm.	m.	km.	in.	ft.	yd.	rod	chain	mile
1 millimeter	1	0.1	0.001	—	0.0394	0.0033	—	—	—	—
1 centimeter	10	1	0.01	10^{-5}	0.3937	0.032808	0.010936	—	—	—
1 meter	1,000	100	1	10^{-3}	39.3701	3.28083	1.09361	0.19884	0.04971	0.00062
1 kilometer	10^6	10^5	1,000	1	39,370.1	3,280.83	1,093.61	198.836	49.7096	0.62137
1 inch	25.40005	2.540005	0.02540	—	1	0.08333	0.02778	0.00505	—	—
1 foot	304.8006	30.48006	0.30480	3.048×10^{-4}	12	1	0.33333	0.060606	0.01515	0.000189
1 yard	—	91.44018	0.91440	9.144×10^{-4}	36	3	1	0.18182	0.04545	0.000568
1 rod	—	502.92	5.02921	0.00503	198	16.5	5.5	1	0.25	0.003125
1 chain ^a	—	2,011.68	20.1168	0.02012	792	66	22	4	1	0.0125
1 mile ^b	—	—	1,609.347	1.6093	63,360	5,280	1,760	320	80	1

^aThere are 100 links per chain; each link = .66 feet or 7.92 inches; 1 furlong = 10 chains.

^b1 international nautical mile = 1852 meters.

B. Area

	cm. ²	m. ²	hectare	km. ²	in. ²	ft. ²	yd. ²	chain ²	acre	mile ²
1 centimeter ²	1	0.0001	10^{-8}	—	0.15500	0.001076	1.196×10^{-4}	—	—	—
1 meter ²	10,000	1	0.0001	10^{-6}	1,549.997	10.76387	1.19599	0.00247	0.000247	3.861×10^{-7}
1 hectare ^a	10^8	10,000	1	0.01	15.50×10^6	107,638.7	11,959.9	24.7104	2.471044	0.0038610
1 kilometer ²	10^{10}	10^6	100	1	—	10,763,867	1,195,985	2,471.04	247.104	0.38610
1 inch ²	6.4516	6.4516×10^{-4}	—	—	1	0.006944	0.7716×10^{-3}	—	—	—
1 foot ²	929.0304	0.092903	—	—	144	1	0.11111	0.000230	0.000023	—
1 yard ²	8,361.31	0.836131	—	—	1,296	9	1	0.002066	0.000207	—
1 chain ² b	—	404.687	0.040469	0.0000405	627,264	4,356	484	1	0.1	0.000156
1 acre ^c	—	4,046.87	0.404687	0.0040469	6,272,640	43,560	4,840	10	1	0.001562
1 mile ²	—	2,589,997	258.9997	2.590	—	27,878,400	3,097,600	6,400	640	1

^a1 hectare = 100 are.

^b1 square chain = 10,000 square links.

^c640 acres = 1 section; 36 sections = 1 township (6 X 6 miles).

Basal area per unit land area converting factors:

1 square foot per acre = .2296 square meters per hectare.

1 square meter per hectare = 4.3560 square feet per acre.

C. Volume

	c.c.	liter ^b	m. ³	in. ³	ft. ³	yd. ³	oz. ^a	pint ^a	qt. ^a	gal. ^a	qt. ^c
1 cubic centimeter	1	0.001	0.000001	0.061023	—	—	0.033814	0.002113	0.001057	—	0.00091
1 liter	1,000.027	1	0.001	61.0237	0.035315	0.0013	33.8147	2.11342	1.05671	0.264178	0.90810
1 cubic meter	10^6	999.973	1	61,023.7	35.3145	1.308	—	—	1,056.68	264.170	908.08
1 cubic inch	16.3872	0.016387	16.38×10^{-6}	1	0.000579	21.43×10^{-6}	0.554113	0.034632	0.017316	0.004329	0.01488
1 cubic foot	28,317	28.316	0.028317	1,728	1	0.03704	957.5	59.8442	29.9221	7.48052	25.714
1 cubic yard	764,555	764.56	0.76456	46,656	27	1	—	—	—	—	—
1 ounce ^a	29.5737	0.29573	29.57×10^{-4}	1.80469	0.00104	—	1	0.0625	0.03125	0.00781	0.02686
1 pint ^a	473.179	0.473167	—	28.875	—	—	16	1	0.5	0.125	0.42958
1 quart ^a	946.359	0.94633	0.000946	57.75	0.03342	—	32	2	1	0.25	0.85937
1 gallon ^a	3,785.43	3.78533	0.003785	231	0.13368	—	128	8	4	1	3.43747
1 quart ^c	1,101.23	1.1020	0.001	67.2006	0.03889	—	—	—	1.16365	0.29091	1

^aUnited States fluid measure. British Imperial gallon = 277.42 in.³ = 1.2009 U.S. Gal.

^bVolume of 1 kg. of water at 4°C and 760 mm. pressure.

^cU. S. dry measure. 32 quarts = 1 bushel.

Volume per unit land area converting factors:

1 cubic foot per acre = 0.06997 cubic meters per hectare.

1 cubic meter per hectare = 14.29 cubic feet per acre.

	grain ^a	ounce ^a	pound ^a	ton ^{a,b}	gram	kilogram	metric ton
1 grain ^a	1	0.002286	0.000143	—	0.64799	—	—
1 ounce ^a	437.5	1	0.0625	—	28.34953	0.028350	—
1 pound ^a	7,000	16	1	0.0005	453.592	0.453592	0.0004536
1 ton ^{a,b}	—	32,000	2,000	1	—	907.1849	0.90718
1 gram	15.43236	0.035274	0.002205	—	1	0.001	—
1 kilogram	15,432.4	35,27396	2,204622	0.001102	1,000	1	0.001
1 metric ton	—	—	2,204.62	1.102311	—	1,000	1

^aAvoirdupois system.^bU. S. ton; 1 Imperial ton = 2240 pounds.

Mass per unit land area converting factors:

1 U. S. ton per acre = 2.241 metric tons per hectare.

1 metric ton per hectare = 44609 U. S. tons per acre.

TABLE OF APPROXIMATE CONVERSION FACTORS
HEWLETT (1982)

To convert column 1 into column 2, multiply by	Column 1	Column 2	To convert column 2 into column 1, multiply by
LENGTH			
0.621 m/km	kilometer	mile	1.609 km/mi
3.281	meter	foot	0.3048
0.394	centimeter	inch	2.54
AREA			
10.764 SF/m^2	meter ²	foot ²	0.0929 m^2/SF
2.471	hectare	acre	0.405
0.386	kilometer ²	mile ²	2.590
VOLUME			
0.0610 m^3/cm	centimeter ³	inch ³	16.387 cm^3/in^3
35.314	meter ³	foot ³	0.0283
0.2642	liter	U.S. gallon	3.785
8.107	hectare-meter	acre-foot	0.12335
0.2400	kilometer ³	mile ³	4.1655
WEIGHT*			
1.1020	metric ton	U.S. ton	0.9074
2.2045	kilogram	pound	0.4536
0.0353	gram	ounce (avdp)	28.35
PRESSURE			
14.50	bar	pound/inch ²	0.06895
0.9869	bar	atmosphere (std.)	1.013
RATE			
0.8921	kilogram/hectare	pound/acre	1.121
0.4464	metric ton/hectare	U.S. ton/acre	2.240
0.5886	meter ³ /minute	foot ³ /second	1.699
0.6362 1.55×10^{-6}	meter ³ /minute/km ²	foot ³ /second/mi ²	1.524 10^{-6}
62 X 10 ⁻⁶	gram/meter ³ (or mg/l)	pound/foot ³	16 X 10 ³
TEMPERATURE			
(9/5) C + 32	Celsius	Fahrenheit	5/9(F - 32)
DENSITY			
62.42	gram/centimeter ³	slug/foot ³	0.0160

*Metric ton, kilogram and gram are both mass and weight units at sea level; U.S. ton, pound and ounce are weight units only. At sea level, a pound weight is one slug.