TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE Casper, Wyoming SOIL CONSERVATION SERVICE

ENGINEERING No. 9 March 14, 1973

METRIC SYSTEM CONVERSION FACTORS

The attached material concerning use and conversions of the metric system of weights and measures should be useful to SCS personnel. Increased use of the metric system in the United States requires that each of us become more familiar with converting values from one system to another.

Additional copies of this information, either in total or specific sheets, may be obtained by request from the State Office.

John R. Long

John R. Long
State Conservation Engineer

Attachment

THE METRIC SYSTEM
CONVERSION FACTORS

Durwood E. Ball, Range Conservationist

In recent years, most technical publications use the metric system as a standard mean of expressing measurements. In using the metric system, some long standing maxims would take on a different look.

"A miss is as good as 1.6093 kilometers."

"I wouldn't touch it with a 3.048 meter pole."

"Texans wear 37.853 liter hats."

"God's little .4047 hectare."

"28.35 grams of prevention is worth 453.6 grams of cure."

"Give 2.54 centimeters and they'll take 1.6093 kilometers."

It appears that in time the metric system will be accepted as the standard system of measurement. It is a simple, easy to use system. The difficulty most people experience is using one system of measurement and occasionally relating it to a different system. As leaders in our technical fields, we need to be capable of working within the metric system and making conversions when necessary. The following will provide information about the metric system and some conversion tables.

The conversion factors and tables for English and Metric units contained in this article come from varied sources:

1. Federal Register - July 1, 1959 - (National Bureau of Standards Miscellaneous Publication-233).

2. Soil Science Society Proceedings

3. American Instrument Company - September 1951 - (Reprinted by courtesy of Albert Sauveur).

4. E. William Anderson, Oregon State SCS Technical Note - September 1972.

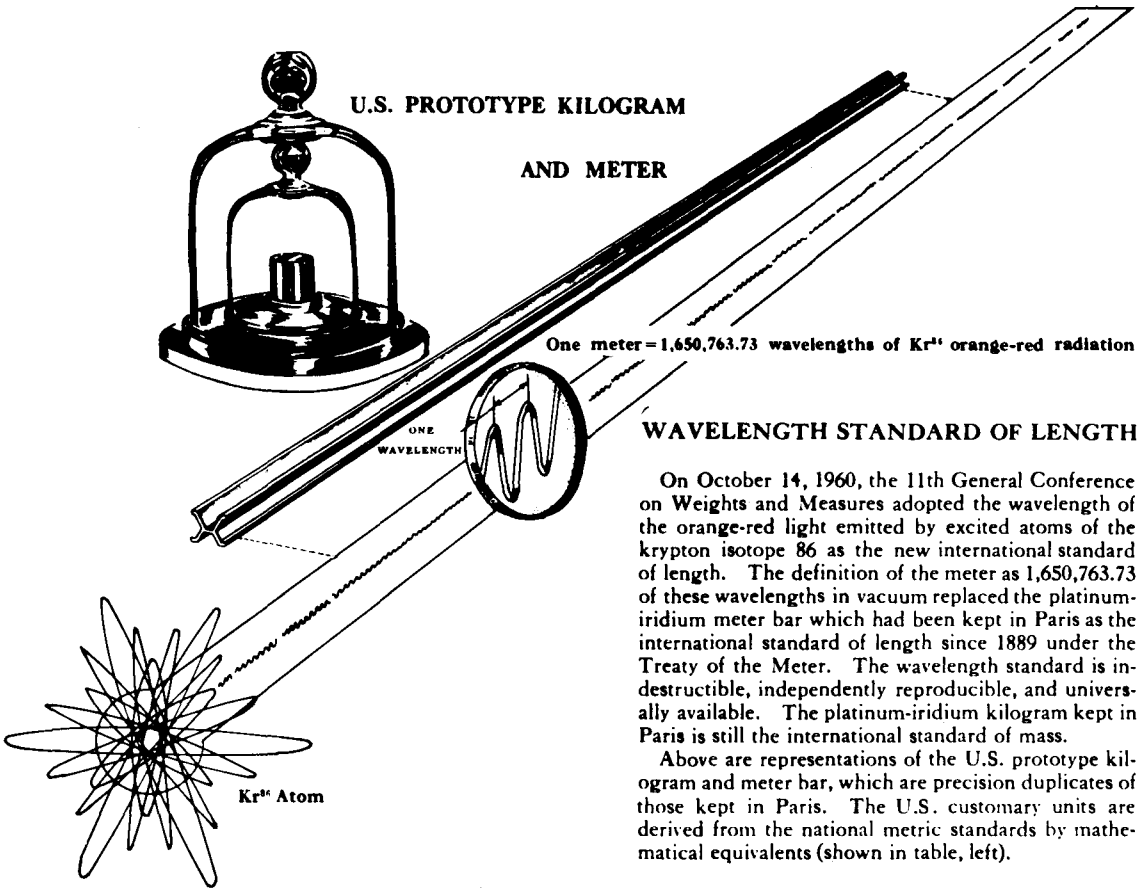
5. Personal assistance of Gary Margheim, Engineer, SCS, Portland, Oregon.

THE METRIC SYSTEM

The metric system comprises the meter as the unit of length and the kilogram as the unit of mass. The unit of fluid capacity, the liter, is the volume of one kilogram of water and is approximately equal to 1/1000 of a cubic meter. All other metric units are the decimal subdivisions or multiples of these three basic units, and are named according to the table of prefixes below.

In conjunction with the metric system the Celsius temperature scale is used and the second is taken as the unit of time. The temperature scale is defined by certain fixed points. The second is defined as 1/31,556,925.9747 of the tropical year 1900 (approximately 1/86,400 of the average day) and is determined by astronomical observation.

Responsibility for the preservation and promotion of the metric system is centered at the International Bureau of Weights and Measures, at Sèvres, France, which was established under the terms of the Treaty of the Meter of 1875. The United States is an adherent to the Treaty of the Meter.



WAVELENGTH STANDARD OF LENGTH

On October 14, 1960, the 11th General Conference on Weights and Measures adopted the wavelength of the orange-red light emitted by excited atoms of the krypton isotope 86 as the new international standard of length. The definition of the meter as 1,650,763.73 of these wavelengths in vacuum replaced the platinum-iridium meter bar which had been kept in Paris as the international standard of length since 1889 under the Treaty of the Meter. The wavelength standard is indestructible, independently reproducible, and universally available. The platinum-iridium kilogram kept in Paris is still the international standard of mass.

Above are representations of the U.S. prototype kilogram and meter bar, which are precision duplicates of those kept in Paris. The U.S. customary units are derived from the national metric standards by mathematical equivalents (shown in table, left).

EQUIVALENTS

1 YARD = 0.9144 METER

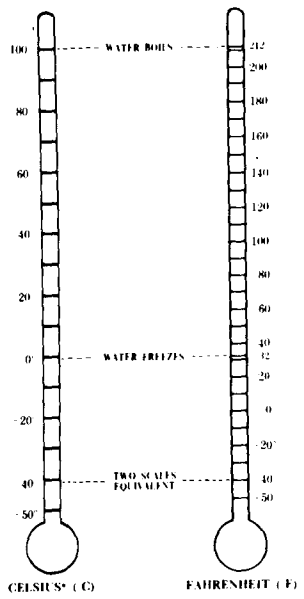
1 AVOIRDUPOIS POUND = 0.453 592 37 KILOGRAM

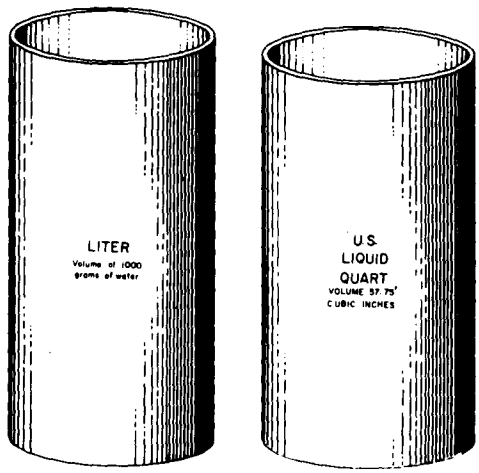
(See Federal Register, July 1, 1959)

GRAPHIC COMPARISONS

IN THE FOLLOWING ILLUSTRATIONS THE UNITS IN EACH PAIR HAVE EQUAL BASES SO THAT THE HEIGHTS SHOW DIRECTLY THE RELATIVE VALUES OF THE UNITS

TEMPERATURE SCALE





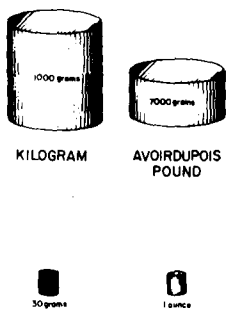
CONVERSION: TEMPERATURE FAHRENHEIT-95 TEMPERATURE CELSIUS+32°
TEMPERATURE CELSIUS-59 (TEMPERATURE FAHRENHEIT-32°)

ABSOLUTE OR KELVIN TEMPERATURE (°K)=CELSIUS+273.15°

*Formerly known as Centigrade

Mass or Weight

Gram	= 15.43 grains
Gram	= 0.0353 avdp ounce
Kilogram	= 2.205 avdp pounds
Metric ton	= 1.102 short or net tons
Grain	= 0.0648 gram
Avdp ounce	= 28.35 grams
Avdp pound	= 0.4536 kilogram
Short or net ton	= 0.907 metric ton



Multiples and Submultiples	Prefixes	Symbols †
1 000 000 000 000 = 10^{12}	tera (tĕr′a)	T
1 000 000 000 = 10^{9}	giga (jĭ′ga)	G
1 000 000 = 10^{6}	mega (mĕg′a)	M
1 000 = 10^{3}	kilo (kĭl′ō)	k
100 = 10^{2}	hecto (hĕk′tō)	h
10 = 10	deka (dĕk′a)	da
0.1 = 10^{-1}	deci (dĕs′ĭ)	d
0.01 = 10^{-2}	centi (sĕn′tĭ)	c
0.001 = 10^{-3}	milli (mĭl′ĭ)	m
0.000 001 = 10^{-6}	micro (mī′krō)	μ*
0.000 000 001 = 10^{-9}	nano (năn′ō)	n
0.000 000 000 001 = 10^{-12}	pico (pē′kō)	p
0.000 000 000 000 001 = 10^{-15}	femto (fĕm′tō)	f
0.000 000 000 000 000 001 = 10^{-18}	atto (ăt′tō)	a

*1 [illegible] micron.

†As agreed on by the International Committee on Weights and Measures, 1962.

Most Common Uses of Prefixes

Length

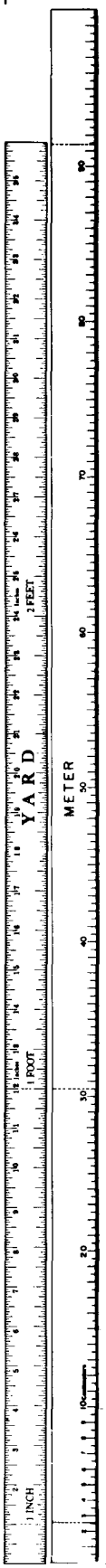
1 000 millimeters mm 100 centimeters cm 10 decimeters dm	= 1 METER (about 40 inches)	m
1 000 meters	= 1 kilometer (about 5/8 mile)	km

Mass

1 000 000 micrograms μg 1 000 milligrams mg	= 1 GRAM (about 15 grains)	g
1 000 grams	= 1 kilogram (about 2 pounds)	kg

Capacity

1 000 milliliters ml	= 1 LITER (about 1 quart)	l
1 000 liters	= 1 kiloliter	kl



Length

Centimeter	=	0.3937 inch
Meter	=	3.28 feet
Meter	=	1.094 yards
Kilometer	=	0.621 statute mile
Kilometer	=	0.5400 nautical mile
Inch	=	**2.54 centimeters**
Foot	=	**0.3048 meter**
Yard	=	**0.9144 meter**
Statute mile	=	1.61 kilometers
Nautical mile	=	**1.852 kilometers**

Area

Sq centimeter	=	0.155 sq inch
Sq meter	=	10.76 sq feet
Sq meter	=	1.196 sq yards
Hectare	=	2.47 acres
Sq kilometer	=	0.386 sq mile
Sq inch	=	6.45 sq centimeters
Sq foot	=	0.0929 sq meter
Sq yard	=	0.836 sq meter
Acre	=	0.405 hectare
Sq mile	=	2.59 sq kilometers

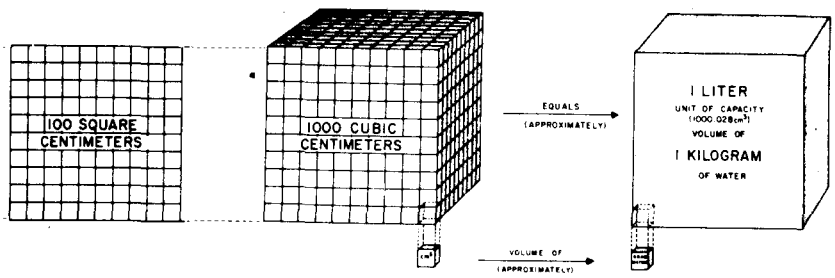
Equivalents shown in bold face type are exact; all others are approximate.
For complete conversion tables, see NBS Miscellaneous Publication 233.

Capacity

Milliliter	=	0.0338 U.S. fluid ounce
Liter	=	1.057 U.S. liq quarts
Liter	=	0.908 U.S. dry quart
U.S. fluid ounce	=	29.57 milliliters
U.S. liq quart	=	0.946 liter
U.S. dry quart	=	1.101 liters

Volume

Cu centimeter	=	0.0610 cu inch
Cu meter	=	35.3 cu feet
Cu meter	=	1.308 cu yards
Cu inch	=	16.39 cu centimeters
Cu foot	=	0.0283 cu meter
Cu yard	=	0.765 cu meter



YIELD OR RATE

From/To	Ton(M)/ha	Ton(E)/ac	kg/ha	lb/ac	g/ha
Ton(Metric)/Hectare	1	.446	10^3	891.	10
Ton(English)/Acre	2.24	1	2240	2000	22.4
Kilogram/Hectare	10^{-3}	4.46×10^{-4}	1	.891	.01
Pound/Acre	1.12×10^{-3}	5×10^{-4}	1.12	1	.0112
Quintal/Hectare	.10	.0446	100	89.1	1
kg/ha/cm to lbs/ac/in --	2.263				
lbs/ac/in to kg/ha/cm --	0.4413				

Kilo-grams/ Hectares	kg/ha or lbs/ac	Pounds/ acre	Ton (Metric)/ Hectares	Ton (M)/ha or Ton (E)/ac	Ton (English)/ acre
1.12	1	.891	2.24	1	.446
2.24	2	1.782	4.48	2	.892
3.36	3	2.673	6.72	3	1.338
4.48	4	3.564	8.96	4	1.784
5.60	5	4.455	11.20	5	2.230
6.72	6	5.346	13.44	6	2.676
7.84	7	6.237	15.68	7	3.122
8.96	8	7.128	17.92	8	3.568
10.08	9	8.109	20.16	9	4.014
11.20	10	8.910	22.40	10	4.460
22.40	20	17.820	44.80	20	8.920
33.60	30	26.730	67.20	30	13.380
44.80	40	35.640	89.60	40	17.840
56.00	50	44.550	112.00	50	22.300
67.20	60	53.460	134.40	60	26.760
78.40	70	62.370	156.80	70	31.220
89.60	80	71.280	179.20	80	35.680
100.80	90	81.090	201.60	90	40.140
112.00	100	89.100	224.00	100	44.600

MASS

From/To	g	kg	oz (avdp.)	lb (avdp.)
g	1	0.001	0.03527	2.205×10^{-3}
kg	1000	1	35.27	2.205
oz (avdp.)	28.35	0.02835	1	0.06250
lb (avdp.)	453.6	0.4536	16	1

Grams	gr or grain	Grains	Grams	gr or oz	Ounces	Kilo-grams	kg or lb	Pounds	Metric tons	mt or t	Net Tons (2,000 lbs)
0.0648	1	15.432	28.35	1	0.0352	0.454	1	2.205	0.9072	1	1.1023
0.1296	2	30.864	56.70	2	0.0704	0.907	2	4.409	1.8144	2	2.2046
0.1944	3	46.296	85.05	3	0.1056	1.361	3	6.614	2.7216	3	3.3069
0.2592	4	61.728	113.40	4	0.1408	1.814	4	8.819	3.6288	4	4.4092
0.3240	5	77.160	141.75	5	0.1760	2.268	5	11.023	4.5360	5	5.5115
0.3888	6	92.592	170.10	6	0.2112	2.722	6	13.228	5.4432	6	6.6138
0.4536	7	108.024	198.45	7	0.2464	3.175	7	15.432	6.3504	7	7.7161
0.5184	8	123.456	226.80	8	0.2816	3.629	8	17.637	7.2576	8	8.8184
0.5832	9	138.888	225.15	9	0.3168	4.082	9	19.842	8.1648	9	9.9207
0.648	10	154.320	283.50	10	0.352	4.536	10	22.046	9.072	10	11.023
1.296	20	308.64	567.0	20	0.704	9.072	20	44.092	18.144	20	22.046
1.944	30	462.96	850.5	30	1.056	13.608	30	66.139	27.216	30	33.069
2.592	40	617.28	1,134.0	40	1.408	18.144	40	88.185	36.288	40	44.092
3.240	50	771.60	1,417.5	50	1.760	22.680	50	110.231	45.360	50	55.115
3.888	60	925.92	1,701.0	60	2.112	27.216	60	132.277	54.432	60	66.138
4.536	70	1,080.24	1,984.5	70	2.464	31.752	70	154.324	63.504	70	77.161
5.184	80	1,234.56	2,268.0	80	2.816	36.287	80	176.370	72.576	80	88.184
5.832	90	1,388.88	2,551.5	90	3.168	40.823	90	198.416	81.648	90	99.207
6.48	100	1,543.2	2,835.0	100	3.52	45.369	100	220.462	90.72	100	110.23

LENGTH

From/To	cm	m	km	in	ft	mile
cm	1	1×10^{-2}	1×10^{-5}	0.3937	3.281×10^{-2}	6.21×10^{-6}
m	100	1	1×10^{-3}	39.37	3.281	6.21×10^{-4}
km	1×10^{5}	1000	1	3.94×10^{4}	3281	0.621
in	2.54	0.0254	2.54×10^{-5}	1	8.33×10^{-2}	1.58×10^{-5}
ft	30.48	0.3048	3.048×10^{-4}	12	1	1.89×10^{-4}
mile	1.609×10^{5}	1609	1.609	6.34×10^{4}	5280	1

Centi-meters	cm or in	Inches
2.540	1	0.394
5.080	2	0.787
7.620	3	1.181
10.160	4	1.575
12.700	5	1.969
15.240	6	2.362
17.780	7	2.756
20.320	8	3.150
22.860	9	3.543
25.400	10	3.937
50.800	20	7.874
76.200	30	11.811
101.600	40	15.748
127.000	50	19.685
152.400	60	23.622
177.800	70	27.559
203.200	80	31.496
228.600	90	35.433
254.000	100	39.370

Meters	m or ft	Feet
0.305	1	3.281
0.610	2	6.562
0.914	3	9.842
1.219	4	13.123
1.524	5	16.404
1.829	6	19.685
2.134	7	22.966
2.438	8	26.246
2.743	9	29.527
3.048	10	32.808
6.096	20	65.616
9.144	30	98.424
12.192	40	131.232
15.240	50	164.040
18.288	60	196.848
21.336	70	229.656
24.384	80	262.464
27.432	90	295.272
30.480	100	328.080

Meters	m or yd	Yards
0.914	1	1.094
1.829	2	2.187
2.743	3	3.281
3.658	4	4.374
4.572	5	5.468
5.486	6	6.562
6.401	7	7.655
7.315	8	8.749
8.230	9	9.843
9.144	10	10.936
18.288	20	21.872
27.432	30	32.808
36.576	40	43.745
45.720	50	54.681
54.864	60	65.617
64.008	70	76.553
73.152	80	87.489
82.296	90	98.425
91.444	100	109.361

Kilo-meters	Km or mi	Miles
1.609	1	0.621
3.218	2	1.243
4.827	3	1.864
6.436	4	2.486
8.045	5	3.107
9.654	6	3.728
11.263	7	4.350
12.872	8	4.971
14.481	9	5.593
16.09	10	6.214
32.18	20	12.428
48.27	30	18.642
64.36	40	24.856
80.45	50	31.070
96.54	60	37.284
112.63	70	43.498
128.72	80	49.712
144.81	90	55.926
160.90	100	62.140

TEMPERATURE

Celsius, C (centigrade) $\left(\frac{9}{5}\ {}^{o}C\right) + 32$

Fahrenheit, F $\frac{5}{9}\left({}^{o}F - 32\right)$

The center figure is the temperature to be converted to either Centigrade or Fahrenheit. The left column is the equivalent degrees in centigrade and the right column is the equivalent degrees in Fahrenheit.

For example:

To convert 0°C to °F, find 0° in the center column and read the degrees F in the right hand column. To convert 32° F to °C, find 32° in the center column and read the degrees C in the left hand column.

C		F
-40.0	-40	-40
-34.4	-30	-22
-28.9	-20	-4
-23.3	-10	14
-17.8	0	32
-15.0	5	41.0
-12.2	10	50.0
-9.44	15	59.0
-6.67	20	68.0
-3.89	25	77.0
-1.11	30	86.0
0	32	89.6
1.67	35	95.0
4.44	40	104.0
7.22	45	113.0
10.0	50	122.0
12.8	55	131
15.6	60	140
18.3	65	149
21.1	70	158
23.9	75	167
26.7	80	176
29.4	85	185
32.2	90	194
35.0	95	203
37.8	100	212

INTERPOLATION FACTOR

C		F
0.56	1	1.8
1.11	2	3.6
1.67	3	5.4
2.22	4	7.2
2.78	5	9.0

AREA

From/To	cm^2	m^2	km^2	in^2	ft^2	$mile^2$	acre	hectare
cm^2	1	1×10^{-4}	1×10^{-10}	0.155	1.076×10^{-3}	3.86×10^{-11}	2.47×10^{-8}	1×10^{-8}
m^2	1×10^{4}	1	1×10^{-6}	1.550×10^{3}	10.76	3.86×10^{-7}	2.47×10^{-4}	1×10^{-4}
km^2	1×10^{10}	1×10^{6}	1	1.55×10^{9}	1.076×10^{7}	0.386	247.10	1×10^{2}
in^2	6.452	6.452×10^{-4}	6.452×10^{-10}	1	0.00694	2.49×10^{-10}	1.60×10^{-7}	6.45×10^{-8}
ft^2	929.0	0.0929	9.29×10^{-8}	144	1	3.59×10^{-8}	2.30×10^{-5}	9.29×10^{-6}
$mile^2$	2.59×10^{10}	2.59×10^{6}	2.590	4.01×10^{9}	2.79×10^{7}	1	640	259.
acre	4.047×10^{7}	4047.	4.047×10^{-3}	6.27×10^{6}	43,560	.00156	1	.4047
hectare	1×10^{8}	1×10^{4}	1×10^{-2}	1.55×10^{7}	1.076×10^{5}	3.86×10^{-3}	2.47	1

Square centi-meters	Square cm or in	Square Inches
6.452	1	0.155
12.904	2	0.310
19.356	3	0.465
25.808	4	0.620
32.260	5	0.775
38.712	6	0.930
45.164	7	1.085
51.616	8	1.240
58.068	9	1.395
64.52	10	1.55
129.04	20	3.10
193.56	30	4.65
258.08	40	6.20
322.60	50	7.75
387.12	60	9.30
451.64	70	10.85
516.16	80	12.40
580.68	90	13.95
645.2	100	15.50

Square meters	Square m or ft	Square feet
0.093	1	10.764
0.186	2	21.528
0.279	3	32.292
0.372	4	43.056
0.465	5	53.820
0.557	6	64.584
0.650	7	75.348
0.743	8	86.112
0.836	9	96.876
0.929	10	107.64
1.858	20	215.28
2.787	30	322.92
3.716	40	430.56
4.645	50	538.20
5.574	60	645.84
6.503	70	753.48
7.432	80	861.12
8.361	90	968.76
9.29	100	1,076.4

Square meters	Square m or yd	Square yards
0.836	1	1.196
1.672	2	2.392
2.508	3	3.588
3.344	4	4.784
4.181	5	5.980
5.017	6	7.176
5.853	7	8.372
6.689	8	9.568
7.525	9	10.764
8.361	10	11.96
16.722	20	23.92
25.083	30	35.88
33.444	40	47.84
41.805	50	59.80
50.166	60	71.76
58.527	70	83.72
66.888	80	95.68
75.249	90	107.64
83.61	100	119.6

Square kilo-meters	Square km or mi	Square miles
2.59	1	0.386
5.18	2	0.772
7.77	3	1.158
10.36	4	1.544
12.95	5	1.931
15.54	6	2.317
18.13	7	2.703
20.72	8	3.089
23.31	9	3.475
25.90	10	3.861
51.8	20	7.722
77.7	30	11.583
103.6	40	15.444
129.5	50	19.305
155.4	60	23.166
181.3	70	27.027
207.2	80	30.888
233.1	90	34.749
259.	100	38.61

Hectares	ha or ac	Acres
0.405	1	2.471
0.809	2	4.942
1.214	3	7.413
1.619	4	9.884
2.023	5	12.355
2.428	6	14.826
2.833	7	17.297
3.237	8	19.769
3.642	9	22.240
4.047	10	24.711
8.094	20	49.421
12.140	30	74.132
16.187	40	98.842
20.234	50	123.553
24.281	60	148.263
28.328	70	172.794
32.375	80	197.684
36.422	90	222.395
40.469	100	247.105

Hectares	ha or sq.mi	Square miles
258.99	1	0.00386
517.98	2	0.00772
776.97	3	0.01158
1,035.96	4	0.01544
1,294.95	5	0.01930
1,553.94	6	0.02316
1,812.93	7	0.02702
2,071.92	8	0.03088
2,330.91	9	0.03474
2,589.9	10	0.0386
5,179.8	20	0.0772
7,769.7	30	0.1158
10,359.6	40	0.1544
12,949.5	50	0.1930
15,539.4	60	0.2316
18,129.3	70	0.2702
20,719.2	80	0.3088
23,309.1	90	0.3474
25,899.	100	0.386

VOLUME

From/To	cm^3	liter	in^3	ft^3	fl.qt.	gal.
cm^3	1	0.001	0.06102	3.53×10^{-5}	0.00106	2.64×10^{-4}
liter	1000	1	61.02	0.03532	1.057	0.2642
in^3	16.39	0.01639	1	5.79×10^{-4}	0.01732	0.00433
ft^3	2.83×10^4	28.32	1728	1	29.92	7.481
fl.qt.	946.4	0.9463	57.75	0.03342	1	0.2500
gal.	3785.	3.785	231.0	0.1337	4	1

Cubic centimeters	cu cm or cu in	Cubic inches
16.39	1	0.061
32.78	2	0.122
49.17	3	0.183
65.56	4	0.244
81.95	5	0.305
98.34	6	0.366
114.73	7	0.427
131.12	8	0.488
147.51	9	0.549
163.9	10	0.61
327.8	20	1.22
491.7	30	1.83
655.6	40	2.44
819.5	50	3.05
983.4	60	3.66
1,147.3	70	4.27
1,311.2	80	4.88
1,475.1	90	5.49
1,639.	100	6.1

Cubic meters	cu m or cu ft	Cubic feet
0.028	1	35.314
0.057	2	70.628
0.085	3	105.942
0.113	4	141.256
0.142	5	176.570
0.170	6	211.884
0.198	7	247.198
0.226	8	282.512
0.255	9	317.826
0.283	10	353.14
0.566	20	706.28
0.849	30	1,059.42
1.132	40	1,412.56
1.415	50	1,765.70
1.698	60	2,118.84
1.981	70	2,471.98
2.264	80	2,825.12
2.547	90	3,178.26
2.83	100	3,531.4

Cubic meters	cu m or cu yd	Cubic yards
0.765	1	1.308
1.529	2	2.616
2.294	3	3.924
3.058	4	5.232
3.823	5	6.540
4.587	6	7.848
5.352	7	9.156
6.116	8	10.464
6.881	9	11.772
7.645	10	13.08
15.290	20	26.16
22.935	30	39.24
30.580	40	52.32
38.225	50	65.40
45.870	60	78.48
53.515	70	91.56
61.160	80	104.64
68.805	90	117.72
76.45	100	130.8

Liters	l or qt	Quarts
0.946	1	1.057
1.893	2	2.113
2.839	3	3.170
3.785	4	4.227
4.732	5	5.284
5.678	6	6.340
6.624	7	7.397
7.570	8	8.454
8.517	9	9.510
9.463	10	10.567
18.926	20	21.134
28.389	30	31.701
37.852	40	42.268
47.315	50	52.835
56.778	60	63.402
66.241	70	73.969
75.704	80	84.536
85.167	90	95.10
94.63	100	105.67

Liters	l or gal	Gallons
3.785	1	0.264
7.571	2	0.528
11.356	3	0.793
15.142	4	1.057
18.927	5	1.321
22.712	6	1.585
26.498	7	1.849
30.283	8	2.114
34.069	9	2.378
37.854	10	2.642
75.708	20	5.284
113.562	30	7.926
151.416	40	10.568
189.270	50	13.210
227.124	60	15.852
264.978	70	18.494
302.832	80	21.136
340.686	90	23.778
378.540	100	26.42

Cubic meters	cu m or gal	Gallons
0.004	1	264.17
0.008	2	528.34
0.011	3	792.51
0.015	4	1,056.68
0.019	5	1,320.85
0.023	6	1,585.02
0.027	7	1,849.19
0.030	8	2,113.36
0.034	9	2,377.53
0.038	10	2,641.7
0.076	20	5,283.4
0.114	30	7,925.1
0.152	40	10,566.8
0.190	50	13,208.5
0.228	60	15,850.2
0.266	70	18,491.9
0.304	80	21,133.6
0.342	90	23,775.3
0.38	100	26,417.

PRESSURE

From/To	kg/cm^2	lb/in^2	Atmospheres
kg/cm^2	1	14.22	.9678
lb/in^2	0.07031	1	0.06805
Atmospheres	1.033	14.70	1

Kilogram/square centimeter	kg/sq cm or lb/sq in	Pounds/square inch
0.070	1	14.233
0.141	2	28.446
0.211	3	42.669
0.281	4	56.892
0.352	5	71.115
0.422	6	85.338
0.492	7	99.561
0.562	8	113.784
0.633	9	128.007
0.703	10	142.230
1.406	20	284.46
2.109	30	426.69
2.812	40	568.92
3.515	50	711.15
4.218	60	853.38
4.921	70	995.61
5.624	80	1,137.84
6.327	90	1,280.07
7.030	100	1,422.3

Kilograms/meter	Kg/m or lb/ft	Pounds/foot
1.488	1	0.672
2.976	2	1.344
4.465	3	2.016
5.953	4	2.688
7.441	5	3.360
8.929	6	4.032
10.417	7	4.704
11.906	8	5.376
13.394	9	6.048
14.882	10	6.720
29.764	20	13.440
44.646	30	20.160
59.528	40	26.880
74.410	50	33.600
89.292	60	40.320
104.174	70	47.040
119.056	80	53.760
133.938	90	60.480
148.82	100	67.20

Kilograms square meter	kg/sq m or lb/sq ft	Pounds/square foot
4.883	1	0.205
9.765	2	0.410
14.648	3	0.614
19.530	4	0.819
24.413	5	1.024
29.295	6	1.229
34.178	7	1.434
39.060	8	1.638
43.943	9	1.843
48.825	10	2.048
97.650	20	4.096
146.475	30	6.144
195.300	40	8.192
244.125	50	10.240
292.950	60	12.288
341.75	70	14.336
390.600	80	16.384
439.425	90	18.432
488.25	100	20.48

Kilogram/cubic meter	kg/cu m or lb/cu ft	Pounds/cubic foot
16.019	1	0.062
32.038	2	0.125
48.058	3	0.187
64.077	4	0.250
80.096	5	0.312
96.115	6	0.374
112.134	7	0.437
128.154	8	0.499
144.173	9	0.562
160.192	10	0.624
320.384	20	1.248
480.576	30	1.872
640.768	40	2.496
800.960	50	3.120
961.152	60	3.744
1,121.344	70	4.368
1,281.536	80	4.992
1,441.728	90	5.616
1,601.92	100	6.24