

4-1944

Photographic Interpretation Handbook, United States Forces: Section 04 Tables

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Bolin, Robert L. Depositor, "Photographic Interpretation Handbook, United States Forces: Section 04 Tables" (1944). *DOD Military Intelligence*. 7.
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**SECTION
TABLES**

4.01 — 4.99

UNITS OF LENGTH, ENGLISH & METRIC

Statute Mile	Kilometers	Meters	Yards	Feet	Inches	Centimeters
1	1.6093	1609.3	1760	5280	63360	160934
	1	1000	1093.6	3280.8	39370	100000
		1	1.0936	3.281	39.37	100
			1	3	36	91.44
				1	12	30.48
					1	2.54

1 link = 7.92 inches
 1 rod = 25 links = 16½ feet
 1 chain = 100 links = 4 rods
 1 furlong = 10 chains = 40 rods
 1 mile = 8 furlongs
 1 league = 3 miles

1 Centimeter = 10 Millimeters
 1 Decimeter = 10 Centimeters
 1 Meter = 10 Decimeters
 1 Decameter = 10 Meters
 1 Hectometer = 10 Decameters
 1 Kilometer = 10 Hectometers
 1 Myriameter = 10 Kilometers

1 fathom = 6 feet
 1 nautical mile = approx. 1.15 statue miles = 1' of arc at the equator

UNITS OF LENGTH, ENGLISH & RUSSIAN METRIC

Statute Mile	Verst	Kilometer	Sajenyam	Meters	Yards	Feet Futam	Inches Dymimam	Centimeters
1	1.5086	1.6093	754.29	1,609.3	1,760	5,280	63,360	160,934
	1	1.0568	500	1,066.8	1,156.67	3,500	42,000	106,680
		1	468.7	1,000	1,093.6	3,280.8	39,370	100,000
			1	2.1336	2.333	7	84	213.36

OTHER RUSSIAN MEASURES

1 marine sajen = 1 fathom
 1 arshin = 28 inches
 1 stopa = 14 inches

1 vershok = 1.75 inches
 1 paletz = 5 inches

The Russian foot and inch are the exact equivalents of the English units.

INTERNATIONAL MILE MEASUREMENTS

The English statute mile = 1,760 yards
 The Italian mile = 1,467 yards
 The Spanish mile = 5,028 yards
 The Austrian mile = 8,296 yards
 The geographical or nautical mile = 2,026 2/3 yards
 The Russian verst = 1,168 yards
 The kilometer = 1,093 yards

TABLES

UNITS OF MEASURE (CONT.)

RESTRICTED

UNITS OF AREA

1 sq. inch = 6.452 sq. centimeters
 1 sq. foot = 144 sq. inches = .093 sq. meters
 1 sq. yard = 9 sq. feet = .836 sq. meters
 1 acre = 4,840 sq. yards = 4,047 sq. meters
 1 sq. mile = 640 acres = 259 Hectares

1 Centare = 1 sq. meter = 1,550 sq. inches
 1 Are = 100 sq. meters = 119.6 sq. yards
 1 Hectare = 10,000 sq. meters = 2.471 acres

UNITS OF VOLUME

1 cubic inch = 16.39 cubic centimeters = .0164 liters
 1 cubic foot = 1728 cubic inches = 28.339 liters
 1 cubic yard = 27 cubic feet = 765.16 liters

1 pint liquid = 4 gills = 473.2 liters
 1 quart liquid = 2 pints = 946.3 liters
 1 gallon = 4 quarts = 231 cu. inch. = 3.785 liters
 1 barrel = 31.5 gallons = 4.21 cu. feet
 1 hogshead = 2 barrels
 1 Imperial gallon (Great Britain) = 277.274 cu. inches

1 liter = 1000 cu. centimeters = 61.02 cu. inches
 = .908 quarts (dry) = 1.0567 quarts (liquid)
 1 hectoliter = 100 liters = .1 cu. meter
 = 25.417 gallons
 1 kiloliter = 1000 liters = 1 cu. meter
 = 264.17 gallons = 1.308 cu. yards

UNITS OF WEIGHT

1 ounce (av.) = 28.3495 grams
 1 pound = 16 ounces = 453.59 grams
 1 short ton = 2000 pounds = .9072 metric tons
 1 long ton = 2240 pounds = 1.016 metric tons

1 gram = .03527 Ounces (av.) = weight of 1 cu. centimeter of water
 1 kilogram = 1000 grams = 2.2046 pounds = 1 liter of water
 1 metric ton (millier) = 1000 kilograms = 2204.6 pounds
 = weight of 1 cu. meter of water

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TABLES

DEGREES & GRADES

GRADES AND DEGREES

On American and British maps, and those of several other countries, the geographic coordinates used are based on the 360 degree circle. On many French and certain other continental maps, however, the coordinate system used is based on a 400 grade circle. The units are subdivided as follows:

Degrees (Sexagesimal)		Grades (Centesimal)	
Complete circle =	360 degrees	Complete circle =	400 grades
1 degree =	60 minutes	1 grade =	100 minutes
1 minute =	60 seconds	1 minute =	100 seconds

An angle or coordinate in degrees is written as follows: 25° 10' 30"

An angle or coordinate in grades is written as follows: 65 G 45' 70", or may be expressed decimally 65.4570 G.

CONVERSION OF GRADES TO DEGREES

In changing grades to degrees, first the number of grades is expressed decimally as a part of a right angle, i.e. 65 G 45' 70" is .65457 of a right angle or of 90°. Then .65457 X 90 = 58.9113°, which is the equivalent number of degrees expressed decimally. The fractional portion of the number of degrees, .9113, is changed to minutes by multiplying by 60, giving 54.678'. Again, the fractional portion of the number of minutes, .678, is changed to seconds by multiplying by 60. .678 X 60 = 40.68", which may be simplified to 41". The angle may now be expressed in degrees as 58° 54' 41".

CONVERSION OF DEGREES TO GRADES

In changing degrees to grades, first the number of seconds is converted to decimal parts of a minute by dividing by 60, i.e. 25° 10' 30" becomes 25° 10.5'. Minutes are next changed to decimal parts of degrees by dividing by 60. 10.5 / 60 = .175, then 25° 10.5' becomes 25.175°. The number of degrees must now be divided by 90 to change to a decimal part of a right angle. 25.175/90 = .279722. Since there are 100 grades in a right angle, the angle may be written as 27 G 97' 22".

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TABLES
DEGREES & GRADES (CONT.)

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TABLES
DEGREES & GRADES (CONT.)

CONVERSION TABLE
GRADES TO DEGREES

Whole Numbers			Decimals							
Grades to Degrees and Minutes	Minutes Centesimal to Minutes and Seconds Sexagesimal	Seconds Centesimal to Seconds Sexagesimal	Grades to Degrees and Minutes	Minutes Centesimal to Minutes and Seconds Sexagesimal	Seconds Centesimal to Seconds Sexagesimal	Decimals of Second Centesimal	Decimals of Second Sexagesimal	Decimals of Second Centesimal	Decimals of Second Sexagesimal	
1	0 54	0 32.4	51	45 54	27 32.4	16.524	.01	0.003	.51	0.165
2	1 48	1 04.8	52	46 48	28 04.8	16.848	.02	.006	.52	.168
3	2 42	1 37.2	53	47 42	28 37.2	17.172	.03	.010	.53	.172
4	3 36	2 09.6	54	48 36	29 09.6	17.496	.04	.013	.54	.175
5	4 30	2 42.0	55	49 30	29 42.0	17.820	.05	.016	.55	.178
6	5 24	3 14.4	56	50 24	30 14.4	18.144	.06	.019	.56	.181
7	6 18	3 46.8	57	51 18	30 46.8	18.468	.07	.023	.57	.185
8	7 12	4 19.2	58	52 12	31 19.2	18.792	.08	.026	.58	.188
9	8 06	4 51.6	59	53 06	31 51.6	19.116	.09	.029	.59	.191
10	9 00	5 24.0	60	54 00	32 24.0	19.440	.10	.032	.60	.194
11	9 54	5 56.4	61	54 54	32 56.4	19.764	.11	.036	.61	.198
12	10 48	6 28.8	62	55 48	33 28.8	20.088	.12	.039	.62	.201
13	11 42	7 01.2	63	56 42	34 01.2	20.412	.13	.042	.63	.204
14	12 36	7 33.6	64	57 36	34 33.6	20.736	.14	.045	.64	.207
15	13 30	8 06.0	65	58 30	35 06.0	21.060	.15	.049	.65	.211
16	14 24	8 38.4	66	59 24	35 38.4	21.384	.16	.052	.66	.214
17	15 18	9 10.8	67	60 18	36 10.8	21.708	.17	.055	.67	.217
18	16 12	9 43.2	68	61 12	36 43.2	22.032	.18	.058	.68	.220
19	17 06	10 15.6	69	62 06	37 15.6	22.356	.19	.062	.69	.224
20	18 00	10 48.0	70	63 00	37 48.0	22.680	.20	.065	.70	.227
21	18 54	11 20.4	71	63 54	38 20.4	23.004	.21	.068	.71	.230
22	19 48	11 52.8	72	64 48	38 52.8	23.328	.22	.071	.72	.233
23	20 42	12 25.2	73	65 42	39 25.2	23.652	.23	.075	.73	.237
24	21 36	12 57.6	74	66 36	39 57.6	23.976	.24	.078	.74	.240
25	22 30	13 30.0	75	67 30	40 30.0	24.300	.25	.081	.75	.243
26	23 24	14 02.4	76	68 24	41 02.4	24.624	.26	.084	.76	.246
27	24 18	14 34.8	77	69 18	41 34.8	24.948	.27	.087	.77	.249
28	25 12	15 07.2	78	70 12	42 07.2	25.272	.28	.091	.78	.253
29	26 06	15 39.6	79	71 06	42 39.6	25.596	.29	.094	.79	.256
30	27 00	16 12.0	80	72 00	43 12.0	25.920	.30	.097	.80	.259
31	27 54	16 44.4	81	72 54	43 44.4	26.244	.31	.100	.81	.262
32	28 48	17 16.8	82	73 48	44 16.8	26.568	.32	.104	.82	.266
33	29 42	17 49.2	83	74 42	44 49.2	26.892	.33	.107	.83	.269
34	30 36	18 21.6	84	75 36	45 21.6	27.216	.34	.110	.84	.272
35	31 30	18 54.0	85	76 30	45 54.0	27.540	.35	.113	.85	.275
36	32 24	19 26.4	86	77 24	46 26.4	27.864	.36	.117	.86	.279
37	33 18	19 58.8	87	78 18	46 58.8	28.188	.37	.120	.87	.282
38	34 12	20 31.2	88	79 12	47 31.2	28.512	.38	.123	.88	.285
39	35 06	21 03.6	89	80 06	48 03.6	28.836	.39	.126	.89	.288
40	36 00	21 36.0	90	81 00	48 36.0	29.160	.40	.130	.90	.292
41	36 54	22 08.4	91	81 54	49 08.4	29.484	.41	.133	.91	.295
42	37 48	22 40.8	92	82 48	49 40.8	29.808	.42	.136	.92	.298
43	38 42	23 13.2	93	83 42	50 13.2	30.132	.43	.139	.93	.301
44	39 36	23 45.6	94	84 36	50 45.6	30.456	.44	.143	.94	.305
45	40 30	24 18.0	95	85 30	51 18.0	30.780	.45	.146	.95	.308
46	41 24	24 50.4	96	86 24	51 50.4	31.104	.46	.149	.96	.311
47	42 18	25 22.8	97	87 18	52 22.8	31.428	.47	.152	.97	.314
48	43 12	25 55.2	98	88 12	52 55.2	31.752	.48	.156	.98	.318
49	44 06	26 27.6	99	89 06	53 27.6	32.076	.49	.159	.99	.321
50	45 00	27 00.0	100	90 00	54 00.0	32.400	.50	.162	1.00	.324

CONVERSION TABLE
DEGREES TO GRADES

Degrees	Grades	Degrees	Grades	Minutes Sexagesimal to Minutes Centesimal	Seconds Sexagesimal to Seconds Centesimal	Decimals of a Second Sexagesimal to Decimals of a Second Centesimal				
1	1.1...	61	67.7...	1	1.85 185	3.086	.01	.031	.61	1.883
2	2.2...	62	68.8...	2	3.70 370	6.173	.02	.062	.62	1.914
3	3.3...	63	70.0...	3	5.55 556	9.259	.03	.093	.63	1.945
4	4.4...	64	71.1...	4	7.40 741	12.346	.04	.123	.64	1.975
5	5.5...	65	72.2...	5	9.25 926	15.432	.05	.154	.65	2.006
6	6.6...	66	73.3...	6	11.11 111	18.519	.06	.185	.66	2.037
7	7.7...	67	74.4...	7	12.96 296	21.605	.07	.216	.67	2.068
8	8.8...	68	75.5...	8	14.81 481	24.691	.08	.247	.68	2.099
9	10.0...	69	76.6...	9	16.66 667	27.778	.09	.278	.69	2.130
10	11.1...	70	77.7...	10	18.51 852	30.864	.10	.309	.70	2.160
11	12.2...	71	78.8...	11	20.37 037	33.951	.11	.340	.71	2.191
12	13.3...	72	80.0...	12	22.22 222	37.037	.12	.370	.72	2.222
13	14.4...	73	81.1...	13	24.07 407	40.123	.13	.401	.73	2.253
14	15.5...	74	82.2...	14	25.92 593	43.210	.14	.432	.74	2.284
15	16.6...	75	83.3...	15	27.77 778	46.296	.15	.463	.75	2.315
16	17.7...	76	84.4...	16	29.62 963	49.383	.16	.494	.76	2.346
17	18.8...	77	85.5...	17	31.48 148	52.469	.17	.525	.77	2.376
18	20.0...	78	86.6...	18	33.33 333	55.556	.18	.556	.78	2.407
19	21.1...	79	87.7...	19	35.18 519	58.642	.19	.586	.79	2.438
20	22.2...	80	88.8...	20	37.03 704	61.728	.20	.617	.80	2.469
21	23.3...	81	90.0...	21	38.88 889	64.815	.21	.648	.81	2.500
22	24.4...	82	91.1...	22	40.74 074	67.901	.22	.679	.82	2.531
23	25.5...	83	92.2...	23	42.59 259	70.988	.23	.710	.83	2.562
24	26.6...	84	93.3...	24	44.44 444	74.074	.24	.741	.84	2.593
25	27.7...	85	94.4...	25	46.29 630	77.161	.25	.772	.85	2.624
26	28.8...	86	95.5...	26	48.14 815	80.247	.26	.802	.86	2.655
27	30.0...	87	96.6...	27	50.00 000	83.333	.27	.833	.87	2.685
28	31.1...	88	97.7...	28	51.85 185	86.420	.28	.864	.88	2.716
29	32.2...	89	98.8...	29	53.70 370	89.506	.29	.895	.89	2.747
30	33.3...	90	100.0...	30	55.55 556	92.593	.30	.926	.90	2.778
31	34.4...	91	101.1...	31	57.40 741	95.679	.31	.957	.91	2.809
32	35.5...	92	102.2...	32	59.25 926	98.765	.32	.988	.92	2.840
33	36.6...	93	103.3...	33	61.11 111	101.852	.33	1.019	.93	2.870
34	37.7...	94	104.4...	34	62.96 296	104.938	.34	1.049	.94	2.901
35	38.8...	95	105.5...	35	64.81 481	108.025	.35	1.080	.95	2.932
36	40.0...	96	106.6...	36	66.66 667	111.111	.36	1.111	.96	2.963
37	41.1...	97	107.7...	37	68.51 852	114.198	.37	1.142	.97	2.994
38	42.2...	98	108.8...	38	70.37 037	117.284	.38	1.173	.98	3.025
39	43.3...	99	110.0...	39	72.22 222	120.370	.39	1.204	.99	3.055
40	44.4...	100	111.1...	40	74.07 407	123.457	.40	1.234		
41	45.5...			41	75.92 593	126.543	.41	1.265		
42	46.6...			42	77.77 778	129.630	.42	1.296		
43	47.7...			43	79.62 963	132.716	.43	1.327		
44	48.8...			44	81.48 148	135.802	.44	1.358		
45	50.0...			45	83.33 333	138.889	.45	1.389		
46	51.1...			46	85.18 519	141.975	.46	1.420		
47	52.2...			47	87.03 704	145.062	.47	1.451		
48	53.3...			48	88.88 889	148.148	.48	1.481		
49	54.4...			49	90.74 074	151.234	.49	1.512		
50	55.5...			50	92.59 259	154.321	.50	1.543		
51	56.6...			51	94.44 444	157.407	.51	1.574		
52	57.7...			52	96.29 630	160.494	.52	1.605		
53	58.8...			53	98.14 815	163.580	.53	1.636		
54	60.0...			54	100.00 000	166.667	.54	1.667		
55	61.1...			55	101.85 185	169.753	.55	1.698		
56	62.2...			56	103.70 370	172.839	.56	1.728		
57	63.3...			57	105.55 556	175.926	.57	1.759		
58	64.4...			58	107.40 741	179.012	.58	1.790		
59	65.5...			59	109.25 926	182.099	.59	1.821		
60	66.6...			60	111.11 111	185.185	.60	1.852		

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TABLES

REFERENCE MERIDIANS

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Although the equator is generally used as zero latitude, not all countries use the meridian at Greenwich, England, as a reference for longitudinal coordinates. Some have used the Ferro Islands and several the capital of their respective country, or that of France as the location of the zero meridian. In utilizing maps having different reference meridians, as for example in transferring information from one to another, it is necessary to know the angular separation of their reference meridians, preferably in degrees. The following table shows the reference meridians which have been used by various countries and the longitude of the meridian from Greenwich, England:

COUNTRY	REFERENCE MERIDIAN	LONGITUDE FROM GREENWICH	REMARKS
Austria	Ferro Islands	17° 40' W.	Old Austro-Hungarian staff maps, extending over much of the Balkans.
Belgium	Brussels	4° 22' E.	
Denmark	Copenhagen	12° 34' 40" E.	Greenwich for Ferro Islands and Iceland
France	Paris	2° 20' 13.950" E.	2 G 59' 69"
Germany	Greenwich		
	Ferro Islands	17° 40' W.	
Italy	Rome	12° 28' E.	
Netherlands	Amsterdam	4° 53' 02" E.	
Norway	Oslo	10° 43' 20" E.	For all general maps
	Ferro Islands	17° 40' W.	For Amt. (1/200,000 Countries Map).
Portugal	Lisbon	9° 11' W.	
Roumania	Paris	2° 20' 14" E.	
Spain	Madrid	3° 41' 15" W.	
Sweden	Stockholm	18° 03' 29" E.	
Switzerland	Paris	2° 20' 14" E.	

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TABLES

CONVERSION OF TIME TO LONGITUDE

CONVERSION OF TIME INTO DEGREES OF LONGITUDE

h.m. °	h.m. °	h.m. °	h.m. °	h.m. °	h.m. °	h.m. °	h.m. °
0:00 0	3:00 45	6:00 90	9:00 135	12:00 180	15:00 225	18:00 270	21:00 315
0:04 1	3:04 46	6:04 91	9:04 136	12:04 181	15:04 226	18:04 271	21:04 316
0:08 2	3:08 47	6:08 92	9:08 137	12:08 182	15:08 227	18:08 272	21:08 317
0:12 3	3:12 48	6:12 93	9:12 138	12:12 183	15:12 228	18:12 273	21:12 318
0:16 4	3:16 49	6:16 94	9:16 139	12:16 184	15:16 229	18:16 274	21:16 319
0:20 5	3:20 50	6:20 95	9:20 140	12:20 185	15:20 230	18:20 275	21:20 320
0:24 6	3:24 51	6:24 96	9:24 141	12:24 186	15:24 231	18:24 276	21:24 321
0:28 7	3:28 52	6:28 97	9:28 142	12:28 187	15:28 232	18:28 277	21:28 322
0:32 8	3:32 53	6:32 98	9:32 143	12:32 188	15:32 233	18:32 278	21:32 323
0:36 9	3:36 54	6:36 99	9:36 144	12:36 189	15:36 234	18:36 279	21:36 324
0:40 10	3:40 55	6:40 100	9:40 145	12:40 190	15:40 235	18:40 280	21:40 325
0:44 11	3:44 56	6:44 101	9:44 146	12:44 191	15:44 236	18:44 281	21:44 326
0:48 12	3:48 57	6:48 102	9:48 147	12:48 192	15:48 237	18:48 282	21:48 327
0:52 13	3:52 58	6:52 103	9:52 148	12:52 193	15:52 238	18:52 283	21:52 328
0:56 14	3:56 59	6:56 104	9:56 149	12:56 194	15:56 239	18:56 284	21:56 329
1:00 15	4:00 60	7:00 105	10:00 150	13:00 195	16:00 240	19:00 285	22:00 330
1:04 16	4:04 61	7:04 106	10:04 151	13:04 196	16:04 241	19:04 286	22:04 331
1:08 17	4:08 62	7:08 107	10:08 152	13:08 197	16:08 242	19:08 287	22:08 332
1:12 18	4:12 63	7:12 108	10:12 153	13:12 198	16:12 243	19:12 288	22:12 333
1:16 19	4:16 64	7:16 109	10:16 154	13:16 199	16:16 244	19:16 289	22:16 334
1:20 20	4:20 65	7:20 110	10:20 155	13:20 200	16:20 245	19:20 290	22:20 335
1:24 21	4:24 66	7:24 111	10:24 156	13:24 201	16:24 246	19:24 291	22:24 336
1:28 22	4:28 67	7:28 112	10:28 157	13:28 202	16:28 247	19:28 292	22:28 337
1:32 23	4:32 68	7:32 113	10:32 158	13:32 203	16:32 248	19:32 293	22:32 338
1:36 24	4:36 69	7:36 114	10:36 159	13:36 204	16:36 249	19:36 294	22:36 339
1:40 25	4:40 70	7:40 115	10:40 160	13:40 205	16:40 250	19:40 295	22:40 340
1:44 26	4:44 71	7:44 116	10:44 161	13:44 206	16:44 251	19:44 296	22:44 341
1:48 27	4:48 72	7:48 117	10:48 162	13:48 207	16:48 252	19:48 297	22:48 342
1:52 28	4:52 73	7:52 118	10:52 163	13:52 208	16:52 253	19:52 298	22:52 343
1:56 29	4:56 74	7:56 119	10:56 164	13:56 209	16:56 254	19:56 299	22:56 344
2:00 30	5:00 75	8:00 120	11:00 165	14:00 210	17:00 255	20:00 300	23:00 345
2:04 31	5:04 76	8:04 121	11:04 166	14:04 211	17:04 256	20:04 301	23:04 346
2:08 32	5:08 77	8:08 122	11:08 167	14:08 212	17:08 257	20:08 302	23:08 347
2:12 33	5:12 78	8:12 123	11:12 168	14:12 213	17:12 258	20:12 303	23:12 348
2:16 34	5:16 79	8:16 124	11:16 169	14:16 214	17:16 259	20:16 304	23:16 349
2:20 35	5:20 80	8:20 125	11:20 170	14:20 215	17:20 260	20:20 305	23:20 350
2:24 36	5:24 81	8:24 126	11:24 171	14:24 216	17:24 261	20:24 306	23:24 351
2:28 37	5:28 82	8:28 127	11:28 172	14:28 217	17:28 262	20:28 307	23:28 352
2:32 38	5:32 83	8:32 128	11:32 173	14:32 218	17:32 263	20:32 308	23:32 353
2:36 39	5:36 84	8:36 129	11:36 174	14:36 219	17:36 264	20:36 309	23:36 354
2:40 40	5:40 85	8:40 130	11:40 175	14:40 220	17:40 265	20:40 310	23:40 355
2:44 41	5:44 86	8:44 131	11:44 176	14:44 221	17:44 266	20:44 311	23:44 356
2:48 42	5:48 87	8:48 132	11:48 177	14:48 222	17:48 267	20:48 312	23:48 357
2:52 43	5:52 88	8:52 133	11:52 178	14:52 223	17:52 268	20:52 313	23:52 358
2:56 44	5:56 89	8:56 134	11:56 179	14:56 224	17:56 269	20:56 314	23:56 359
3:00 45	6:00 90	9:00 135	12:00 180	15:00 225	18:00 270	21:00 315	24:00 360

RESTRICTED

RESTRICTED

NATURAL TRIGONOMETRIC FUNCTIONS

Table with columns for Degrees (0-90), Sines, and Cosines. It provides values for sine and cosine functions at 1-degree intervals.

RESTRICTED

NATURAL TRIGONOMETRIC FUNCTIONS

Table with columns for Degrees (0-90), Cosines, and Sines. It provides values for cosine and sine functions at 1-degree intervals.

TABLES
NATURAL SINES, ETC.

RESTRICTED

NATURAL TRIGONOMETRIC FUNCTIONS

Table with columns for Degrees (0-90), Tangents, and Cotangents. It provides values for tangent and cotangent functions at 1-degree intervals.

RESTRICTED

NATURAL TRIGONOMETRIC FUNCTIONS

Table with columns for Degrees (0-90), Cotangents, and Tangents. It provides values for cotangent and tangent functions at 1-degree intervals.

RESTRICTED

NATURAL SINES, ETC. (CONT.)

TABLES

N	0	1	2	3	4	5	6	7	8	9
10	00000	00432	00860	01284	01703	02119	02531	02938	03342	03743
11	04139	04532	04922	05308	05690	06070	06446	06819	07188	07555
12	07918	08279	08636	08991	09342	09691	10037	10380	10721	11059
13	11394	11727	12057	12385	12710	13033	13354	13672	13988	14301
14	14613	14922	15229	15534	15836	16137	16435	16732	17026	17319
15	17609	17898	18184	18469	18752	19033	19312	19590	19866	20140
16	20412	20683	20952	21219	21484	21748	22011	22272	22531	22789
17	23045	23300	23553	23805	24055	24304	24551	24797	25042	25285
18	25527	25768	26007	26245	26482	26717	26951	27184	27416	27646
19	27875	28103	28330	28556	28780	29003	29226	29447	29667	29885
20	30103	30320	30535	30750	30963	31175	31387	31597	31806	32015
21	32222	32428	32634	32838	33041	33244	33445	33646	33846	34044
22	34242	34439	34635	34830	35025	35218	35411	35603	35793	35984
23	36173	36361	36549	36736	36922	37107	37291	37475	37658	37840
24	38021	38202	38382	38561	38739	38917	39094	39270	39445	39620
25	39794	39967	40140	40312	40483	40654	40824	40993	41162	41330
26	41497	41664	41830	41996	42160	42325	42488	42651	42813	42975
27	43136	43297	43457	43616	43775	43933	44091	44248	44404	44560
28	44716	44871	45025	45179	45332	45484	45637	45788	45939	46090
29	46240	46389	46538	46687	46835	46982	47129	47276	47422	47567
30	47712	47857	48001	48144	48287	48430	48572	48714	48855	48996
31	49136	49276	49415	49554	49693	49831	49969	50106	50243	50379
32	50515	50651	50786	50920	51055	51188	51322	51455	51587	51720
33	51851	51983	52114	52244	52375	52504	52634	52763	52892	53020
34	53148	53275	53403	53529	53656	53782	53908	54033	54158	54283
35	54407	54531	54654	54777	54900	55023	55145	55267	55388	55509
36	55630	55751	55871	55991	56110	56229	56348	56467	56585	56703
37	56820	56937	57054	57171	57287	57403	57519	57634	57749	57864
38	57978	58092	58206	58320	58433	58546	58659	58771	58883	58995
39	59106	59218	59329	59439	59550	59660	59770	59879	59988	60097
40	60206	60314	60423	60531	60638	60746	60853	60959	61066	61172
41	61278	61384	61490	61595	61700	61805	61909	62014	62118	62221
42	62325	62428	62531	62634	62737	62839	62941	63043	63144	63246
43	63347	63448	63548	63649	63749	63849	63949	64048	64147	64246
44	64345	64444	64542	64640	64738	64836	64933	65031	65128	65225
45	65321	65418	65514	65610	65706	65801	65896	65992	66087	66181
46	66276	66370	66464	66558	66652	66745	66839	66932	67025	67117
47	67210	67302	67394	67486	67578	67669	67761	67852	67943	68034
48	68124	68215	68305	68395	68485	68574	68664	68753	68842	68931
49	69020	69108	69197	69285	69373	69461	69548	69636	69723	69810
50	69897	69984	70070	70157	70243	70329	70415	70501	70586	70672
51	70757	70842	70927	71012	71096	71181	71265	71349	71433	71517
52	71600	71684	71767	71850	71933	72016	72099	72181	72263	72346
53	72428	72509	72591	72673	72754	72835	72916	72997	73078	73159
54	73239	73320	73400	73480	73560	73640	73719	73799	73878	73957

N	0	1	2	3	4	5	6	7	8	9
55	74036	74115	74194	74273	74351	74429	74507	74586	74663	74741
56	74819	74896	74974	75051	75128	75205	75282	75358	75435	75511
57	75587	75664	75740	75815	75891	75967	76042	76118	76193	76268
58	76343	76418	76492	76567	76641	76716	76790	76864	76938	77012
59	77085	77159	77232	77305	77379	77452	77525	77597	77670	77743
60	77815	77887	77960	78032	78104	78176	78247	78319	78390	78462
61	78533	78604	78675	78746	78817	78888	78958	79029	79099	79169
62	79239	79309	79379	79449	79518	79588	79657	79727	79796	79865
63	79934	80003	80072	80140	80209	80277	80346	80414	80482	80550
64	80618	80686	80754	80821	80889	80956	81023	81090	81158	81224
65	81291	81358	81425	81491	81558	81624	81690	81757	81823	81889
66	81954	82020	82086	82151	82217	82282	82347	82413	82478	82543
67	82607	82672	82737	82802	82866	82930	82995	83059	83123	83187
68	83251	83315	83378	83442	83506	83569	83632	83696	83759	83822
69	83885	83948	84011	84073	84136	84198	84261	84323	84386	84448
70	84510	84572	84634	84696	84757	84819	84880	84942	85003	85065
71	85126	85187	85248	85309	85370	85431	85491	85552	85612	85673
72	85733	85794	85854	85914	85974	86034	86094	86153	86213	86273
73	86332	86392	86451	86510	86570	86629	86688	86747	86806	86864
74	86923	86982	87040	87099	87157	87216	87274	87332	87390	87448
75	87506	87564	87622	87679	87737	87795	87852	87910	87967	88024
76	88081	88138	88195	88252	88309	88366	88423	88480	88536	88593
77	88649	88705	88762	88818	88874	88930	88986	89042	89098	89154
78	89209	89265	89321	89376	89432	89487	89542	89597	89653	89708
79	89763	89818	89873	89927	89982	90037	90091	90146	90200	90255
80	90309	90363	90417	90472	90526	90580	90634	90687	90741	90795
81	90849	90902	90956	91009	91062	91116	91169	91222	91275	91328
82	91381	91434	91487	91540	91593	91645	91698	91751	91803	91855
83	91908	91960	92012	92065	92117	92169	92221	92273	92324	92376
84	92428	92480	92531	92583	92634	92686	92737	92788	92840	92891
85	92942	92993	93044	93095	93146	93197	93247	93298	93349	93399
86	93450	93500	93551	93601	93651	93702	93752	93802	93852	93902
87	93952	94002	94052	94101	94151	94201	94250	94300	94349	94399
88	94448	94498	94547	94596	94645	94694	94743	94792	94841	94890
89	94939	94988	95036	95085	95134	95182	95231	95279	95328	95376
90	95424	95472	95521	95569	95617	95665	95713	95761	95809	95856
91	95904	95952	95999	96047	96095	96142	96190	96237	96284	96332
92	96379	96426	96473	96520	96567	96614	96661	96708	96755	96802
93	96848	96895	96942	96988	97035	97081	97128	97174	97220	97267
94	97313	97359	97405	97451	97497	97543	97589	97635	97681	97727
95	97772	97818	97864	97909	97955	98000	98046	98091	98137	98182
96	98227	98272	98318	98363	98408	98453	98498	98543	98588	98632
97	98677	98722	98767	98811	98856	98900	98945	98989	99034	99078
98	99123	99167	99211	99255	99300	99344	99388	99432	99476	99520
99	99564	99607	99651	99695	99739	99782	99826	99870	99913	99957