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United States  
Department of  
Agriculture

Soil  
Conservation  
Service



# National Engineering Handbook

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Section 3

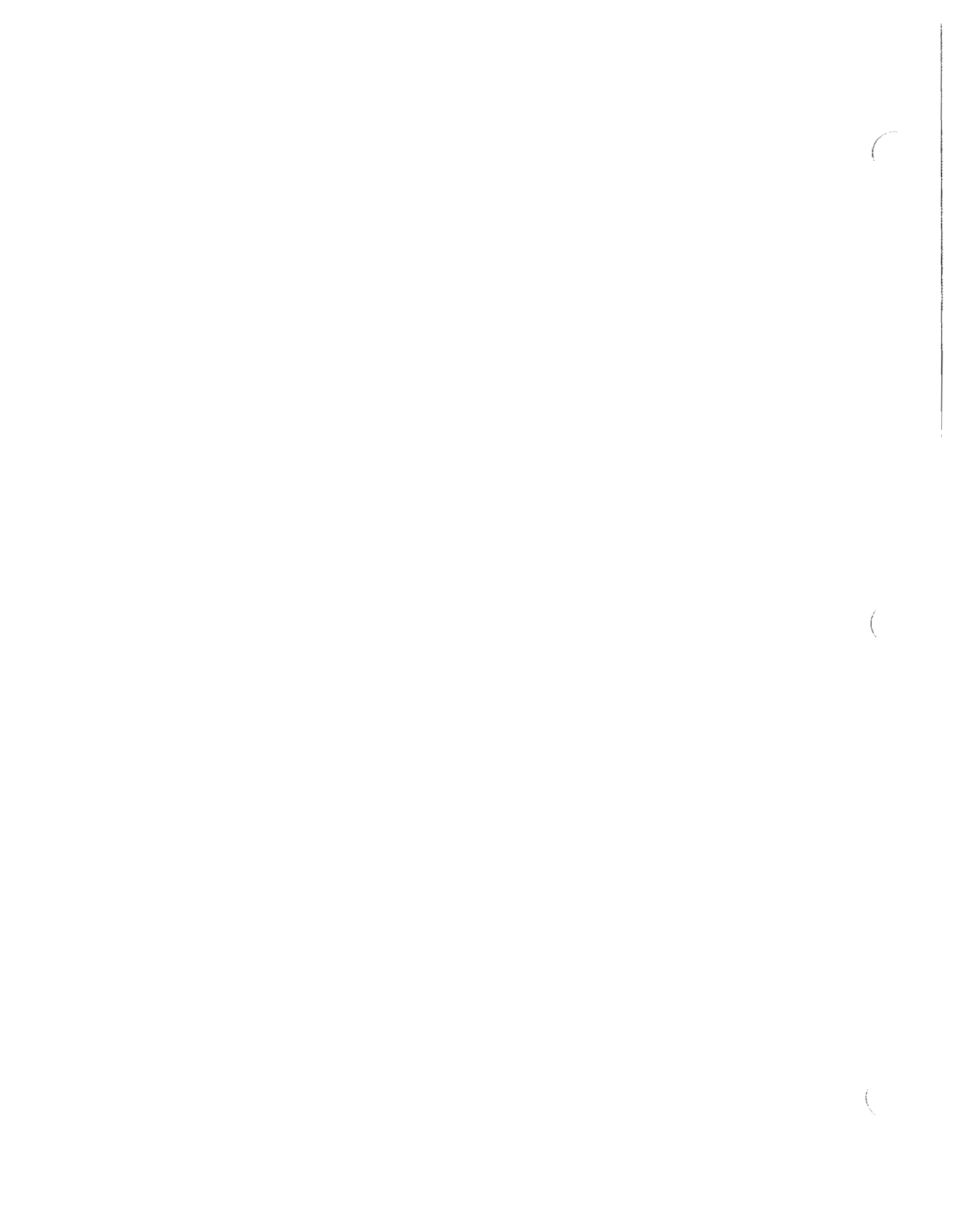
## Sedimentation

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### Chapter 9

# Units and Equivalents





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# Chapter 9

## Units and Equivalents

### General

Various lists, tables, and charts are included in this section for the convenience of geologists compiling information on rates, volumes, and quantities of sediment, rock formations, and geologic processes. The only explanations in the tables and charts are those necessary to give the basis for the information presented. The conversion factors shown are generally four significant digits; more precise conversion factors of five or more significant digits may be needed in some instances. In all conversions, retain enough significant digits to ensure that accuracy is neither sacrificed nor exaggerated.

### Metric System (SI) Conversion

Most of the procedures, formulas, and tables in this handbook are presented in English units. Conversion factors are included in this chapter for those who wish to use the metric system. Table 9-1 shows pertinent base units of the International System of Units (SI), and table 9-2 shows prefixes to be used with SI units.

Table 9-1.—Base units of the International System (SI)

Quantity	Base unit	
	Name	Symbol
Length	meter (metre) <sup>1</sup>	m
Mass <sup>2</sup>	kilogram	kg
Time	second	s

<sup>1</sup>Both spelling are acceptable.

<sup>2</sup>Weight is the commonly used term for mass.

Table 9-2.—Prefixes for use in multiples of International System (SI) units

Mutiplier	Prefix	Symbol
10 <sup>18</sup>	exa	E
10 <sup>15</sup>	peta	P
10 <sup>12</sup>	tera	T
10 <sup>9</sup>	giga	G
10 <sup>6</sup>	mega	M
10 <sup>3</sup>	kilo	k
10 <sup>2</sup>	hecto <sup>a</sup>	h
10 <sup>1</sup>	deka <sup>a</sup>	da
10 <sup>-1</sup>	deci <sup>a</sup>	d
10 <sup>-2</sup>	centi <sup>a</sup>	c
10 <sup>-3</sup>	milli	m
10 <sup>-6</sup>	micro	μ
10 <sup>-9</sup>	nano	n
10 <sup>-12</sup>	pico	p
10 <sup>-15</sup>	femto	f
10 <sup>-18</sup>	atto	a

<sup>a</sup>These prefixes are generally not recommended. Multiples of 1,000 are preferred.

## Rules for Style and Usage

The choice of the appropriate prefix (multiplier) of an SI unit is governed by convenience. The multiple chosen for a particular application is the one that yields numerical values within a practical range.

Use a slash (/) to form a compound unit by dividing one unit by another, e.g., m/s, kg/m<sup>2</sup>.

Area or volume units are indicated by the appropriate superscript, e.g., km<sup>2</sup> or m<sup>3</sup>.

Do not use multiple prefixes, such as dkm or μml.

## Conversion Factors

<u>To Convert</u>	<u>Into</u>	<u>Multiply By</u>
A acre	hectares or square hectometers	0.4047
	square feet (sq ft) <sup>a</sup>	43,560.
	square meters (m <sup>2</sup> )	4,047.
	square miles (sq mi)	1.562 × 10 <sup>-3</sup>
	acre-feet (acre-ft)	43,560
acre-feet (acre-ft)	cubic feet (cu ft)	1,613.
	cubic yards (cu yd)	325,850.
	gallons (gal)	1.234
	megaliters (ML)	1,234.
	cubic meters (m <sup>3</sup> )	1.234
	cubic dekameters (dam <sup>3</sup> )	12.00
	acre-inches	68.06
acre-feet/square mile (acre-ft/sq mi)	cubic feet/acre	See fig. 9-1
	tons/square mile (T/sq mi)	See fig. 9-1 <sup>b</sup>
	tons/acre	0.01875
	watershed inches	476.3
acre-feet of water	cubic meters/square kilometer (m <sup>3</sup> /km <sup>2</sup> )	1,359.
	tons	1.234
	cubic dekameters (dam <sup>3</sup> )	1,234.
	megagrams (Mg)	

<sup>a</sup>These abbreviations may be used when their meaning is clear; otherwise spell them out.

<sup>b</sup>After getting tons/square mile from figure 9-1, multiply by 1.56 × 10<sup>-3</sup> to convert to tons/acre.

<u>To Convert</u>	<u>Into</u>	<u>Multiply By</u>
acre-inches	acre-feet (acre-ft) cubic feet (cu ft)	0.08333 3,630.
C		
Celsius (C)	Fahrenheit (F)	$1.8C + 32$
centimeters (cm)	feet (ft)	0.03281
	inches (in)	0.3937
	meters (m)	0.010
	millimeters (mm)	10.00
centimeters/second (cm/s)	feet/minute (ft/min)	1.197
cubic centimeters (cm <sup>3</sup> )	cubic feet (cu ft)	$3.531 \times 10^{-5}$
	cubic inches (cu in)	0.06102
	U.S. gallons (U.S. gal)	$2.642 \times 10^{-4}$
	liters (L)	0.001
	U.S. pints	$2.113 \times 10^{-3}$
	U.S. quarts	$1.057 \times 10^{-3}$
cubic dekameters (dam <sup>3</sup> )	acre-feet (acre-ft)	0.8104
cubic feet (cu ft)	cubic centimeters (cm <sup>3</sup> )	28,320.
	cubic inches (cu in)	1,728.
	cubic meters (m <sup>3</sup> )	0.02832
	cubic yards (cu yd)	0.03704
	U.S. gallons (U.S. gal)	7.481
	liters (L)	28.32
cubic feet/acre	acre-inches	$2.754 \times 10^{-4}$
	acre-feet (acre-ft)	$2.296 \times 10^{-5}$
cubic feet of water	pounds (lb)	62.43
	kilograms/square centimeter (kg/cm <sup>2</sup> )	0.03048
	kilograms/square meter (kg/m <sup>2</sup> )	304.8
	pounds/square foot (psf)	62.43
	pounds/square inch (psi)	0.4335
cubic feet/second (cfs)	acre-feet per day (acre-ft/d)	1.984
	acre-feet per year (acre-ft/yr)	724.0
	gallons/minute (gpm)	448.8
	million gallons/day (mgd)	0.6463
	cubic meters/second (m <sup>3</sup> /s)	0.02832
	liters/second (L/s)	28.32
cubic feet/second/square mile (csm)	liters/second/square kilometer (L/s/km <sup>2</sup> )	0.0915
cubic feet/second-days	cubic feet	86,400.
cubic inches (cu in)	cubic centimeters (cm <sup>3</sup> )	16.39
	cubic feet (cu ft)	$5.787 \times 10^{-4}$
cubic meters (m <sup>3</sup> )	cubic feet (cu ft)	35.32
	U.S. gallons (U.S. gal)	264.2
	cubic yards (cu yd)	1.308
cubic meters/second (m <sup>3</sup> /s)	million gallons/day (M gal/d)	22.83
cubic meters/square kilometer (m <sup>3</sup> /km <sup>2</sup> )	acre-feet/square mile	$21.0 \times 10^{-4}$
cubic mile (U.S. statute)	acre-feet (acre-ft)	$3.379 \times 10^6$
cubic yards (cu yd)	cubic centimeters (cm <sup>3</sup> )	$7.646 \times 10^5$

<u>To Convert</u>	<u>Into</u>	<u>Multiply By</u>
	cubic feet (cu ft)	27.0
	cubic meters (m <sup>3</sup> )	0.7646
	acre-feet (acre-ft)	6.19 × 10 <sup>-4</sup>
<b>D</b>		
days	seconds (s)	86,400.
degrees Fahrenheit (F)	degrees Celsius (C)	(F° - 32)0.5556
<b>F</b>		
Fahrenheit (F)	Celsius (C)	(F° - 32)0.5556
feet (ft)	centimeters (cm)	30.48
	kilometers (km)	3.048 × 10 <sup>-4</sup>
feet (ft)	meters (m)	0.3048
	miles (mi)	1.894 × 10 <sup>-4</sup>
feet/minute (fpm)	centimeters/second (cm/s)	0.5080
	feet/second (fps)	0.01667
	kilometers/hour (km/h)	0.01829
	miles/hour (mi/h)	0.01136
feet/second (fps)	meters/minute (m/min)	18.29
	meters/second (m/s)	0.3048
	miles/hour (mph)	0.6818
	kilometers/hour (km/h)	1.097
<b>G</b>		
gallons (U.S.)	cubic centimeters (cm <sup>3</sup> )	3,785.0
	cubic feet (cu ft)	0.1337
	cubic inches (cu in)	231.0
	cubic meters (m <sup>3</sup> )	0.003785
	gallons-British Imperial (gal Br. Imp.)	0.8327
	liters (L)	3.785
gallons of water	pounds of water	8.3453
gallons/minute (gpm)	cubic feet/second (cfs)	2.228 × 10 <sup>-3</sup>
	cubic meters/day (m <sup>3</sup> /d)	5.451
	liters/second (L/s)	0.06308
	cubic feet/hour (cu ft/h)	8.0208
grams	pounds (lb)	2.205 × 10 <sup>-3</sup>
grams of water	cubic centimeters of water (cm <sup>3</sup> of H <sub>2</sub> O)	1.0 (at 4°C)
grams/cubic centimeter (g/cm <sup>3</sup> )	kilograms/cubic meter (kg/m <sup>3</sup> )	1,000.
grams/cubic meter (g/m <sup>3</sup> )	parts/million (ppm)	1.0 <sup>c</sup>
<b>H</b>		
hectares	acres	2.471
	square feet (sq ft)	1.076 × 10 <sup>-5</sup>
hours (h)	days (d)	0.04167
	weeks (wk)	5.952 × 10 <sup>-3</sup>

<sup>c</sup>True within 1 percent when concentration is less than 1,000 ppm (g/m<sup>3</sup> = mg/L).



<u>To Convert</u>	<u>Into</u>	<u>Multiply By</u>
<b>I</b>		
inches (in)	centimeters (cm)	2.540
inches (watershed)	cubic feet/second/square mile (csm)	13.584
inches eroded	tons (t) <sup>d</sup>	1.815 × volume wt (pcf) of up- land soil
<b>K</b>		
kilograms (kg)	pounds, avoirdupois (lb)	2.205
	tons (T)	1.102 × 10 <sup>-3</sup>
	megagrams (Mg) or tonnes	1 × 10 <sup>-3</sup>
kilograms/second (kg/sec)	tons/year (T/yr)	34,786.
kilograms/cubic meter (kg/m <sup>3</sup> )	pounds/cubic foot (pcf)	0.06243
kilometers (km)	miles (mi)	0.6214
<b>L</b>		
liters (L)	cubic centimeters (cm <sup>3</sup> )	1,000.
	cubic feet (cu ft)	0.03531
	gallons (gal)	0.2642
liters/second	cubic feet/second (cfs)	0.03531
liters/second/square kilometer (L/s/km <sup>2</sup> )	cubic feet/second/square mile (csm)	10.93
<b>M</b>		
megagrams (Mg)	tons (T)	1.1023
megagrams/square kilometer (Mg/km <sup>2</sup> )	tons/square mile	2.8571
megaliters (ML)	acre-feet (acre-ft)	0.8104
meters (m)	yards (yd)	1.094
	feet (ft)	3.281
	inches (in)	39.37
	miles, U.S. Stat. (mi)	6.214 × 10 <sup>-4</sup>
meters/second (m/s)	feet/second (ft/sec)	3.281
micrometer (μm)	meters (m)	1.0 × 10 <sup>-6</sup>
	cubic dekameters (dam <sup>3</sup> )	1.0
miles, U.S. Stat. (mi)	kilometers (km)	1.609
miles/hour (mph)	feet/second (fps)	1.467
milliliters (ml)	liters (L)	1.0 × 10 <sup>-3</sup>
millimeters (mm)	inches (in)	0.03937
	micrometers (μm)	1.0 × 10 <sup>-3</sup>
million gallons/day (mgd)	cubic feet/second (cfs)	1.547
	acre-feet/day	3.069
	cubic/meters/minute (m <sup>3</sup> /min)	2.629
minutes, angular (min)	degrees (deg)	0.01667

<sup>d</sup>Tons means short tons (2,000 lb) unless otherwise indicated.

<u>To Convert</u>	<u>Into</u>	<u>Multiply By</u>
<b>O</b>		
ounces (oz)	grams (g)	28.35
	pounds (lb)	0.0625
ounces/gallon (U.S.) (oz/gal-U.S.)	grams/liter (gm/L)	7.489
<b>P</b>		
parts per million (ppm)	grams/cubic meter (g/m <sup>3</sup> )	1.0 <sup>e</sup>
pounds (lb)	grains	7,000.
	grams (g)	453.6
	kilograms (kg)	0.4536
	ounces (oz)	16.00
	tons	0.0005
pounds of water	cubic feet (cu ft)	0.01602
	cubic inches (cu in)	27.68
	gallons (gal)	0.1198
pounds of water/minute	cubic feet/second (cfs)	2.670 × 10 <sup>-3</sup>
pounds/cubic foot (pcf)	grams/cubic centimeter (g/cm <sup>3</sup> )	0.01602
	kilograms/cubic meter (kg/m <sup>3</sup> )	16.02
pounds/cubic inch	grams/cubic centimeter (g/cm <sup>3</sup> )	27.68
pounds/gallon (U.S.)	grams/liter (g/L)	119.8
pounds/cubic foot (pcf)	tons/acre-foot (T/acre-ft)	21.78
	kilograms/cubic meter (kg/m <sup>3</sup> )	16.02
pounds/square foot (psf)	pounds/square inch (psi)	6.944 × 10 <sup>-3</sup>
pounds/second/foot	kilograms/second/meter	1.488
<b>R</b>		
rods	feet (ft)	16.50
	miles (mi)	3.125 × 10 <sup>-3</sup>
<b>S</b>		
seconds (s)	days	1.157 × 10 <sup>-5</sup>
square centimeters (cm <sup>2</sup> )	square inches (sq in)	0.1550
square feet (sq ft)	acres	2.296 × 10 <sup>-5</sup>
	square meters (m <sup>2</sup> )	0.0929
square inches (sq in)	square centimeters (cm <sup>2</sup> )	6.452
square kilometers (km <sup>2</sup> )	square miles (sq mi)	0.3861
	acres	247.1
square meters (m <sup>2</sup> )	square feet (sq ft)	10.76
	square yards (sq yd)	1.196
square miles (sq mi)	acres	640.0
	square feet (sq ft)	27.88 × 10 <sup>6</sup>
	square kilometers (km <sup>2</sup> )	2.590
	square meters (m <sup>2</sup> )	2.590 × 10 <sup>6</sup>
	square yards (sq yd)	3.098 × 10 <sup>6</sup>
square yards (sq yd)	square feet (sq ft)	9.000
	square meters (m <sup>2</sup> )	0.8361

<sup>e</sup>True within 1 percent when concentration is less than 10,000 ppm (g/m<sup>3</sup> = mg/L).



To Convert

Into

Multiply By

T

tonnes

tons  
pounds (lb)  
megagrams (Mg)

1.103  
2,205.  
1.000

tons (long)

pounds (lb)  
tons

2,240.  
1.102

tons

pounds (lb)  
kilograms (kg)  
megagrams (Mg)

2,205.  
907.2  
0.9072

pounds (lb)  
tons (long)

2,000.  
0.8929

tonnes

0.9072

tons/square mile

acre-feet/square mile  
(acre-ft/sq mi)  
megagrams/square kilometer (Mg/km<sup>2</sup>)

See fig. 9-1A and B

tons of water/24 hr

tons/acre (T/acre)  
pounds of water/hour  
gallons/minute (gpm)  
cubic feet/hour (cu ft/hr)

0.350  
1.5625 × 10<sup>-3</sup>  
83.33  
0.1664  
1.335

tons/acre-foot

pounds/cubic foot (pcf)

0.04591

W

watershed inches

acre-feet/square mile (acre-ft/sq mi)  
acre-feet (total)

53.33  
53.33 × drainage  
area in sq mi



## Other Conversions

Figures 9-1A and 9-1B are charts for converting various volume-weights or weights of sediment per acre-foot to tons. Table 9-3 is convenient for conversions of hydraulic or sedimentation data. Table 9-4 shows the Greek alphabet. Table 9-5 shows map scales and equivalents for use with aerial photographs and U.S. Geological Survey quadrangles. Table 9-6 illustrates conversion of volume-weight between pounds per cubic foot and tons per acre-foot. Table 9-7 shows conversion of inches to feet.

Suspended sediment and sediment yield can be converted from parts per million by weight to tons as follows:

$$\frac{\text{ppm} \times \text{discharge (cu ft per period)} \times 62.4}{1,000,000 \times 2,000 \text{ (or } 2 \times 10^9\text{)}} = \text{sediment yield (tons per period)}$$

$$\frac{\text{ppm} \times \text{cfs} \times 86,400 \times 62.4}{2 \times 10^9} = \text{ppm} \times \text{cfs}$$
$$\times 0.0027 = \text{sediment yield (tons per day)}$$

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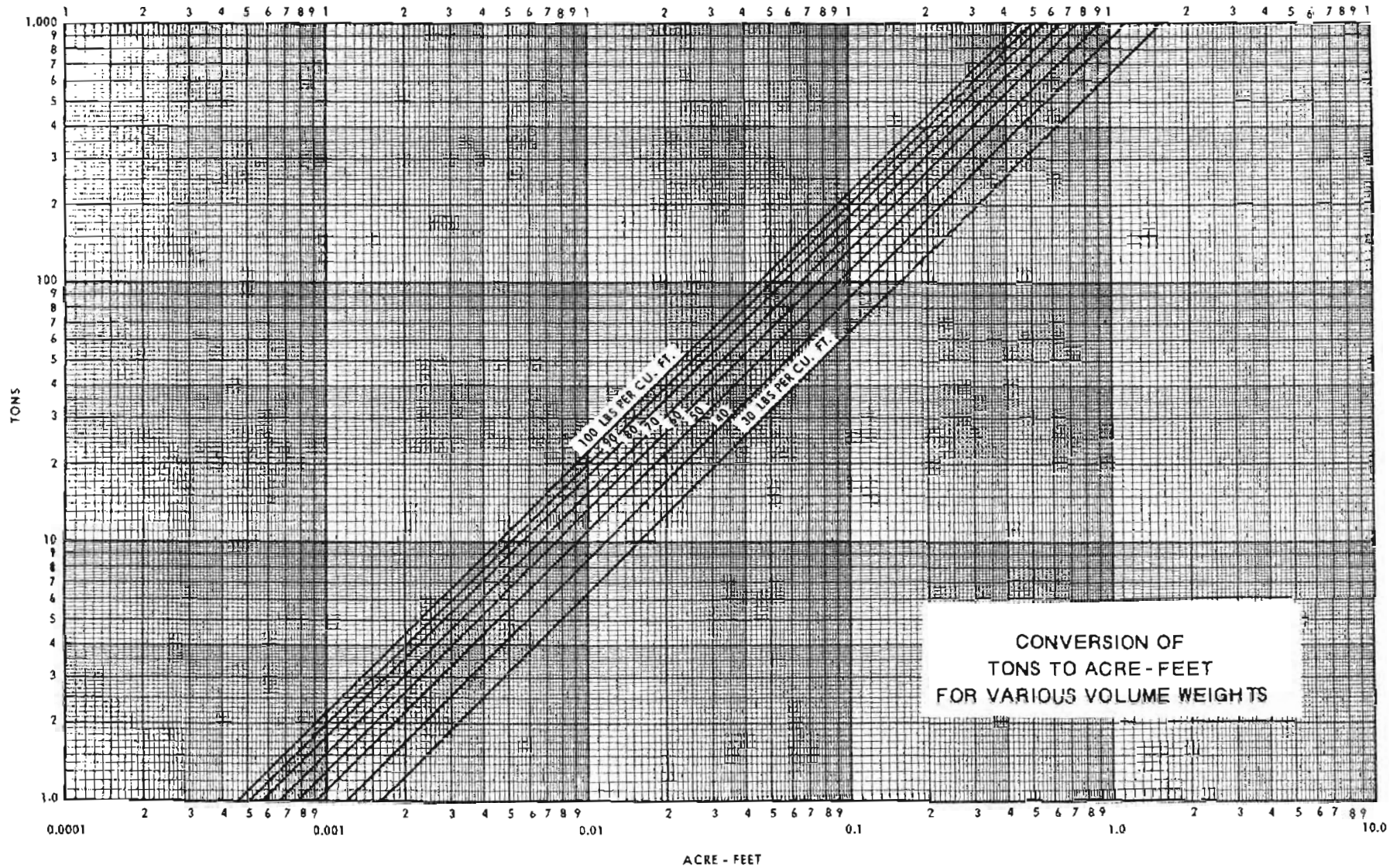


Figure 9-1A.—Conversion of tons to acre-feet for various volume-weights.

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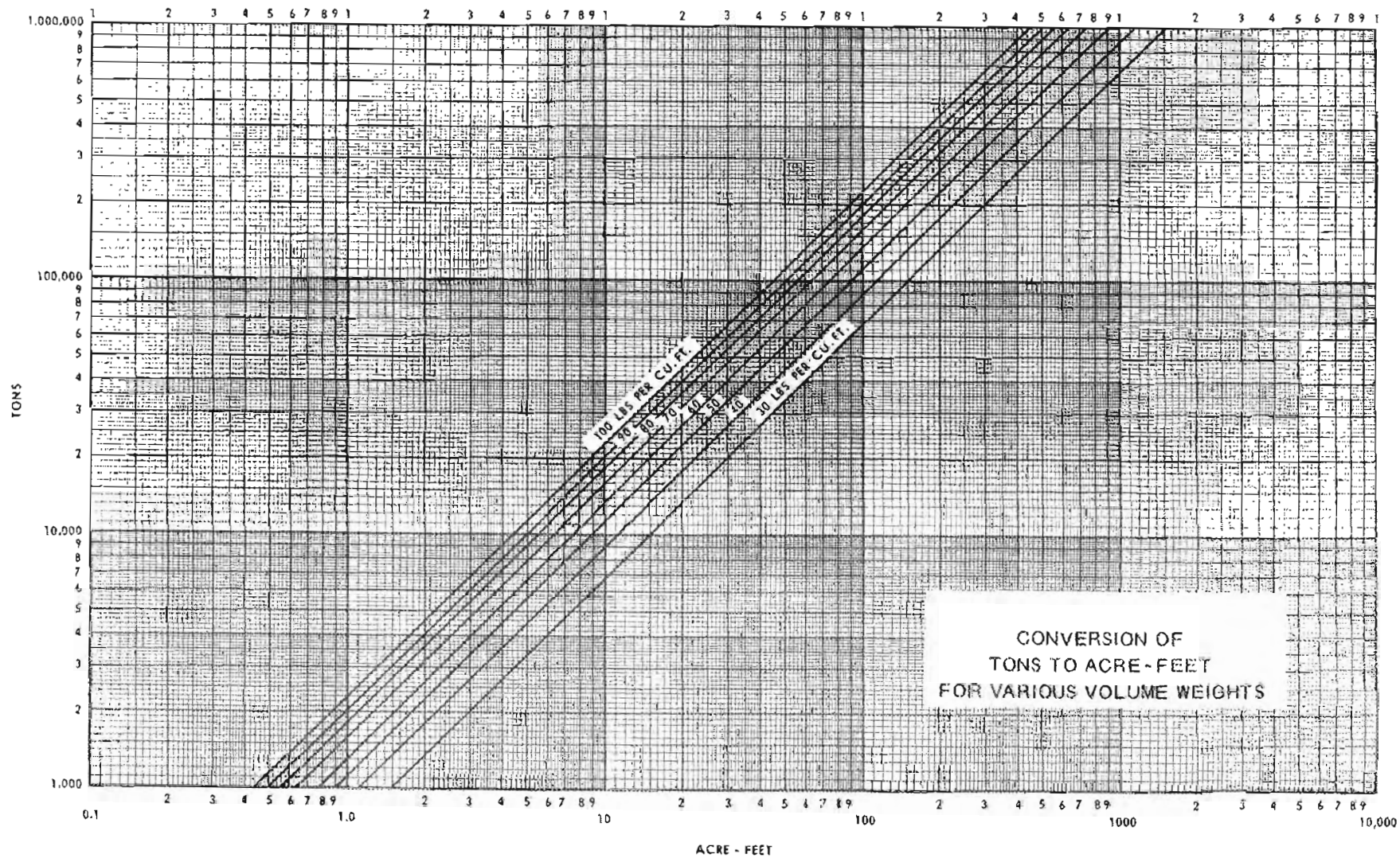


Figure 9-1B.—Conversion of tons to acre-feet for various volume-weights.

Table 9-3.—Conversion factors for hydraulic volumes

Initial unit	Multiplier to obtain:				
	Cfs-days	Cu ft × 10 <sup>6</sup>	Gal × 10 <sup>6</sup>	Acre-ft	In/sq mi
Cfs-days	—	0.08640	0.64632	1.9835	0.037190
Cu ft × 10 <sup>6</sup>	11.574	—	7.4805	22.957	.43044
Gal × 10 <sup>6</sup>	1.5472	0.13368	—	3.0689	.05742
Acre-ft	0.50417	0.04356	0.32585	—	.018750
In/sq mi	26.889	2.3232	17.379	53.33	—

Table 9-4.—Greek alphabet

A α alpha	H η eta	N ν nu	T τ tau
B β beta	Θ θ theta	Ξ ξ xi	Υ υ upsilon
Γ γ gamma	Ι ι iota	Ο ο omicron	Φ φ phi
Δ δ delta	Κ κ kappa	Π π pi	Χ χ chi
E ε epsilon	Λ λ lambda	Ρ ρ rho	Ψ ψ psi
Z ζ zeta	Μ μ mu	Σ σ sigma	Ω ω omega

Table 9-5.—Map scales and area equivalents

Fractional scale	Ft per in.	In. per 1,000 ft	In. per mi	Mi per in.	Meters per in.	Acres per sq. in.	Sq. in. per acre	Sq. mi per sq. in.
1: 500	41.667	24.00	126.72	0.008	12.700	0.0399	25.091	0.00006
1: 600	50.00	20.00	105.60	0.009	15.240	0.0574	17.424	0.00009
1: 1,000	83.333	12.00	63.36	0.016	25.400	0.1594	6.273	0.00025
1: 1,200	100.00	10.00	52.80	0.019	30.480	0.2296	4.356	0.00036
1: 1,500	125.00	8.00	42.24	0.024	38.100	0.3587	2.788	0.00056
1: 2,000	166.667	6.00	31.68	0.032	50.800	0.6377	1.568	0.00100
1: 2,400	200.00	5.00	26.40	0.038	60.960	0.9183	1.089	0.0014
1: 2,500	208.333	4.80	25.344	0.039	63.500	0.9964	1.004	0.0016
1: 3,000	250.00	4.00	21.12	0.047	76.200	1.4348	0.697	0.0022
1: 3,600	300.00	3.333	17.60	0.057	91.440	2.0661	0.484	0.0032
1: 4,000	333.333	3.000	15.84	0.063	101.600	2.5508	0.392	0.0040
1: 4,800	400.00	2.500	13.20	0.076	121.920	3.6731	0.272	0.0057
1: 5,000	416.667	2.400	12.672	0.079	127.000	3.9856	0.251	0.0062
1: 6,000	500.00	2.000	10.56	0.095	152.400	5.7392	0.174	0.0090
1: 7,000	583.333	1.714	9.051	0.110	177.800	7.8117	0.128	0.0122
1: 7,200	600.00	1.667	8.800	0.114	182.880	8.2645	0.121	0.0129
1: 7,920	660.00	1.515	8.000	0.125	201.168	10.00	0.100	0.0156
1: 8,000	666.667	1.500	7.920	0.126	203.200	10.203	0.098	0.0159
1: 8,400	700.00	1.429	7.543	0.133	213.360	11.249	0.089	0.0176
1: 9,000	750.00	1.333	7.041	0.142	228.600	12.913	0.077	0.0202
1: 9,600	800.00	1.250	6.600	0.152	243.840	14.692	0.068	0.0230
1: 10,000	833.333	1.200	6.336	0.158	254.000	15.942	0.063	0.0249
1: 10,800	900.00	1.111	5.867	0.170	274.321	18.595	0.054	0.0291
1: 12,000	1,000.00	1.000	5.280	0.189	304.801	22.957	0.044	0.0359
1: 13,200	1,100.00	0.909	4.800	0.208	335.281	27.778	0.036	0.0434
1: 14,400	1,200.00	0.833	4.400	0.227	365.761	33.058	0.030	0.0517
1: 15,000	1,250.00	0.800	4.224	0.237	381.001	35.870	0.028	0.0560
1: 15,600	1,300.00	0.769	4.062	0.246	396.241	38.797	0.026	0.0606
1: 15,840	1,320.00	0.758	4.000	0.250	402.337	40.000	0.025	0.0625
1: 16,000	1,333.333	0.750	3.960	0.253	406.400	40.812	0.024	0.0638
1: 16,800	1,400.00	0.714	3.771	0.265	426.721	44.995	0.022	0.0703
1: 18,000	1,500.00	0.667	3.520	0.284	457.201	51.653	0.019	0.0807
1: 19,200	1,600.00	0.625	3.300	0.303	487.681	58.770	0.017	0.0918
1: 20,000	1,666.667	0.600	3.168	0.316	508.002	63.769	0.016	0.0996
1: 20,400	1,700.00	0.588	3.106	0.322	518.161	66.345	0.015	0.1037
1: 21,120	1,760.00	0.568	3.000	0.333	536.449	71.111	0.014	0.1111
1: 21,600	1,800.00	0.556	2.933	0.341	548.641	74.380	0.013	0.1162
1: 22,800	1,900.00	0.526	2.779	0.360	579.121	82.874	0.012	0.1295
1: 24,000	2,000.00	0.500	2.640	0.379	609.601	91.827	0.011	0.1435
1: 25,000	2,083.333	0.480	2.534	0.395	635.001	99.639	0.010	0.1557
1: 31,680	2,640.00	0.379	2.000	0.500	804.674	160.000	0.006	0.2500
1: 48,000	4,000.00	0.250	1.320	0.758	1,219.202	367.309	0.003	0.5739
1: 62,500	5,208.333	0.192	1.014	0.986	1,587.503	622.744	0.0016	0.9730
1: 63,360	5,280.00	0.189	1.000	1.000	1,609.347	640.00	0.0016	1.0000
1: 96,000	8,000.00	0.125	0.660	1.515	2,438.405	1,469.24	0.0007	2.2957
1: 125,000	10,416.667	0.096	0.507	1.973	3,175.006	2,490.98	0.0004	3.8922
1: 126,720	10,560.00	0.095	0.500	2.00	3,218.694	2,560.00	0.0004	4.000
1: 250,000	20,833.333	0.048	0.253	3.946	6,350.012	9,963.907	0.0001	15.5686
1: 253,440	21,120.00	0.047	0.250	4.00	6,437.389	10,244.202	0.0001	16.00
1: 500,000	41,666.667	0.024	0.127	7.891	12,700.025	39,855.627	$2.5 \times 10^{-5}$	62.2744
1:1,000,000	83,333.333	0.012	0.063	15.783	25,400.050	159,422.507	$6.2 \times 10^{-6}$	249.0977
FORMULAS	SCALE	12,000	63,360	SCALE	Ft per in.	(SCALE) <sup>2</sup>	43,560 × 144	(Ft per in.) <sup>2</sup>
	12	SCALE	SCALE	63,360	× 0.3048006	43,560 × 144	(SCALE) <sup>2</sup>	(5,280) <sup>2</sup>



Table 9-6.—Volume-weight conversions

Lb per cu ft	Tons per acre-ft	Acre-ft per ton	Acre-in. per ton	Tons per acre-in.	Lb per cu ft	Tons per acre-ft	Acre-ft per ton	Acre-in. per ton	Tons per acre-in.
30	653.40	0.00153	0.01837	54.45					
31	675.18	.00148	.01777	56.27	76	1,655.28	0.00060	0.00725	137.94
32	696.96	.00144	.01722	58.08	77	1,677.06	.00060	.00715	139.76
33	718.74	.00139	.01670	59.90	78	1,698.84	.00059	.00706	141.57
34	740.52	.00135	.01620	61.71	79	1,720.62	.00058	.00697	143.39
35	762.30	.00131	.01574	63.53	80	1,742.40	.00057	.00689	145.20
36	784.08	.00128	.01530	65.34	81	1,764.18	.00057	.00679	147.02
37	805.86	.00124	.01489	67.16	82	1,785.96	.00056	.00672	148.83
38	827.64	.00121	.01450	68.97	82.65	1,800.12	.00056	.00666	150.01
39	849.42	.00118	.01412	70.79	83	1,807.74	.00055	.00664	150.65
40	871.20	.00115	.01378	72.60	84	1,829.52	.00055	.00655	152.46
41	892.98	.00112	.01344	74.42	85	1,851.30	.00054	.00648	154.28
42	914.76	.00109	.01312	76.23	86	1,873.08	.00053	.00641	156.09
43	936.54	.00107	.01282	78.05	87	1,894.86	.00053	.00634	157.91
44	958.32	.00104	.01252	79.86	88	1,916.64	.00052	.00626	159.72
45	980.10	.00102	.01224	81.68	89	1,938.42	.00052	.00619	161.54
46	1,001.88	.00100	.01198	83.49	90	1,960.20	.00051	.00612	163.35
47	1,023.66	.00098	.01172	85.31	91	1,981.98	.00051	.00606	165.17
48	1,045.44	.00096	.01147	87.12	92	2,003.76	.00050	.00599	166.98
49	1,067.22	.00094	.01124	88.94	93	2,025.54	.00049	.00592	168.80
50	1,089.00	.00092	.01102	90.75	94	2,047.32	.00049	.00586	170.61
51	1,110.78	.00090	.01080	92.57	95	2,069.10	.00048	.00580	172.43
52	1,132.56	.00088	.01060	94.38	96	2,090.88	.00048	.00574	174.24
53	1,154.34	.00087	.01039	96.20	97	2,112.66	.00047	.00568	176.06
54	1,176.12	.00085	.01020	98.01	98	2,134.44	.00047	.00563	177.87
55	1,197.90	.00084	.01002	99.83	99	2,156.22	.00046	.00557	179.69
56	1,219.46	.00082	.00984	101.62	100	2,178.00	.00046	.00551	181.50
57	1,241.46	.00081	.00967	103.46	101	2,199.78	.00046	.00546	183.32
58	1,263.24	.00079	.00949	105.27	102	2,221.56	.00045	.00540	185.13
59	1,285.02	.00078	.00934	107.09	103	2,243.34	.00045	.00535	186.95
60	1,306.80	.00077	.00918	108.90	104	2,265.12	.00044	.00529	188.76
61	1,328.58	.00075	.00904	110.72	105	2,286.90	.00044	.00524	190.58
62	1,350.36	.00074	.00889	112.53	106	2,308.68	.00043	.00520	192.39
62.43	1,359.73	.00074	.00883	113.31	107	2,330.46	.00043	.00515	194.21
63	1,372.14	.00073	.00875	114.35	108	2,352.24	.00043	.00510	196.02
64	1,393.92	.00072	.00860	116.16	109	2,374.02	.00042	.00505	197.84
65	1,415.70	.00071	.00847	117.98	110	2,395.80	.00042	.00500	199.65
66	1,437.48	.00070	.00834	119.79	111	2,417.58	.00041	.00497	201.47
67	1,459.26	.00069	.00822	121.61	112	2,439.36	.00041	.00492	203.28
68	1,481.04	.00068	.00810	123.42	113	2,461.14	.00041	.00487	205.10
69	1,502.82	.00067	.00798	125.24	114	2,482.92	.00040	.00484	206.91
70	1,524.60	.00066	.00787	127.05	115	2,504.70	.00040	.00479	208.73
71	1,546.38	.00065	.00776	128.87	116	2,526.48	.00040	.00475	210.54
72	1,568.16	.00064	.00764	130.68	117	2,548.26	.00039	.00470	212.36
73	1,589.94	.00063	.00755	132.50	118	2,570.04	.00039	.00467	214.17
74	1,611.72	.00062	.00744	134.31	119	2,591.82	.00039	.00463	215.99
75	1,633.50	.00061	.00734	136.13	120	2,613.60	.00038	.00460	217.80

Table 9-7.—Conversion of inches to feet

1 in. = 0.08 ft	7 in. = 0.58 ft
2 in. = 0.17 ft	8 in. = 0.67 ft
3 in. = 0.25 ft	9 in. = 0.75 ft
4 in. = 0.33 ft	10 in. = 0.83 ft
5 in. = 0.42 ft	11 in. = 0.92 ft
6 in. = 0.50 ft	12 in. = 1.00 ft

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