TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE Portland, Oregon SOIL CONSERVATION SERVICE

Range - No. 5 September 1972

The following conversion tables are useful in reading current scientific and technical reports which commonly cite data expressed in the metric system.

The figures in the central of the three columns in each table represent either one or the other of the two side columns, as required. For example: 1 cm equals 0.394 inch; 1 inch equals 2.540 cm.

E. William Anderson
State Range Specialist

CONVERSION TABLES FOR METRIC AND U.S. WEIGHTS AND MEASURES

LENGTH

Centimeters	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

Kilometers	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

AREA

Square centimeters	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 kilometers	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	172.974
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

(OVER)

WEIGHT

Grams	gr or grain	Grains
0.0648	1	15.432
0.1296	2	30.864
0.1944	3	46.296
0.2592	4	61.728
0.3240	5	77.160
0.3888	6	92.592
0.4536	7	108.024
0.5184	8	123.456
0.5832	9	138.888
0.648	10	154.320
1.296	20	308.64
1.944	30	462.96
2.592	40	617.28
3.240	50	771.60
3.888	60	925.92
4.536	70	1,080.24
5.184	80	1,234.56
5.832	90	1,388.88
6.48	100	1,543.2

Grams	gr or oz	Ounces
28.35	1	0.0352
56.70	2	0.0704
85.05	3	0.1056
113.40	4	0.1408
141.75	5	0.1760
170.10	6	0.2112
198.45	7	0.2464
226.80	8	0.2816
255.15	9	0.3168
283.50	10	0.352
567.0	20	0.704
850.5	30	1.056
1,134.0	40	1.408
1,417.5	50	1.760
1,701.0	60	2.112
1,984.5	70	2.464
2,268.0	80	2.816
2,551.5	90	3.168
2,835.0	100	3.52

Kilo-grams	kg or lb	Pounds
0.454	1	2.205
0.907	2	4.409
1.361	3	6.614
1.814	4	8.819
2.268	5	11.023
2.722	6	13.228
3.175	7	15.432
3.629	8	17.637
4.082	9	19.842
4.536	10	22.046
9.072	20	44.092
13.608	30	66.139
18.144	40	88.185
22.680	50	110.231
27.216	60	132.277
31.752	70	154.324
36.287	80	176.370
40.823	90	198.416
45.369	100	220.462

Metric tons	mt or t	Net tons (2,000 lbs)
0.9072	1	1.1023
1.8144	2	2.2046
2.7216	3	3.3069
3.6288	4	4.4092
4.5360	5	5.5115
5.4432	6	6.6138
6.3504	7	7.7161
7.2576	8	8.8184
8.1648	9	9.9207
9.072	10	11.023
18.144	20	22.046
27.216	30	33.069
36.288	40	44.092
45.360	50	55.115
54.432	60	66.138
63.504	70	77.161
72.576	80	88.184
81.648	90	99.207
90.72	100	110.23

Kilo-gram/ square centi-meter	kg/sq cm or lb/sq in	Pounds/ square inch
0.070	1	14.223
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

Kilo-grams/ 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

Kilo-grams/ 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
341.775	70	14.336
390.600	80	16.384
439.425	90	18.432
488.25	100	20.48

Kilo-gram/ 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

VOLUME AND CAPACITY

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

1 liter equals 61.023 cu in

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

28.32 liters equals 1 cu ft

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

LIQUID VOLUME

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

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Supplement to Range - No.5 September 1972

CONVERSION TABLES FOR METRIC AND U.S. WEIGHTS AND MEASURES

E. William Anderson
State Range Specialist

TEMPERATURE

CELSIUS (C)						FAHRENHEIT (F)			
EQUIVALENT READING				EQUIVALENT INCREMENT	C or F	EQUIVALENT INCREMENT	EQUIVALENT READING		
Above Zero		Below Zero					Above Zero	Below Zero	
minus	17.78				0		plus 32.0		
	17.72	minus	18.33	0.5556	1	1.8	33.8	plus	30.2
	16.67		18.89	1.1112	2	3.6	35.6		28.4
	16.11		19.44	1.6668	3	5.4	37.4		26.6
	15.56		20.00	2.2224	4	7.2	39.2		24.8
	15.00		20.56	2.7780	5	9.0	41.0		23.0
	14.44		21.11	3.3336	6	10.8	42.8		21.2
	13.89		21.67	3.8892	7	12.6	44.6		19.4
	13.33		22.22	4.4448	8	14.4	46.4		17.6
	12.78		22.78	5.0004	9	16.2	48.2		15.8
	12.22		23.33	5.5560	10	18.0	50.0	plus	14.0
	6.67		28.89	11.112	20	36.0	68.0	minus	4.0
minus	1.11		34.44	16.668	30	54.0	86.0		22.0
plus	4.44		40.00	22.224	40	72.0	104.0		40.0
	10.00		45.56	27.780	50	90.0	122.0		58.0
	15.56		51.11	33.336	60	108.0	140.0		76.0
	21.11		56.67	38.892	70	126.0	158.0		94.0
	26.67		62.22	44.448	80	144.0	176.0		112.0
	32.22		67.78	50.004	90	162.0	194.0		130.0
plus	37.78	minus	73.33	55.560	100	180.0	plus 212.0	minus	140.0

$1^{\circ}F$ equals $0.556^{\circ}C$
$1^{\circ}C$ equals $1.8^{\circ}F$

F equals 9/5 X C plus 32
C equals 5/9 X (F minus 32)

The figures in the central column represent either Celsius or Fahrenheit, as required, to obtain equivalent temperature readings or equivalent increments. For example:

1. A change in temperature of $1^{\circ}C$ is equivalent to a change in temperature of $1.8^{\circ}F$; a change of $1^{\circ}F$ is equivalent to a change of $0.556^{\circ}C$.

2. A temperature reading of $1^{\circ}C$ above zero is equivalent to a reading of $33.8^{\circ}F$ above zero; a reading of $1^{\circ}F$ above zero is equivalent to a reading of $17.72^{\circ}C$ below zero.

3. A temperature reading of $1^{\circ}C$ below zero is equivalent to a reading of $30.2^{\circ}F$ above zero; a reading of $1^{\circ}F$ below zero is equivalent to $18.33^{\circ}C$ below zero.

4. A temperature reading of $73^{\circ}C$ above zero is equivalent to a reading of $163.4^{\circ}F$. This is obtained by adding $158.0^{\circ}F$ (the equivalent reading for $70^{\circ}C$) and $5.4^{\circ}F$ (the equivalent increment for $3^{\circ}C$).

   A reading of $73^{\circ}F$ above zero is equivalent to a reading of $21.11^{\circ}C$ above zero (the equivalent reading of $70^{\circ}F$) plus $1.67^{\circ}C$ (the equivalent increment for $3^{\circ}F$) for a total of $22.78^{\circ}C$.