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GEODESY.

TABLES FOR A POLYCONIC PROJECTION OF MAPS,

BASED UPON

CLARKE'S REFERENCE SPHEROID OF 1866.

(SECOND EDITION.)

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PROJECTION TABLES FOR MAPS BASED UPON A POLYCONIC DEVELOPMENT OF CLARKE'S SPHEROID OF 1866.

(SECOND EDITION.)

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TABLES FOR THE PROJECTION OF MAPS BASED UPON A POLYCONIC DEVELOPMENT OF CLARKE'S SPHEROID OF 1866, AND COMPUTED FROM THE EQUATOR TO THE POLE.

[Second edition.]

These tables were first published as Appendix No. 6 in the Coast and Geodetic Survey Report for 1884. That edition has long since been exhausted. The demand for this publication still continues, and it is therefore desirable to issue the present edition, which only differs from the previous one by a new preface.

The tables here given for the construction of maps on the polyconic projection depend upon the dimensions of the spheroid representative of the earth's figure and size as determined by Col. A. R. Clarke, R. E., in 1866. Prior to February, 1880, the work of the Survey was developed on Bessel's representative spheroid of 1841, and for which projection tables had been published in the annual reports for 1853, 1856, 1859, and 1865. The first publication, by E. B. Hunt, U. S. A., Assistant in the Survey, is accompanied by an exposition of the method; the second publication, by J. E. Hilgard, Assistant, specially provides for the projecting of maps of large extent, and received some further extension in 1859 and for a special case in 1865. These earlier publications were superseded in consequence of the change of the spheroid of development. The report of the Survey for 1880 contains a paper by C. A. Schott, Assistant, comparing the polyconic with other projections as to their relative practical values, and a special publication of the Survey in 1882, by T. Craig, Ph. D., develops the mathematical principles upon which the various forms of projections depend and exhibits their special properties. The projection tables of 1884 were edited by C. O. Boutelle, Assistant in charge of the Office, and are in a most complete form for use for maps of any scale.*

The two spheroids of reference referred to, with their dimensions expressed in meters, compare as follows:

	According to Bessel (1841).	According to Clarke (1866).
Equatorial radius a	6 377 397·2	6 378 206·4
Polar semi-axis b	6 356 079·0	6 356 583·8
b/a	298·15/299·15	293·98/294·98

Originally the dimensions of the Besselian spheroid were expressed in toises, those of Clarke's spheroid in English standard feet. Their metric equivalents as adopted at the time and here given could not now be considered as representing the best comparisons.† According to Clarke (1866):

The toise equals 76·734 402 inches = 1·949 036 32 meters
The meter equals 39·370 432 inches = 3·280 869 33 feet

whereas we find now the more correct relation to the international meter somewhere between 39.369 87 and 39.370 08 inches;‡ the value 39.369 90 inches is the result by the Weights and Measures Bureau, presented in Appendix No.

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*Projection tables for the use of the United States Navy were published by the Bureau of Navigation, Navy Department, Washington, 1869. They are adapted to areas of small and large extent, refer to Bessel's spheroid, and use the metric system. The latest publication of tables on polyconic projection is by the Smithsonian Institution, "Geographical Tables," prepared by R. S. Woodward. Smithsonian Miscellaneous Collections, 854; Washington, 1894. Clarke's spheroid of 1866 is employed, but the quantities are expressed in feet and inches.

† Comparisons of standards of length, etc., made at the Ordnance Office at Southampton by Capt. A. R. Clarke, London, 1866, p. 287.

‡ Die Europäishe Längengradmessurg in 52° Breite. F. R. Helmert. Berlin, 1893, pp. 225-230.

16, Coast and Geodetic Survey Report for 1890, by Assistant O. H. Tittmann, pages 715–720. The legal value in the United States is 39.3700 inches, which is undoubtedly close to the truth. This last relation corresponds to 1 meter=3.280 833 3 feet and 1 foot=0.304 800 6 meters.

The statute mile of 5 280 feet equals 1 609·35 meters. The nautical mile, not being a measure of precision unless specially defined, is variously given. Originally and practically for uses at sea it is the length of one minute of arc on the earth's surface for the given latitude and in the given azimuth as computed on a representative spheroid.* In the tables issued by the office of Standard Weights and Measures, September, 1898, the value given is 1 853·25 meters and is defined as a minute of arc of a great circle of a sphere whose surface equals that of the Clarke representative spheroid of 1866. Using Clarke's ratio of foot to meter this length is equal to 6 080.27 feet and is the same as given by Bowditch, United States Naval edition of 1888. With the latest relation of the meter and the foot we get 6 080·20 feet. Accordingly we have 1 statute mile equal to 0·868 392 nautical mile and 1 nautical mile equals 1·151 553 statute miles.

For Clarke's spheroid (1866) and for the middle latitude φ we have the length in meters M° of a degree of the meridian and the length P° of a degree of the parallel by the expressions:

$$M° = 111\ 132{\cdot}09 - 566{\cdot}05 \cos 2\varphi + 1{\cdot}20 \cos 4\varphi - 0{\cdot}003 \cos 6\varphi + \ldots.$$
$$P° = 111\ 415{\cdot}10 \cos \varphi - 94{\cdot}54 \cos 3\varphi + 0{\cdot}12 \cos 5\varphi - \ldots.$$

The general aspect of a polyconic projection is well shown by the maps of North and Central America, Coast Survey Report for 1865, page 177, and, when extended over the surface of the sphere, by illustration No. 38 in the report of 1859. In this projection every parallel of latitude appears on the map as the developed circumference of the base of a right cone tangent to the spheroid on that parallel; the central meridian appears as a straight line, while all other meridians appear concave toward it; the parallels appear as arcs of circles of different radii, but with their centers on the central line (produced), the equator alone being represented by a straight line, and all parallels have their convexity turned toward it. It will be noticed that near the middle portion of a map or for ordinary limited charts of *large scale* the intersections of the projected meridians and parallels do not differ much from a right angle; developed arcs on the parallels appear in their true length according to scale of map, as also do the differences of latitude on the central meridian; hence for equal differences of longitude the corresponding parts on any parallel are equal, whereas the meridional differences widen out as we recede from the central meridian. For the construction of the net the table provides the values of rectangular coordinates of the intersections of parallels and meridians, which are computed by means of the following formulæ: We have radius of curvature of normal section perpendicular to the meridian (and terminating at the minor axis)

$$\rho_n = a\left(1 - e^2 \sin^2 \varphi\right)^{-\frac{1}{2}} \text{ and } e^2 = \frac{a^2 - b^2}{a^2} = 0.006\ 768\ 66$$

Where a = equatorial radius (6 378 206 meters), $e = a^2$ eccentricity, and φ = latitude. The slant height l of the tangent cone is $l = \rho_n \cot \varphi$ and the angle θ at the apex of any developed arc n corresponding to the difference of longitude $\Delta\lambda$ is given by

$$\theta = n \sin \varphi$$

The coordinates x and y of intersection are given by

$$x = l \sin \theta, \text{ which is nearly equivalent to } \rho_n n \cos \varphi$$
$$y = 2l \sin^2 \tfrac{1}{2}\theta, \text{ which is nearly equivalent to } \tfrac{1}{4}\rho_n n^2 \sin^2 \varphi$$

From what has been said the construction of a polyconic net is very simple, viz: Lay off on the given scale of the map and in its middle part a straight line to represent the central meridian; on it scale off the meridional distances between the several parallels of latitude, and through these points draw perpendiculars to the meridian to serve for the axes of the coordinates x, those of the coordinates y being at right angles thereto. Take the values of x and y from the table. The several successive points of intersection, thus marked, are then united by curved lines. The vertical ones represent the meridians and the others the parallels.

*See Appendix No. 12, Coast and Geodetic Survey Report for 1881, which contains a variety of values for length of a nautical mile according to definitions.

Conversion tables.

Meters into feet.

1 meter =	3.280 833 3 feet.
2	6.561 666 7
3	9.842 500 0
4	13.123 333 3
5	16.404 166 7
6	19.685 000 0
7	22.965 833 3
8	26.246 666 7
9	29.527 500 0

Feet into meters.

1 foot =	0.304 800 6 meters.
2	0.609 601 2
3	0.914 401 8
4	1.219 202 4
5	1.524 003 0
6	1.828 803 7
7	2.133 604 3
8	2.438 404 9
9	2.743 205 5

1 inch = .025 400 05 meter

Meters into yards.

1 meter =	1.093 611 1 yards.
2	2.187 222 2
3	3.280 833 3
4	4.374 444 4
5	5.468 055 6
6	6.561 666 7
7	7.655 277 8
8	8.748 888 9
9	9.842 500 0

Yards into meters.

1 yard =	0.914 401 8 meters.
2	1.828 803 7
3	2.743 205 5
4	3.657 607 3
5	4.572 009 1
6	5.486 411 0
7	6.400 812 8
8	7.315 214 6
9	8.229 616 5

Meters into statute miles.

1 meter =	0.000 621 369 st. miles.
2	1 242 738
3	1 864 106
4	2 485 475
5	3 106 844
6	3 728 213
7	4 349 582
8	4 970 950
9	5 592 319

Statute miles into meters.

1 st. mile =	1 609.35 meters.
2	3 218.70
3	4 828.05
4	6 437.40
5	8 046.75
6	9 656.10
7	11 265.45
8	12 874.80
9	14 484.15

Meters into nautical miles.

1 meter =	0.000 539 593 n miles.
2	1 079 185
3	1 618 778
4	2 158 370
5	2 697 963
6	3 237 556
7	3 777 148
8	4 316 741
9	4 856 333

Nautical miles into meters.

1 n. mile =	1 853.25 meters.
2	3 706.50
3	5 559.75
4	7 413.00
5	9 266.25
6	11 119.50
7	12 972.75
8	14 826.00
9	16 679.25

Nautical miles into statute miles.

1 n. mile =	1.151 553 st. miles.
2	2.303 106
3	3.454 659
4	4.606 212
5	5.757 765
6	6.909 318
7	8.060 871
8	9.212 424
9	10.363 977

Statute miles into nautical miles.

1 st. mile =	0.868 393 n. miles.
2	1.736 785
3	2.605 177
4	3.473 570
5	4.341 962
6	5.210 355
7	6.078 747
8	6.947 140
9	7.815 532

C. A. SCHOTT,
Assistant.

FEBRUARY 11, 1899.

LENGTHS OF DEGREES OF THE PARALLEL.

Lat.	Meters.	Yards.	Statute miles.	Nautical miles.	Lat.	Meters.	Yards.	Statute miles.	Nautical miles.	Lat.	Meters.	Yards.	Statute miles.	Nautical miles.
° ′					° ′					° ′				
0 00	111 321	121 742	69. 172	60. 068	30 00	96 488	105 520	59. 956	52. 064	60 00	55 802	61 026	34. 674	30. 110
30	1 316	1 736	9. 169	0. 065	30	6 001	4 988	9. 653	1. 801	30	4 958	0 103	4. 150	29. 654
1 00	1 304	1 723	9. 162	0. 059	31 00	5 506	4 446	9. 345	1. 534	61 00	4 110	59 175	3. 623	9. 197
30	1 283	1 700	9. 149	0. 047	30	5 004	3 897	9. 033	1. 264	30	3 257	8 242	3. 093	9. 737
2 00	1 253	1 668	9. 130	0. 031	32 00	4 495	3 341	8. 716	0. 989	62 00	2 400	7 305	2. 560	8. 275
30	111 215	121 626	69. 106	60. 011	30	93 979	102 776	58. 396	50. 710	30	51 540	56 365	32. 025	27. 811
3 00	1 169	1 576	9. 078	59. 986	33 00	3 455	2 203	8. 071	0. 428	63 00	0 675	5 419	1. 488	7. 344
30	1 114	1 516	9. 044	9. 956	30	2 925	1 624	7. 741	0. 142	30	49 806	4 468	0. 948	6. 875
4 00	1 051	1 447	9. 005	9. 922	34 00	2 387	1 035	7. 407	49. 851	64 00	8 934	3 515	0. 406	6. 404
30	0 980	1 369	8. 960	9. 884	30	1 842	100 439	7. 068	9. 557	30	8 057	2 556	29. 862	5. 931
5 00	110 900	121 281	68. 911	59. 840	35 00	91 290	99 836	56. 725	49. 259	65 00	47 177	51 593	29. 315	25. 456
30	0 812	1 185	8. 856	9. 793	30	0 731	9 224	6. 378	8. 958	30	6 294	0 628	8. 766	4. 979
6 00	0 715	1 079	8. 795	9. 741	36 00	0 166	8 607	6. 027	8. 653	66 00	5 407	49 658	8. 215	4. 501
30	0 610	0 964	8. 730	9. 684	30	89 593	7 980	5. 671	8. 344	30	4 516	8 683	7. 661	4. 021
7 00	0 497	0 841	8. 660	9. 622	37 00	9 014	7 347	5. 311	8. 031	67 00	3 622	7 706	7. 106	3. 538
30	110 375	120 707	68. 585	59. 557	30	88 428	96 706	54. 947	47. 715	30	42 724	46 723	26. 548	23. 053
8 00	0 245	0 565	8. 504	9. 487	38 00	7 835	6 057	4. 579	7. 395	68 00	1 823	5 738	5. 988	2. 567
30	0 106	0 413	8. 418	9. 412	30	7 235	5 401	4. 206	7. 071	30	0 919	4 750	5. 426	2. 079
9 00	109 959	0 252	8. 326	9. 333	39 00	6 629	4 738	3. 829	6. 744	69 00	0 012	3 758	4. 862	1. 590
30	9 804	120 083	8. 230	9. 249	30	6 016	4 068	3. 448	6. 413	30	39 102	2 762	4. 297	1. 099
10 00	109 641	119 905	68. 129	59. 161	40 00	85 396	93 390	53. 063	46. 079	70 00	38 188	41 763	23. 729	20. 606
30	9 469	9 717	8. 022	9. 068	30	4 770	2 705	2. 674	5. 741	30	7 272	0 761	3. 160	0. 112
11 00	9 289	9 520	7. 910	8. 971	41 00	4 137	2 013	2. 281	5. 399	71 00	6 353	39 756	2. 589	19. 616
30	9 101	9 314	7. 793	8. 870	30	3 498	1 314	1. 884	5. 054	30	5 431	8 748	2. 016	9. 118
12 00	8 904	9 099	7. 670	8. 764	42 00	2 853	90 609	1. 483	4. 706	72 00	4 506	7 736	1. 441	8. 619
30	108 699	118 874	67. 543	58. 653	30	82 201	89 896	51. 078	44. 355	30	33 578	36 721	20. 865	18. 119
13 00	8 486	8 641	7. 410	8. 538	43 00	1 543	9 176	0. 669	4. 000	73 00	2 648	5 704	0. 287	7. 617
30	8 265	8 400	7. 273	8. 419	30	0 879	8 450	0. 257	3. 642	30	1 716	4 685	19. 708	7. 114
14 00	8 036	8 149	7. 131	8. 295	44 00	0 208	7 716	49. 840	3. 280	74 00	0 781	3 662	9. 127	6. 609
30	7 798	7 889	6. 983	8. 167	30	79 532	6 977	9. 419	2. 915	30	29 843	2 637	8. 544	6. 103
15 00	107 553	117 621	66. 830	58. 034	45 00	78 849	86 230	48. 995	42. 546	75 00	28 903	31 609	17. 960	15. 596
30	7 299	7 343	6. 672	7. 897	30	8 160	5 477	8. 567	2. 175	30	7 961	0 578	7. 374	5. 088
16 00	7 036	7 086	6. 510	7. 756	46 00	7 466	4 718	8. 136	1. 801	76 00	7 017	29 546	6. 788	4. 578
30	6 766	6 760	6. 342	7. 610	30	6 765	3 951	7. 700	1. 423	30	6 071	8 512	6. 200	4. 067
17 00	6 487	6 455	6. 169	7. 459	47 00	6 058	3 178	7. 261	1. 041	77 00	5 123	7 475	5. 611	3. 556
30	106 201	116 143	65. 991	57. 305	30	75 346	82 400	46. 818	40. 656	30	24 172	26 435	15. 020	13. 043
18 00	5 906	5 820	5. 808	7. 146	48 00	4 628	1 614	6. 372	0. 268	78 00	3 220	5 394	4. 428	2. 529
30	5 604	5 490	5. 620	6. 983	30	3 904	0 822	5. 922	39. 877	30	2 266	4 350	3. 836	2. 014
19 00	5 294	5 151	5. 427	6. 816	49 00	3 174	0 024	5. 469	9. 484	79 00	1 311	3 306	3. 242	1. 499
30	4 975	4 801	5. 229	6. 644	30	2 439	79 220	5. 012	9. 088	30	20 353	2 258	2. 647	0. 983
20 00	104 649	114 445	65. 026	56. 468	50 00	71 698	78 410	44. 552	38. 688	80 00	19 394	21 210	12. 051	10. 465
30	4 314	4 079	4. 818	6. 287	30	0 952	7 594	4. 088	8. 285	30	8 434	0 160	1. 455	9. 947
21 00	3 972	3 705	4. 606	6. 102	51 00	0 200	6 771	3. 621	7. 880	81 00	7 472	19 108	0. 857	9. 428
30	3 622	3 322	4. 389	5. 913	30	69 443	5 944	3. 150	7. 472	30	6 509	8 054	10. 258	8. 908
22 00	3 264	2 931	4. 166	5. 720	52 00	8 680	5 109	2. 676	7. 060	82 00	5 545	7 000	9. 659	8. 388
30	102 898	112 530	63. 938	55. 523	30	67 913	74 270	42. 199	36. 646	30	14 579	15 944	9. 059	7. 867
23 00	2 524	2 121	3. 706	5. 321	53 00	7 140	3 425	1. 719	6. 229	83 00	3 612	4 886	8. 458	7. 345
30	2 143	1 705	3. 469	5. 115	30	6 361	2 573	1. 235	5. 809	30	2 644	3 828	7. 857	6. 823
24 00	1 754	1 279	3. 228	4. 905	54 00	5 578	1 717	0. 749	5. 386	84 00	1 675	2 768	7. 255	6. 300
30	1 357	0 845	2. 981	4. 691	30	4 790	70 855	40. 259	4. 960	30	10 706	1 708	6. 652	5. 776
25 00	100 952	110 402	62. 729	54. 473	55 00	63 996	69 987	39. 766	34. 532	85 00	9 735	10 646	6. 049	5. 253
30	0 539	109 951	2. 473	4. 250	30	3 198	9 114	9. 270	4. 101	30	8 764	9 584	5. 446	4. 729
26 00	0 119	9 491	2. 212	4. 024	56 00	2 395	8 236	8. 771	3. 668	86 00	7 792	8 521	4. 842	4. 205
30	99 692	9 024	1. 946	3. 793	30	1 587	7 362	8. 269	3. 232	30	6 819	7 457	4. 237	3. 680
27 00	9 257	8 549	1. 676	3. 558	57 00	60 774	6 463	7. 764	2. 794	87 00	5 846	6 393	3. 632	3. 154
30	98 814	108 064	61. 401	53. 319	30	59 957	65 570	37. 256	32. 353	30	4 872	5 328	3. 027	2. 629
28 00	8 364	7 572	1. 122	3. 076	58 00	9 135	4 671	6. 745	1. 909	88 00	3 898	4 263	2. 422	2. 103
30	7 906	7 071	0. 837	2. 829	30	8 309	3 767	6. 232	1. 463	30	2 924	3 198	1. 817	1. 578
29 00	7 441	6 563	0. 548	2. 578	59 00	7 478	2 859	5. 716	1. 015	89 00	1 949	2 131	1. 211	1. 052
30	6 968	6 045	60. 254	2. 323	30	6 642	1 944	5. 196	0. 564	30	975	1 066	0. 606	0. 526
30 00	96 488	105 520	59. 956	52. 064	60 00	55 802	61 026	34. 674	30. 110	90 00	0	0	0	0

LENGTHS OF DEGREES OF THE MERIDIAN.

Lat.	Meters.*	Yards.*	Statute miles.*	Nautical miles.*	Lat.	Meters.*	Yards.*	Statute miles.*	Nautical miles.*
°					°				
0	110 567.2	120 917.5	68.704	59.661	45	111 130.9	121 534.0	69.054	59.965
1	110 567.6	120 918.0	68.704	59.661	46	111 150.6	121 555.5	69.066	59.976
2	110 568.6	120 919.0	68.705	59.662	47	111 170.4	121 577.2	69.079	59.987
3	110 570.3	120 920.9	68.706	59.663	48	111 190.1	121 598.7	69.091	59.997
4	110 572.7	120 923.5	68.708	59.664	49	111 209.7	121 620.2	69.103	60.008
5	110 575.8	120 927.0	68.710	59.666	50	111 229.3	121 641.6	69.115	60.019
6	110 579.5	120 931.0	68.712	59.668	51	111 248.7	121 662.8	69.127	60.029
7	110 583.9	120 935.8	68.715	59.670	52	111 268.0	121 684.0	69.139	60.039
8	110 589.0	120 941.4	68.718	59.673	53	111 287.1	121 704.8	69.151	60.050
9	110 594.7	120 947.6	68.721	59.676	54	111 306.0	121 725.5	69.163	60.060
10	110 601.1	120 954.6	68.725	59.680	55	111 324.8	121 746.0	69.175	60.070
11	110 608.1	120 962.2	68.730	59.684	56	111 343.3	121 766.3	69.186	60.080
12	110 615.8	120 970.7	68.734	59.687	57	111 361.5	121 786.2	69.197	60.090
13	110 624.1	120 979.7	68.739	59.692	58	111 379.5	121 805.9	69.209	60.100
14	110 633.0	120 989.5	68.744	59.697	59	111 397.2	121 825.2	69.220	60.109
15	110 642.5	120 999.9	68.751	59.702	60	111 414.5	121 844.1	69.230	60.118
16	110 652.6	121 010.9	68.757	59.707	61	111 431.5	121 862.7	69.241	60.128
17	110 663.3	121 022.6	68.764	59.713	62	111 448.2	121 881.0	69.251	60.137
18	110 674.5	121 034.9	68.771	59.719	63	111 464.4	121 898.7	69.261	60.145
19	110 686.3	121 047.8	68.778	59.725	64	111 480.3	121 916 1	69.271	60.154
20	110 698.7	121 061.3	68.786	59.732	65	111 495.7	121 932.9	69.281	60.162
21	110 711.6	121 075.4	68.794	59.739	66	111 510.7	121 949.3	69.290	60.170
22	110 725.0	121 090.1	68.802	59.746	67	111 525.3	121 965.3	69.299	60.178
23	110 738.8	121 105.2	68.811	59.754	68	111 539.3	121 980.6	69.308	60.186
24	110 753.2	121 120.9	68.820	59.761	69	111 552.9	121 995.5	69.316	60.193
25	110 768.0	121 137.1	68.829	59.769	70	111 565.9	122 009.7	69.324	60.200
26	110 783.3	121 153.8	68.839	59.777	71	111 578.4	122 023.4	69.332	60.207
27	110 799.0	121 171.0	68.848	59.786	72	111 590.4	122 036.5	69.340	60.213
28	110 815.1	121 188.6	68.858	59.795	73	111 601.8	122 049.0	69.347	60.220
29	110 831.6	121 206.7	68.869	59.804	74	111 612.7	122 060.9	69.354	60.225
30	110 848.5	121 225.2	68.879	59.813	75	111 622.9	122 072.0	69.360	60.231
31	110 865.7	121 244.0	68.890	59.822	76	111 632.6	122 082.6	69.366	60.236
32	110 883.2	121 263.1	68.901	59.831	77	111 641.6	122 092.5	69.372	60.241
33	110 901.1	121 282.7	68.912	59.841	78	111 650.0	122 101.7	69.377	60.246
34	110 919.2	121 302.5	68.923	59.851	79	111 657.8	122 110.2	69.382	60.250
35	110 937.6	121 322.6	68.935	59.861	80	111 664.9	122 118.0	69.386	60.254
36	110 956.2	121 342.9	68.946	59.871	81	111 671.4	122 125.1	69.390	60.257
37	110 975.1	121 363.6	68.958	59.881	82	111 677.2	122 131.4	69.394	60.260
38	110 994.1	121 384.4	68.969	59.891	83	111 682.4	122 137.1	69.397	60.263
39	111 013.3	121 405.4	68.981	59.902	84	111 686.9	122 142.0	69.400	60.265
40	111 032.7	121 426.6	68.993	59.912	85	111 690.7	122 146.2	69.402	60.268
41	111 052.2	121 447.9	69.006	59.923	86	111 693.8	122 149.6	69.404	60.269
42	111 071.7	121 469.2	69.018	59.933	87	111 696.2	122 152.2	69.405	60.270
43	111 091.4	121 490.8	69.030	59.944	88	111 697.9	122 154.1	69.407	60.271
44	111 111.1	121 512.3	69.042	59.954	89	111 699.0	122 155.3	69.407	60.272
45	111 130.9	121 534.0	69.054	59.965	90	111 699.3	122 155.6	69.407	60.272

*These quantities express the number of meters, yards, statute miles, and nautical miles contained within an arc of which the degree of latitude named is the middle; thus, the quantity 111 032.7, opposite latitude 40°, is the number of meters between latitude 39° 30′ and latitude 40° 30′.

The method of constructing projections followed in the Drawing Division of the Coast and Geodetic Survey Office is thus described by Mr. E. H. Fowler, chief draftsman:

METHOD OF CONSTRUCTING A POLYCONIC PROJECTION.

The location, size, and scale of the projection having been determined, draw a line representing the parallel nearest the center of the sheet, and where it would intersect the most central meridian construct a perpendicular.

The number of minutes to the extreme parallels, above and below the middle one, being known, take out their values from the tables (for the latitude of the projection), under the head of "meridional arcs;" lay off the distances on the central meridian, and with the same values strike arcs at each end of the parallel, above and below; tangent to these arcs and through the points on the meridian draw straight lines, forming the extreme parallels of the sheet.

From the same tables as above, under the head of "arcs of the parallel in meters," take out the value corresponding to the number of minutes east and west of the central meridian, and lay off the distances, in subdivisions of threes, on each of the three parallels constructed, and then subdivide these spaces, thus securing greater accuracy; through the points thus determined draw the meridians, which will appear as straight lines, except on very small scales, when the value of x, under the head of "coordinates of curvature" in the tables, must be used.

For a large scale projection (1:10 000) the value of y, under the head of "coordinates of curvature," is only applied to each end of the central parallel, perpendicular to it, toward the pole, connecting the position with the central meridian by a straight line; but in small scale projections the value is laid off for each subdivision from the central meridian and connected by a curved line; from this adjusted central parallel lay off the values for each subdivision, north and south, as taken from the tables under the head of "meridional arcs," and through these points draw the various parallels, to complete the projection.

NOTE.—The paging in the body of the publication remains as it appeared on the plates of the first edition.

Latitude 0° to 1°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
0 00	30.92	61.84	92.77	123.69	154.61	185.53	216.46	247.38	278.30	1855.3	3710.7	5566.0	7421.4	9276.7
1	.92	.84	.77	.69	.61	.53	.46	.38	.30	5.3	0.7	6.0	1.4	6.7
2	.92	.84	.77	.69	.61	.53	.46	.38	.30	5.3	0.7	6.0	1.4	6.7
3	.92	.84	.77	.69	.61	.53	.46	.38	.30	5.3	0.7	6.0	1.4	6.7
4	.92	.84	.77	.69	.61	.53	.46	.38	.30	5.3	0.7	6.0	1.4	6.7
0 05	30.92	61.84	92.77	123.69	154.61	185.53	216.46	247.38	278.30	1855.3	3710.7	5566.0	7421.4	9276.7
6	.92	.84	.77	.69	.61	.53	.46	.38	.30	5.3	0.7	6.0	1.4	6.7
7	.92	.84	.77	.69	.61	.53	.46	.38	.30	5.3	0.7	6.0	1.4	6.7
8	.92	.84	.77	.69	.61	.53	.46	.38	.30	5.3	0.7	6.0	1.4	6.7
9	.92	.84	.77	.69	.61	.53	.46	.38	.30	5.3	0.7	6.0	1.4	6.7
0 10	30.92	61.84	92.77	123.69	154.61	185.53	216.46	247.38	278.30	1855.3	3710.7	5566.0	7421.3	9276.7
11	.92	.84	.77	.69	.61	.53	.46	.38	.30	5.3	0.7	6.0	1.3	6.7
12	.92	.84	.77	.69	.61	.53	.46	.38	.30	5.3	0.7	6.0	1.3	6.7
13	.92	.84	.77	.69	.61	.53	.46	.38	.30	5.3	0.7	6.0	1.3	6.7
14	.92	.84	.77	.69	.61	.53	.46	.38	.30	5.3	0.7	6.0	1.3	6.7
0 15	30.92	61.84	92.77	123.69	154.61	185.53	216.45	247.38	278.30	1855.3	3710.7	5566.0	7421.3	9276.6
16	.92	.84	.77	.69	.61	.53	.45	.38	.30	5.3	0.7	6.0	1.3	6.6
17	92	.84	.77	.69	.61	.53	.45	.38	.30	5.3	0.6	6.0	1.3	6.6
18	92	.84	.77	.69	.61	.53	.45	.38	.30	5.3	0.6	6.0	1.3	6.6
19	92	.84	.77	.69	.61	.53	.45	.38	.30	5.3	0.6	6.0	1.3	6.6
0 20	30.92	61.84	92.77	123.69	154.61	185.53	216.45	247.38	278.30	1855.3	3710.6	5565.9	7421.2	9276.6
21	.92	.84	.77	.69	.61	.53	.45	.37	.30	5.3	0.6	5.9	1.2	6.6
22	.92	.84	.77	.69	.61	.53	.45	.37	.30	5.3	0.6	5.9	1.2	6.5
23	.92	.84	.77	.69	.61	.53	.45	.37	.30	5.3	0.6	5.9	1.2	6.5
24	.92	.84	.77	.69	.61	.53	.45	.37	.30	5.3	0.6	5.9	1.2	6.5
0 25	30.92	61.84	92.76	123.68	154.61	185.53	216.45	247.37	278.30	1855.3	3710.6	5565.9	7421.2	9276.5
26	.92	.84	.76	.68	.61	.53	.45	.37	.29	5.3	0.6	5.9	1.2	6.5
27	.92	.84	.76	.68	.61	.53	.45	.37	.29	5.3	0.6	5.9	1.1	6.4
28	.92	.84	.76	.68	.61	.53	.45	.37	.29	5.3	0.6	5.9	1.1	6.4
29	.92	.84	.76	.68	.61	.53	.45	.37	.29	5.3	0.6	5.8	1.1	6.4
0 30	30.92	61.84	92.76	123.68	154.61	185.53	216.45	247.37	278.29	1855.3	3710.5	5565.8	7421.1	9276.4
31	.92	.84	.76	.68	.61	.53	.45	.37	.29	5.3	0.5	5.8	1.1	6.4
32	.92	.84	.76	.68	.61	.53	.45	.37	.29	5.3	0.5	5.8	1.0	6.3
33	.92	.84	.76	.68	.61	.53	.45	.37	.29	5.3	0.5	5.8	1.0	6.3
34	.92	.84	.76	.68	.60	.53	.45	.37	.29	5.3	0.5	5.8	1.0	6.3
0 35	30.92	61.84	92.76	123.68	154.60	185.52	216.45	247.37	278.29	1855.2	3710.5	5565.7	7421.0	9276.3
36	.92	.84	.76	.68	.60	.52	.44	.37	.29	5.2	0.5	5.7	1.0	6.2
37	.92	.84	.76	.68	.60	.52	.44	.36	.29	5.2	0.5	5.7	1.0	6.2
38	.92	.84	.76	.68	.60	.52	.44	.36	.29	5.2	0.5	5.7	0.9	6.2
39	.92	.84	.76	.68	.60	.52	.44	.36	.28	5.2	0.5	5.7	0.9	6.1
0 40	30.92	61.84	92.76	123.68	154.60	185.52	216.44	247.36	278.28	1855.2	3710.4	5565.7	7420.9	9276.1
41	.92	.84	.76	.68	.60	.52	.44	.36	.28	5.2	0.4	5.6	0.9	6.1
42	.92	.84	.76	.68	.60	.52	.44	.36	.28	5.2	0.4	5.6	0.8	6.0
43	.92	.84	.76	.68	.60	.52	.44	.36	.28	5.2	0.4	5.6	0.8	6.0
44	.92	.84	.76	.68	.60	.52	.44	.36	.28	5.2	0.4	5.6	0.8	6.0
0 45	30.92	61.84	92.76	123.68	154.60	185.52	216.44	247.36	278.28	1855.2	3710.4	5565.6	7420.7	9275.9
46	.92	.84	.76	.68	.60	.52	.44	.36	.28	5.2	0.4	5.5	0.7	5.9
47	.92	.84	.76	.68	.60	.52	.44	.36	.28	5.2	0.3	5.5	0.7	5.9
48	.92	.84	.76	.68	.60	.52	.44	.36	.28	5.2	0.3	5.5	0.7	5.8
49	.92	.84	.76	.68	.60	.52	.44	.35	.27	5.2	0.3	5.5	0.6	5.8
0 50	30.92	61.84	92.76	123.68	154.60	185.51	216.43	247.35	278.27	1855.1	3710.3	5565.4	7420.6	9275.7
51	.92	.84	.76	.68	.60	.51	.43	.35	.27	5.1	0.3	5.4	0.6	5.7
52	.92	.84	.76	.68	.59	.51	.43	.35	.27	5.1	0.3	5.4	0.5	5.7
53	.92	.84	.76	.68	.59	.51	.43	.35	.27	5.1	0.3	5.4	0.5	5.6
54	.92	.84	.76	.67	.59	.51	.43	.35	.27	5.1	0.2	5.4	0.5	5.6
0 55	30.92	61.84	92.76	123.67	154.59	185.51	216.43	247.35	278.27	1855.1	3710.2	5565.3	7420.4	9275.5
56	.92	.84	.75	.67	.59	.51	.43	.35	.27	5.1	0.2	5.3	0.4	5.5
57	.92	.84	.75	.67	.59	.51	.43	.35	.26	5.1	0.2	5.3	0.4	5.5
58	.92	.84	.75	.67	.59	.51	.43	.34	.26	5.1	0.2	5.2	0.3	5.4
59	.92	.84	.75	.67	.59	.51	.43	.34	.26	5.1	0.1	5.2	0.3	5.4
0 60	30.92	61.84	92.75	123.67	154.59	185.51	216.42	247.34	278.26	1855.1	3710.1	5565.2	7420.3	9275.3

Lat.	Latitude 0° to 1°—Meridional arcs.						Latitude 0°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
0 00	30.713								
1	3	1	30.71	1842.79	1	1 842.8	0 1	1 855.3	0.0
2	3	2	61.43	.79	2	3 685.6	2	3 710.7	
3	3	3	92.14	.79	3	5 528.4	3	5 566.0	
4	3	4	122.85	.79	4	7 371.1	4	7 421.4	
0 05	30.713	5	153.56	1842.79	5	9 213.9	0 5	9 276.7	0.0
6	3	6	184.28	.79	6	11 056.7	6	11 132.1	
7	3	7	214.99	.79	7	12 899.5	7	12 987.4	
8	3	8	245.70	.79	8	14 742.3	8	14 842.8	
9	3	9	276.42	.79	9	16 585.1	9	16 698.1	
0 10	30.713	10	307.13	1842.79	10	18 427.9	0 10	18 553.4	0.0
11	3	1	337.84	.79	1	20 270.7	15	27 830.2	
12	3	2	368.56	.79	2	22 113.4	20	37 106.9	
13	3	3	399.27	.79	3	23 956.2	25	46 383.6	
14	3	4	429.98	.79	4	25 799.0	30	55 660.3	
0 15	30.713	15	460.69	1842.79	15	27 641.8	0 35	64 937.1	0.0
16	3	6	491.41	.79	6	29 484.6	40	74 213.8	
17	3	7	522.12	.79	7	31 327.4	45	83 490.5	
18	3	8	552.83	.79	8	33 170.2	50	92 767.2	
19	3	9	583.55	.79	9	35 013.0	55	102 044.0	
0 20	30.713	20	614.26	1842.79	20	36 855.8	1 00	111 320.7	0.0
21	3	1	644.97	.79	1	38 698.5	05	120 597.4	
22	3	2	675.69	.79	2	40 541.3	10	129 874.1	
23	3	3	706.40	.79	3	42 384.1	15	139 150.9	
24	3	4	737.11	.79	4	44 226.9	20	148 427.6	
0 25	30.713	25	767.82	1842.79	25	46 069.7	1 25	157 704.3	0 0
26	3	6	798.54	.79	6	47 912.5	30	166 981.0	
27	3	7	829.25	.79	7	49 755.3	35	176 257.8	
28	3	8	859.96	.79	8	51 598.1	40	185 534.5	
29	3	9	890.68	.79	9	53 440.9	45	194 811.2	
0 30	30.713	30	921.39	1842.79	30	55 283.6	1 50	204 087.9	0.0
31	3	1	952.10	.79	1	57 126.4	55	213 364.7	
32	3	2	982.82	.79	2	58 969.2	2 00	222 641	
33	3	3	1 013.53	.79	3	60 812.0	3 00	333 962	
34	3	4	1 044.24	.79	4	62 654.8	4 00	445 283	
0 35	30.713	35	1 074.95	1842.79	35	64 497.6	5 00	556 603	0.0
36	3	6	1 105.67	.79	6	66 340.4	6 00	667 924	
37	3	7	1 136.38	.79	7	68 183.2	7 00	779 245	
38	3	8	1 167.09	.79	8	70 026.0	8 00	890 566	
39	3	9	1 197.81	.79	9	71 868.7	9 00	1 001 886	
0 40	30.713	40	1 228.52	1842.79	40	73 711.5	10 00	1 113 207	0.0
41	3	1	1 259.23	.79	1	75 554.3	11 00	1 224 528	
42	3	2	1 289.95	.79	2	77 397.1	12 00	1 335 848	
43	3	3	1 320.66	.79	3	79 239.9	13 00	1 447 169	
44	3	4	1 351.37	.79	4	81 082.7	14 00	1 558 490	
0 45	30.713	45	1 382.08	1842.79	45	82 925.5	15 00	1 669 810	0.0
46	3	6	1 412.80	.79	6	84 768.3	16 00	1 781 131	
47	3	7	1 443.51	.79	7	86 611.0	17 00	1 892 452	
48	3	8	1 474.22	.79	8	88 453.8	18 00	2 003 772	
49	3	9	1 504.94	.79	9	90 296.6	19 00	2 115 093	
0 50	30.713	50	1 535.65	1842.79	50	92 139.4	20 00	2 226 414	0.0
51	3	1	1 566.36	.79	1	93 982.2	21 00	2 337 735	
52	3	2	1 597.08	.79	2	95 825.0	22 00	2 449 055	
53	3	3	1 627.79	.79	3	97 667.8	23 00	2 560 376	
54	3	4	1 658.50	.79	4	99 510.6	24 00	2 671 697	
0 55	30.713	55	1 689.21	1842.79	55	101 353.4	25 00	2 783 017	0.0
56	3	6	1 719.93	.79	6	103 196.2	26 00	2 894 338	
57	3	7	1 750.64	.79	7	105 038.9	27 00	3 005 659	
58	3	8	1 781.35	.79	8	106 881.7	28 00	3 116 979	
59	3	9	1 812.07	.79	9	108 724.5	29 00	3 228 300	
0 60	30.713	60	1 842.79	1842.79	60	110 567.3	30 00	3 339 621	0.0

Latitude 1° to 2°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
1 00	30.92	61.84	92.75	123.67	154.59	185.51	216.42	247.34	278.26	1855.1	3710.1	5565.2	7420.3	9275.3
1	.92	.84	.75	.67	.59	.51	.42	.34	.26	5.1	0.1	5.2	0.2	5.3
2	.92	.83	.75	.67	.59	.50	.42	.34	.26	5.0	0.1	5.1	0.2	5.2
3	.92	.83	.75	.67	.59	.50	.42	.34	.26	5.0	0.1	5.1	0.1	5.2
4	.92	.83	.75	.67	.59	.50	.42	.34	.25	5.0	0.0	5.1	0.1	5.1
1 05	30.92	61.83	92.75	123.67	154.58	185.50	216.42	247.34	278.25	1855.0	3710.0	5565.0	7420.1	9275.1
6	.92	.83	.75	.67	.58	.50	.42	.33	.25	5.0	0.0	5.0	0.0	5.0
7	.92	.83	.75	.67	.58	.50	.42	.33	.25	5.0	0.0	5.0	0.0	5.0
8	.92	.83	.75	.67	.58	.50	.41	.33	.25	5.0	10.0	5.0	19.9	4.9
9	.92	.83	.75	.66	.58	.50	.41	.33	.24	5.0	9.9	4.9	9.9	4.9
1 10	30.92	61.83	92.75	123.66	154.58	185.50	216.41	247.33	278.24	1855.0	3709.9	5564.9	7419.9	9274.8
11	.92	.83	.75	.66	.58	.50	.41	.33	.24	5.0	9.9	4.9	9.8	4.8
12	.92	.83	.75	.66	.58	.49	.41	.33	.24	4.9	9.9	4.8	9.8	4.7
13	.92	.83	.75	.66	.58	.49	.41	.32	.24	4.9	9.8	4.8	9.7	4.6
14	.92	.83	.75	.66	.58	.49	.41	.32	.24	4.9	9.8	4.8	9.7	4.6
1 15	30.92	61.83	92.75	123.66	154.58	185.49	216.41	247.32	278.24	1854.9	3709.8	5564.7	7419.6	9274.5
16	.91	.83	.74	.66	.57	.49	.40	.32	.23	4.9	9.8	4.7	9.6	4.5
17	.91	.83	.74	.66	.57	.49	.40	.32	.23	4.9	9.8	4.6	9.5	4.4
18	.91	.83	.74	.66	.57	.49	.40	.32	.23	4.9	9.7	4.6	9.5	4.4
19	.91	.83	.74	.66	.57	.49	.40	.31	.23	4.9	9.7	4.6	9.4	4.3
1 20	30.91	61.83	92.74	123.66	154.57	185.48	216.40	247.31	278.23	1854.8	3709.7	5564.5	7419.4	9274.2
21	.91	.83	.74	.66	.57	.48	.40	.31	.23	4.8	9.7	4.5	9.3	4.2
22	.91	.83	.74	.65	.57	.48	.40	.31	.22	4.8	9.6	4.5	9.3	4.1
23	.91	.83	.74	.65	.57	.48	.39	.31	.22	4.8	9.6	4.4	9.2	4.0
24	.91	.83	.74	.65	.57	.48	.39	.31	.22	4.8	9.6	4.4	9.2	4.0
1 25	30.91	61.83	92.74	123.65	154.57	185.48	216.39	247.30	278.22	1854.8	3709.6	5564.3	7419.1	9273.9
26	.91	.83	.74	.65	.56	.48	.39	.30	.22	4.8	9.5	4.3	9.1	3.8
27	.91	.83	.74	.65	.56	.48	.39	.30	.21	4.8	9.5	4.3	9.0	3.8
28	.91	.82	.74	.65	.56	.47	.39	.30	.21	4.7	9.5	4.2	9.0	3.7
29	.91	.82	.74	.65	.56	.47	.38	.30	.21	4.7	9.5	4.2	8.9	3.6
1 30	30.91	61.82	92.74	123.65	154.56	185.47	216.38	247.30	278.21	1854.7	3709.4	5564.1	7418.9	9273.6
31	.91	.82	.73	.65	.56	.47	.38	.29	.20	4.7	9.4	4.1	8.8	3.5
32	.91	.82	.73	.65	.56	.47	.38	.29	.20	4.7	9.4	4.1	8.8	3.4
33	.91	.82	.73	.64	.56	.47	.38	.29	.20	4.7	9.3	4.0	8.7	3.4
34	.91	.82	.73	.64	.55	.47	.38	.29	.20	4.7	9.3	4.0	8.6	3.3
1 35	30.91	61.82	92.73	123.64	154.55	185.46	216.37	247.29	278.20	1854.6	3709.3	5563.9	7418.6	9273.2
36	.91	.82	.73	.64	.55	.46	.37	.28	.19	4.6	9.2	3.9	8.5	3.1
37	.91	.82	.73	.64	.55	.46	.37	.28	.19	4.6	9.2	3.8	8.4	3.1
38	.91	.82	.73	.64	.55	.46	.37	.28	.19	4.6	9.2	3.8	8.4	3.0
39	.91	.82	.73	.64	.55	.46	.37	.28	.19	4.6	9.2	3.7	8.3	2.9
1.40	30.91	61.82	92.73	123.64	154.55	185.46	216.37	247.28	278.18	1854.6	3709.1	5563.7	7418.3	9272.8
41	.91	.82	.73	.64	.55	.45	.36	.27	.18	4.5	9.1	3.6	8.2	2.7
42	.91	.82	.73	.64	.54	.45	.36	.27	.18	4.5	9.0	3.6	8.1	2.7
43	.91	.82	.73	.63	.54	.45	.36	.27	.18	4.5	9.0	3.6	8.1	2.6
44	.91	.82	.73	.63	.54	.45	.36	.27	.18	4.5	9.0	3.5	8.0	2.5
1 45	30.91	61.82	92.72	123.63	154.54	185.45	216.36	247.26	278.17	1854.5	3708.9	5563.5	7417.9	9272.4
46	.91	.82	.72	.63	.54	.45	.35	.26	.17	4.5	8.9	3.4	7.9	2.3
47	.91	.82	.72	.63	.54	.45	.35	.26	.17	4.5	8.9	3.4	7.8	2.3
48	.91	.81	.72	.63	.54	.44	.35	.26	.17	4.4	8.9	3.3	7.7	2.2
49	.91	.81	.72	.63	.53	.44	.35	.26	.16	4.4	8.8	3.3	7.7	2.1
1 50	30.91	61.81	92.72	123.63	154.53	185.44	216.35	247.25	278.16	1854.4	3708.8	5563.2	7417.6	9272.0
51	.91	.81	.72	.63	.53	.44	.34	.25	.16	4.4	8.8	3.1	7.5	1.9
52	.91	.81	.72	.62	.53	.44	.34	.25	.15	4.4	8.7	3.1	7.4	1.8
53	.91	.81	.72	.62	.53	.43	.34	.25	.15	4.3	8.7	3.0	7.4	1.7
54	.91	.81	.72	.62	.53	.43	.34	.24	.15	4.3	8.7	3.0	7.3	1.7
1 55	30.91	61.81	92.72	123.62	154.53	185.43	216.34	247.24	278.15	1854.3	3708.6	5562.9	7417.3	9271.6
56	.90	.81	.71	.62	.52	.43	.33	.24	.14	4.3	8.6	2.9	7.2	1.5
57	.90	.81	.71	.62	.52	.43	.33	.24	.14	4.3	8.5	2.8	7.1	1.4
58	.90	.81	.71	.62	.52	.43	.33	.23	.14	4.3	8.5	2.8	7.0	1.3
59	.90	.81	.71	.62	.52	.42	.33	.23	.14	4.2	8.5	2.7	7.0	1.2
1 60	30.90	61.81	92.71	123.61	154.52	185.42	216.33	247.23	278.13	1854.2	3708.4	5562.7	7416.9	9271.1

Lat.	Latitude 1° to 2°—Meridional arcs.						Latitude 1°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters*
1 00	30.713			1842.79					
1	3	1	30.71	.79	1	1 842.8	0 1	1 855.1	0.0
2	3	2	61.43	.79	2	3 685.6	2	3 710.1	0.0
3	3	3	92.14	.79	3	5 528.4	3	5 565.2	0.0
4	3	4	122.85	.79	4	7 371.2	4	7 420.3	0.1
1 05	30.713	5	153.57	1842.79	5	9 214.0	0 5	9 275.3	0.1
6	3	6	184.28	.79	6	11 056.8	6	11 130.4	0.2
7	3	7	215.00	.79	7	12 899.6	7	12 985.4	0.2
8	3	8	245.71	.79	8	14 742.3	8	14 840.5	0.3
9	3	9	276.42	.79	9	16 585.1	9	16 695.6	0.4
1 10	30.713	10	307.14	1842.79	10	18 427.9	0 10	18 550.6	0.5
11	3	1	337.85	.79	11	20 270.7	15	27 826.0	1.1
12	3	2	368.56	.80	12	22 113.5	20	37 101.3	1.9
13	3	3	399.28	.80	13	23 956.3	25	46 376.6	2.9
14	3	4	429.99	.80	14	25 799.1	30	55 651.9	4.2
1 15	30.713	15	460.70	1842.80	15	27 641.9	0 35	64 927.2	5.8
16	3	6	491.42	.80	16	29 484.7	40	74 202.5	7.5
17	3	7	522.13	.80	17	31 327.5	45	83 477.8	9.5
18	3	8	552.84	.80	18	33 170.3	50	92 753.2	11.7
19	3	9	583.56	.80	19	35 013.1	55	102 028.5	14.2
1 20	30.713	20	614.27	1842.80	20	36 855.9	1 00	111 303.7	16.9
21	3	1	644.98	.80	21	38 698.7	05	120 579.0	19.9
22	3	2	675.70	.80	22	40 541.5	10	129 854.3	23.0
23	3	3	706.41	.80	23	42 384.3	15	139 129.6	26.4
24	3	4	737.12	.80	24	44 227.1	20	148 404.9	30.1
1 25	30.713	25	767.84	1842.80	25	46 069.9	1 25	157 680.2	34.0
26	3	6	798.55	.80	26	47 912.7	30	166 955.5	38.1
27	3	7	829.26	.80	27	49 755.5	35	176 230.8	42.4
28	3	8	859.98	.80	28	51 598.3	40	185 506.1	47.0
29	3	9	890.69	.80	29	53 441.1	45	194 781.4	51.8
1 30	30.713	30	921.40	1842.80	30	55 283.9	1 50	204 056.7	56.9
31	3	1	952.12	.80	31	57 126.7	55	213 331.9	62.2
32	3	2	982.83	.80	32	58 969.5	2 00	222 607	68
33	3	3	1 013.54	.80	33	60 812.3	3 00	333 911	153
34	3	4	1 044.26	.80	34	62 655.1	4 00	445 214	271
1 35	30.713	35	1 074.97	1842.80	35	64 497.9	5 00	556 518	424
36	3	6	1 105.68	.80	36	66 340.7	6 00	667 822	610
37	3	7	1 136.40	.80	37	68 183.5	7 00	779 126	831
38	3	8	1 167.11	.80	38	70 026.3	8 00	890 429	1 085
39	3	9	1 197.82	.80	39	71 869.1	9 00	1 001 733	1 373
1 40	30.713	40	1 228.54	1842.80	40	73 711.9	10 00	1 113 037	1 695
41	3	1	1 259.25	.80	41	75 554.7	11 00	1 224 340	2 051
42	3	2	1 289.96	.80	42	77 397.5	12 00	1 335 643	2 441
43	3	3	1 320.68	.80	43	79 240.3	13 00	1 446 946	2 865
44	3	4	1 351.39	.81	44	81 083.1	14 00	1 558 249	3 323
1 45	30.713	45	1 382.10	1842.81	45	82 925.9	15 00	1 669 551	3 814
46	3	6	1 412.82	.81	46	84 768.7	16 00	1 780 854	4 340
47	3	7	1 443.53	.81	47	86 611.5	17 00	1 892 157	4 899
48	3	8	1 474.24	.81	48	88 454.3	18 00	2 003 459	5 492
49	3	9	1 504.96	.81	49	90 297.1	19 00	2 114 761	6 120
1 50	30.713	50	1 535.67	1842.81	50	92 139.9	20 00	2 226 063	6 781
51	3	1	1 566.38	.81	51	93 982.7	21 00	2 337 364	7 476
52	3	2	1 597.10	.81	52	95 825.6	22 00	2 448 666	8 205
53	3	3	1 627.81	.81	53	97 668.4	23 00	2 559 967	8 967
54	3	4	1 658.52	.81	54	99 511.2	24 00	2 671 268	9 764
1 55	30.713	55	1 689.23	1842.81	55	101 354.0	25 00	2 782 569	10 595
56	3	6	1 719.95	.81	56	103 196.8	26 00	2 893 869	11 459
57	3	7	1 750.66	.81	57	105 039.6	27 00	3 005 170	12 358
58	3	8	1 781.37	.81	58	106 882.4	28 00	3 116 470	13 290
59	3	9	1 812.09	.81	59	108 725.2	29 00	3 227 770	14 256
1 60	30.713	60	1 842.80	1842.81	60	110 568.0	30 00	3 339 070	15 256

Latitude 2° to 3°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
2 00	30.90	61.81	92.71	123.61	154.52	185.42	216.33	247.23	278.13	1854.2	3708.4	5562.7	7416.9	9271.1
1	.90	.81	.71	.61	.52	.42	.33	.23	.13	4.2	8.4	2.6	6.8	1.0
2	.90	.81	.71	.61	.52	.42	.32	.22	.12	4.2	8.3	2.6	6.7	0.9
3	.90	.81	.71	.61	.51	.41	.32	.22	.12	4.1	8.3	2.5	6.7	0.8
4	.90	.81	.71	.61	.51	.41	.32	.22	.12	4.1	8.2	2.5	6.6	0.7
2 05	30.90	61.81	92.71	123.61	154.51	185.41	216.31	247.21	278.11	1854.1	3708.2	5562.4	7416.5	9270.6
6	.90	.80	.70	.60	.51	.41	.31	.21	.11	4.1	8.2	2.3	6.4	0.5
7	.90	.80	.70	.60	.51	.41	.31	.21	.11	4.1	8.2	2.3	6.3	0.4
8	.90	.80	.70	.60	.50	.40	.31	.21	.11	4.0	8.1	2.2	6.3	0.3
9	.90	.80	.70	.60	.50	.40	.30	.20	.10	4.0	8.1	2.2	6.2	0.2
2 10	30.90	61.80	92.70	123.60	154.50	185.40	216.30	247.20	278.10	1854.0	3708.1	5562.1	7416.1	9270.1
11	.90	.80	.70	.60	.50	.40	.30	.20	.10	4.0	8.0	2.0	6.0	70.0
12	.90	.80	.70	.60	.50	.40	.30	.20	.09	4.0	8.0	2.0	5.9	69.9
13	.90	.80	.70	.60	.50	.39	.29	.19	.09	3.9	7.9	1.9	5.9	9.8
14	.90	.80	.70	.60	.50	.39	.29	.19	.09	3.9	7.9	1.9	5.8	9.7
2 15	30.90	61.80	92.70	123.60	154.50	185.39	216.29	247.19	278.08	1853.9	3707.8	5561.8	7415.7	9269.6
16	.90	.79	.69	.59	.49	.39	.29	.19	.08	3.9	7.8	1.7	5.6	9.5
17	.90	.79	.69	.59	.49	.39	.29	.19	.08	3.9	7.7	1.7	5.5	9.4
18	.90	.79	.69	.59	.49	.38	.28	.18	.08	3.8	7.7	1.6	5.5	9.3
19	.90	.79	.69	.59	.49	.38	.28	.18	.07	3.8	7.6	1.6	5.4	9.2
2 20	30.90	61.79	92.69	123.59	154.49	185.38	216.28	247.18	278.07	1853.8	3707.6	5561.5	7415.3	9269.1
21	.90	.79	.69	.59	.49	.38	.28	.18	.07	3.8	7.6	1.4	5.2	9.0
22	.90	.79	.69	.59	.49	.38	.27	.17	.06	3.8	7.5	1.3	5.1	8.9
23	.90	.79	.69	.58	.48	.37	.27	.17	.06	3.7	7.5	1.3	5.0	8.7
24	.90	.79	.69	.58	.48	.37	.27	.17	.06	3.7	7.4	1.2	4.9	8.6
2 25	30.90	61.79	92.69	123.58	154.48	185.37	216.26	247.16	278.05	1853.7	3707.4	5561.1	7414.8	9268.5
26	.89	.79	.68	.58	.48	.37	.26	.16	.05	3.7	7.4	1.0	4.7	8.4
27	.89	.79	.68	.58	.48	.37	.26	.16	.05	3.7	7.3	1.0	4.6	8.3
28	.89	.79	.68	.57	.47	.36	.26	.16	.05	3.6	7.3	0.9	4.6	8.2
29	.89	.79	.68	.57	.47	.36	.25	.15	.04	3.6	7.2	0.9	4.5	8.1
2 30	30.89	61.79	92.68	123.57	154.47	185.36	216.25	247.15	278.04	1853.6	3707.2	5560.8	7414.4	9268.0
31	.89	.79	.68	.57	.47	.36	.25	.15	.04	3.6	7.1	0.7	4.3	7.9
32	.89	.79	.68	.57	.47	.35	.24	.14	.03	3.5	7.1	0.6	4.2	7.7
33	.89	.79	.68	.57	.46	.35	.24	.14	.03	3.5	7.0	0.6	4.0	7.6
34	.89	.79	.67	.57	.46	.35	.24	.13	.02	3.5	7.0	0.5	3.9	7.4
2 35	30.89	61.79	92.67	123.57	154.46	185.35	216.23	247.13	278.02	1853.5	3706.9	5560.4	7413.8	9267.3
36	.89	.78	.67	.56	.46	.34	.23	.13	.02	3.4	6.9	0.3	3.7	7.2
37	.89	.78	.67	.56	.46	.34	.23	.12	.01	3.4	6.8	0.2	3.6	7.1
38	.89	.78	.67	.56	.45	.34	.23	.12	.01	3.4	6.8	0.2	3.6	6.9
39	.89	.78	.67	.56	.45	.33	.22	.11	.00	3.3	6.7	0.1	3.5	6.8
2 40	30.89	61.78	92.67	123.56	154.45	185.33	216.22	247.11	278.00	1853.3	3706.7	5560.0	7413.4	9266.7
41	.89	.78	.67	.56	.45	.33	.22	.11	8.00	3.3	6.6	59.9	3.3	6.6
42	.89	.78	.67	.56	.44	.33	.21	.10	7.99	3.3	6.6	9.8	3.2	6.5
43	.89	.78	.66	.55	.44	.32	.21	.10	.99	3.2	6.5	9.8	3.0	6.3
44	.89	.78	.66	.55	.44	.32	.21	.10	.98	3.2	6.5	9.7	2.9	6.2
2 45	30.89	61.78	92.66	123.55	154.43	185.32	216.20	247.09	277.98	1853.2	3706.4	5559.6	7412.8	9266.1
46	.88	.77	.66	.55	.43	.32	.20	.09	.98	3.2	6.4	9.5	2.7	6.0
47	.88	.77	.66	.55	.43	.32	.20	.09	.97	3.2	6.3	9.5	2.6	5.9
48	.88	.77	.66	.54	.43	.31	.20	.09	.97	3.1	6.3	9.4	2.6	5.7
49	.88	.77	.66	.54	.42	.31	.19	.08	.96	3.1	6.2	9.4	2.5	5.6
2 50	30.88	61.77	92.65	123.54	154.42	185.31	216.19	247.08	277.96	1853.1	3706.2	5559.3	7412.4	9265.5
51	.88	.77	.65	.54	.42	.31	.19	.08	.96	3.1	6.1	9.2	2.3	5.3
52	.88	.77	.65	.54	.42	.31	.18	.07	.95	3.0	6.1	9.1	2.2	5.2
53	.88	.77	.65	.53	.41	.30	.18	.07	.95	3.0	6.0	9.1	2.0	5.0
54	.88	.77	.65	.53	.41	.30	.18	.06	.94	3.0	6.0	9.0	1.9	4.9
2 55	30.88	61.77	92.65	123.53	154.41	185.29	216.17	247.06	277.94	1852.9	3705.9	5558.9	7411.8	9264.7
56	.88	.76	.65	.53	.41	.29	.17	.06	.94	2.9	5.8	8.8	1.7	4.6
57	.88	.76	.64	.53	.41	.29	.17	.05	.93	2.9	5.8	8.7	1.6	4.5
58	.88	.76	.64	.52	.40	.29	.17	.05	.93	2.9	5.7	8.7	1.5	4.3
59	.88	.76	.64	.52	.40	.28	.16	.04	.92	2.8	5.7	8.6	1.4	4.2
2 60	30.88	61.76	92.64	123.52	154.40	185.28	216.16	247.04	277.92	1852.8	3705.6	5558.5	7411.3	9264.1

Lat.	Latitude 2° to 3°—Meridional arcs.						Latitude 2°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
2 00	30.714			1842.81					
1	4	1	30.71	.81	1	1 842.8	0 1	1 854.2	
2	4	2	61.43	.81	2	3 685.6	2	3 708.4	
3	4	3	92.14	.81	3	5 528.4	3	5 562.7	0.1
4	4	4	122.86	.81	4	7 371.2	4	7 416.9	0.2
2 5	30.714	5	153.57	1842.81	5	9 214.1	0 5	9 271.1	0.2
6	4	6	184.28	.81	6	11 056.9	6	11 125.3	0.3
7	4	7	215.00	.81	7	12 899.7	7	12 979.6	0.5
8	4	8	245.71	.81	8	14 742.5	8	14 833.8	0.6
9	4	9	276.43	.81	9	16 585.3	9	16 688.0	0.8
2 10	30.714	10	307.14	1842.81	10	18 428.1	0 10	18 542.2	0.9
11	4	1	337.85	.81	1	20 270.9	15	27 813.3	2.1
12	4	2	368.57	.81	2	22 113.8	20	37 084.4	3.8
13	4	3	399.28	.81	3	23 956.6	25	46 355.6	5.9
14	4	4	430.00	.81	4	25 799.4	30	55 626.7	8.5
2 15	30.714	15	460.71	1842.82	15	27 642.2	0 35	64 897.8	11.5
16	4	6	491.42	.82	6	29 485.0	40	74 168.9	15.0
17	4	7	522.14	.82	7	31 327.8	45	83 440.0	19.0
18	4	8	552.85	.82	8	33 170.7	50	92 711.1	23.5
19	4	9	583.57	.82	9	35 013.5	55	101 982.2	28.4
2 20	30.714	20	614.28	1842.82	20	36 856.3	1 00	111 253.4	33.9
21	4	1	644.99	.82	1	38 699.1	05	120 524.5	39.8
22	4	2	675.71	.82	2	40 541.9	10	129 795.6	46.1
23	4	3	706.42	.82	3	42 384.8	15	139 066.7	52.9
24	4	4	737.14	.82	4	44 227.6	20	148 337.8	60.2
2 25	30.714	25	767.85	1842.82	25	46 070.4	1 25	157 608.9	68.0
26	4	6	798.56	.82	6	47 913.2	30	166 880.0	76.2
27	4	7	829.28	.82	7	49 756.0	35	176 151.1	84.9
28	4	8	859.99	.82	8	51 598.9	40	185 422.2	94.1
29	4	9	890.71	.82	9	53 441.7	45	194 693.3	103.8
2 30	30.714	30	921.41	1842.82	30	55 284.5	1 50	203 964.5	113.9
31	4	1	952.13	.82	1	57 127.3	55	213 235.6	124.5
32	4	2	982.85	.82	2	58 970.1	2 00	222 506	136
33	4	3	1 013.56	.82	3	60 813.0	3 00	333 759	305
34	4	4	1 044.28	.82	4	62 655.8	4 00	445 012	542
2 35	30.714	35	1 074.99	1842.83	35	64 498.6	5 00	556 266	847
36	4	6	1 105.70	.83	6	66 341.5	6 00	667 517	1 220
37	4	7	1 136.42	.83	7	68 184.3	7 00	778 770	1 660
38	4	8	1 167.13	.83	8	70 027.1	8 00	890 023	2 169
39	4	9	1 197.85	.83	9	71 869.9	9 00	1 001 275	2 745
2 40	30.714	40	1 228.56	1842.83	40	73 712.8	10 00	1 112 527	3 388
41	4	1	1 259.27	.83	1	75 555.6	11 00	1 223 778	4 100
42	4	2	1 289.99	.83	2	77 398.4	12 00	1 335 028	4 879
43	4	3	1 320.70	.83	3	79 241.3	13 00	1 446 278	5 726
44	4	4	1 351.42	.83	4	81 084.1	14 00	1 557 528	6 641
2 45	30.714	45	1 382.13	1842.83	45	82 926.9	15 00	1 668 778	7 624
46	4	6	1 412.84	.83	6	84 769.8	16 00	1 780 027	8 674
47	4	7	1 443.56	.83	7	86 612.6	17 00	1 891 275	9 792
48	4	8	1 474.27	.83	8	88 455.4	18 00	2 002 522	10 978
49	4	9	1 504.99	.83	9	90 298.2	19 00	2 113 768	12 232
2 50	30.714	50	1 535.70	1842.83	50	92 141.1	20 00	2 225 012	13 553
51	4	1	1 566.41	.83	1	93 983.9	21 00	2 336 257	14 942
52	4	2	1 597.13	.84	2	95 826.7	22 00	2 447 501	16 399
53	4	3	1 627.84	.84	3	97 669.5	23 00	2 558 744	17 923
54	4	4	1 658.56	.84	4	99 512.4	24 00	2 669 986	19 515
2 55	30.714	55	1 689.27	1842.84	55	101 355.2	25 00	2 781 227	21 176
56	4	6	1 719.98	.84	6	103 198.0	26 00	2 892 466	22 904
57	4	7	1 750.70	.84	7	105 041.9	27 00	3 003 705	24 700
58	4	8	1 781.41	.84	8	106 883.7	28 00	3 114 943	26 563
59	4	9	1 812.13	.84	9	108 726.5	29 00	3 226 179	28 494
2 60	30.714	60	1 842.82	1842.84	60	110 569.4	30 00	3 337 415	30 494

Latitude 3° to 4°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
3 00	30.88	61.76	92.64	123.52	154.40	185.28	216.16	247.04	277.92	1852.8	3705.6	5558.5	7411.3	9264.1
1	.88	.76	.64	.52	.40	.28	.16	.04	.92	2.8	5.5	8.4	1.2	4.0
2	.88	.76	.64	.52	.40	.28	.15	.03	.91	2.8	5.5	8.3	1.1	3.8
3	.88	.76	.64	.51	.39	.27	.15	.03	.91	2.7	5.4	8.2	0.9	3.7
4	.88	.76	.64	.51	.39	.27	.15	.02	.90	2.7	5.4	8.1	0.8	3.5
3 05	30.88	61.76	92.63	123.51	154.39	185.27	216.14	247.02	277.90	1852.7	3705.3	5558.0	7410.7	9263.4
6	.88	.75	.63	.51	.39	.27	.14	.02	.90	2.7	5.3	7.9	0.6	3.3
7	.88	.75	.63	.51	.39	.26	.14	.01	.89	2.6	5.2	7.8	0.5	3.1
8	.88	.75	.63	.50	.38	.26	.14	.01	.89	2.6	5.2	7.8	0.3	3.0
9	.88	.75	.63	.50	.38	.25	.13	.00	.88	2.5	5.1	7.7	0.2	2.8
3 10	30.88	61.75	92.63	123.50	154.38	185.25	216.13	247.00	277.88	1852.5	3705.1	5557.6	7410.1	9262.7
11	.88	.75	.63	.50	.38	.25	.13	7.00	.88	2.5	5.0	7.5	10.0	2.5
12	.88	.75	.62	.50	.37	.25	.12	6.99	.87	2.5	5.0	7.4	09.9	2.4
13	.88	.75	.62	.49	.37	.24	.12	.99	.87	2.4	4.9	7.4	9.7	2.2
14	.88	.75	.62	.49	.37	.24	.11	.98	.86	2.4	4.9	7.3	9.6	2.1
3 15	30.88	61.75	92.62	123.49	154.36	185.24	216.11	246.98	277.86	1852.4	3704.8	5557.2	7409.5	9261.9
16	.87	.74	.62	.49	.36	.23	.11	.98	.85	2.3	4.7	7.1	9.4	1.7
17	.87	.74	.62	.49	.36	.23	.10	.97	.85	2.3	4.7	7.0	9.3	1.6
18	.87	.74	.61	.48	.36	.23	.10	.97	.84	2.3	4.6	6.9	9.1	1.4
19	.87	.74	.61	.48	.35	.22	.09	.96	.84	2.2	4.6	6.8	9.0	1.3
3 20	30.87	61.74	92.61	123.48	154.35	185.22	216.09	246.96	277.83	1852.2	3704.5	5556.7	7408.9	9261.1
21	.87	.74	.61	.48	.35	.22	.09	.96	.83	2.2	4.4	6.6	8.8	1.0
22	.87	.74	.61	.48	.35	.22	.08	.95	.82	2.2	4.3	6.5	8.7	0.8
23	.87	.74	.61	.47	.34	.21	.08	.95	.82	2.1	4.3	6.4	8.5	0.7
24	.87	.74	.61	.47	.34	.21	.08	.94	.81	2.1	4.2	6.3	8.4	0.5
3 25	30.87	61.74	92.60	123.47	154.34	185.21	216.07	246.94	277.81	1852.1	3704.1	5556.2	7408.3	9260.4
26	.87	.73	.60	.47	.34	.20	.07	.94	.81	2.1	4.0	6.1	8.2	0.2
27	.87	.73	.60	.47	.34	.20	.07	.93	.80	2.0	4.0	6.0	8.0	60.0
28	.87	.73	.60	.46	.33	.20	.07	.93	.80	2.0	3.9	5.9	7.9	59.9
29	.87	.73	.60	.46	.33	.19	.06	.92	.79	1.9	3.9	5.8	7.7	9.7
3 30	30.87	61.73	92.60	123.46	154.33	185.19	216.06	246.92	277.79	1851.9	3703.8	5555.7	7407.6	9259.5
31	.87	.73	.59	.46	.33	.19	.06	.92	.79	1.9	3.7	5.6	7.5	9.3
32	.87	.73	.59	.46	.32	.18	.05	.91	.78	1.8	3.7	5.5	7.4	9.2
33	.87	.73	.59	.45	.32	.18	.05	.91	.78	1.8	3.6	5.4	7.2	9.0
34	.87	.73	.59	.45	.32	.18	.04	.90	.77	1.7	3.6	5.3	7.1	8.9
3 35	30.87	61.73	92.59	123.45	154.31	185.17	216.04	246.90	277.77	1851.7	3703.5	5555.2	7407.0	9258.7
36	.86	.72	.59	.45	.31	.17	.04	.90	.76	1.7	3.4	5.1	6.9	8.5
37	.86	.72	.58	.45	.31	.17	.03	.89	.76	1.7	3.3	5.0	6.7	8.4
38	.86	.72	.58	.44	.31	.17	.03	.89	.75	1.6	3.3	4.9	6.6	8.2
39	.86	.72	.58	.44	.30	.16	.02	.88	.75	1.6	3.2	4.8	6.4	8.1
3 40	30.86	61.72	92.58	123.44	154.30	185.16	216.02	246.88	277.74	1851.6	3703.1	5554.7	7406.3	9257.9
41	.86	.72	.58	.44	.30	.16	.02	.88	.73	1.6	3.0	4.6	6.2	7.7
42	.86	.72	.58	.43	.29	.15	.01	.87	.73	1.5	3.0	4.5	6.0	7.5
43	.86	.71	.57	.43	.29	.15	.01	.87	.72	1.5	2.9	4.4	5.9	7.4
44	.86	.71	.57	.43	.29	.14	.00	.86	.72	1.4	2.9	4.3	5.7	7.2
3 45	30.86	61.71	92.57	123.42	154.28	185.14	216.00	246.86	277.71	1851.4	3702.8	5554.2	7405.6	9257.0
46	.85	.71	.57	.42	.28	.14	6.00	.85	.70	1.4	2.7	4.1	5.5	6.8
47	.85	.71	.57	.42	.28	.13	5.99	.85	.70	1.3	2.6	4.0	5.3	6.6
48	.85	.70	.57	.42	.28	.13	.99	.84	.69	1.3	2.6	3.9	5.1	6.5
49	.85	.70	.56	.41	.27	.12	.98	.84	.69	1.2	2.5	3.8	5.0	6.3
3 50	30.85	61.70	92.56	123.41	154.27	185.12	215.98	246.83	277.68	1851.2	3702.4	5553.7	7404.9	9256.1
51	.85	.70	.56	.41	.27	.12	.98	.83	.68	1.2	2.3	3.6	4.8	5.9
52	.85	.70	.56	.41	.26	.11	.97	.82	.67	1.1	2.3	3.5	4.6	5.7
53	.85	.70	.56	.40	.26	.11	.97	.82	.67	1.1	2.2	3.3	4.5	5.6
54	.85	.70	.55	.40	.26	.11	.96	.81	.66	1.0	2.2	3.2	4.3	5.4
3 55	30.85	61.70	92.55	123.40	154.25	185.10	215.96	246.81	277.66	1851.0	3702.1	5553.1	7404.2	9255.2
56	.85	.70	.55	.40	.25	.10	.95	.80	.65	1.0	2.0	3.0	4.0	5.0
57	.85	.70	.55	.40	.25	.10	.95	.80	.65	1.0	1.9	2.9	3.9	4.8
58	.85	.70	.55	.39	.25	.10	.94	.79	.64	0.9	1.9	2.8	3.7	4.7
59	.85	.70	.54	.39	.24	.09	.94	.79	.64	0.9	1.8	2.7	3.6	4.5
3 60	30.85	61.70	92.54	123.39	154.24	185.09	215.93	246.78	277.63	1850.9	3701.7	5552.6	7403.4	9254.3

Lat.	Latitude 3° to 4°—Meridional arcs.						Latitude 3°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
3 00	30.714			1842.84					
1	4	1	30.71	.84	1	1 842.8	0 1	1 852.8	
2	4	2	61.43	.84	2	3 685.7	2	3 705.6	0.1
3	4	3	92.14	.84	3	5 528.5	3	5 558.4	0.1
4	4	4	122.86	.84	4	7 371.4	4	7 411.3	0.2
3 05	30.714	5	153.57	1842.84	5	9 214.2	0 5	9 264.1	0.4
6	4	6	184.29	.84	6	11 057.0	6	11 116.9	0.5
7	4	7	215.00	.84	7	12 899.9	7	12 969.7	0.7
8	4	8	245.71	.84	8	14 742.7	8	14 822.5	0.9
9	4	9	276.43	.84	9	16 585.6	9	16 675.3	1.1
3 10	30.714	10	307.14	1842.84	10	18 428.4	0 10	18 528.1	1.4
11	4	1	337.86	.85	1	20 271.3	15	27 792.3	3.2
12	4	2	368.57	.85	2	22 114.1	20	37 056.4	5.6
13	4	3	399.29	.85	3	23 957.0	25	46 320.5	8.8
14	4	4	430.00	.85	4	25 799.8	30	55 584.6	12.7
3 15	30.714	15	460.71	1842.85	15	27 642.7	0 35	64 848.7	17.3
16	4	6	491.43	.85	6	29 485.5	40	74 112.8	22.6
17	4	7	522.14	.85	7	31 328.4	45	83 376.9	28.6
18	4	8	552.86	.85	8	33 171.2	50	92 641.1	35.3
19	4	9	583.57	.85	9	35 014.1	55	101 905.2	42.7
3 20	30.714	20	614.29	1842.85	20	36 856.9	1 00	111 169.3	50.8
21	4	1	645.00	.85	1	38 699.8	05	120 433.3	59.6
22	4	2	675.71	.85	2	40 542.6	10	129 697.4	69.1
23	4	3	706.43	.85	3	42 385.5	15	138 961.5	79.3
24	4	4	737.14	.85	4	44 228.3	20	148 225.7	90.3
3 25	30.714	25	767.86	1842.85	25	46 071.2	1 25	157 489.8	101.9
26	4	6	798.57	.85	6	47 914.0	30	166 753.9	114.2
27	4	7	829.29	.85	7	49 756.9	35	176 018.0	127.3
28	4	8	860.00	.86	8	51 599.7	40	185 282.0	141.0
29	4	9	890.71	.86	9	53 442.6	45	194 546.1	155.5
3 30	30.714	30	921.43	1842.86	30	55 285.5	1 50	203 810.1	170.7
31	4	1	952.14	.86	1	57 128.3	55	213 074.1	186.5
32	4	2	982.86	.86	2	58 971.2	2 00	222 338	203
33	4	3	1 013.57	.86	3	60 814.0	3 00	333 507	457
34	4	4	1 044.29	.86	4	62 656.9	4 00	444 676	812
3 35	30.714	35	1 075.00	1842.86	35	64 499.8	5 00	555 844	1 269
36	4	6	1 105.71	.86	6	66 342.6	6 00	667 012	1 828
37	4	7	1 136.43	.86	7	68 185.5	7 00	778 179	2 488
38	4	8	1 167.14	.86	8	70 028.3	8 00	889 346	3 249
39	4	9	1 197.86	.86	9	71 871.2	9 00	1 000 512	4 112
3 40	30.714	40	1 228.57	1842.86	40	73 714.1	10 00	1 111 677	5 077
41	4	1	1 259.29	.86	1	75 556.9	11 00	1 222 841	6 144
42	4	2	1 290.00	.86	2	77 399.8	12 00	1 334 005	7 312
43	4	3	1 320.71	.87	3	79 242.7	13 00	1 445 166	8 581
44	4	4	1 351.43	.87	4	81 085.5	14 00	1 556 327	9 952
3 45	30.714	45	1 382.14	1842.87	45	82 928.4	15 00	1 667 487	11 424
46	4	6	1 412.86	.87	6	84 771.3	16 00	1 778 645	12 998
47	4	7	1 443.57	.87	7	86 614.1	17 00	1 889 802	14 673
48	4	8	1 474.29	.87	8	88 457.0	18 00	2 000 957	16 450
49	4	9	1 505.00	.87	9	90 299.9	19 00	2 112 110	18 329
3 50	30.715	50	1 535.71	1842.87	50	92 142.7	20 00	2 223 260	20 309
51	5	1	1 566.43	.87	1	93 985.6	21 00	2 334 410	22 391
52	5	2	1 597.14	.87	2	95 828.4	22 00	2 445 557	24 574
53	5	3	1 627.86	.87	3	97 671.3	23 00	2 556 703	26 859
54	5	4	1 658.57	.87	4	99 514.2	24 00	2 667 846	29 245
3 55	30.715	55	1 689.29	1842.87	55	101 357.0	25 00	2 778 988	31 732
56	5	6	1 720.00	.87	6	103 199.9	26 00	2 890 127	34 321
57	5	7	1 750.71	.88	7	105 042.8	27 00	3 001 265	37 012
58	5	8	1 781.43	.88	8	106 885.7	28 00	3 112 399	39 804
59	5	9	1 812.14	.88	9	108 728.5	29 00	3 223 530	42 697
3 60	30.715	60	1 842.86	1842.88	60	110 571.4	30 00	3 334 659	45 693

Latitude 4° to 5°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
4 00	30.85	61.70	92.54	123.39	154.24	185.09	215.93	246.78	277.63	1850.9	3701.7	5552.6	7403.4	9254.3
1	.85	.70	.54	.39	.24	.09	.93	.78	.62	0.9	1.6	2.5	3.3	4.1
2	.85	.70	.54	.39	.23	.08	.92	.77	.62	0.8	1.6	2.4	3.1	3.9
3	.85	.69	.54	.38	.23	.08	.92	.77	.61	0.8	1.5	2.2	3.0	3.8
4	.85	.69	.54	.38	.23	.07	.91	.76	.61	0.7	1.4	2.1	2.8	3.6
4 05	30.85	61.69	92.53	123.38	154.22	185.07	215.91	246.76	277.60	1850.7	3701.4	5552.0	7402.7	9253.4
6	.84	.69	.53	.38	.22	.07	.91	.75	.59	0.7	1.3	1.9	2.5	3.2
7	.84	.69	.53	.38	.22	.06	.90	.75	.59	0.6	1.2	1.8	2.4	3.0
8	.84	.68	.53	.37	.22	.06	.90	.74	.58	0.6	1.1	1.6	2.2	2.8
9	.84	.68	.53	.37	.21	.05	.89	.74	.58	0.5	1.1	1.5	2.1	2.6
4 10	30.84	61.68	92.52	123.37	154.21	185.05	215.89	246.73	277.57	1850.5	3701.0	5551.4	7401.9	9252.4
11	.84	.68	.52	.37	.21	.05	.89	.73	.56	0.5	0.9	1.3	1.8	2.2
12	.84	.68	.52	.36	.20	.04	.88	.72	.56	0.4	0.8	1.2	1.6	2.0
13	.84	.68	.52	.36	.20	.04	.88	.72	.55	0.4	0.8	1.0	1.5	1.8
14	.84	.68	.52	.36	.19	.03	.87	.71	.55	0.3	0.7	0.9	1.3	1.6
4 15	30.84	61.68	92.51	123.35	154.19	185.03	215.87	246.71	277.54	1850.3	3700.6	5550.9	7401.2	9251.4
16	.83	.67	.61	.35	.19	.03	.86	.70	.53	0.3	0.5	0.7	1.0	1.2
17	.83	.67	.51	.35	.18	.02	.86	.70	.53	0.2	0.4	0.6	0.8	1.0
18	.83	.67	.51	.35	.18	.02	.85	.69	.52	0.2	0.4	0.4	0.7	0.8
19	.83	.67	.51	.34	.17	.01	.85	.69	.52	0.1	0.3	0.3	0.5	0.6
4 20	30.83	61.67	92.50	123.34	154.17	185.01	215.84	246.68	277.51	1850.1	3700.2	5550.2	7400.3	9250.4
21	.83	.67	.50	.34	.17	.01	.84	.67	.50	0.1	0.1	0.1	0.1	0.2
22	.83	.67	.50	.33	.16	.00	.83	.67	.50	0.0	700.0	50.0	400.0	50.0
23	.83	.67	.50	.33	.16	5.00	.83	.66	.49	50.0	699.9	49.8	399.8	49.8
24	.83	.67	.50	.33	.16	4.99	.82	.66	.49	49.9	9.8	9.7	9.7	9.6
4 25	30.83	61.67	92.49	123.32	154.15	184.99	215.82	246.65	277.48	1849.9	3699.8	5549.6	7399.5	9249.4
26	.83	.66	.49	.32	.15	.99	.81	.64	.47	9.9	9.7	9.5	9.3	9.2
27	.83	.66	.49	.32	.15	.98	.81	.64	.47	9.8	9.6	9.4	9.2	9.0
28	.83	.66	.49	.32	.15	.98	.80	.63	.46	9.8	9.5	9.2	9.0	8.7
29	.83	.66	.49	.31	.14	.97	.80	.63	.46	9.7	9.4	9.1	8.9	8.5
4 30	30.83	61.66	92.48	123.31	154.14	184.97	215.79	246.62	277.45	1849.7	3699.3	5549.0	7398.7	9248.3
31	.83	.66	.48	.31	.14	.97	.79	.61	.44	9.7	9.2	8.9	8.5	8.1
32	.83	.66	.48	.30	.13	.96	.78	.61	.44	9.6	9.1	8.8	8.3	7.9
33	.83	.65	.48	.30	.13	.96	.78	.60	.43	9.6	9.1	8.6	8.2	7.7
34	.83	.65	.48	.30	.12	.95	.77	.60	.42	9.5	9.0	8.5	8.0	7.5
4 35	30.83	61.65	92.47	123.29	154.12	184.95	215.77	246.59	277.41	1849.5	3698.9	5548.4	7397.8	9247.3
36	.82	.65	.47	.29	.12	.94	.76	.58	.41	9.4	8.8	8.3	7.6	7.1
37	.82	.65	.47	.29	.11	.94	.76	.58	.40	9.4	8.7	8.1	7.4	6.9
38	.82	.64	.47	.29	.11	.93	.75	.57	.39	9.3	8.7	8.0	7.3	6.6
39	.82	.64	.46	.28	.10	.93	.75	.57	.38	9.3	8.6	7.8	7.1	6.4
4 40	38.82	61.64	92.46	123.28	154.10	184.92	215.74	246.56	277.38	1849.2	3698.5	5547.7	7396.9	9246.2
41	.82	.64	.46	.28	.10	.92	.74	.56	.37	9.2	8.4	7.6	6.7	6.0
42	.82	.64	.46	.27	.09	.91	.73	.55	.37	9.1	8.3	7.5	6.6	5.8
43	.82	.64	.46	.27	.09	.91	.73	.55	.36	9.1	8.2	7.3	6.4	5.5
44	.82	.64	.45	.27	.09	.90	.72	.54	.36	9.0	8.1	7.2	6.3	5.3
4 45	30.82	61.64	92.45	123.26	154.08	184.90	215.72	246.54	277.35	1849.0	3698.0	5547.1	7396.1	9245.1
46	.81	.63	.45	.26	.08	.90	.71	.53	.34	9.0	8.0	7.0	5.9	4.9
47	.81	.63	.45	.26	.08	.89	.71	.53	.34	8.9	7.9	6.8	5.7	4.7
48	.81	.63	.44	.26	.08	.89	.70	.52	.33	8.9	7.8	6.7	5.6	4.4
49	.81	.63	.44	.25	.07	.88	.70	.52	.33	8.8	7.7	6.5	5.4	4.2
4 50	30.81	61.63	92.44	123.25	154.07	184.88	215.69	246.51	277.32	1848.8	3697.6	5546.4	7395.2	9244.0
51	.81	.63	.44	.25	.07	.88	.69	.50	.31	8.8	7.5	6.3	5.0	3.8
52	.81	.63	.44	.24	.06	.87	.68	.50	.31	8.7	7.4	6.1	4.8	3.5
53	.81	.62	.43	.24	.06	.87	.68	.49	.30	8.7	7.3	6.0	4.7	3.3
54	.81	.62	.43	.24	.05	.86	.67	.48	.29	8.6	7.2	5.8	4.5	3.0
4 55	30.81	61.62	92.43	123.23	154.05	184.86	215.67	246.47	277.28	1848.6	3697.1	5545.7	7394.3	9242.8
56	.81	.62	.43	.23	.05	.85	.66	.47	.28	8.5	7.1	5.6	4.1	2.6
57	.81	.62	.42	.23	.04	.85	.66	.46	.27	8.5	7.0	5.4	3.9	2.4
58	.81	.61	.42	.23	.04	.84	.65	.45	.26	8.4	6.9	5.3	3.7	2.1
59	.81	.61	.42	.22	.03	.84	.65	.45	.26	8.4	6.8	5.1	3.5	1.9
4 60	30.81	61.61	92.42	123.22	154.03	184.83	215.64	246.44	277.25	1848.3	3696.7	5545.0	7393.3	9241.7

Lat.	Latitude 4° to 5°—Meridional arcs.						Latitude 4°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
4 00	30.715			1842.88					
01	5	1	30.72	.88	1	1 842.9	0 1	1 850.9	
02	5	2	61.43	.88	2	3 685.8	2	3 701.7	0.1
03	5	3	92.15	.88	3	5 528.6	3	5 552.6	0.2
04	5	4	122.86	.88	4	7 371.5	4	7 403.4	0.3
4 05	30.715	5	153.58	1842.88	5	9 214.4	0 5	9 254.3	0.5
06	5	6	184.29	.88	6	11 057.3	6	11 105.1	0.7
07	5	7	215.01	.88	7	12 900.2	7	12 956.0	0.9
08	5	8	245.72	.89	8	14 743.1	8	14 806.9	1.2
09	5	9	276.44	.89	9	16 585.9	9	16 657.7	1.5
4 10	30.715	10	307.15	1842.89	10	18 428.8	0 10	18 508.6	1.9
11	5	1	337.87	.89	1	20 271.7	15	27 762.8	4.2
12	5	2	368.58	.89	2	22 114.6	20	37 017.1	7.5
13	5	3	399.30	.89	3	23 957.5	25	46 271.4	11.7
14	5	4	430.01	.89	4	25 800.4	30	55 525.7	16.9
4 15	30.715	15	460.73	1842.89	15	27 643.3	0 35	64 780.0	23.0
16	5	6	491.44	.89	6	29 486.2	40	74 034.3	30.0
17	5	7	522.16	.89	7	31 329.0	45	83 288.5	38.0
18	5	8	552.87	.89	8	33 171.9	50	92 542.8	46.9
19	5	9	583.59	.89	9	35 014.8	55	101 797.1	56.8
4 20	30.715	20	614.30	1842.89	20	36 857.7	1 00	111 051.4	67.6
21	5	1	645.02	.90	1	38 700.6	05	120 305.7	79.3
22	5	2	675.73	.90	2	40 543.5	10	129 559.9	92.0
23	5	3	706.45	.90	3	42 386.4	15	138 814.2	105.6
24	5	4	737.16	.90	4	44 229.3	20	148 068.5	120.2
4 25	30.715	25	767.88	1842.90	25	46 072.2	1 25	157 322.7	135.7
26	5	6	798.59	.90	6	47 915.1	30	166 577.0	152.1
27	5	7	829.31	.90	7	49 758.0	35	175 831.3	169.5
28	5	8	860.02	.90	8	51 600.9	40	185 085.5	187.8
29	5	9	890.74	.90	9	53 443.8	45	194 339.8	207.0
4 30	30.715	30	921.45	1842.90	30	55 286.7	1 50	203 594.0	227.2
31	5	1	952.17	.90	1	57 129.6	55	212 848.3	248.3
32	5	2	982.88	.90	2	58 972.5	2 00	222 102	270
33	5	3	1 013.60	.90	3	60 815.4	3 00	333 153	608
34	5	4	1 044.31	.90	4	62 658.3	4 00	444 203	1 082
4 35	30.715	35	1 075.03	1842.91	35	64 501.2	5 00	555 253	1 691
36	5	6	1 105.74	.91	6	66 344.1	6 00	666 302	2 434
37	5	7	1 136.46	.91	7	68 187.0	7 00	777 350	3 312
38	5	8	1 167.17	.91	8	70 029.9	8 00	888 397	4 326
39	5	9	1 197.89	.91	9	71 872.9	9 00	999 442	5 476
4 40	30.715	40	1 228.60	1842.91	40	73 715.8	10 00	1 110 487	6 760
41	5	1	1 259.32	.91	1	75 558.7	11 00	1 221 529	8 180
42	5	2	1 290.03	.91	2	77 401.6	12 00	1 332 570	9 735
43	5	3	1 320.75	.91	3	79 244.5	13 00	1 443 608	11 425
44	5	4	1 351.46	.91	4	81 087.4	14 00	1 554 644	13 250
4 45	30.715	45	1 382.18	1842.91	45	82 930.3	15 00	1 665 678	15 210
46	5	6	1 412.89	.92	6	84 773.2	16 00	1 776 710	17 305
47	5	7	1 443.61	.92	7	86 616.2	17 00	1 887 739	19 536
48	5	8	1 474.32	.92	8	88 459.1	18 00	1 998 765	21 902
49	5	9	1 505.04	.92	9	90 302.0	19 00	2 109 789	24 403
4 50	30.715	50	1 535.75	1842.92	50	92 144.9	20 00	2 220 809	27 039
51	5	1	1 566.47	.92	1	93 987.8	21 00	2 331 825	29 810
52	5	2	1 597.18	.92	2	95 830.8	22 00	2 442 839	32 717
53	5	3	1 627.90	.92	3	97 673.7	23 00	2 553 848	35 758
54	5	4	1 658.61	.92	4	99 516.6	24 00	2 664 854	38 935
4 55	30.715	55	1 689.33	1842.92	55	101 359.5	25 00	2 775 856	42 248
56	5	6	1 720.04	.93	6	103 202.4	26 00	2 886 854	45 696
57	5	7	1 750.76	.93	7	105 045.4	27 00	2 997 848	49 278
58	5	8	1 781.47	.93	8	106 888.3	28 00	3 108 837	52 995
59	5	9	1 812.19	.93	9	108 731.2	29 00	3 219 821	56 848
4 60	30.715	60	1 842.90	.93	60	110 574.1	30 00	3 330 801	60 835

Latitude 5° to 6°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
5 00	30.81	61.61	92.42	123.22	154.03	184.83	215.64	246.44	277.25	1848.3	3696.7	5545.0	7393.3	9241.7
1	.81	.61	.42	.22	.03	.83	.63	.43	.24	8.3	6.6	4.9	3.1	1.5
2	.81	.61	.41	.21	.02	.82	.63	.43	.24	8.2	6.5	4.7	2.9	1.2
3	.81	.61	.41	.21	.02	.82	.62	.42	.23	8.2	6.4	4.6	2.8	1.0
4	.81	.61	.41	.21	.01	.81	.62	.42	.22	8.1	6.3	4.4	2.6	0.7
5 5	30.81	61.61	92.40	123.20	154.01	184.81	215.61	246.41	277.21	1848.1	3696.2	5544.3	7392.4	9240.5
6	.80	.60	.40	.20	.01	.81	.60	.40	.21	8.1	6.1	4.2	2.2	0.3
7	.80	.60	.40	.20	.00	.80	.60	.40	.20	8.0	6.0	4.0	2.0	40.0
8	.80	.60	.40	.20	4.00	.80	.59	.39	.19	8.0	5.9	3.9	1.8	39.8
9	.80	.60	.39	.19	3.99	.79	.59	.39	.19	7.9	5.8	3.7	1.6	9.5
5 10	30.80	61.60	92.39	123.19	153.99	184.79	215.58	246.38	277.18	1847.9	3695.7	5543.6	7391.4	9239.3
11	.80	.60	.39	.19	.99	.78	.58	.37	.17	7.8	5.6	3.4	1.2	9.0
12	.80	.60	.39	.18	.98	.78	.57	.37	.16	7.8	5.5	3.3	1.0	8.8
13	.80	.59	.38	.18	.98	.77	.57	.36	.16	7.7	5.4	3.1	0.9	8.5
14	.80	.59	.38	.18	.97	.77	.56	.36	.15	7.7	5.3	3.0	0.7	8.3
5 15	30.80	61.59	92.38	123.17	153.97	184.76	215.56	246.35	277.14	1847.6	3695.2	5542.8	7390.5	9238.0
16	.79	.59	.38	.17	.97	.76	.55	.34	.13	7.6	5.1	2.7	0.3	7.8
17	.79	.59	.38	.17	.96	.75	.55	.34	.12	7.5	5.0	2.5	90.1	7.5
18	.79	.58	.37	.17	.96	.75	.54	.33	.12	7.5	4.9	2.4	89.9	7.3
19	.79	.58	.37	.16	.95	.74	.54	.33	.11	7.4	4.8	2.2	9.7	7.0
5 20	30.79	61.58	92.37	123.16	153.95	184.74	215.53	246.32	277.10	1847.4	3694.7	5542.1	7389.5	9236.8
21	.79	.58	.37	.16	.95	.73	.52	.31	.09	7.3	4.6	1.9	9.3	6.5
22	.79	.58	.36	.15	.94	.73	.52	.31	.09	7.3	4.5	1.8	9.1	6.3
23	.79	.57	.36	.15	.94	.72	.51	.30	.08	7.2	4.4	1.6	8.8	6.0
24	.79	.57	.36	.14	.93	.72	.51	.29	.07	7.2	4.3	1.5	8.6	5.8
5 25	30.79	61.57	92.35	123.14	153.93	184.71	215.50	246.28	277.06	1847.1	3694.2	5541.3	7388.4	9235.5
26	.78	.57	.35	.14	.92	.71	.49	.28	.06	7.1	4.1	1.2	8.2	5.3
27	.78	.57	.35	.13	.92	.70	.49	.27	.05	7.0	4.0	1.0	8.0	5.0
28	.78	.56	.35	.13	.91	.70	.48	.26	.04	7.0	3.9	0.9	7.8	4.8
29	.78	.56	.34	.12	.91	.69	.48	.26	.04	6.9	3.8	0.7	7.6	4.5
5 30	30.78	61.56	92.34	123.12	153.90	184.69	215.47	246.25	277.03	1846.9	3693.7	5540.6	7387.4	9234.3
31	.78	.56	.34	.12	.90	.68	.46	.24	.02	6.8	3.6	0.4	7.2	4.0
32	.78	.56	.34	.11	.89	.67	.46	.24	.01	6.7	3.5	0.3	7.0	3.8
33	.78	.55	.33	.11	.89	.67	.45	.23	.01	6.7	3.4	0.1	6.8	3.5
34	.78	.55	.33	.11	.88	.67	.45	.22	7.00	6.7	3.3	40.0	6.6	3.3
5 35	30.78	61.55	92.33	123.10	153.88	184.66	215.44	246.21	276.99	1846.6	3693.2	5539.8	7386.4	9233.0
36	.77	.55	.33	.10	.88	.65	.43	.21	.98	6.5	3.1	9.6	6.2	2.7
37	.77	.55	.33	.10	.87	.65	.43	.20	.97	6.5	3.0	9.5	6.0	2.5
38	.77	.54	.32	.10	.87	.64	.42	.19	.97	6.4	2.9	9.3	5.8	2.2
39	.77	.54	.32	.09	.86	.64	.42	.19	.96	6.4	2.8	9.2	5.6	2.0
5 40	30.77	61.54	92.32	123.09	153.86	184.63	215.41	246.18	276.95	1846.3	3692.7	5539.0	7385.4	9231.7
41	.77	.54	.31	.09	.86	.63	.40	.17	.94	6.3	2.6	8.8	5.2	1.4
42	.77	.54	.31	.08	.85	.62	.40	.17	.93	6.2	2.5	8.7	5.0	1.1
43	.77	.54	.31	.08	.85	.62	.39	.16	.93	6.2	2.3	8.5	4.7	0.9
44	.77	.54	.31	.07	.84	.61	.38	.15	.92	6.1	2.2	8.4	4.5	0.6
5 45	30.77	61.54	92.30	123.07	153.84	184.61	215.37	246.14	276.91	1846.1	3692.1	5538.2	7384.3	9230.3
46	.76	.53	.30	.07	.84	.60	.37	.14	.90	6.0	2.0	8.0	4.1	30.0
47	.76	.53	.30	.06	.83	.60	.36	.13	.89	6.0	1.9	7.9	3.9	29.8
48	.76	.53	.30	.06	.83	.59	.35	.12	.89	5.9	1.8	7.7	3.7	9.5
49	.76	.53	.29	.05	.82	.59	.35	.12	.88	5.9	1.7	7.6	3.5	9.3
5 50	30.76	61.53	92.29	123.05	153.82	184.58	215.34	246.11	276.87	1845.8	3691.6	5537.4	7383.2	9229.0
51	.76	.53	.29	.05	.82	.57	.33	.10	.86	5.7	1.5	7.2	3.0	8.7
52	.76	.53	.28	.04	.81	.57	.33	.09	.85	5.7	1.4	7.0	2.8	8.4
53	.76	.52	.28	.04	.81	.56	.32	.09	.85	5.6	1.2	6.9	2.5	8.2
54	.76	.52	.28	.04	.80	.56	.32	.08	.84	5.6	1.1	6.7	2.3	7.9
5 55	30.76	61.52	92.27	123.03	153.80	184.55	215.31	246.07	276.83	1845.5	3691.0	5536.5	7382.1	9227.6
56	.75	.52	.27	.03	.79	.54	.30	.06	.82	5.4	0.9	6.3	1.9	7.3
57	.75	.52	.27	.03	.79	.54	.30	.05	.81	5.4	0.8	6.2	1.7	7.0
58	.75	.51	.27	.03	.78	.53	.29	.05	.81	5.3	0.7	6.0	1.4	6.8
59	.75	.51	.26	.02	.78	.53	.29	.04	.80	5.3	0.6	5.9	1.2	6.5
5 60	30.75	61.51	92.26	123.02	153.77	184.52	215.28	246.03	276.79	1845.2	3690.5	5535.7	7381.0	9226.2

Lat.	Latitude 5° to 6°—Meridional arcs.						Latitude 5°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
5 00	30.715			1842.93					
1	5	1	30.72	.93	1	1 842.9	0 1	1 848.3	
2	6	2	61.43	.93	2	3 685.9	2	3 696.7	0.1
3	6	3	92.15	.93	3	5 528.8	3	5 545.0	0.2
4	6	4	122.86	.93	4	7 371.7	4	7 393.3	0.4
5 05	30.716	5	153.58	1842.93	5	9 214.7	0 5	9 241.7	0.6
6	6	6	184.30	.93	6	11 057.6	6	11 090.0	0.8
7	6	7	215.01	.94	7	12 900.5	7	12 938.3	1.1
8	6	8	245.73	.94	8	14 743.5	8	14 786.7	1.5
9	6	9	276.44	.94	9	16 586.4	9	16 635.0	1.9
5 10	30.716	10	307.16	1842.94	10	18 429.3	0 10	18 483.3	2.3
11	6	1	337.88	.94	1	20 272.3	15	27 725.0	5.3
12	6	2	368.59	.94	2	22 115.2	20	36 966.6	9.4
13	6	3	399.31	.94	3	23 958.2	25	46 208.3	14.6
14	6	4	430.02	.94	4	25 801.1	30	55 449.9	21.1
5 15	30.716	15	460.74	1842.94	15	27 644.1	0 35	64 691.6	28.7
16	6	6	491.46	.94	6	29 487.0	40	73 933.3	37.5
17	6	7	522.17	.95	7	31 329.9	45	83 174.9	47.4
18	6	8	552.89	.95	8	33 172.9	50	92 416.6	58.6
19	6	9	583.60	.95	9	35 015.8	55	101 658.2	70.9
5 20	30.716	20	614.32	1842.85	20	36 858.8	1 00	110 899.9	84.4
21	6	1	645.04	.95	1	38 701.7	05	120 141.5	99.0
22	6	2	675.75	.95	2	40 544.7	10	129 383.2	114.8
23	6	3	706.47	.95	3	42 387.6	15	138 624.8	131.8
24	6	4	737.18	.95	4	44 230.6	20	147 866.4	150.0
5 25	30.716	25	767.90	1842.95	25	46 073.5	1 25	157 108.0	169.3
26	6	6	798.62	.95	6	47 916.5	30	166 349.7	189.8
27	6	7	829.33	.96	7	49 759.5	35	175 591.3	211.5
28	6	8	860.05	.96	8	51 602.4	40	184 832.9	234.3
29	6	9	890.76	.96	9	53 445.4	45	194 074.5	258.3
5 30	30.716	30	921.48	1842.96	30	55 288.3	1 50	203 316.2	283.5
31	6	1	952.20	.96	1	57 131.3	55	212 557.8	309.9
32	6	2	982.91	.96	2	58 974.3	2 00	221 799	337
33	6	3	1 013.63	.96	3	60 817.2	3 00	332 699	759
34	6	4	1 044.34	.96	4	62 660.2	4 00	443 597	1 349
5 35	30.716	35	1 075.06	1842.96	35	64 503.1	5 00	554 494	2 108
36	6	6	1 105.78	.97	6	66 346.1	6 00	665 390	3 036
37	6	7	1 136.49	.97	7	68 189.1	7 00	776 284	4 133
38	6	8	1 167.21	.97	8	70 032.0	8 00	887 177	5 398
39	6	9	1 197.92	.97	9	71 875.0	9 00	998 068	6 832
5 40	30.716	40	1 228.64	1842.97	40	73 718.0	10 00	1 108 956	8 435
41	6	1	1 259.36	.97	1	75 560.9	11 00	1 219 842	10 206
42	6	2	1 290.07	.97	2	77 403.9	12 00	1 330 725	12 146
43	6	3	1 320.79	.97	3	79 246.9	13 00	1 441 604	14 255
44	6	4	1 351.50	.97	4	81 089.9	14 00	1 552 481	16 532
5 45	30.716	45	1 382.22	1842.97	45	82 932.9	15 00	1 663 354	18 977
46	6	6	1 412.94	.98	6	84 775.8	16 00	1 774 223	21 592
47	6	7	1 443.65	.98	7	86 618.8	17 00	1 885 088	24 376
48	6	8	1 474.37	.98	8	88 461.8	18 00	1 995 948	27 328
49	6	9	1 505.08	.98	9	90 304.8	19 00	2 106 804	30 448
5 50	30.716	50	1 535.80	1842.98	50	92 147.7	20 00	2 217 655	33 737
51	6	1	1 566.52	.98	1	93 990.7	21 00	2 328 502	37 195
52	6	2	1 597.23	.98	2	95 833.7	22 00	2 439 342	40 821
53	6	3	1 627.95	.98	3	97 676.7	23 00	2 550 177	44 616
54	6	4	1 658.66	.98	4	99 519.7	24 00	2 661 006	48 579
5 55	30.716	55	1 689.38	1842.98	55	101 362.7	25 00	2 771 829	52 711
56	6	6	1 720.10	.99	6	103 205.6	26 00	2 882 645	57 013
57	6	7	1 750.81	.99	7	105 048.6	27 00	2 993 455	61 483
58	6	8	1 781.53	.99	8	106 891.6	28 00	3 104 259	66 120
59	6	9	1 812.24	.99	9	108 734.6	29 00	3 215 055	70 926
5 60	30.716	60	1 842.96	1842.99	60	110 577.6	30 00	3 325 844	75 900

Latitude 6° to 7°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
6 00	30.75	61.51	92.26	123.02	153.77	184.52	215.28	246.03	276.79	1845.2	3690.5	5535.7	7381.0	9226.2
1	.75	.51	.26	.02	.77	.52	.27	.02	.78	5.2	0.4	5.5	0.8	5.9
2	.75	.51	.26	.01	.76	.51	.27	.02	.77	5.1	0.3	5.4	0.6	5.6
3	.75	.50	.25	.01	.76	.51	.26	.01	.76	5.1	0.1	5.2	0.3	5.4
4	.75	.50	.25	.00	.75	.50	.25	6.00	.75	5.0	90.0	5.1	80.1	5.1
6 05	30.75	61.50	92.25	123.00	153.75	184.50	215.24	245.99	276.74	1845.0	3689.9	5534.9	7379.9	9224.8
6	.74	.50	.24	.00	.74	.49	.24	.99	.74	4.9	9.8	4.7	9.7	4.5
7	.74	.50	.24	3.00	.74	.49	.23	.98	.73	4.9	9.7	4.5	9.4	4.2
8	.74	.49	.24	2.99	.73	.48	.22	.97	.72	4.8	9.6	4.4	9.2	4.0
9	.74	.49	.24	.99	.73	.48	.22	.97	.71	4.8	9.5	4.2	8.9	3.7
6 10	30.74	61.49	92.23	122.98	153.72	184.47	215.21	245.96	276.70	1844.7	3689.4	5534.0	7378.7	9223.4
11	.74	.49	.23	.98	.72	.46	.20	.95	.69	4.6	9.3	3.8	8.5	3.1
12	.74	.49	.23	.97	.71	.46	.20	.94	.68	4.6	9.2	3.7	8.3	2.8
13	.74	.48	.22	.97	.71	.45	.19	.94	.67	4.5	9.0	3.5	8.0	2.5
14	.74	.48	.22	.96	.70	.45	.18	.93	.66	4.5	8.9	3.4	7.8	2.2
6 15	30.74	61.48	92.22	122.96	153.70	184.44	215.17	245.92	276.65	1844.4	3688.8	5533.2	7377.6	9221.9
16	.73	.48	.22	.96	.69	.43	.17	.91	.65	4.3	8.7	3.0	7.4	1.6
17	.73	.48	.21	.95	.69	.43	.16	.90	.64	4.3	8.6	2.8	7.1	1.3
18	.73	.47	.21	.95	.68	.42	.15	.90	.63	4.2	8.4	2.7	6.9	1.1
19	.73	.47	.21	.94	.68	.42	.15	.89	.62	4.2	8.3	2.5	6.6	0.8
6 20	30.73	61.47	92.20	122.94	153.67	184.41	215.14	245.88	276.61	1844.1	3688.2	5532.3	7376.4	9220.5
21	.73	.47	.20	.94	.67	.40	.13	.87	.60	4.0	8.1	2.1	6.2	20.2
22	.73	.47	.20	.93	.66	.40	.13	.86	.59	4.0	8.0	1.9	5.9	19.9
23	.73	.46	.20	.93	.66	.39	.12	.86	.58	3.9	7.8	1.8	5.7	9.6
24	.73	.46	.19	.92	.65	.39	.11	.85	.57	3.9	7.7	1.6	5.4	9.3
6 25	30.73	61.46	92.19	122.92	153.65	184.38	215.10	245.84	276.56	1843.8	3687.6	5531.4	7375.2	9219.0
26	.72	.46	.19	.92	.64	.37	.10	.83	.56	3.7	7.5	1.2	5.0	8.7
27	.72	.46	.18	.91	.64	.37	.09	.82	.55	3.7	7.4	1.0	4.7	8.4
28	.72	.45	.18	.91	.63	.36	.08	.82	.54	3.6	7.2	0.9	4.5	8.1
29	.72	.45	.18	.90	.63	.36	.08	.81	.53	3.6	7.1	0.7	4.2	7.8
6 30	30.72	61.45	92.17	122.90	153.62	184.35	215.07	245.80	276.52	1843.5	3687.0	5530.5	7374.0	9217.5
31	.72	.45	.17	.90	.62	.34	.06	.79	.51	3.4	6.9	0.3	3.8	7.2
32	.72	.45	.17	.89	.61	.34	.06	.78	.50	3.4	6.8	0.1	3.5	6.9
33	.72	.44	.16	.89	.61	.33	.05	.78	.49	3.3	6.6	30.0	3.3	6.5
34	.72	.44	.16	.88	.60	.33	.04	.77	.48	3.3	6.5	29.8	3.0	6.2
6 35	30.72	61.44	92.16	122.88	153.60	184.32	215.03	245.76	276.47	1843.2	3686.4	5529.6	7372.8	9215.9
36	.71	.44	.16	.88	.59	.31	.03	.75	.47	3.1	6.3	9.4	2.6	5.6
37	.71	.44	.15	.87	.59	.31	.02	.74	.46	3.1	6.2	9.2	2.3	5.3
38	.71	.43	.15	.87	.58	.30	.01	.74	.45	3.0	6.0	9.1	2.1	5.0
39	.71	.43	.15	.86	.58	.30	.01	.73	.44	3.0	5.9	8.9	1.8	4.7
6 40	30.71	61.43	92.14	122.86	153.57	184.29	215.00	245.72	276.43	1842.9	3685.8	5528.7	7371.6	9214.4
41	.71	.43	.14	.86	.57	.28	4.99	.71	.42	2.8	5.7	8.5	1.3	4.1
42	.71	.43	.14	.85	.56	.28	.99	.70	.41	2.8	5.5	8.3	1.1	3.8
43	.71	.42	.13	.85	.56	.27	.98	.69	.40	2.7	5.4	8.1	0.8	3.4
44	.71	.42	.13	.84	.55	.27	.97	.68	.39	2.7	5.2	7.9	0.6	3.1
6 45	30.71	61.42	92.13	122.84	153.55	184.26	214.96	245.67	276.38	1842.6	3685.1	5527.7	7370.3	9212.8
46	.70	.42	.12	.84	.54	.25	.96	.67	.38	2.5	5.0	7.5	70.0	2.5
47	.70	.42	.12	.83	.54	.25	.95	.66	.37	2.5	4.9	7.3	69.8	2.2
48	.70	.41	.12	.83	.53	.24	.94	.65	.36	2.4	4.7	7.2	9.5	1.9
49	.70	.41	.12	.82	.53	.24	.94	.64	.35	2.4	4.6	7.0	9.3	1.6
6 50	30.70	61.41	92.11	122.82	153.52	184.23	214.93	245.63	276.34	1842.3	3684.5	5526.8	7369.0	9211.3
51	.70	.41	.11	.82	.52	.22	.92	.62	.33	2.2	4.4	6.6	8.7	1.0
52	.70	.41	.11	.81	.51	.21	.91	.61	.32	2.1	4.3	6.4	8.5	0.6
53	.70	.40	.10	.81	.51	.21	.91	.61	.31	2.1	4.1	6.2	8.2	10.3
54	.70	.40	.10	.80	.50	.20	.90	.60	.30	2.0	4.0	6.0	8.0	09.9
6 55	30.70	61.40	92.10	122.80	153.50	184.19	214.89	245.59	276.29	1841.9	3683.9	5525.8	7367.7	9209.6
56	.69	.40	.09	.79	.49	.19	.88	.58	.28	1.9	3.8	5.6	7.4	9.3
57	.69	.40	.09	.79	.49	.18	.87	.57	.27	1.8	3.6	5.4	7.2	9.0
58	.69	.39	.09	.78	.48	.17	.87	.57	.26	1.7	3.5	5.2	6.9	8.6
59	.69	.39	.08	.78	.48	.17	.86	.56	.25	1.7	3.3	5.0	6.7	8.3
.6 60	30.69	61.39	92.08	122.77	153.47	184.16	214.85	245.55	276.24	1841.6	3683.2	5524.8	7366.4	9208.0

Lat.	Latitude 6° to 7°—Meridional arcs.						Latitude 6°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
6 00	30.716			1842.99					
1	7	1	30.72	.99	1	1 843.0	0 1	1 845.3	
2	7	2	61.43	.99	2	3 686.0	2	3 690.5	0.1
3	7	3	92.15	.99	3	5 529.0	3	5 535.8	0.2
4	7	4	122.87	.99	4	7 372.0	4	7 381.0	0.4
6 05	30.717	5	153.59	1843.00	5	9 215.0	0 5	9 226.3	0.7
6	7	6	184.30	.00	6	11 058.0	6	11 071.5	1.0
7	7	7	215.02	.00	7	12 901.0	7	12 916.7	1.4
8	7	8	245.74	.00	8	14 744.0	8	14 762.0	1.8
9	7	9	276.45	.00	9	16 587.0	9	16 607.2	2.3
6 10	30.717	10	307.17	1843.00	10	18 430.0	0 10	18 452.5	2.8
11	7	1	337.89	.00	1	20 273.0	15	27 678.8	6.3
12	7	2	368.61	.00	2	22 116.0	20	36 905.0	11.2
13	7	3	399.32	.00	3	23 959.0	25	46 131.2	17.5
14	7	4	430.04	.01	4	25 802.0	30	55 357.5	25.3
6 15	30.717	15	460.76	1843.01	15	27 645.0	0 35	64 583.8	34.4
16	7	6	491.47	.01	6	29 488.0	40	73 810.0	44.9
17	7	7	522.19	.01	7	31 331.0	45	83 036.2	56.8
18	7	8	552.91	.01	8	33 174.0	50	92 262.5	70.1
19	7	9	583.63	.01	9	35 017.0	55	101 488.7	84.9
6 20	30.717	20	614.34	1843.01	20	36 860.0	1 00	110 714.9	101.0
21	7	1	645.06	.01	1	38 703.1	05	119 941.2	118.5
22	7	2	675.78	.02	2	40 546.1	10	129 167.4	137.5
23	7	3	706.49	.02	3	42 389.1	15	138 393.6	157.8
24	7	4	737.21	.02	4	44 232.1	20	147 619.9	179.5
6 25	30.717	25	767.93	1843.02	25	46 075.1	1 25	156 846.1	202.7
26	7	6	798.65	.02	6	47 918.2	30	166 072.3	227.2
27	7	7	829.36	.02	7	49 761.2	35	175 298.5	253.2
28	7	8	860.08	.02	8	51 604.2	40	184 524.7	280.5
29	7	9	890.80	.02	9	53 447.2	45	193 750.9	309.3
6 30	30.717	30	921.51	1843.03	30	55 290.3	1 50	202 977.1	339.4
31	7	1	952.23	.03	1	57 133.3	55	212 203.3	371.0
32	7	2	982.95	.03	2	58 976.3	2 00	221 429	404
33	7	3	1 013.67	.03	3	60 819.4	3 00	332 143	909
34	7	4	1 044.38	.03	4	62 662.4	4 00	442 856	1 616
6 35	30.717	35	1 075.10	1843.03	35	64 505.4	5 00	553 567	2 525
36	7	6	1 105.82	.03	6	66 348.4	6 00	664 277	3 636
37	7	7	1 136.54	.03	7	68 191.5	7 00	774 984	4 949
38	7	8	1 167.25	.04	8	70 034.5	8 00	885 689	6 464
39	7	9	1 197.97	.04	9	71 877.6	9 00	996 390	8 180
6 40	30.717	40	1 228.69	1843.04	40	73 720.6	10 00	1 107 088	10 099
41	7	1	1 259.40	.04	1	75 563.6	11 00	1 217 783	12 220
42	7	2	1 290.12	.04	2	77 406.7	12 00	1 328 474	14 543
43	7	3	1 320.84	.04	3	79 249.7	13 00	1 439 160	17 067
44	7	4	1 351.56	.04	4	81 092.8	14 00	1 549 841	19 793
6 45	30.717	45	1 382.27	1843.04	45	82 935.8	15 00	1 660 518	22 721
46	7	6	1 412.97	.05	6	84 778.9	16 00	1 771 189	25 852
47	7	7	1 443.71	.05	7	86 621.9	17 00	1 881 854	29 185
48	7	8	1 474.42	.05	8	88 464.9	18 00	1 992 512	32 719
49	7	9	1 505.14	.05	9	90 308.0	19 00	2 103 164	36 454
6 50	30.718	50	1 535.86	1843.05	50	92 151.1	20 00	2 213 809	40 392
51	8	1	1 566.57	.05	1	93 994.1	21 00	2 324 446	44 532
52	8	2	1 597.29	.05	2	95 837.2	22 00	2 435 076	48 874
53	8	3	1 628.01	.05	3	97 680.2	23 00	2 545 698	53 418
54	8	4	1 658.72	.06	4	99 523.3	24 00	2 656 311	58 163
6 55	30.718	55	1 689.44	1843.06	55	101 366.3	25 00	2 766 915	63 109
56	8	6	1 720.16	.06	6	103 209.4	26 00	2 877 511	68 257
57	8	7	1 750.88	.06	7	105 052.4	27 00	2 988 097	73 607
58	8	8	1 781.59	.06	8	106 895.5	28 00	3 098 672	79 160
59	8	9	1 812.31	.06	9	108 738.6	29 00	3 209 237	84 915
6 60	30.718	60	1 843.03	1843.06	60	110 581.6	30 00	3 319 792	90 871

Latitude 7° to 8°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
7 00	30.69	61.39	92.08	122.77	153.47	184.16	214.85	245.55	276.24	1841.6	3683.2	5524.8	7366.4	9208.0
1	.69	.39	.08	.77	.46	.15	.84	.54	.23	1.5	3.1	4.6	6.1	7.7
2	.69	.39	.07	.76	.46	.15	.84	.53	.22	1.5	3.0	4.4	5.9	7.4
3	.69	.38	.07	.76	.45	.14	.83	.52	.21	1.4	2.8	4.2	5.6	7.0
4	.69	.38	.07	.75	.45	.13	.82	.51	.20	1.3	2.7	4.0	5.4	6.7
7 05	30.69	61.38	92.06	122.75	153.44	184.13	214.81	245.50	276.19	1841.3	3682.6	5523.8	7365.1	9206.4
6	.68	.38	.06	.75	.43	.12	.81	.50	.18	1.2	2.5	3.6	4.8	6.1
7	.68	.38	.06	.74	.43	.11	.80	.49	.17	1.1	2.3	3.4	4.6	5.7
8	.68	.37	.05	.74	.42	.11	.79	.48	.16	1.1	2.2	3.2	4.3	5.4
9	.68	.37	.05	.73	.42	.10	.79	.47	.15	1.0	2.0	3.0	4.1	5.0
7 10	30.68	61.37	92.05	122.73	153.41	184.09	214.78	245.46	276.14	1840.9	3681.9	5522.8	7363.8	9204.7
11	.68	.37	.04	.73	.41	.08	.77	.45	.13	0.8	1.8	2.6	3.5	4.4
12	.68	.36	.04	.72	.40	.08	.76	.44	.12	0.8	1.6	2.4	3.2	4.0
13	.68	.36	.04	.72	.40	.07	.76	.43	.11	0.7	1.4	2.2	3.0	3.7
14	.68	.36	.03	.71	.39	.07	.75	.42	.10	0.7	1.3	2.0	2.7	3.3
7 15	30.68	61.35	92.03	122.71	153.39	184.06	214.74	245.41	276.09	1840.6	3681.2	5521.8	7362.4	9203.0
16	.67	.35	.03	.70	.38	.05	.73	.41	.08	0.5	1.1	1.6	2.1	2.7
17	.67	.35	.02	.70	.38	.05	.72	.40	.07	0.5	0.9	1.4	1.9	2.4
18	.67	.35	.02	.69	.37	.04	.72	.39	.06	0.4	0.8	1.2	1.6	2.0
19	.67	.34	.02	.69	.37	.04	.71	.38	.05	0.4	0.6	1.0	1.4	1.7
7 20	30.67	61.34	92.01	122.68	153.36	184.03	214.70	245.37	276.04	1840.3	3680.5	5520.8	7361.1	9201.4
21	.67	.34	.01	.68	.35	.02	.69	.36	.03	0.2	0.4	0.6	0.8	1.0
22	.67	.34	.01	.67	.35	.01	.68	.35	.02	0.1	0.2	0.4	0.5	0.7
23	.67	.33	.00	.67	.34	.01	.68	.34	.01	0.1	80.1	0.2	0.3	0.3
24	.67	.33	.00	.66	.34	4.00	.67	.33	6.00	40.0	79.9	20.0	60.0	200.0
7 25	30.67	61.33	92.00	122.66	153.33	183.99	214.66	245.32	275.99	1839.9	3679.8	5519.8	7359.7	9199.6
26	.66	.33	1.99	.66	.32	.99	.65	.32	.98	9.9	9.7	9.6	9.4	9.3
27	.66	.33	.99	.65	.32	.98	.64	.31	.97	9.8	9.6	9.4	9.1	8.9
28	.66	.32	.99	.65	.31	.97	.64	.30	.96	9.7	9.4	9.1	8.9	8.6
29	.66	.32	.98	.64	.31	.97	.63	.29	.95	9.7	9.3	8.9	8.6	8.2
7 30	30.66	61.32	91.98	122.64	153.30	183.96	214.62	245.28	275.94	1839.6	3679.2	5518.7	7358.3	9197.9
31	.66	.32	.98	.64	.29	.95	.61	.27	.93	9.5	9.0	8.5	8.0	7.5
32	.66	.32	.97	.63	.29	.94	.60	.26	.92	9.4	8.9	8.3	7.7	7.2
33	.66	.31	.97	.63	.28	.94	.59	.25	.91	9.4	8.7	8.1	7.5	6.8
34	.66	.31	.96	.62	.28	.93	.58	.24	.90	9.3	8.6	7.9	7.2	6.5
7 35	30.66	61.31	91.96	122.62	153.27	183.92	214.57	245.23	275.88	1839.2	3678.4	5517.7	7356.9	9196.1
36	.65	.31	.96	.61	.26	.92	.57	.22	.87	9.2	8.3	7.5	6.6	5.8
37	.65	.31	.95	.61	.26	.91	.56	.21	.86	9.1	8.1	7.3	6.3	5.4
38	.65	.30	.95	.60	.25	.90	.55	.20	.85	9.0	8.0	7.0	6.1	5.1
39	.65	.30	.95	.60	.25	.90	.54	.19	.84	9.0	7.8	6.8	5.8	4.7
7 40	30.65	61.30	91.94	122.59	153.24	183.89	214.53	245.18	275.83	1838.9	3677.7	5516.6	7355.5	9194.4
41	.65	.30	.94	.59	.23	.88	.52	.17	.82	8.8	7.6	6.4	5.2	4.0
42	.65	.29	.94	.58	.23	.87	.51	.16	.81	8.7	7.4	6.2	4.9	3.6
43	.65	.29	.93	.58	.22	.87	.51	.15	.80	8.7	7.3	5.9	4.6	3.3
44	.65	.29	.93	.57	.22	.86	.50	.14	.79	8.6	7.1	5.7	4.3	2.9
7 45	30.65	61.28	91.92	122.57	153.21	183.85	214.49	245.13	275.77	1838.5	3677.0	5515.5	7354.0	9192.5
46	.64	.28	.92	.56	.20	.84	.48	.13	.76	8.4	6.9	5.3	3.7	2.1
47	.64	.28	.92	.56	.20	.83	.47	.12	.75	8.3	6.7	5.1	3.4	1.8
48	.64	.28	.91	.55	.19	.83	.47	.11	.74	8.3	6.6	4.8	3.2	1.4
49	.64	.27	.91	.55	.19	.82	.46	.10	.73	8.2	6.4	4.6	2.9	1.1
7 50	30.64	61.27	91.91	122.54	153.18	183.81	214.45	245.09	275.72	1838.1	3676.3	5514.4	7352.6	9190.7
51	.64	.27	.90	.54	.17	.80	.44	.08	.71	8.0	6.1	4.2	2.3	0.3
52	.64	.27	.90	.53	.17	.80	.43	.07	.70	8.0	6.0	4.0	2.0	90.0
53	.63	.26	.90	.53	.16	.79	.42	.06	.69	7.9	5.8	3.7	1.7	89.6
54	.63	.26	.89	.52	.16	.79	.41	.05	.68	7.9	5.7	3.5	1.4	9.3
7 55	30.63	61.26	91.89	122.52	153.15	183.78	214.40	245.04	275.66	1837.8	3675.5	5513.3	7351.1	9188.9
56	.63	.26	.89	.51	.14	.77	.40	.03	.65	7.7	5.4	3.1	0.8	8.5
57	.63	.26	.88	.51	.14	.76	.39	.02	.64	7.6	5.2	2.9	0.5	8.1
58	.62	.25	.88	.50	.13	.76	.38	.01	.63	7.6	5.1	2.6	50.2	7.8
59	.62	.25	.87	.50	.13	.75	.37	5.00	.62	7.5	4.9	2.4	49.9	7.4
7 60	30.62	61.25	91.87	122.49	153.12	183.74	214.36	244.99	275.61	1837.4	3674.8	5512.2	7349.6	9187.0

Lat.	Latitude 7° to 8°—Meridional arcs.						Latitude 7°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
7 00	30.718			1843.06					
1	8	1	30.72	.07	1	1 843.1	0 1	1 841.6	
2	8	2	61.44	.07	2	3 686.1	2	3 683.2	0.1
3	8	3	92.16	.07	3	5 529.2	3	5 524.8	0.3
4	8	4	122.87	.07	4	7 372.3	4	7 366.4	0.5
7 05	30.718	5	153.59	1843.07	5	9 215.3	0 5	9 208.0	0.8
6	8	6	184.31	.07	6	11 058.4	6	11 049.7	1.2
7	8	7	215.03	.07	7	12 901.5	7	12 891.3	1.6
8	8	8	245.75	.08	8	14 744.6	8	14 732.9	2.1
9	8	9	276.47	.08	9	16 587.6	9	16 574.5	2.6
7 10	30.718	10	307.18	1843.08	10	18 430.7	0 10	18 416.1	3.3
11	8	1	337.90	.08	1	20 273.8	15	27 624.1	7.3
12	8	2	368.62	.08	2	22 116.9	20	36 832.1	13.1
13	8	3	399.34	.08	3	23 960.0	25	46 040.2	20.4
14	8	4	430.06	.08	4	25 803.0	30	55 248.2	29.4
7 15	30.718	15	460.78	1843.09	15	27 646.1	0 35	64 456.2	40.0
16	8	6	491.49	.09	6	29 489.2	40	73 664.3	52.2
17	8	7	522.21	.09	7	31 332.3	45	82 872.3	66.1
18	8	8	552.93	.09	8	33 175.4	50	92 080.3	81.6
19	8	9	583.65	.09	9	35 018.5	55	101 288.3	98.7
7 20	30.718	20	614.37	1843.09	20	36 861.6	1 00	110 496.4	117.5
21	8	1	645.09	.09	1	38 704.7	05	119 704.4	137.9
22	8	2	675.81	.10	2	40 547.8	10	128 912.4	160.0
23	8	3	706.52	.10	3	42 390.9	15	138 120.4	183.6
24	8	4	737.24	.10	4	44 234.0	20	147 328.4	208.9
7 25	30.718	25	767.96	1843.10	25	46 077.1	1 25	156 536.4	235.8
26	8	6	798.68	.10	6	47 920.2	30	165 744.4	264.4
27	8	7	829.40	.10	7	49 763.3	35	174 952.4	294.6
28	8	8	860.12	.10	8	51 606.4	40	184 160.4	326.4
29	8	9	890.83	.10	9	53 449.5	45	193 368.4	359.9
7 30	30.718	30	921.55	1843.11	30	55 292.6	1 50	202 576.3	395.0
31	8	1	952.27	.11	1	57 135.7	55	211 784.3	431.7
32	8	2	982.99	.11	2	58 978.8	2 00	220 992	470
33	8	3	1 013.71	.11	3	60 821.9	3 00	331 487	1 058
34	8	4	1 044.43	.11	4	62 665.0	4 00	441 981	1 880
7 35	30.719	35	1 075.15	1843.11	35	64 508.1	5 00	552 472	2 938
36	9	6	1 105.86	.11	6	66 351.2	6 00	662 961	4 231
37	9	7	1 136.58	.11	7	68 194.4	7 00	773 447	5 758
38	9	8	1 167.30	.11	8	70 037.5	8 00	883 929	7 521
39	9	9	1 198.02	.12	9	71 880.6	9 00	994 407	9 519
7 40	30.719	40	1 228.74	1843.12	40	73 723.7	10 00	1 104 881	11 751
41	9	1	1 259.46	.12	1	75 566.8	11 00	1 215 350	14 218
42	9	2	1 290.17	.12	2	77 409.9	12 00	1 325 813	16 921
43	9	3	1 320.89	.12	3	79 253.1	13 00	1 436 271	19 859
44	9	4	1 351.61	.12	4	81 096.2	14 00	1 546 722	23 031
7 45	30.719	45	1 382.33	1843.13	45	82 939.3	15 00	1 657 166	26 438
46	9	6	1 413.05	.13	6	84 782.4	16 00	1 767 602	30 080
47	9	7	1 443.77	.13	7	86 625.6	17 00	1 878 030	33 958
48	9	8	1 474.48	.13	8	88 468.7	18 00	1 988 450	38 070
49	9	9	1 505.20	.13	9	90 311.8	19 00	2 098 861	42 417
7 50	30.719	50	1 535.92	1843.13	50	92 155.0	20 00	2 209 263	46 999
51	9	1	1 566.64	.13	1	93 998.1	21 00	2 319 654	51 815
52	9	2	1 597.36	.14	2	95 841.2	22 00	2 430 035	56 866
53	9	3	1 628.08	.14	3	97 684.4	23 00	2 540 405	62 152
54	9	4	1 658.80	.14	4	99 527.5	24 00	2 650 764	67 673
7 55	30.719	55	1 689.51	1843.14	55	101 370.7	25 00	2 761 111	73 429
56	9	6	1 720.23	.14	6	103 213.8	26 00	2 871 444	79 420
57	9	7	1 750.95	.14	7	105 056.9	27 00	2 981 766	85 644
58	9	8	1 781.67	.15	8	106 900.1	28 00	3 092 073	92 103
59	9	9	1 812.39	.15	9	108 743.2	29 00	3 202 367	98 797
7 60	30.719	60	1 843.11	1843.15	60	110 586.4	30 00	3 312 646	105 727

Latitude 8° to 9°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
8 00	30.62	61.25	91.87	122.49	153.12	183.74	214.36	244.99	275.61	1837.4	3674.8	5512.2	7349.6	9187.0
1	.62	.25	.87	.49	.11	.73	.35	.98	.60	7.3	4.7	2.0	9.3	6.6
2	.62	.24	.86	.48	.11	.72	.34	.97	.59	7.2	4.5	1.8	9.0	6.2
3	.62	.24	.86	.48	.10	.72	.34	.96	.58	7.2	4.4	1.5	8.7	5.9
4	.62	.24	.85	.47	.09	.71	.33	.95	.57	7.1	4.2	1.3	8.4	5.5
8 05	30.62	61.23	91.85	122.47	153.08	183.70	214.32	244.94	275.55	1837.0	3674.1	5511.1	7348.1	9185.1
6	.61	.23	.85	.46	.08	.69	.31	.93	.54	6.9	3.9	0.9	7.8	4.7
7	.61	.23	.84	.46	.07	.69	.30	.92	.53	6.9	3.8	0.7	7.5	4.4
8	.61	.23	.84	.45	.06	.68	.29	.91	.52	6.8	3.6	0.4	7.2	4.0
9	.61	.22	.84	.45	.06	.68	.29	.90	.51	6.8	3.5	0.2	6.9	3.7
8 10	30.61	61.22	91.83	122.44	153.05	183.67	214.28	244.89	275.50	1836.7	3673.3	5510.0	7346.6	9183.3
11	.61	.22	.83	.44	.04	.66	.27	.88	.49	6.6	3.1	09.8	6.3	2.9
12	.61	.22	.82	.43	.04	.65	.26	.87	.48	6.5	3.0	9.5	6.0	2.5
13	.61	.21	.82	.43	.03	.65	.25	.86	.46	6.5	2.8	9.3	5.7	2.1
14	.61	.21	.82	.42	.03	.64	.24	.85	.45	6.4	2.7	9.0	5.4	1.7
8 15	30.61	61.21	91.81	122.42	153.02	183.63	214.23	244.83	275.44	1836.3	3672.5	5508.8	7345.1	9181.3
16	.60	.21	.81	.41	.01	.62	.23	.82	.43	6.2	2.4	8.6	4.8	0.9
17	.60	.21	.80	.41	.01	.61	.22	.81	.42	6.1	2.2	8.4	4.5	0.5
18	.60	.20	.80	.40	.00	.61	.21	.80	.40	6.1	2.1	8.1	4.1	80.2
19	.60	.20	.80	.40	3.00	.60	.20	.79	.39	6.0	1.9	7.9	3.8	79.8
8 20	30.60	61.20	91.79	122.39	152.99	183.59	214.19	244.78	275.38	1835.9	3671.8	5507.7	7343.5	9179.4
21	.60	.20	.79	.39	.98	.58	.18	.77	.37	5.8	1.6	7.5	3.2	9.0
22	.60	.19	.79	.38	.98	.57	.17	.76	.36	5.7	1.5	7.2	2.9	8.6
23	.60	.19	.78	.38	.97	.57	.16	.75	.35	5.7	1.3	7.0	2.6	8.3
24	.60	.19	.78	.37	.97	.56	.15	.74	.34	5.6	1.2	6.7	2.3	7.9
8 25	30.60	61.18	91.77	122.37	152.96	183.55	214.14	244.73	275.32	1835.5	3671.0	5506.5	7342.0	9177.5
26	.59	.18	.77	.36	.95	.54	.14	.72	.31	5.4	0.8	6.3	1.7	7.1
27	.59	.18	.77	.36	.95	.53	.13	.71	.30	5.3	0.7	6.0	1.4	6.7
28	.59	.18	.76	.35	.94	.53	.12	.70	.29	5.3	0.5	5.8	1.0	6.3
29	.59	.17	.76	.35	.94	.52	.11	.69	.28	5.2	0.4	5.5	0.7	5.9
8 30	30.59	61.17	91.76	122.34	152.93	183.51	214.10	244.68	275.27	1835.1	3670.2	5505.3	7340.4	9175.5
31	.59	.17	.75	.34	.92	.50	.09	.67	.26	5.0	70.0	5.1	40.1	5.1
32	.59	.16	.75	.33	.92	.49	.08	.66	.25	4.9	69.9	4.8	39.8	4.7
33	.58	.16	.74	.33	.91	.49	.07	.65	.23	4.9	9.7	4.6	9.4	4.3
34	.58	.16	.74	.32	.90	.48	.06	.64	.22	4.8	9.6	4.3	9.1	3.9
8 35	30.58	61.15	91.74	122.32	152.89	183.47	214.05	244.62	275.21	1834.7	3669.4	5504.1	7338.8	9173.5
36	.58	.15	.73	.31	.89	.46	.04	.61	.20	4.6	9.2	3.9	8.5	3.1
37	.58	.15	.73	.31	.88	.45	.03	.60	.19	4.5	9.1	3.6	8.2	2.7
38	.57	.15	.72	.30	.87	.45	.02	.59	.17	4.5	8.9	3.4	7.8	2.3
39	.57	.14	.72	.30	.87	.44	.01	.58	.16	4.4	8.8	3.1	7.5	1.9
8 40	30.57	61.14	91.72	122.29	152.86	183.43	214.00	244.57	275.15	1834.3	3668.6	5502.9	7337.2	9171.5
41	.57	.14	.71	.28	.85	.42	3.99	.56	.14	4.2	8.4	2.7	6.9	1.1
42	.57	.14	.71	.28	.85	.41	.98	.55	.12	4.1	8.3	2.4	6.6	0.7
43	.57	.13	.70	.27	.84	.41	.97	.54	.11	4.1	8.1	2.2	6.2	70.3
44	.57	.13	.70	.27	.83	.40	.96	.53	.10	4.0	8.0	1.9	5.9	69.9
8 45	30.57	61.13	91.70	122.26	152.82	183.39	213.95	244.51	275.09	1833.9	3667.8	5501.7	7335.6	9169.5
46	.56	.13	.69	.25	.82	.38	.95	.50	.07	3.8	7.6	1.5	5.3	9.1
47	.56	.13	.69	.25	.81	.37	.94	.49	.06	3.7	7.5	1.2	4.9	8.7
48	.56	.12	.68	.24	.80	.36	.93	.48	.05	3.6	7.3	1.0	4.6	8.2
49	.56	.12	.68	.24	.80	.36	.92	.47	.03	3.6	7.2	0.7	4.2	7.8
8 50	30.56	61.12	91.67	122.23	152.79	183.35	213.91	244.46	275.02	1833.5	3667.0	5500.5	7333.9	9167.4
51	.56	.12	.67	.23	.78	.34	.90	.45	.01	3.4	6.8	0.2	3.6	7.0
52	.56	.11	.67	.22	.78	.33	.89	.44	5.00	3.3	6.6	5500.0	3.3	6.6
53	.55	.11	.66	.22	.77	.33	.88	.43	4.98	3.3	6.5	499.7	2.9	6.1
54	.55	.11	.66	.21	.76	.32	.87	.42	.97	3.2	6.3	9.5	2.6	5.7
8 55	30.55	61.10	91.65	122.21	152.75	183.31	213.86	244.40	274.96	1833.1	3666.1	5499.2	7332.3	9165.3
56	.55	.10	.65	.20	.75	.30	.85	.39	.95	3.0	5.9	9.0	2.0	4.9
57	.55	.10	.64	.20	.74	.29	.84	.38	.94	2.9	5.8	8.7	1.6	4.5
58	.54	.10	.64	.19	.73	.28	.83	.37	.92	2.8	5.6	8.5	1.3	4.1
59	.54	.09	.64	.19	.73	.28	.82	.36	.91	2.8	5.5	8.2	0.9	3.7
8 60	30.54	61.09	91.63	122.18	152.72	183.27	213.81	244.35	274.90	1832.7	3665.3	5498.0	7330.6	9163.3

Lat.	Latitude 8° to 9°—Meridional arcs.						Latitude 8°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
8 00	30.719			1843.15					
1	9	1	30.72	.15	1	1 843.2	0 1	1 837.4	
2	9	2	61.44	.15	2	3 686.3	2	3 674.8	0.1
3	9	3	92.16	.16	3	5 529.5	3	5 512.2	0.3
4	9	4	122.88	.16	4	7 372.6	4	7 349.6	0.6
8 05	30.719	5	153.60	1843.16	5	9 215.8	0 5	9 187.0	0.9
6	9	6	184.32	.16	6	11 058.9	6	11 024.4	1.3
7	9	7	215.04	.16	7	12 902.1	7	12 861.9	1.8
8	9	8	245.76	.16	8	14 745.3	8	14 699.3	2.4
9	9	9	276.48	.16	9	16 588.4	9	16 536.7	3.0
8 10	30.719	10	307.20	1843.17	10	18 431.6	0 10	18 374.1	3.7
11	9	1	337.92	.17	1	20 274.8	15	27 561.1	8.4
12	19	2	368.64	.17	2	22 117.9	20	36 748.2	14.9
13	20	3	399.36	.17	3	23 961.1	25	45 935.2	23.2
14	0	4	430.08	.17	4	25 804.3	30	55 122.3	33.5
8 15	30.720	15	460.80	1843.17	15	27 647.4	0 35	64 309.3	45.6
16	0	6	491.52	.17	6	29 490.6	40	73 496.4	59.5
17	0	7	522.24	.18	7	31 333.8	45	82 683.4	75.3
18	0	8	552.96	.18	8	33 177.0	50	91 870.4	93.0
19	0	9	583.68	.18	9	35 020.2	55	101 057.5	112.5
8 20	30.720	20	614.40	1843.18	20	36 863.3	1 00	110 244.5	133.9
21	0	1	645.12	.18	1	38 706.5	05	119 431.5	157.1
22	0	2	675.84	.18	2	40 549.7	10	128 618.5	182.2
23	0	3	706.56	.19	3	42 392.9	15	137 805.5	209.2
24	0	4	737.28	.19	4	44 236.1	20	146 992.5	238.0
8 25	30.720	25	768.00	1843.19	25	46 079.3	1 25	156 179.5	268.7
26	0	6	798.72	.19	6	47 922.5	30	165 366.5	301.3
27	0	7	829.44	.19	7	49 765.6	35	174 553.4	335.7
28	0	8	860.16	.19	8	51 608.8	40	183 740.4	371.9
29	0	9	890.88	.19	9	53 452.0	45	192 927.4	410.0
8 30	30.720	30	921.60	1843.20	30	55 295.2	1 50	202 114.3	450.0
31	0	1	952.32	.20	1	57 138.4	55	211 301.3	491.9
32	0	2	983.04	.20	2	58 981.6	2 00	220 488	536
33	0	3	1 013.76	.20	3	60 824.8	3 00	330 730	1 205
34	0	4	1 044.48	.20	4	62 668.0	4 00	440 971	2 142
8 35	30.720	35	1 075.20	1843.20	35	64 511.2	5 00	551 209	3 347
36	0	6	1 105.92	.20	6	66 354.4	6 00	661 444	4 820
37	0	7	1 136.64	.21	7	68 197.6	7 00	771 675	6 561
38	0	8	1 167.36	.21	8	70 040.8	8 00	881 901	8 569
39	0	9	1 198.08	.21	9	71 884.0	9 00	992 122	10 845
8 40	30.720	40	1 228.80	1843.21	40	73 727.2	10 00	1 102 337	13 389
41	0	1	1 259.52	.21	1	75 570.4	11 00	1 212 546	16 200
42	0	2	1 290.24	.21	2	77 413.6	12 00	1 322 747	19 279
43	0	3	1 320.96	.22	3	79 256.8	13 00	1 432 940	22 626
44	0	4	1 351.68	.22	4	81 100.1	14 00	1 543 126	26 240
8 45	30.720	45	1 382.40	1843.22	45	82 943.3	15 00	1 653 302	30 123
46	0	6	1 413.12	.22	6	84 786.5	16 00	1 763 469	34 274
47	0	7	1 443.84	.22	7	86 629.7	17 00	1 873 626	38 692
48	0	8	1 474.56	.22	8	88 472.9	18 00	1 983 771	43 378
49	0	9	1 505.28	.22	9	90 316.2	19 00	2 093 904	48 330
8 50	30.720	50	1 536.00	1843.23	50	92 159.4	20 00	2 204 024	53 548
51	0	1	1 566.72	.23	1	94 002.6	21 00	2 314 131	59 034
52	0	2	1 597.44	.23	2	95 845.9	22 00	2 424 225	64 789
53	1	3	1 628.16	.23	3	97 689.1	23 00	2 534 305	70 811
54	1	4	1 658.88	.23	4	99 532.3	24 00	2 644 370	77 101
8 55	30.721	55	1 689.60	1843.23	55	101 375.6	25 00	2 754 420	83 658
56	1	6	1 720.32	.24	6	103 218.8	26 00	2 864 454	90 482
57	1	7	1 751.04	.24	7	105 062.0	27 00	2 974 470	97 573
58	1	8	1 781.76	.24	8	106 905.3	28 00	3 084 468	104 932
59	1	9	1 812.48	.24	9	108 748.5	29 00	3 194 449	112 558
8 60	30.721	60	1 843.20	1843.24	60	110 591.8	30 00	3 304 411	120 451

Latitude 9° to 10°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
9 00	30.54	61.09	91.63	122.18	152.72	183.27	213.81	244.35	274.90	1832.7	3665.3	5498.0	7330.6	9163.3
1	.54	.09	.63	.17	.71	.26	.80	.34	.89	2.6	5.1	7.7	30.3	2.9
2	.54	.08	.62	.17	.71	.25	.79	.33	.87	2.5	5.0	7.5	29.9	2.4
3	.54	.08	.62	.16	.70	.24	.78	.32	.86	2.4	4.8	7.2	9.6	2.0
4	.54	.08	.61	.16	.69	.23	.77	.31	.85	2.3	4.7	7.0	9.2	1.5
9 05	30.54	61.07	91.61	122.15	152.68	183.22	213.76	244.29	274.83	1832.2	3664.5	5496.7	7328.9	9161.1
6	.53	.07	.61	.14	.68	.21	.75	.28	.82	2.1	4.3	6.4	8.6	0.7
7	.53	.07	.60	.14	.67	.21	.74	.27	.81	2.1	4.1	6.2	8.2	60.3
8	.53	.07	.60	.13	.66	.20	.73	.26	.80	2.0	4.0	5.9	7.9	59.8
9	.53	.06	.59	.13	.66	.19	.72	.25	.78	1.9	3.8	5.7	7.5	9.4
9 10	30.53	61.06	91.59	122.12	152.65	183.18	213.71	244.24	274.77	1831.8	3663.6	5495.4	7327.2	9159.0
11	.53	.06	.59	.11	.64	.17	.70	.23	.76	1.7	3.4	5.1	6.9	8.6
12	.53	.05	.58	.11	.64	.16	.69	.22	.74	1.6	3.3	4.9	6.5	8.2
13	.53	.05	.58	.10	.63	.15	.68	.21	.73	1.5	3.1	4.6	6.2	7.7
14	.53	.05	.57	.10	.62	.15	.67	.20	.72	1.5	3.0	4.4	5.8	7.3
9 15	30.53	61.04	91.57	122.09	152.61	183.14	213.66	244.18	274.70	1831.4	3662.8	5494.1	7325.5	9156.9
16	.52	.04	.57	.08	.61	.13	.65	.17	.69	1.3	2.6	3.8	5.2	6.5
17	.52	.04	.56	.08	.60	.12	.64	.16	.68	1.2	2.4	3.6	4.8	6.0
18	.52	.04	.56	.07	.59	.11	.63	.15	.67	1.1	2.3	3.3	4.5	5.6
19	.52	.03	.55	.07	.59	.10	.62	.14	.65	1.0	2.1	3.1	4.1	5.1
9 20	30.52	61.03	91.55	122.06	152.58	183.09	213.61	244.13	274.64	1830.9	3661.9	5492.8	7323.8	9154.7
21	.52	.03	.54	.05	.57	.08	.60	.12	.63	0.8	1.7	2.5	3.4	4.3
22	.52	.02	.54	.05	.57	.07	.59	.11	.61	0.7	1.5	2.3	3.1	3.8
23	.51	.02	.53	.04	.56	.07	.58	.09	.60	0.7	1.4	2.0	2.7	3.4
24	.51	.02	.53	.04	.55	.06	.57	.08	.59	0.6	1.2	1.8	2.4	2.9
9 25	30.51	61.01	91.53	122.03	152.54	183.05	213.56	244.07	274.57	1830.5	3661.0	5491.5	7322.0	9152.5
26	.51	.01	.52	.02	.54	.04	.55	.06	.56	0.4	0.8	1.2	1.7	2.1
27	.51	.01	.52	.02	.53	.03	.54	.05	.55	0.3	0.6	1.0	1.3	1.6
28	.50	.01	.51	.01	.52	.03	.53	.03	.54	0.3	0.5	0.7	1.0	1.2
29	.50	.00	.51	.01	.52	.02	.52	.02	.52	0.2	0.3	0.5	0.6	0.7
9 30	30.50	61.00	91.50	122.00	152.51	183.01	213.51	244.01	274.51	1830.1	3660.1	5490.2	7320.3	9150.3
31	.50	1.00	.50	1.99	.50	3.00	.50	4.00	.50	30.0	59.9	89.9	19.9	49.9
32	.50	0.99	.49	.99	.49	2.99	.49	3.99	.48	29.9	9.7	9.7	9.6	9.4
33	.50	.99	.49	.98	.49	.98	.48	.97	.47	9.8	9.6	9.4	9.2	9.0
34	.50	.99	.48	.98	.48	.97	.47	.96	.46	9.7	9.4	9.2	8.9	8.5
9 35	30.50	60.98	91.48	121.97	152.47	182.96	213.46	243.95	274.44	1829.6	3659.2	5488.9	7318.5	9148.1
36	.49	.98	.48	.96	.46	.96	.44	.94	.43	9.6	9.0	8.6	8.1	7.7
37	.49	.98	.47	.96	.45	.95	.43	.93	.42	9.5	8.9	8.3	7.8	7.2
38	.49	.98	.47	.95	.45	.94	.42	.91	.41	9.4	8.7	8.1	7.4	6.8
39	.49	.97	.46	.95	.44	.93	.41	.90	.39	9.3	8.6	7.8	7.1	6.3
9 40	30.49	60.97	91.46	121.94	152.43	182.92	213.40	243.89	274.38	1829.2	3658.4	5487.5	7316.7	9145.9
41	.49	.97	.45	.93	.42	.91	.39	.88	.37	9.1	8.2	7.2	6.3	5.4
42	.49	.96	.45	.93	.42	.90	.38	.87	.35	9.0	8.0	7.0	6.0	5.0
43	.48	.96	.45	.92	.41	.89	.37	.85	.34	8.9	7.8	6.7	5.6	4.5
44	.48	.96	.44	.92	.40	.88	.36	.84	.32	8.8	7.6	6.5	5.3	4.1
9 45	30.48	60.95	91.44	121.91	152.39	182.87	213.35	243.83	274.31	1828.7	3657.4	5486.2	7314.9	9143.6
46	.48	.95	.43	.90	.39	.86	.34	.82	.30	8.6	7.2	5.9	4.5	3.1
47	.48	.95	.43	.90	.38	.85	.33	.81	.28	8.5	7.0	5.6	4.2	2.7
48	.47	.95	.42	.89	.37	.85	.32	.79	.27	8.5	6.9	5.4	3.8	2.2
49	.47	.94	.42	.89	.37	.84	.31	.78	.25	8.4	6.7	5.1	3.5	1.8
9 50	30.47	60.94	91.41	121.88	152.36	182.83	213.30	243.77	274.24	1828.3	3656.5	5484.8	7313.1	9141.3
51	.47	.94	.41	.87	.35	.82	.29	.76	.23	8.2	6.3	4.5	2.7	0.8
52	.47	.93	.40	.87	.34	.81	.28	.75	.21	8.1	6.1	4.2	2.3	40.4
53	.47	.93	.40	.86	.34	.80	.27	.73	.20	8.0	6.0	4.0	2.0	39.9
54	.47	.93	.39	.86	.33	.79	.26	.72	.18	7.9	5.8	3.7	1.6	9.5
9 55	30.47	60.92	91.39	121.85	152.32	182.78	213.25	243.71	274.17	1827.8	3655.6	5483.4	7311.2	9139.0
56	.46	.92	.39	.84	.31	.77	.23	.70	.16	7.7	5.4	3.1	0.8	8.5
57	.46	.92	.38	.84	.30	.76	.22	.69	.14	7.6	5.2	2.8	0.5	8.1
58	.46	.92	.38	.83	.30	.75	.21	.67	.13	7.5	5.1	2.6	10.1	7.6
59	.46	.91	.37	.83	.29	.74	.20	.66	.11	7.4	4.9	2.3	09.8	7.2
9 60	30.46	60.91	91.37	121.82	152.28	182.73	213.19	243.65	274.10	1827.3	3654.7	5482.0	7309.4	9136.7

Lat.	Latitude 9° to 10°—Meridional arcs.						Latitude 9°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
9 00	30.721			1843.24					
1	1	1	30.72	.25	1	1 843.2	0 1	1 832.6	
2	1	2	61.44	.25	2	3 686.5	2	3 665.3	0.2
3	1	3	92.16	.25	3	5 529.7	3	5 498.0	0.4
4	1	4	122.89	.25	4	7 373.0	4	7 330.6	0.7
9 05	30.721	5	153.61	1843.25	5	9 216.2	0 5	9 163.3	1.0
6	1	6	184.33	.25	6	11 059.5	6	10 995.9	1.5
7	1	7	215.05	.26	7	12 902.8	7	12 828.6	2.0
8	1	8	245.77	.26	8	14 746.0	8	14 661.2	2.7
9	1	9	276.49	.26	9	16 589.3	9	16 493.9	3.4
9 10	30.721	10	307.22	1843.26	10	18 432.5	0 10	18 326.5	4.2
11	1	1	337.94	.26	1	20 275.8	15	27 489.8	9.4
12	1	2	368.66	.26	2	22 119.1	20	36 653.1	16.7
13	1	3	399.38	.27	3	23 962.3	25	45 816.4	26.1
14	1	4	430.10	.27	4	25 805.6	30	54 979.6	37.5
9 15	30.721	15	460.82	1843.27	15	27 648.9	0 35	64 142.9	51.1
16	1	6	491.55	.27	6	29 492.1	40	73 306.2	66.7
17	1	7	522.27	.27	7	31 335.4	45	82 469.4	84.4
18	1	8	552.99	.28	8	33 178.7	50	91 632.7	104.2
19	1	9	583.71	.28	9	35 022.0	55	100 795.9	126.1
9 20	30.721	20	614.43	1843.28	20	36 865.3	1 00	109 959.2	150.1
21	1	1	645.15	.28	1	38 708.5	05	119 122.4	176.2
22	1	2	675.88	.28	2	40 551.8	10	128 285.6	204.3
23	1	3	706.60	.28	3	42 395.1	15	137 448.9	234.6
24	1	4	737.32	.29	4	44 238.4	20	146 612.1	266.9
9 25	30.721	25	768.04	1843.29	25	46 081.7	1 25	155 775.3	301.3
26	1	6	798.76	.29	6	47 925.0	30	164 938.5	337.8
27	2	7	829.48	.29	7	49 768.3	35	174 101.7	376.3
28	2	8	860.21	.29	8	51 611.5	40	183 264.8	417.0
29	2	9	890.93	.29	9	53 454.8	45	192 428.0	459.7
9 30	30.722	30	921.65	1843.30	30	55 298.1	1 50	201 591.2	504.5
31	2	1	952.37	.30	1	57 141.4	55	210 754.3	551.4
32	2	2	983.09	.30	2	58 984.7	2 00	219 917	600
33	2	3	1 013.81	.30	3	60 828.0	3 00	329 874	1 351
34	2	4	1 044.53	.30	4	62 671.3	4 00	439 828	2 402
9 35	30.722	35	1 075.26	1843.31	35	64 514.6	5 00	549 779	3 753
36	2	6	1 105.98	.31	6	66 357.9	6 00	659 726	5 404
37	2	7	1 136.70	.31	7	68 201.2	7 00	769 668	7 355
38	2	8	1 167.42	.31	8	70 044.6	8 00	879 604	9 607
39	2	9	1 198.14	.31	9	71 887.9	9 00	989 534	12 158
9 40	30.722	40	1 228.86	1843.31	40	73 731.2	10 00	1 099 456	15 010
41	2	1	1 259.59	.32	1	75 574.5	11 00	1 209 370	18 162
42	2	2	1 290.31	.32	2	77 417.8	12 00	1 319 275	21 614
43	2	3	1 321.03	.32	3	79 261.1	13 00	1 429 171	25 367
44	2	4	1 351.75	.32	4	81 104.5	14 00	1 539 055	29 419
9 45	30.722	45	1 382.47	1843.32	45	82 947.8	15 00	1 648 928	33 770
46	2	6	1 413.19	.33	6	84 791.1	16 00	1 758 789	38 422
47	2	7	1 443.92	.33	7	86 634.4	17 00	1 868 637	43 374
48	2	8	1 474.64	.33	8	88 477.8	18 00	1 978 471	48 626
49	2	9	1 505.36	.33	9	90 321.1	19 00	2 088 289	54 178
9 50	30.722	50	1 536.08	1843.33	50	92 164.4	20 00	2 198 093	60 029
51	2	1	1 566.80	.33	1	94 007.7	21 00	2 307 880	66 180
52	2	2	1 597.52	.34	2	95 851.1	22 00	2 417 650	72 631
53	2	3	1 628.25	.34	3	97 694.4	23 00	2 527 402	79 382
54	2	4	1 658.97	.34	4	99 537.8	24 00	2 637 136	86 433
9 55	30.722	55	1 689.69	1843.34	55	101 381.1	25 00	2 746 848	93 783
56	2	6	1 720.41	.34	6	103 224.4	26 00	2 856 541	101 432
57	2	7	1 751.13	.35	7	105 067.8	27 00	2 966 213	109 381
58	2	8	1 781.85	.35	8	106 911.1	28 00	3 075 862	117 629
59	2	9	1 812.58	.35	9	108 754.4	29 00	3 185 488	126 177
9 60	30.723	60	1 843.30	1843.35	60	110 597.8	30 00	3 295 091	135 024

Latitude 10° to 11°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
10 00	30.46	60.91	91.37	121.82	152.28	182.73	213.19	243.65	274.10	1827.3	3654.7	5482.0	7309.4	9136.7
1	.46	.91	.36	.81	.27	.72	.18	.64	.09	7.2	4.5	1.7	9.0	6.2
2	.46	.90	.36	.81	.26	.71	.17	.62	.07	7.1	4.3	1.4	8.6	5.8
3	.45	.90	.35	.80	.26	.71	.16	.61	.06	7.1	4.1	1.2	8.3	5.3
4	.45	.90	.35	.80	.25	.70	.15	.60	.04	7.0	3.9	0.9	7.9	4.9
10 05	30.45	60.89	91.34	121.79	152.24	182.69	213.13	243.58	274.03	1826.9	3653.7	5480.6	7307.5	9134.4
6	.45	.89	.34	.78	.23	.68	.12	.57	.02	6.8	3.5	0.3	7.1	3.9
7	.45	.89	.33	.78	.22	.67	.11	.56	4.00	6.7	3.3	80.0	6.7	3.4
8	.44	.89	.33	.77	.22	.66	.10	.55	3.99	6.6	3.2	79.8	6.4	3.0
9	.44	.88	.33	.77	.21	.65	.09	.53	.97	6.5	3.0	9.5	6.0	2.5
10 10	30.44	60.88	91.32	121.76	152.20	182.64	213.08	243.52	273.96	1826.4	3652.8	5479.2	7305.6	9132.0
11	.44	.88	.32	.75	.19	.63	.07	.51	.95	6.3	2.6	8.9	5.2	1.5
12	.44	.87	.31	.75	.18	.62	.06	.50	.93	6.2	2.4	8.6	4.8	1.0
13	.43	.87	.31	.74	.18	.61	.05	.48	.92	6.1	2.3	8.4	4.5	0.6
14	.43	.87	.30	.74	.17	.60	.04	.47	.90	6.0	2.1	8.1	4.1	30.1
10 15	30.43	60.86	91.30	121.73	152.16	182.59	213.02	243.46	273.89	1825.9	3651.9	5477.8	7303.7	9129.6
16	.43	.86	.29	.72	.15	.58	.01	.45	.88	5.8	1.7	7.5	3.3	9.1
17	.43	.86	.29	.72	.14	.57	3.00	.44	.86	5.7	1.5	7.2	2.9	8.7
18	.42	.86	.28	.71	.14	.57	2.99	.42	.85	5.7	1.3	7.0	2.6	8.2
19	.42	.85	.28	.71	.13	.56	.98	.41	.83	5.6	1.1	6.7	2.2	7.8
10 20	30.42	60.85	91.27	121.70	152.12	182.55	212.97	243.40	273.82	1825.5	3650.9	5476.4	7301.8	9127.3
21	.42	.85	.27	.69	.11	.54	.96	.39	.81	5.4	0.7	6.1	1.4	6.8
22	.42	.84	.26	.69	.10	.53	.95	.37	.79	5.3	0.5	5.8	1.0	6.3
23	.42	.84	.26	.68	.10	.52	.94	.36	.78	5.2	0.3	5.5	0.7	5.8
24	.42	.84	.25	.67	.09	.51	.93	.34	.76	5.1	50.1	5.2	300.3	5.3
10 25	30.42	60.83	91.25	121.67	152.08	182.50	212.91	243.33	273.75	1825.0	3649.9	5474.9	7299.9	9124.8
26	.41	.83	.24	.66	.07	.49	.90	.32	.73	4.9	9.7	4.6	9.5	4.3
27	.41	.83	.24	.65	.06	.48	.89	.30	.72	4.8	9.5	4.3	9.1	3.8
28	.41	.83	.23	.64	.06	.47	.88	.29	.70	4.7	9.4	4.0	8.7	3.4
29	.41	.82	.23	.64	.05	.46	.87	.27	.69	4.6	9.2	3.7	8.3	2.9
10 30	30.41	60.82	91.22	121.63	152.04	182.45	212.86	243.26	273.67	1824.5	3649.0	5473.4	7297.9	9122.4
31	.41	.82	.22	.62	.03	.44	.85	.25	.66	4.4	8.8	3.1	7.5	1.9
32	.41	.81	.21	.62	.02	.43	.84	.23	.64	4.3	8.6	2.8	7.1	1.4
33	.40	.81	.21	.61	.02	.42	.82	.22	.63	4.2	8.4	2.6	6.7	0.9
34	.40	.80	.20	.61	.01	.41	.81	.21	.61	4.1	8.2	2.3	6.3	20.4
10 35	30.40	60.80	91.20	121.60	152.00	182.40	212.80	243.20	273.60	1824.0	3648.0	5472.0	7295.9	9119.9
36	.40	.80	.19	.59	1.99	.39	.79	.18	.58	3.9	7.8	1.7	5.5	9.4
37	.40	.79	.19	.59	.98	.38	.78	.17	.57	3.8	7.6	1.4	5.1	8.9
38	.39	.79	.18	.58	.98	.37	.76	.16	.55	3.7	7.4	1.1	4.8	8.5
39	.39	.78	.18	.58	.97	.36	.75	.14	.54	3.6	7.2	0.8	4.4	8.0
10 40	30.39	60.78	91.17	121.57	151.96	182.35	212.74	243.13	273.52	1823.5	3647.0	5470.5	7294.0	9117.5
41	.39	.78	.17	.56	.95	.34	.73	.12	.51	3.4	6.8	70.2	3.6	7.0
42	.39	.77	.16	.56	.94	.33	.72	.10	.49	3.3	6.6	69.9	3.2	6.5
43	.38	.77	.16	.55	.93	.32	.70	.09	.48	3.2	6.4	9.6	2.8	6.0
44	.38	.77	.15	.54	.92	.31	.69	.08	.46	3.1	6.2	9.3	2.4	5.5
10 45	30.38	60.76	91.15	121.53	151.91	182.30	212.68	243.06	273.45	1823.0	3646.0	5469.0	7292.0	9115.0
46	.38	.76	.14	.53	.91	.29	.67	.05	.43	2.9	5.8	8.7	1.6	4.5
47	.38	.76	.14	.52	.90	.28	.66	.04	.42	2.8	5.6	8.4	1.2	4.0
48	.37	.76	.13	.51	.89	.27	.64	.03	.40	2.7	5.4	8.1	0.8	3.5
49	.37	.75	.13	.51	.88	.26	.63	.01	.39	2.6	5.2	7.8	0.4	3.0
10 50	30.37	60.75	91.12	121.50	151.87	182.25	212.62	243.00	273.37	1822.5	3645.0	5467.5	7290.0	9112.5
51	.37	.75	.12	.49	.86	.24	.61	2.99	.36	2.4	4.8	7.2	89.6	2.0
52	.37	.74	.11	.49	.85	.23	.60	.97	.34	2.3	4.6	6.9	9.2	1.5
53	.37	.74	.11	.48	.85	.22	.59	.96	.33	2.2	4.4	6.6	8.7	0.9
54	.37	.74	.10	.47	.84	.21	.58	.94	.31	2.1	4.2	6.3	8.3	10.4
10 55	30.37	60.73	91.10	121.47	151.83	182.20	212.56	242.93	273.30	1822.0	3644.0	5466.0	7287.9	9109.9
56	.36	.73	.09	.46	.82	.19	.55	.92	.28	1.9	3.8	5.7	7.5	9.4
57	.36	.73	.09	.45	.81	.18	.54	.90	.27	1.8	3.6	5.4	7.1	8.9
58	.36	.73	.08	.44	.81	.17	.53	.89	.25	1.7	3.4	5.0	6.7	8.4
59	.36	.72	.08	.44	.80	.16	.52	.87	.24	1.6	3.2	4.7	6.3	7.9
10 60	30.36	60.72	91.07	121.43	151.79	182.15	212.51	242.86	273.22	1821.5	3643.0	5464.4	7285.9	9107.4

Lat.		Latitude 10° to 11°—Meridional arcs.						Latitude 10°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
10	00	30.723			1843.35					
	1	3	1	30.72	.35	1	1 843.4	0 1	1 827.3	
	2	3	2	61.45	.35	2	3 686.7	2	3 654.7	0.2
	3	3	3	92.17	.36	3	5 530.1	3	5 482.0	0.4
	4	3	4	122.89	.36	4	7 373.4	4	7 309.4	0.7
10	05	30.723	5	153.62	1843.36	5	9 216.8	0 5	9 136.7	1.2
	6	3	6	184.34	.36	6	11 060.1	6	10 964.1	1.7
	7	3	7	215.06	.36	7	12 903.5	7	12 791.4	2.3
	8	3	8	245.79	.37	8	14 746.9	8	14 618.7	3.0
	9	3	9	276.51	.37	9	16 590.2	9	16 446.1	3.7
10	10	30.723	10	307.23	1843.37	10	18 433.6	0 10	18 273.4	4.6
	1	3	1	337.96	.37	1	20 277.0	15	27 410.2	10.4
	2	3	2	368.68	.37	2	22 120.4	20	36 546.9	18.5
	3	3	3	399.41	.38	3	23 963.7	25	45 683.6	28.8
	4	3	4	430.13	.38	4	25 807.1	30	54 820.3	41.5
10	15	30.723	15	460.85	1843.38	15	27 650.5	0 35	63 957.0	56.5
	6	3	6	491.58	.38	6	29 493.9	40	73 093.7	73.8
	7	3	7	522.30	.38	7	31 337.3	45	82 230.4	93.5
	8	3	8	553.02	.39	8	33 180.7	50	91 367.1	115.4
	9	3	9	583.75	.39	9	35 024.0	55	100 503.8	139.6
10	20	30.723	20	614.47	1843.39	20	36 867.4	1 00	109 640.5	166.1
	1	3	1	645.19	.39	1	38 710.8	05	118 777.2	195.0
	2	3	2	675.92	.39	2	40 554.2	10	127 913.9	226.1
	3	3	3	706.64	.40	3	42 397.6	15	137 050.5	259.6
	4	3	4	737.36	.40	4	44 241.0	20	146 187.2	295.4
10	25	30.723	25	768.09	1843.40	25	46 084.4	1 25	155 323.8	333.4
	6	3	6	798.81	.40	6	47 927.8	30	164 460.5	373.8
	7	3	7	829.53	.40	7	49 771.2	35	173 597.1	416.5
	8	3	8	860.26	.41	8	51 614.6	40	182 733.7	461.5
	9	3	9	890.98	.41	9	53 458.0	45	191 870.3	508.8
10	30	30.723	30	921.70	1843.41	30	55 301.4	1 50	201 006.9	558.4
	1	3	1	952.43	.41	1	57 144.8	55	210 143.5	610.3
	2	4	2	983.15	.41	2	58 988.2	2 00	219 280	665
	3	4	3	1 013.87	.41	3	60 831.6	3 00	328 917	1 495
	4	4	4	1 044.60	.42	4	62 675.0	4 00	438 552	2 658
10	35	30.724	35	1 075.32	1843.42	35	64 518.5	5 00	548 182	4 154
	6	4	6	1 106.05	.42	6	66 361.9	6 00	657 808	5 981
	7	4	7	1 136.77	.42	7	68 205.3	7 00	767 427	8 140
	8	4	8	1 167.49	.42	8	70 048.7	8 00	877 040	10 632
	9	4	9	1 198.22	.43	9	71 892.2	9 00	986 644	13 457
10	40	30.724	40	1 228.94	1843.43	40	73 735.6	10 00	1 096 239	16 614
	1	4	1	1 259.66	.43	1	75 579.0	11 00	1 205 824	20 102
	2	4	2	1 290.39	.43	2	77 422.4	12 00	1 315 398	23 922
	3	4	3	1 321.11	.43	3	79 265.9	13 00	1 424 960	28 075
	4	4	4	1 351.83	.44	4	81 109.3	14 00	1 534 509	32 560
10	45	30.724	45	1 382.56	1843.44	45	82 952.7	15 00	1 644 044	37 375
	6	4	6	1 413.28	.44	6	84 796.2	16 00	1 753 564	42 522
	7	4	7	1 444.00	.44	7	86 639.6	17 00	1 863 067	48 002
	8	4	8	1 474.73	.44	8	88 483.1	18 00	1 972 554	53 815
	9	4	9	1 505.45	.45	9	90 326.5	19 00	2 082 022	59 962
10	50	30.724	50	1 536.17	1843.45	50	92 170.0	20 00	2 191 471	66 440
	1	4	1	1 566.90	.45	1	94 013.4	21 00	2 300 900	73 246
	2	4	2	1 597.62	.45	2	95 856.9	22 00	2 410 308	80 385
	3	4	3	1 628.34	.45	3	97 700.3	23 00	2 519 694	87 855
	4	4	4	1 659.07	.46	4	99 543.8	24 00	2 629 057	95 658
10	55	30.724	55	1 689.79	1843.46	55	101 387.2	25 00	2 738 395	103 792
	6	4	6	1 720.51	.46	6	103 230.7	26 00	2 847 709	112 256
	7	4	7	1 751.24	.46	7	105 074.1	27 00	2 956 996	121 053
	8	4	8	1 781.96	.46	8	106 917.6	28 00	3 066 256	130 180
	9	4	9	1 812.69	.47	9	108 761.1	29 00	3 175 488	139 639
10	60	30.724	60	1 843.41	1843.47	60	110 604.5	30 00	3 284 690	149 428

Latitude 11° to 12°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
11 00	30.36	60.72	91.07	121.43	151.79	182.15	212.51	242.86	273.22	1821.5	3643.0	5464.4	7285.9	9107.4
1	.36	.72	.07	.42	.78	.14	.50	.85	.21	1.4	2.8	4.1	5.5	6.9
2	.36	.71	.06	.42	.77	.13	.49	.83	.19	1.3	2.6	3.8	5.1	6.4
3	.35	.71	.06	.41	.76	.12	.47	.82	.18	1.2	2.3	3.5	4.7	5.8
4	.35	.70	.05	.40	575	.11	.46	.81	.16	1.1	2.1	3.2	4.3	5.3
11 05	30.35	60.70	91.05	121.39	151.74	182.10	212.45	242.79	273.15	1821.0	3641.9	5462.9	7283.9	9104.8
6	.35	.70	.04	.39	.74	.09	.44	.78	.13	0.9	1.7	2.6	3.5	4.3
7	.35	.69	.04	.38	.73	.08	.43	.77	.12	0.8	1.5	2.3	3.1	3.8
8	.34	.69	.03	.37	.72	.07	.41	.76	.10	0.7	1.3	2.0	2.6	3.3
9	.34	.68	.03	.37	.71	.06	.40	.74	.09	0.6	1.1	1.7	2.2	2.8
11 10	30.34	60.68	91.02	121.36	151.70	182.05	212.39	242.73	273.07	1820.5	3640.9	5461.4	7281.8	9102.3
11	.34	.68	.02	.35	.69	.04	.38	.72	.05	0.4	0.7	1.1	1.4	1.8
12	.34	.67	.01	.35	.68	.03	.36	.70	.04	0.3	0.5	0.8	1.0	1.2
13	.33	.67	.01	.34	.68	.01	.35	.69	.02	0.1	0.3	0.4	0.5	0.7
14	.33	.67	.00	.33	.67	2.00	.34	.67	3.01	20.0	40.1	60.1	80.1	100.1
11 15	30.33	60.66	91.00	121.32	151.66	181.99	212.32	242.66	272.99	1819.9	3639.9	5459.8	7279.7	9099.6
16	.33	.66	0.99	.32	.65	.98	.31	.65	.97	9.8	9.7	9.5	9.3	9.1
17	.33	.66	.99	.31	.64	.97	.30	.63	.96	9.7	9.5	9.2	8.9	8.6
18	.32	.66	.98	.30	.64	.96	.29	.62	.94	9.6	9.2	8.8	8.4	8.0
19	.32	.65	.98	.30	.63	.95	.27	.60	.93	9.5	9.0	8.5	8.0	7.5
11 20	30.32	60.65	90.97	121.29	151.62	181.94	212.26	242.59	272.91	1819.4	3638.8	5458.2	7277.6	9097.0
21	.32	.65	.97	.28	.61	.93	.25	.58	.89	9.3	8.6	7.9	7.2	6.5
22	.32	.64	.96	.28	.60	.92	.24	.56	.88	9.2	8.4	7.6	6.8	6.0
23	.32	.64	.95	.27	.59	.91	.22	.55	.86	9.1	8.1	7.2	6.3	5.4
24	.32	.63	.95	.26	.58	.90	.21	.53	.85	9.0	7.9	6.9	5.9	4.9
11 25	30.32	60.63	90.94	121.25	151.57	181.89	212.20	242.52	272.83	1818.9	3637.7	5456.6	7275.5	9094.4
26	.31	.63	.94	.25	.57	.88	.19	.51	.81	8.8	7.5	6.3	5.1	3.9
27	.31	.62	.93	.24	.56	.87	.18	.49	.80	8.7	7.3	6.0	4.7	3.3
28	.31	.62	.93	.23	.55	.85	.16	.48	.78	8.5	7.1	5.6	4.2	2.8
29	.31	.61	.92	.23	.54	.84	.15	.46	.77	8.4	6.9	5.3	3.8	2.2
11 30	30.31	60.61	90.92	121.22	151.53	181.83	212.14	242.45	272.75	1818.3	3636.7	5455.0	7273.4	9091.7
31	.31	.61	.91	.21	.52	.82	.13	.44	.73	8.2	6.5	4.7	3.0	1.2
32	.31	.60	.91	.21	.51	.81	.11	.42	.72	8.1	6.3	4.4	2.5	0.6
33	.30	.60	.90	.20	.50	.80	.10	.41	.70	8.0	6.0	4.0	2.1	90.1
34	.30	.60	.90	.19	.49	.79	.09	.39	.69	7.9	5.8	3.7	1.6	89.5
11 35	30.30	60.59	90.89	121.18	151.48	181.78	212.07	242.38	272.67	1817.8	3635.6	5453.4	7271.2	9089.0
36	.30	.59	.88	.18	.48	.77	.06	.36	.65	7.7	5.4	3.1	0.8	8.5
37	.30	.59	.88	.17	.47	.76	.05	.35	.64	7.6	5.2	2.8	70.4	7.9
38	.29	.59	.87	.16	.46	.75	.04	.33	.62	7.5	4.9	2.4	69.9	7.4
39	.29	.58	.87	.16	.45	.74	.02	.32	.61	7.4	4.7	2.1	9.5	6.8
11 40	30.29	60.58	90.86	121.15	151.44	181.73	212.01	242.30	272.59	1817.3	3634.5	5451.8	7269.1	9086.3
41	.29	.58	.86	.14	.43	.72	2.00	.29	.57	7.2	4.3	1.5	8.7	5.8
42	.29	.57	.85	.14	.42	.71	1.99	.27	.56	7.1	4.1	1.2	8.2	5.2
43	.28	.57	.85	.13	.41	.69	.97	.26	.54	6.9	3.8	0.8	7.8	4.7
44	.28	.56	.84	.12	.40	.68	.96	.24	.53	6.8	3.6	0.5	7.3	4.1
11 45	30.28	60.56	90.84	121.11	151.39	181.67	211.95	242.23	272.51	1816.7	3633.4	5450.2	7266.9	9083.6
46	.28	.56	.83	.11	.39	.66	.94	.22	.49	6.6	3.2	49.9	6.5	3.1
47	.28	.55	.83	.10	.38	.65	.93	.20	.48	6.5	3.0	9.5	6.0	2.5
48	.27	.55	.82	.09	.37	.64	.91	.19	.46	6.4	2.8	9.2	5.6	2.0
49	.27	.54	.81	.09	.36	.63	.90	.17	.45	6.3	2.6	8.8	5.1	1.4
11 50	30.27	60.54	90.81	121.08	151.35	181.62	211.89	242.16	272.43	1816.2	3632.4	5448.5	7264.7	9080.9
51	.27	.54	.80	.07	.34	.61	.88	.15	.41	6.1	2.2	8.2	4.3	80.3
52	.27	.53	.80	.06	.33	.60	.86	.13	.40	6.0	1.9	7.9	3.8	79.8
53	.26	.53	.79	.06	.32	.58	.85	.12	.38	5.8	1.7	7.5	3.4	9.2
54	.26	.52	.79	.05	.31	.57	.84	.10	.36	5.7	1.4	7.2	2.9	8.7
11 55	30.26	60.52	90.78	121.04	151.30	181.56	211.82	242.09	272.34	1815.6	3631.2	5446.9	7262.5	9078.1
56	.26	.52	.77	.03	.30	.55	.81	.07	.33	5.5	1.0	6.6	2.1	7.5
57	.26	.51	.77	.02	.29	.54	.80	.06	.31	5.4	0.8	6.2	1.6	7.0
58	.25	.51	.76	.02	.28	.53	.79	.04	.29	5.3	0.5	5.9	1.2	6.4
59	.25	.50	.76	.01	.27	.52	.77	.03	.28	5.2	0.3	5.5	0.7	5.9
11 60	30.25	60.50	90.75	121.00	151.26	181.51	211.76	242.01	272.26	1815.1	3630.1	5445.2	7260.3	9075.3

Lat.		Latitude 11° to 12°—Meridional arcs.						Latitude 11°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
11	00	30.724			1843.47					
	1	4	1	30.73	.47	1	1 843.5	0 1	1 821.5	0.1
	2	5	2	61.45	.47	2	3 686.9	2	3 643.0	0.2
	3	5	3	92.18	.47	3	5 530.4	3	5 464.4	0.5
	4	5	4	122.90	.48	4	7 373.9	4	7 285.9	0.8
11	05	30.725	5	153.63	1843.48	5	9 217.4	0 5	9 107.4	1.3
	6	5	6	184.35	.48	6	11 060.8	6	10 928.9	1.8
	7	5	7	215.08	.48	7	12 904.3	7	12 750.4	2.5
	8	5	8	245.80	.49	8	14 747.8	8	14 571.8	3.2
	9	5	9	276.53	.49	9	16 591.3	9	16 393.3	4.1
11	10	30.725	10	307.26	1843.49	10	18 434.8	0 10	18 214.8	5.1
	11	5	1	337.98	.49	1	20 278.3	15	27 322.2	11.4
	12	5	2	368.71	.49	2	22 121.8	20	36 429.6	20.2
	13	5	3	399.43	.50	3	23 965.3	25	45 537.0	31.6
	14	5	4	430.16	.50	4	25 808.8	30	54 644.4	45.5
11	15	30.725	15	460.88	1843.50	15	27 652.3	0 35	63 751.8	61.9
	16	5	6	491.61	.50	6	29 495.8	40	72 859.2	80.9
	17	5	7	522.33	.50	7	31 339.3	45	81 966.5	102.4
	18	5	8	553.06	.51	8	33 182.8	50	91 073.9	126.4
	19	5	9	583.78	.51	9	35 026.3	55	100 181.3	152.9
11	20	30.725	20	614.51	1843.51	20	36 869.8	1 00	109 288.7	182.0
	21	5	1	645.24	.51	1	38 713.3	05	118 396.0	213.6
	22	5	2	675.96	.51	2	40 556.8	10	127 503.4	247.7
	23	5	3	706.69	.52	3	42 400.3	15	136 610.7	284.3
	24	5	4	737.41	.52	4	44 243.8	20	145 718.0	323.5
11	25	30.725	25	768.14	1843.52	25	46 087.3	1 25	154 825.3	365.2
	26	5	6	798.86	.52	6	47 930.9	30	163 932.7	409.4
	27	5	7	829.59	.52	7	49 774.4	35	173 039.9	456.2
	28	5	8	860.31	.53	8	51 617.9	40	182 147.2	505.5
	29	5	9	891.04	.53	9	53 461.4	45	191 254.5	557.3
11	30	30.726	30	921.77	1843.53	30	55 305.0	1 50	200 361.7	611.6
	31	6	1	952.49	.53	1	57 148.5	55	209 469.0	668.5
	32	6	2	983.22	.54	2	58 992.0	2 00	218 576	728
	33	6	3	1 013.94	.54	3	60 835.6	3 00	327 861	1 638
	34	.6	4	1 044.67	.54	4	62 679.1	4 00	437 143	2 911
11	35	30.726	35	1 075.39	1843.54	35	64 522.7	5 00	546 419	4 549
	36	6	6	1 106.12	.54	6	66 366.2	6 00	655 690	6 551
	37	6	7	1 136.84	.55	7	68 209.8	7 00	764 953	8 916
	38	6	8	1 167.57	.55	8	70 053.3	8 00	874 208	11 646
	39	6	9	1 198.30	.55	9	71 896.9	9 00	983 453	14 739
11	40	30.726	40	1 229.02	1843.55	40	73 740.4	10 00	1 092 687	18 196
	41	6	1	1 259.75	.55	1	75 584.0	11 00	1 201 909	22 016
	42	6	2	1 290.47	.56	2	77 427.5	12 00	1 311 117	26 201
	43	6	3	1 321.20	.56	3	79 271.1	13 00	1 420 311	30 749
	44	6	4	1 351.92	.56	4	81 114.6	14 00	1 529 490	35 663
11	45	30.726	45	1 382.65	1843.56	45	82 958.2	15 00	1 638 652	40 937
	46	6	6	1 413.37	.57	6	84 801.8	16 00	1 747 795	46 577
	47	6	7	1 444.10	.57	7	86 645.3	17 00	1 856 919	52 579
	48	6	8	1 474.82	.57	8	88 488.9	18 00	1 966 022	58 944
	49	6	9	1 505.55	.57	9	90 332.5	19 00	2 075 104	65 674
11	50	30.726	50	1 536.28	1843.57	50	92 176.1	20 00	2 184 162	72 764
	51	6	1	1 567.00	.58	1	94 019.6	21 00	2 293 196	80 221
	52	6	2	1 597.73	.58	2	95 863.2	22 00	2 402 205	88 039
	53	6	3	1 628.45	.58	3	97 706.8	23 00	2 511 187	96 221
	54	6	4	1 659.18	.58	4	99 550.4	24 00	2 620 142	104 765
11	55	30.726	55	1 689.90	1843.58	55	101 394.0	25 00	2 729 067	113 671
	56	6	6	1 720.63	.59	6	103 237.6	26 00	2 837 962	122 940
	57	6	7	1 751.35	.59	7	105 081.1	27 00	2 946 825	132 573
	58	7	8	1 782.08	.59	8	106 924.7	28 00	3 055 656	142 569
	59	7	9	1 812.81	.59	9	108 768.3	29 00	3 164 453	152 926
11	60	30.727	60	1 843.53	1843.60	60	110 611.9	30 00	3 273 215	163 645

Latitude 12° to 13°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
12 00	30.25	60.50	90.75	121.00	151.26	181.51	211.76	242.01	272.26	1815.1	3630.1	5445.2	7260.3	9075.3
1	.25	.50	.75	120.99	.25	.50	.75	2.00	.24	5.0	29.9	4.9	59.8	4.7
2	.25	.49	.74	.99	.24	.49	.73	1.98	.23	4.9	9.7	4.5	9.4	4.2
3	.24	.49	.74	.98	.23	.47	.72	.97	.21	4.7	9.4	4.2	8.9	3.6
4	.24	.48	.73	.97	.22	.46	.71	.95	.19	4.6	9.2	3.8	8.5	3.1
12 05	30.24	60.48	90.73	120.96	151.21	181.45	211.69	241.93	272.17	1814.5	3629.0	5443.5	7258.0	9072.5
6	.24	.48	.72	.96	.20	.44	.68	.92	.16	4.4	8.8	3.2	7.6	1.9
7	.24	.47	.71	.95	.19	.43	.67	.90	.14	4.3	8.6	2.8	7.1	1.4
8	.23	.47	.71	.94	.18	.41	.66	.89	.12	4.1	8.3	2.5	6.7	0.8
9	.23	.46	.70	.94	.17	.40	.64	.87	.11	4.0	8.1	2.1	6.2	70.3
12 10	30.23	60.46	90.70	120.93	151.16	181.39	211.63	241.86	272.09	1813.9	3627.9	5441.8	7255.8	9069.7
11	.23	.46	.69	.92	.15	.38	.62	.85	.07	3.8	7.7	1.5	5.3	9.1
12	.23	.45	.69	.91	.14	.37	.60	.83	.06	3.7	7.4	1.1	4.9	8.6
13	.22	.45	.68	.91	.13	.36	.59	.82	.04	3.6	7.2	0.7	4.4	8.0
14	.22	.45	.68	.90	.12	.35	.57	.80	.02	3.5	6.9	0.3	4.0	7.5
12 15	30.22	60.44	90.67	120.89	151.12	181.34	211.56	241.78	272.00	1813.4	3626.7	5440.1	7253.5	9066.9
16	.22	.44	.66	.88	.11	.33	.55	.77	1.99	3.3	6.5	39.8	3.0	6.3
17	.22	.44	.66	.87	.10	.32	.53	.75	.97	3.2	6.3	9.4	2.6	5.7
18	.21	.44	.65	.87	.09	.30	.52	.74	.95	3.0	6.0	9.1	2.1	5.2
19	.21	.43	.65	.86	.08	.29	.50	.72	.94	2.9	5.8	8.7	1.7	4.6
12 20	30.21	60.43	90.64	120.85	151.07	181.28	211.49	241.71	271.92	1812.8	3625.6	5438.4	7251.2	9064.0
21	.21	.43	.63	.84	.06	.27	.48	.69	.90	2.7	5.4	8.1	0.7	3.4
22	.21	.42	.63	.84	.05	.26	.46	.68	.89	2.6	5.2	7.4	50.3	2.8
23	.20	.42	.62	.83	.04	.24	.45	.66	.87	2.4	4.9	7.7	49.8	2.3
24	.20	.41	.62	.82	.03	.23	.44	.65	.85	2.3	4.7	7.0	9.4	1.7
12 25	30.20	60.41	90.61	120.81	151.02	181.22	211.42	241.63	271.83	1812.2	3624.5	5436.7	7248.9	9061.1
26	.20	.41	.60	.81	.01	.21	.41	.61	.82	2.1	4.3	6.4	8.4	0.5
27	.20	.40	.60	.80	1.00	.20	.40	.60	.80	2.0	4.0	6.0	8.0	60.0
28	.19	.40	.59	.79	0.99	.19	.39	.58	.78	1.9	3.8	5.7	7.5	59.4
29	.19	.39	.59	.79	.98	.18	.37	.57	.77	1.8	3.5	5.3	7.1	8.9
12 30	30.19	60.39	90.58	120.78	150.97	181.17	211.36	241.55	271.75	1811.7	3623.3	5435.0	7246.6	9058.3
31	.19	.39	.58	.77	.96	.16	.35	.54	.73	1.6	3.1	4.6	6.1	7.7
32	.19	.38	.57	.76	.95	.15	.33	.52	.71	1.5	2.8	4.3	5.7	7.1
33	.18	.38	.56	.76	.94	.13	.32	.51	.70	1.3	2.6	3.9	5.2	6.5
34	.18	.37	.56	.75	.93	.12	.30	.49	.68	1.2	2.3	3.6	4.8	5.9
12 35	30.18	60.37	90.55	120.74	150.92	181.11	211.29	241.47	271.66	1811.1	3622.1	5433.2	7244.3	9055.3
36	.18	.37	.55	.73	.91	.10	.28	.46	.64	1.0	1.9	2.9	3.8	4.7
37	.18	.36	.54	.72	.90	.09	.26	.44	.62	0.9	1.7	2.5	3.3	4.1
38	.17	.36	.54	.72	.89	.07	.25	.43	.61	0.7	1.4	2.2	2.9	3.6
39	.17	.35	.53	.71	.88	.06	.23	.41	.59	0.6	1.2	1.8	2.4	3.0
12 40	30.17	60.35	90.52	120.70	150.87	181.05	211.22	241.40	271.57	1810.5	3621.0	5431.5	7241.9	9052.4
41	.17	.35	.52	.69	.86	.04	.21	.38	.55	0.4	0.8	1.1	1.4	1.8
42	.17	.34	.51	.68	.85	.03	.19	.37	.54	0.3	0.5	0.8	1.0	1.2
43	.17	.34	.51	.68	.84	.01	.18	.35	.52	0.1	0.3	0.4	0.5	0.7
44	.17	.33	.50	.67	.83	1.00	.17	.34	.50	10.0	20.0	30.1	40.1	50.1
12 45	30.17	60.33	90.50	120.66	150.83	180.99	211.15	241.32	271.48	1809.9	3619.8	5429.7	7239.6	9049.5
46	.16	.33	.49	.65	.82	.98	.14	.30	.47	9.8	9.6	9.3	9.1	8.9
47	.16	.32	.48	.64	.81	.97	.13	.29	.45	9.7	9.3	9.0	8.6	8.3
48	.16	.32	.48	.64	.80	.95	.12	.27	.43	9.5	9.1	8.6	8.2	7.7
49	.16	.31	.47	.63	.79	.94	.10	.26	.42	9.4	8.8	8.3	7.7	7.1
12 50	30.16	60.31	90.47	120.62	150.78	180.93	211.09	241.24	271.40	1809.3	3618.6	5427.9	7237.2	9046.5
51	.16	.31	.46	.61	.77	.92	.08	.22	.38	9.2	8.4	7.5	6.7	5.9
52	.16	.30	.45	.60	.76	.91	.06	.21	.36	9.1	8.1	7.2	6.2	5.3
53	.15	.30	.45	.60	.75	.89	.05	.19	.35	8.9	7.9	6.8	5.8	4.7
54	.15	.29	.44	.59	.74	.88	.03	.18	.33	8.8	7.6	6.5	5.3	4.1
12 55	30.15	60.29	90.44	120.58	150.73	180.87	211.02	241.16	271.31	1808.7	3617.4	5426.1	7234.8	9043.5
56	.15	.29	.43	.57	.72	.86	1.01	.14	.29	8.6	7.2	5.7	4.3	2.9
57	.15	.28	.42	.56	.71	.85	0.99	.13	.27	8.5	6.9	5.4	3.8	2.3
58	.14	.28	.42	.56	.70	.83	.98	.11	.26	8.3	6.7	5.0	3.4	1.7
59	.14	.27	.41	.55	.69	.82	.96	.10	.24	8.2	6.4	4.7	2.9	1.1
12 60	30.14	60.27	90.41	120.54	150.68	180.81	210.95	241.08	271.22	1808.1	3616.2	5424.3	7232.4	9040.5

Lat.		Latitude 12° to 13°—Meridional arcs.						Latitude 12°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
12	00	30.727			1843.60					
	1	7	1	30.73	.60	1	1 843.6	0 1	1 815.1	0.1
	2	7	2	61.46	.60	2	3 687.2	2	3 630.1	0.2
	3	7	3	92.18	.60	3	5 530.8	3	5 445.2	0.5
	4	7	4	122.91	.60	4	7 374.4	4	7 260.3	0.9
12	05	30.727	5	153.64	1843.61	5	9 218.0	0 5	9 075.3	1.4
	6	7	6	184.37	.61	6	11 061.6	6	10 890.4	2.0
	7	7	7	215.09	.61	7	12 905.2	7	12 705.5	2.7
	8	7	8	245.82	.61	8	14 748.8	8	14 520.5	3.5
	9	7	9	276.55	.62	9	16 592.5	9	16 335.6	4.5
12	10	30.727	10	307.28	1843.62	10	18 436.1	0 10	18 150.7	5.5
	11	7	1	338.01	.62	1	20 279.7	15	27 226.0	12.4
	12	7	2	368.73	.62	2	22 123.3	20	36 301.3	22.0
	13	7	3	399.46	.62	3	23 966.9	25	45 376.7	34.3
	14	7	4	430.19	.63	4	25 810.6	30	54 452.0	49.4
12	15	30.727	15	460.92	1843.63	15	27 654.2	0 35	63 527.3	67.2
	16	7	6	491.64	.63	6	29 497.8	40	72 602.6	87.8
	17	7	7	522.37	.63	7	31 341.5	45	81 677.9	111.1
	18	7	8	553.10	.64	8	33 185.1	50	90 753.2	137.2
	19	7	9	583.83	.64	9	35 028.7	55	99 828.5	166.0
12	20	30.727	20	614.55	1843.64	20	36 872.4	1 00	108 903.8	197.6
	21	7	1	645.28	.64	1	38 716.0	05	117 979.0	231.9
	22	7	2	676.01	.65	2	40 559.7	10	127 054.3	268.9
	23	7	3	706.74	.65	3	42 403.3	15	136 129.6	308.7
	24	7	4	737.47	.65	4	44 247.0	20	145 204.8	351.3
12	25	30.728	25	768.19	1843.65	25	46 090.6	1 25	154 280.0	396.6
	26	8	6	798.92	.65	6	47 934.3	30	163 355.2	444.6
	27	8	7	829.65	.66	7	49 777.9	35	172 430.4	495.4
	28	8	8	860.38	.66	8	51 621.6	40	181 505.6	548.9
	29	8	9	891.10	.66	9	53 465.3	45	190 580.7	605.1
12	30	30.728	30	921.83	1843.66	30	55 308.9	1 50	199 655.9	664.1
	31	8	1	952.56	.67	1	57 152.6	55	208 731.0	725.9
	32	8	2	983.29	.67	2	58 996.3	2 00	217 806	790
	33	8	3	1 014.02	.67	3	60 839.9	3 00	326 706	1 778
	34	8	4	1 044.74	.67	4	62 683.6	4 00	435 601	3 161
12	35	30.728	35	1 075.47	1843.67	35	64 527.2	5 00	544 490	4 940
	36	8	6	1 106.20	.68	6	66 370.9	6 00	653 372	7 113
	37	8	7	1 136.93	.68	7	68 214.6	7 00	762 246	9 682
	38	8	8	1 167.65	.68	8	70 058.3	8 00	871 110	12 646
	39	8	9	1 198.38	.68	9	71 902.0	9 00	979 962	16 004
12	40	30.728	40	1 229.11	1843.69	40	73 745.6	10 00	1 088 801	19 757
	41	8	1	1 259.84	.69	1	75 589.3	11 00	1 197 626	23 905
	42	8	2	1 290.56	.69	2	77 433.0	12 00	1 306 435	28 449
	43	8	3	1 321.29	.69	3	79 276.7	13 00	1 415 227	33 387
	44	8	4	1 352.02	.70	4	81 120.4	14 00	1 524 000	38 719
12	45	30.728	45	1 382.75	1843.70	45	82 964.1	15 00	1 632 753	44 447
	46	8	6	1 413.48	.70	6	84 807.8	16 00	1 741 485	50 569
	47	8	7	1 444.20	.70	7	86 651.5	17 00	1 850 194	57 085
	48	8	8	1 474.93	.70	8	88 495.2	18 00	1 958 879	63 997
	49	8	9	1 505.66	.71	9	90 338.9	19 00	2 067 537	71 303
12	50	30.728	50	1 536.39	1843.71	50	92 182.6	20 00	2 176 168	79 003
	51	9	1	1 567.11	.71	1	94 026.3	21 00	2 284 771	87 096
	52	9	2	1 597.84	.71	2	95 870.1	22 00	2 393 344	95 584
	53	9	3	1 628.57	.72	3	97 713.8	23 00	2 501 885	104 466
	54	9	4	1 659.30	.72	4	99 557.5	24 00	2 610 394	113 741
12	55	30.729	55	1 690.03	1843.72	55	101 401.2	25 00	2 718 867	123 410
	56	9	6	1 720.75	.72	6	103 244.9	26 00	2 827 305	133 473
	57	9	7	1 751.48	.73	7	105 088.7	27 00	2 935 706	143 930
	58	9	8	1 782.21	.73	8	106 932.4	28 00	3 044 068	154 780
	59	9	9	1 812.94	.73	9	108 776.1	29 00	3 152 390	166 023
12	60	30.729	60	1 843.66	1843.73	60	110 619.8	30 00	3 260 671	177 658

Latitude 13° to 14°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
13 00	30.14	60.27	90.41	120.54	150.68	180.81	210.95	241.08	271.22	1808.1	3616.2	5424.3	7232.4	9040.5
1	.14	.27	.40	.53	.67	.80	.94	.06	.20	8.0	6.0	3.9	1.9	39.9
2	.13	.26	.39	.52	.66	.79	.92	.05	.18	7.9	5.7	3.6	1.4	9.3
3	.13	.26	.39	.52	.65	.77	.91	.03	.16	7.7	5.5	3.2	1.0	8.7
4	.13	.25	.38	.51	.64	.76	.89	.02	.14	7.6	5.2	2.9	0.5	8.1
13 05	30.12	60.25	90.37	120.50	150.62	180.75	210.88	241.00	271.12	1807.5	3615.0	5422.5	7230.0	9037.5
6	.12	.25	.37	.49	.61	.74	.86	0.98	.11	7.4	4.8	2.1	29.5	6.9
7	.12	.24	.36	.48	.60	.73	.85	.97	.09	7.3	4.5	1.8	9.0	6.3
8	.12	.24	.36	.48	.59	.71	.83	.95	.07	7.1	4.3	1.4	8.6	5.6
9	.11	.23	.35	.47	.58	.70	.82	.94	.05	7.0	4.0	1.1	8.1	5.0
13 10	30.11	60.23	90.34	120.46	150.57	180.69	210.80	240.92	271.03	1806.9	3613.8	5420.7	7227.6	9034.4
11	.11	.23	.34	.45	.56	.68	.79	.90	1.01	6.8	3.5	20.3	7.1	3.8
12	.11	.22	.33	.44	.55	.67	.77	.89	0.99	6.7	3.3	19.9	6.6	3.2
13	.10	.22	.33	.44	.54	.65	.76	.87	.98	6.5	3.0	9.6	6.1	2.6
14	.10	.21	.32	.43	.53	.64	.74	.85	.96	6.4	2.8	9.2	5.6	2.0
13 15	30.10	60.21	90.31	120.42	150.52	180.63	210.73	240.84	270.94	1806.3	3612.5	5418.8	7225.1	9031.4
16	.10	.21	.31	.41	.51	.62	.72	.82	.92	6.2	2.3	8.4	4.6	0.8
17	.10	.20	.30	.40	.50	.61	.70	.80	.90	6.1	2.0	8.1	4.1	30.2
18	.09	.20	.29	.39	.49	.59	.69	.78	.89	5.9	1.8	7.7	3.6	29.5
19	.09	.19	.29	.38	.48	.58	.67	.77	.87	5.8	1.5	7.4	3.1	8.9
13 20	30.09	60.19	90.28	120.38	150.47	180.57	210.66	240.75	270.85	1805.7	3611.3	5417.0	7222.6	9028.3
21	.09	.19	.28	.37	.46	.56	.65	.73	.83	5.6	1.1	6.6	2.1	7.7
22	.09	.18	.27	.36	.45	.54	.63	.72	.81	5.4	0.8	6.2	1.6	7.1
23	.08	.18	.26	.35	.44	.53	.62	.70	.79	5.3	0.6	5.9	1.1	6.4
24	.08	.17	.26	.34	.43	.51	.60	.69	.77	5.1	0.3	5.5	0.6	5.8
13 25	30.08	60.17	90.25	120.33	150.42	180.50	210.59	240.67	270.76	1805.0	3610.1	5415.1	7220.1	9025.2
26	.08	.17	.25	.33	.41	.49	.58	.65	.74	4.9	09.8	4.7	19.6	4.6
27	.08	.16	.24	.32	.40	.48	.56	.64	.72	4.8	9.6	4.3	9.1	4.0
28	.07	.16	.23	.31	.39	.46	.55	.62	.70	4.6	9.3	4.0	8.7	3.3
29	.07	.15	.23	.30	.38	.45	.53	.61	.68	4.5	9.1	3.6	8.2	2.7
13 30	30.07	60.15	90.22	120.29	150.37	180.44	210.52	240.59	270.66	1804.4	3608.8	5413.2	7217.7	9022.1
31	.07	.15	.21	.28	.36	.43	.51	.57	.64	4.3	8.6	2.8	7.2	1.5
32	.07	.14	.21	.27	.35	.42	.49	.56	.62	4.2	8.3	2.5	6.7	0.8
33	.06	.14	.20	.27	.34	.40	.48	.54	.60	4.0	8.1	2.1	6.1	20.2
34	.06	.13	.20	.26	.33	.39	.46	.52	.58	3.9	7.8	1.8	5.6	19.5
13 35	30.06	60.13	90.19	120.25	150.31	180.38	210.45	240.51	270.57	1803.8	3607.6	5411.4	7215.1	9018.9
36	.06	.13	.19	.24	.30	.37	.43	.49	.55	3.7	7.3	1.0	4.6	8.6
37	.06	.12	.18	.23	.29	.36	.42	.47	.53	3.6	7.1	0.6	4.1	7.7
38	.05	.12	.17	.23	.28	.34	.40	.45	.51	3.4	6.8	10.3	3.6	7.0
39	.05	.11	.16	.22	.27	.33	.39	.44	.49	3.3	6.6	09.9	3.1	6.4
13 40	30.05	60.11	90.16	120.21	150.26	180.32	210.37	240.42	270.47	1803.2	3606.3	5409.5	7212.6	9015.8
41	.05	.11	.15	.20	.25	.31	.36	.40	.45	3.1	6.0	9.1	2.1	5.2
42	.05	.10	.15	.19	.24	.29	.34	.39	.43	2.9	5.8	8.7	1.6	4.5
43	.04	.10	.14	.18	.23	.28	.33	.37	.41	2.8	5.5	8.4	1.1	3.9
44	.04	.09	.13	.17	.22	.26	.31	.35	.39	2.6	5.3	8.0	0.6	3.2
13 45	30.04	60.09	90.13	120.16	150.21	180.25	210.30	240.33	270.38	1802.5	3605.0	5407.6	7210.1	9012.6
46	.04	.08	.12	.16	.20	.24	.28	.32	.36	2.4	4.8	7.2	09.6	2.0
47	.04	.08	.11	.15	.19	.23	.27	.30	.34	2.3	4.5	6.8	9.1	1.3
48	.03	.07	.11	.14	.18	.21	.25	.28	.32	2.1	4.3	6.4	8.6	0.7
49	.03	.07	.10	.13	.17	.20	.24	.27	.30	2.0	4.0	6.0	8.1	10.0
13 50	30.03	60.06	90.09	120.12	150.16	180.19	210.22	240.25	270.28	1801.9	3603.8	5405.6	7207.5	9009.4
51	.03	.06	.09	.11	.15	.18	.21	.23	.26	1.8	3.5	5.2	7.0	8.8
52	.03	.05	.08	.10	.14	.16	.19	.22	.24	1.6	3.3	4.8	6.5	8.1
53	.02	.05	.07	.10	.13	.15	.18	.20	.22	1.5	3.0	4.5	5.9	7.5
54	.02	.04	.07	.09	.12	.13	.16	.18	.20	1.3	2.8	4.1	5.4	6.8
13 55	30.02	60.04	90.06	120.08	150.10	180.12	210.15	240.16	270.19	1801.2	3602.5	5403.7	7204.9	9006.2
56	.02	.04	.06	.07	.09	.11	.13	.15	.17	1.1	2.2	3.3	4.4	5.6
57	.02	.03	.05	.06	.08	.10	.12	.13	.15	1.0	2.0	2.9	3.9	4.9
58	.01	.03	.04	.06	.07	.08	.10	.11	.13	0.8	1.7	2.6	3.4	4.3
59	.01	.02	.04	.05	.06	.07	.09	.10	.11	0.7	1.5	2.2	2.9	3.6
13 60	30.01	60.02	90.03	120.04	150.05	180.06	210.07	240.08	270.09	1800.6	3601.2	5401.8	7202.4	9003.0

Lat.	Latitude 13° to 14°—Meridional arcs.						Latitude 13°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
13 00	30.729			1843.73					
1	9	1	30.73	.73	1	1 843.7	0 1	1 808.1	0.1
2	9	2	61.46	.74	2	3 687.5	2	3 616.2	0.2
3	9	3	92.19	.74	3	5 531.2	3	5 424.3	0.5
4	9	4	122.92	.74	4	7 375.0	4	7 232.4	0.9
13 05	30.729	5	153.65	1843.74	5	9 218.7	0 5	9 040.5	1.5
6	9	6	184.38	.75	6	11 062.4	6	10 848.6	2.1
7	9	7	215.11	.75	7	12 906.2	7	12 656.7	2.9
8	9	8	245.84	.75	8	14 750.0	8	14 464.8	3.8
9	9	9	276.57	.75	9	16 593.7	9	16 272.9	4.8
13 10	30.729	10	307.30	1843.76	10	18 437.5	0 10	18 081.0	5.9
11	9	1	338.03	.76	1	20 281.2	15	27 121.5	13.3
12	9	2	368.76	.76	2	22 125.0	20	36 162.0	23.7
13	9	3	399.49	.76	3	23 968.8	25	45 202.5	37.0
14	9	4	430.22	.77	4	25 812.5	30	54 243.0	53.2
13 15	30.729	15	460.95	1843.77	15	27 656.3	0 35	63 283.5	72.5
16	30	6	491.68	.77	6	29 500.1	40	72 324.0	94.7
17	0	7	522.41	.77	7	31 343.8	45	81 364.5	119.9
18	0	8	553.14	.78	8	33 187.6	50	90 405.0	148.0
19	0	9	583.87	.78	9	35 031.4	55	99 445.4	179.1
13 20	30.730	20	614.60	1843.78	20	36 875.2	1 00	108 485.9	213.0
21	0	1	645.33	.78	1	38 719.0	05	117 526.3	249.9
22	0	2	676.06	.79	2	40 562.7	10	126 566.7	289.8
23	0	3	706.79	.79	3	42 406.5	15	135 607.1	332.7
24	0	4	737.52	.79	4	44 250.3	20	144 647.5	378.6
13 25	30.730	25	768.25	1843.79	25	46 094.1	1 25	153 687.9	427.4
26	0	6	798.98	.80	6	47 937.9	30	162 728.3	479.1
27	0	7	829.71	.80	7	49 781.7	35	171 768.6	533.8
28	0	8	860.44	.80	8	51 625.5	40	180 809.0	591.6
29	0	9	891.17	.80	9	53 469.3	45	189 849.2	652.1
13 30	30.730	30	921.90	1843.81	30	55 313.1	1 50	198 889.5	715.7
31	0	1	952.63	.81	1	57 156.9	55	207 929.6	782.3
32	0	2	983.36	.81	2	59 000.8	2 00	216 970	852
33	0	3	1 014.09	.81	3	60 844.6	3 00	325 451	1 917
34	0	4	1 044.82	.82	4	62 688.4	4 00	433 927	3 407
13 35	30.730	35	1 075.55	1843.82	35	64 532.2	5 00	542 396	5 324
36	0	6	1 106.28	.82	6	66 376.0	6 00	650 857	7 666
37	0	7	1 137.01	.82	7	68 219.8	7 00	759 307	10 434
38	0	8	1 167.74	.83	8	70 063.6	8 00	867 746	13 628
39	0	9	1 198.47	.83	9	71 907.5	9 00	976 172	17 248
13 40	30.731	40	1 229.21	1843.83	40	73 751.3	10 00	1 084 583	21 294
41	1	1	1 259.94	.83	1	75 595.1	11 00	1 192 977	25 765
42	1	2	1 290.67	.84	2	77 439.0	12 00	1 301 352	30 661
43	1	3	1 321.40	.84	3	79 282.8	13 00	1 409 708	35 983
44	1	4	1 352.13	.84	4	81 126.7	14 00	1 518 042	41 730
13 45	30.731	45	1 382.86	1843.84	45	82 970.5	15 00	1 626 352	47 903
46	1	6	1 413.59	.85	6	84 814.3	16 00	1 734 637	54 501
47	1	7	1 444.32	.85	7	86 658.2	17 00	1 842 896	61 524
48	1	8	1 475.05	.85	8	88 502.0	18 00	1 951 126	68 972
49	1	9	1 505.78	.85	9	90 345.9	19 00	2 059 326	76 845
13 50	30.731	50	1 536.51	1843.86	50	92 189.8	20 00	2 167 494	85 143
51	1	1	1 567.24	.86	1	94 033.6	21 00	2 275 629	93 865
52	1	2	1 597.97	.86	2	95 877.5	22 00	2 383 729	103 012
53	1	3	1 628.70	.86	3	97 721.3	23 00	2 491 792	112 583
54	1	4	1 659.43	.87	4	99 565.2	24 00	2 599 817	122 578
13 55	30.731	55	1 690.16	1843.87	55	101 409.1	25 00	2 707 801	132 997
56	1	6	1 720.89	.87	6	103 252.9	26 00	2 815 744	143 840
57	1	7	1 751.62	.87	7	105 096.8	27 00	2 923 644	155 107
58	1	8	1 782.35	.88	8	106 940.7	28 00	3 031 498	166 798
59	1	9	1 813.08	.88	9	108 784.6	29 00	3 139 305	178 912
13 60	30.731	60	1 843.81	1843.88	60	110 628.4	30 00	3 247 065	191 448

Latitude 14° to 15°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
14 00	30.01	60.02	90.03	120.04	150.05	180.06	210.07	240.08	270.09	1800.6	3601.2	5401.8	7202.4	9003.0
1	.01	.02	.02	.03	.04	.05	.06	.06	.07	0.5	0.9	1.4	1.9	2.3
2	.01	.01	.02	.02	.03	.03	.04	.04	.05	0.3	0.7	1.0	1.3	1.6
3	.00	.01	.01	.01	.02	.02	.03	.03	.03	0.2	0.4	0.6	0.8	1.0
4	.00	.00	90.00	20.00	50.01	80.01	.01	40.01	70.01	800.1	600.2	400.2	200.2	9000.4
14 05	30.00	60.00	90.00	119.99	149.99	179.99	210.00	239.99	269.99	1799.9	3599.9	5399.8	7199.7	8999.7
6	.00	60.00	89.99	.99	.98	.98	09.98	.97	.97	9.8	9.6	9.4	9.2	9.0
7	30.00	59.99	.98	.98	.97	.97	.97	.95	.95	9.7	9.4	9.0	8.7	8.4
8	29.99	.99	.98	.97	.96	.95	.95	.94	.93	9.5	9.1	8.7	8.1	7.7
9	.99	.98	.97	.96	.95	.94	.94	.92	.91	9.4	8.9	8.3	7.6	7.1
14 10	29.99	59.98	89.96	119.95	149.94	179.93	209.92	239.90	269.89	1799.3	3598.6	5397.9	7197.1	8996.4
11	.99	.98	.96	.94	.93	.92	.90	.88	.87	9.2	8.3	7.5	6.6	5.7
12	.99	.97	.95	.93	.92	.90	.89	.87	.85	9.0	8.0	7.1	6.1	5.1
13	.98	.97	.94	.92	.91	.89	.87	.85	.83	8.9	7.8	6.7	5.5	4.4
14	.98	.96	.94	.91	.90	.88	.86	.83	.81	8.8	7.5	6.3	5.0	3.8
14 15	29.98	59.96	89.93	119.90	149.88	179.86	209.84	239.81	269.79	1798.6	3597.2	5395.9	7194.5	8993.1
16	.98	.95	.92	.90	.87	.85	.82	.80	.77	8.5	6.9	5.5	4.0	2.4
17	.98	.95	.92	.89	.86	.84	.81	.78	.75	8.4	6.7	5.1	3.5	1.8
18	.97	.94	.91	.88	.85	.82	.79	.76	.73	8.2	6.4	4.7	2.9	1.1
19	.97	.94	.91	.87	.84	.81	.78	.75	.71	8.1	6.2	4.3	2.4	90.5
14 20	29.97	59.93	89.90	119.86	149.83	179.80	209.76	239.73	269.69	1798.0	3595.9	5393.9	7191.9	8989.8
21	.97	.93	.89	.85	.82	.79	.75	.71	.67	7.9	5.6	3.5	1.4	9.1
22	.96	.92	.89	.84	.81	.77	.73	.69	.65	7.7	5.4	3.1	0.8	8.5
23	.96	.92	.88	.84	.80	.76	.72	.68	.63	7.6	5.1	2.7	90.3	7.8
24	.96	.91	.87	.83	.79	.74	.70	.66	.61	7.4	4.9	2.3	89.7	7.2
14 25	29.95	59.91	89.86	119.82	149.77	179.73	209.69	239.64	269.59	1797.3	3594.6	5391.9	7189.2	8986.5
26	.95	.91	.86	.81	.76	.72	.67	.62	.57	7.2	4.3	1.5	8.7	5.8
27	.95	.90	.85	.80	.75	.70	.66	.60	.55	7.0	4.1	1.1	8.1	5.1
28	.95	.90	.84	.80	.74	.69	.64	.59	.53	6.9	3.8	0.7	7.6	4.5
29	.94	.89	.84	.79	.73	.67	.63	.57	.51	6.7	3.6	90.3	7.0	3.8
14 30	29.94	59.89	89.83	119.78	149.72	179.66	209.61	239.55	269.49	1796.6	3593.3	5389.9	7186.5	8983.1
31	.94	.89	.82	.77	.71	.65	.59	.53	.47	6.5	3.0	9.5	6.0	2.4
32	.94	.88	.82	.76	.70	.64	.58	.51	.45	6.4	2.7	9.1	5.4	1.8
33	.93	.88	.81	.75	.69	.62	.56	.50	.43	6.2	2.5	8.7	4.9	1.1
34	.93	.87	.80	.74	.68	.61	.55	.48	.41	6.1	2.2	8.3	4.3	80.5
14 35	29.93	59.87	89.80	119.73	149.66	179.60	209.53	239.46	269.39	1796.0	3591.9	5387.9	7183.8	8979.8
36	.93	.86	.79	.73	.65	.58	.51	.44	.37	5.8	1.6	7.5	3.3	9.1
37	.93	.86	.78	.72	.64	.57	.50	.42	.35	5.7	1.4	7.1	2.7	8.4
38	.92	.85	.78	.71	.63	.56	.48	.41	.33	5.6	1.1	6.6	2.2	7.8
39	.92	.85	.77	.70	.62	.54	.47	.39	.31	5.4	0.9	6.2	1.6	7.1
14 40	29.92	59.84	89.76	119.69	149.61	179.53	209.45	239.37	269.29	1795.3	3590.6	5385.8	7181.1	8976.4
41	.92	.84	.76	.68	.60	.52	.43	.35	.27	5.2	0.3	5.4	0.6	5.7
42	.92	.83	.75	.67	.59	.50	.42	.33	.25	5.0	90.0	5.0	80.0	5.0
43	.91	.83	.74	.66	.57	.49	.40	.32	.23	4.9	89.8	4.5	79.5	4.4
44	.91	.82	.74	.65	.56	.47	.39	.30	.21	4.7	9.5	4.1	8.9	3.7
14 45	29.91	59.82	89.73	119.64	149.55	179 46	209.37	239.28	269.19	1794.6	3589.2	5383.7	7178.4	8973.0
46	.91	.82	.72	.63	.54	.45	.35	.26	.17	4.5	8.9	3.3	7.9	2.3
47	.91	.81	.72	.62	.53	.43	.34	.24	.15	4.3	8.6	2.9	7.3	1.6
48	.90	.81	.71	.61	.51	.42	.32	.23	.13	4.2	8.4	2.5	6.8	1.0
49	.90	.80	.70	.60	.50	.40	.31	.21	.11	4.0	8.1	2.1	6.2	70.3
14 50	29.90	59.80	89.70	119.59	149.49	179.39	209.29	239.19	269.09	1793.9	3587.8	5381.7	7175.7	8969.6
51	.90	.80	.69	.58	.48	.38	.27	.17	.07	3.8	7.5	1.3	5.1	8.9
52	.90	.79	.68	.57	.47	.36	.26	.15	.05	3.6	7.2	0.9	4.6	8.2
53	.89	.79	.68	.56	.46	.35	.24	.13	.03	3.5	7.0	0.5	4.0	7.5
54	.89	.78	.67	.55	.45	.33	.23	.11	9.01	3.3	6.7	80.1	3.5	6.8
14 55	29.89	59.78	89.66	119.54	149.43	179.32	209.21	239.09	268.98	1793.2	3586.4	5379.7	7172.9	8966.1
56	.89	.77	.65	.54	.42	.31	.19	.08	.96	3.1	6.1	9.3	2.3	5.4
57	.89	.77	.65	.53	.41	.29	.18	.06	.94	2.9	5.9	8.9	1.8	4.7
58	.88	.76	.64	.52	.40	.28	.16	.04	.92	2.8	5.6	8.4	1.2	4.1
59	.88	.76	.63	.51	.39	.26	.15	.02	.90	2.6	5.4	8.0	0.7	3.4
14 60	29.88	59.75	89.63	119.50	149.38	179.25	209.13	239.00	268.88	1792.5	3585.1	5377.6	7170.1	8962.7

Lat.	Latitude 14° to 15°—Meridional arcs.						Latitude 14°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
14 00	30.731			1843.88					
1	1	1	30.73	.88	1	1 843.9	0 1	1 800.6	0.1
2	1	2	61.47	.89	2	3 687.8	2	3 601.2	0.3
3	1	3	92.20	.89	3	5 531.7	3	5 401.8	0.6
4	2	4	122.93	.89	4	7 375.6	4	7 202.4	1.0
14 05	30.732	5	153.66	1843.89	5	9 219.4	0 5	9 002.9	1.6
6	2	6	184.40	.90	6	11 063.3	6	10 803.5	2.3
7	2	7	215.13	.90	7	12 907.2	7	12 604.1	3.1
8	2	8	245.86	.90	8	14 751.1	8	14 404.7	4.1
9	2	9	276.59	.91	9	16 595.0	9	16 205.3	5.1
14 10	30.732	10	307.33	1843.91	10	18 438.9	0 10	18 005.9	6.3
11	2	1	338.06	.91	1	20 282.9	15	27 008.8	14.2
12	2	2	368.79	.91	2	22 126.8	20	36 011.8	25.3
13	2	3	399.52	.92	3	23 970.7	25	45 014.7	39.6
14	2	4	430.26	.92	4	25 814.6	30	54 017.7	57.0
14 15	30.732	15	460.99	1843.92	15	27 658.5	0 35	63 020.6	77.6
16	2	6	491.72	.92	6	29 502.5	40	72 023.5	101.4
17	2	7	522.46	.93	7	31 346.4	45	81 026.4	128.3
18	2	8	553.19	.93	8	33 190.3	50	90 029.3	158.4
19	2	9	583.92	.93	9	35 034.3	55	99 032.2	191.7
14 20	30.732	20	614.65	1843.93	20	36 878.2	1 00	108 035.1	228.1
21	2	1	645.39	.94	1	38 722.1	05	117 037.9	267.7
22	2	2	676.12	.94	2	40 566.1	10	126 040.8	310.4
23	2	3	706.85	.94	3	42 410.0	15	135 043.6	356.4
24	2	4	737.58	.94	4	44 254.0	20	144 046.4	405.5
14 25	30.732	25	768.32	1843.95	25	46 097.9	1 25	153 049.2	457.7
26	2	6	799.05	.95	6	47 941.9	30	162 052.0	513.2
27	3	7	829.78	.95	7	49 785.8	35	171 054.8	571.8
28	3	8	860.52	.96	8	51 629.8	40	180 057.5	633.6
29	3	9	891.25	.96	9	53 473.7	45	189 060.2	698.5
14 30	30.733	30	921.98	1843.96	30	55 317.7	1 50	198 062.9	766.6
31	3	1	952.71	.96	1	57 161.6	55	207 065.6	837.9
32	3	2	983.45	.97	2	59 005.6	2 00	216 068	912
33	3	3	1 014.18	.97	3	60 849.5	3 00	324 098	2 053
34	3	4	1 044.91	.97	4	62 693.5	4 00	432 121	3 649
14 35	30.733	35	1 075.64	1843.97	35	64 537.5	5 00	540 137	5 702
36	3	6	1 106.38	.98	6	66 381.5	6 00	648 143	8 210
37	3	7	1 137.11	.98	7	68 225.4	7 00	756 138	11 175
38	3	8	1 167.84	.98	8	70 069.4	8 00	864 119	14 595
39	3	9	1 198.57	.98	9	71 913.4	9 00	972 085	18 472
14 40	30.733	40	1 229.31	1843.99	40	73 757.4	10 00	1 080 033	22 805
41	3	1	1 260.04	.99	1	75 601.4	11 00	1 187 962	27 593
42	3	2	1 290.77	.99	2	77 445.4	12 00	1 295 870	32 837
43	3	3	1 321.51	3.99	3	79 289.4	13 00	1 403 755	38 536
44	3	4	1 352.24	4.00	4	81 133.4	14 00	1 511 615	44 691
14 45	30.733	45	1 382.97	1844.00	45	82 977.3	15 00	1 619 448	51 301
46	3	6	1 413.70	.00	6	84 821.4	16 00	1 727 252	58 366
47	3	7	1 444.44	.00	7	86 665.4	17 00	1 835 025	65 887
48	3	8	1 475.17	.01	8	88 509.4	18 00	1 942 766	73 863
49	3	9	1 505.90	.01	9	90 353.4	19 00	2 050 472	82 294
14 50	30.734	50	1 536.63	1844.01	50	92 197.4	20 00	2 158 142	91 179
51	4	1	1 567.37	.01	1	94 041.4	21 00	2 265 772	100 518
52	4	2	1 598.10	.02	2	95 885.4	22 00	2 373 362	110 312
53	4	3	1 628.83	.02	3	97 729.4	23 00	2 480 911	120 560
54	4	4	1 659.57	.02	4	99 573.5	24 00	2 588 415	131 262
14 55	30.734	55	1 690.30	1844.02	55	101 417.5	25 00	2 695 873	142 418
56	4	6	1 721.03	.03	6	103 261.5	26 00	2 803 283	154 028
57	4	7	1 751.76	.03	7	105 105.5	27 00	2 910 642	166 091
58	4	8	1 782.50	.03	8	106 949.6	28 00	3 017 950	178 607
59	4	9	1 813.23	.04	9	108 793.6	29 00	3 125 204	191 576
14 60	30.734	60	1 843.96	1844.04	60	110 637.6	30 00	3 232 402	204 998

Latitude 15° to 16°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
15 00	29.88	59.75	89.63	119.50	149.38	179.25	209.13	239.00	268.88	1792.5	3585.1	5377.6	7170.1	8962.7
1	.88	.75	.62	.49	.37	.24	.11	8.98	.86	2.4	4.8	7.2	69.6	2.0
2	.87	.74	.61	.48	.36	.22	.10	.96	.84	2.2	4.5	6.8	9.0	1.3
3	.87	.74	.61	.47	.34	.21	.08	.95	.82	2.1	4.3	6.3	8.4	60.6
4	.87	.73	.60	.46	.33	.19	.07	.93	.80	1.9	4.0	5.9	7.9	59.9
15 05	29.86	59.73	89.59	119.45	149.32	179 18	209.05	238.91	268.77	1791.8	3583.7	5375.5	7167.3	8959.2
6	.86	.72	.59	.45	.31	.17	.03	.89	.75	1.7	3.4	5.1	6.8	8.5
7	.86	.72	.58	.44	.30	.15	.02	.87	.73	1.5	3.1	4.7	6.2	7.8
8	.86	.71	.57	.43	.28	.14	9.00	.86	.71	1.4	2.9	4.2	5.7	7.1
9	.85	.71	.56	.42	.27	.12	8.99	.84	.69	1.2	2.6	3.8	5.1	6.4
15 10	29.85	59.70	89.56	119.41	149.26	179.11	208.97	238.82	268.67	1791.1	3582.3	5373.4	7164.6	8955.7
11	.85	.70	.55	.40	.25	.10	.95	.80	.65	1.0	2.0	3.0	4.0	5.0
12	.85	.69	.54	.39	.24	.08	.94	.78	.63	0.8	1.7	2.6	3.4	4.3
13	.84	.69	.54	.38	.22	.07	.92	.76	.61	0.7	1.5	2.1	2.9	3.6
14	.84	.68	.53	.37	.21	.05	.90	.74	.59	0.5	1.2	1.7	2.3	2.9
15 15	29.84	59.68	89.52	119.36	149.20	179.04	208.89	238.72	268.56	1790.4	3580.9	5371.3	7161.7	8952.2
16	.84	.68	.52	.35	19	.03	.87	.71	.54	0.3	0.6	0.9	1.1	1.5
17	.84	.67	.51	.34	.18	.01	.85	.69	.52	0.1	0.3	0.5	0.6	0.8
18	.83	.67	.50	.33	.16	9.00	.83	.67	.50	90.0	80.0	70.0	60.0	50.0
19	.83	.66	.49	.32	.15	8.98	.82	.65	.48	89.8	79.7	69.6	59.5	49.3
15 20	29.83	59.66	89.49	119.31	149.14	178.97	208.80	238.63	268.46	1789.7	3579.4	5369.2	7158.9	8948.6
21	.83	.66	.48	.30	.13	.96	.78	.61	.44	9.6	9.1	8.8	8.3	7.9
22	.83	.65	.47	.29	.12	.94	.77	.59	.42	9.4	8.8	8.3	7.7	7.2
23	.82	.65	.46	.28	.11	.93	.75	.57	.40	9.3	8.6	7.9	7.2	6.4
24	.82	.64	.46	.27	.10	.91	.74	.55	.38	9.1	8.3	7.4	6.6	5.7
15 25	29.82	59.64	89.45	119.26	149.08	178.90	208.72	238.54	268.35	1789.0	3578.0	5367.0	7156.0	8945.0
26	.82	.63	.44	.26	.07	.89	.70	.52	.33	8.9	7.7	6.6	5.4	4.3
27	.82	.63	.44	.25	.06	.87	.69	.50	.31	8.7	7.4	6.2	4.9	3.6
28	.81	.62	.43	.24	.05	.86	.67	.48	.29	8.6	7.2	5.7	4.3	2.9
29	.81	.62	.42	.23	.04	.84	.66	.46	.27	8.4	6.9	5.3	3.8	2.2
15 30	29.81	59.61	89.42	119.22	149.03	178.83	208.64	238.44	268.25	1788.3	3576.6	5364.9	7153.2	8941.5
31	.81	.61	.41	.21	.02	.82	.62	.42	.23	8.2	6.3	4.5	2.6	0.8
32	.80	.60	.40	.20	9.01	.80	.61	.40	.21	8.0	6.0	4.0	2.0	40.1
33	.80	.60	.39	.19	8.99	.79	.59	.38	.18	7.9	5.8	3.6	1.5	39.3
34	.80	.59	.39	.18	.98	.77	.57	.36	.16	7.7	5.5	3.1	0.9	8.6
15 35	29.79	59.59	89.38	119.17	148.97	178.76	208.55	238.35	268.14	1787.6	3575.2	5362.7	7150.3	8937.9
36	.79	.58	.37	.16	.96	.75	.54	.33	.12	7.5	4.9	2.3	49.7	7.2
37	.79	.58	.36	.15	.95	.73	.52	.31	.10	7.3	4.6	1.9	9.1	6.5
38	.79	.57	.36	.14	.93	.72	.50	.29	.07	7.2	4.3	1.4	8.6	5.7
39	.78	.57	.35	.13	.92	.70	.49	.27	.05	7.0	4.0	1.0	8.0	5.0
15 40	29.78	59.56	89.34	119.12	148.91	178.69	208.47	238.25	268.03	1786.9	3573.7	5360.6	7147.4	8934.3
41	.78	.56	.34	.11	.90	.67	.45	.23	8.01	6.7	3.4	60.2	6.8	3.6
42	.78	.55	.33	.10	.88	.66	.44	.21	7.99	6.6	3.1	59.7	6.2	2.8
43	.77	.55	.32	.09	.87	.64	.42	.19	.96	6.4	2.9	9.3	5.7	2.1
44	.77	.54	.31	.08	.86	.63	.40	.17	.94	6.3	2.6	8.8	5.1	1.3
15 45	29.77	59.54	89.31	119.07	148.84	178.61	208.39	238.15	267.92	1786.1	3572.3	5358.4	7144.5	8930.6
46	.77	.53	.30	.07	.83	.60	.37	.13	.90	6.0	2.0	8.0	3.9	29.9
47	.77	.53	.29	.06	.82	.58	.35	.11	.88	5.8	1.7	7.5	3.3	9.2
48	.76	.52	.28	.05	.81	.57	.33	.09	.85	5.7	1.4	7.1	2.8	8.4
49	.76	.52	.28	.04	.79	.55	.32	.07	.83	5.5	1.1	6.6	2.2	7.7
15 50	29.76	59.51	89.27	119.03	148.78	178.54	208.30	238.05	267.81	1785.4	3570.8	5356.2	7141.6	8927.0
51	.76	.51	.26	.02	.77	.53	.28	.03	.79	5.3	0.5	5.8	1.0	6.3
52	.75	.50	.26	.01	.76	.51	.27	8.01	.77	5.1	70.2	5.3	40.4	5.5
53	.75	.50	.25	9.00	.74	.50	.25	7.99	.74	5.0	69.9	4.9	39.9	4.8
54	.75	.49	.24	8.99	.73	.48	.23	.97	.72	4.8	9.6	4.4	9.3	4.0
15 55	29.74	59.49	89.23	118.98	148.72	178.47	208.22	237.96	267.70	1784.7	3569.3	5354.0	7138.7	8923.3
56	.74	.48	.23	.97	.71	.45	.20	.94	.68	4.5	9.0	3.6	8.1	2.6
57	.74	.48	.22	.96	.70	.44	.18	.92	.66	4.4	8.7	3.1	7.5	1.9
58	.74	.47	.21	.95	.68	.42	.16	.90	.63	4.2	8.5	2.7	6.9	1.1
59	.73	.47	.20	.94	.67	.41	.15	.88	.61	4.1	8.2	2.2	6.3	20.4
15 60	29.73	59.46	89.20	118.93	148.66	178.39	208.13	237.86	267.59	1783.9	3567.9	5351.8	7135.7	8919.7

Lat.	Latitude 15° to 16°—Meridional arcs.						Latitude 15°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
15 00	30.734			1844.04					
1	4	1	30.74	.04	1	1 844.0	0 1	1 792.5	0.1
2	4	2	61.47	.05	2	3 688.1	2	3 585.1	0.3
3	4	3	92.21	.05	3	5 532.1	3	5 377.6	0.6
4	4	4	122.94	.05	4	7 376.2	4	7 170.1	1.1
15 05	30.734	5	153.68	1844.05	5	9 220.2	0 5	8 962.7	1.7
6	4	6	184.41	.06	6	11 064.3	6	10 755.2	2.4
7	4	7	215.15	.06	7	12 908.4	7	12 547.7	3.3
8	4	8	245.88	.06	8	14 752.4	8	14 340.2	4.3
9	4	9	276.62	.06	9	16 596.5	9	16 132.8	5.5
15 10	30.734	10	307.35	1844.07	10	18 440.6	0 10	17 925.3	6.8
11	5	1	338.09	.07	1	20 284.6	15	26 887.9	15.2
12	5	2	368.82	.07	2	22 128.7	20	35 850.6	27.0
13	5	3	399.56	.08	3	23 972.8	25	44 813.2	42.2
14	5	4	430.30	.08	4	25 816.9	30	53 775.9	60.7
15 15	30.735	15	461.03	1844.08	15	27 660.9	0 35	62 738.5	82.7
16	5	6	491.77	.08	6	29 505.0	40	71 701.2	108.0
17	5	7	522.50	.09	7	31 349.1	45	80 663.8	136.7
18	5	8	553.24	.09	8	33 193.2	50	89 626.4	168.7
19	5	9	583.97	.09	9	35 037.3	55	98 589.0	204.1
15 20	30.735	20	614.71	1844.10	20	36 881.4	1 00	107 551.6	242.9
21	5	1	645.44	.10	1	38 725.5	05	116 514.1	285.1
22	5	2	676.18	.10	2	40 569.6	10	125 476.6	330.7
23	5	3	706.91	.10	3	42 413.7	15	134 439.2	379.6
24	5	4	737.65	.11	4	44 257.8	20	143 401.7	431.9
15 25	30.735	25	768.39	1844.11	25	46 101.9	1 25	152 364.2	487.5
26	5	6	799.12	.11	6	47 946.0	30	161 326.6	546.6
27	5	7	829.86	.12	7	49 790.1	35	170 289.1	609.0
28	5	8	860.59	.12	8	51 634.3	40	179 251.5	674.8
29	5	9	891.33	.12	9	53 478.4	45	188 213.9	743.9
15 30	30.735	30	922.06	1844.12	30	55 322.5	1 50	197 176.3	816.5
31	5	1	952.80	.13	1	57 166.6	55	206 138.6	892.4
32	5	2	983.53	.13	2	59 010.8	2 00	215 101	972
33	6	3	1 014.27	.13	3	60 854.9	3 00	322 646	2 186
34	6	4	1 045.00	.13	4	62 699.0	4 00	430 184	3 887
15 35	30.736	35	1 075.74	1844.14	35	64 543.2	5 00	537 713	6 072
36	6	6	1 106.47	.14	6	66 387.3	6 00	645 232	8 744
37	6	7	1 137.21	.14	7	68 231.4	7 00	752 738	11 901
38	6	8	1 167.95	.15	8	70 075.6	8 00	860 228	15 545
39	6	9	1 198.68	.15	9	71 919.7	9 00	967 701	19 674
15 40	30.736	40	1 229.42	1844.15	40	73 763.9	10 00	1 075 153	24 288
41	6	1	1 260.15	.15	1	75 608.0	11 00	1 182 584	29 387
42	6	2	1 290.89	.16	2	77 452.2	12 00	1 289 991	34 972
43	6	3	1 321.62	.16	3	79 296.3	13 00	1 397 371	41 042
44	6	4	1 352.36	.16	4	81 140.5	14 00	1 504 723	47 597
15 45	30.736	45	1 383.09	1844.17	45	82 984.6	15 00	1 612 046	54 636
46	6	6	1 413.83	.17	6	84 828.8	16 00	1 719 333	62 160
47	6	7	1 444.56	.17	7	86 673.0	17 00	1 826 586	70 169
48	6	8	1 475.30	.17	8	88 517.2	18 00	1 933 802	78 662
49	6	9	1 506.03	.18	9	90 361.3	19 00	2 040 978	87 639
15 50	30.736	50	1 536.77	1844.18	50	92 205.5	20 00	2 148 113	97 101
51	6	1	1 567.51	.18	1	94 049.7	21 00	2 255 204	107 047
52	6	2	1 598.24	.19	2	95 893.9	22 00	2 362 248	117 476
53	6	3	1 628.98	.19	3	97 738.1	23 00	2 469 245	128 388
54	7	4	1 659.71	.19	4	99 582.3	24 00	2 576 192	139 784
15 55	30.737	55	1 690.45	1844.19	55	101 426.5	25 00	2 683 086	151 663
56	7	6	1 721.18	.20	6	103 270.6	26 00	2 789 925	164 024
57	7	7	1 751.92	.20	7	105 114.8	27 00	2 896 708	176 868
58	7	8	1 782.65	.20	8	106 959.0	28 00	3 003 430	190 194
59	7	9	1 813.39	.20	9	108 803.3	29 00	3 110 091	204 003
15 60	30.737	60	1 844.12	1844.21	60	110 647.5	30 00	3 216 690	218 294

Latitude 16° to 17°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
16 00	29.73	59.46	89.20	118.93	148.66	178.39	208.13	237.86	267.59	1783.9	3567.9	5351.8	7135.7	8919.7
01	.73	.46	.19	.92	.65	.38	.11	.84	.57	3.8	7.6	1.4	5.1	8.9
02	.73	.45	.18	.91	.64	.36	.09	.82	.55	3.6	7.3	0.9	4.5	8.2
03	.72	.45	.17	.90	.62	.35	.08	.80	.53	3.5	7.0	0.5	3.9	7.4
04	.72	.44	.17	.89	.61	.33	.06	.78	.51	3.3	6.7	50.0	3.3	6.7
16 05	29.72	59.44	89.16	118.88	148.60	178.32	208.04	237.76	267.48	1783.2	3566.4	5349.6	7132.7	8915.9
06	.72	.43	.15	.87	.59	.30	.02	.74	.46	3.0	6.1	9.1	2.1	5.2
07	.72	.43	.14	.86	.58	.29	8.00	.72	.44	2.9	5.8	8.7	1.5	4.4
08	.71	.42	.14	.85	.56	.27	7.99	.70	.41	2.7	5.5	8.2	1.0	3.7
09	.71	.42	.13	.84	.55	.26	.97	.68	.39	2.6	5.2	7.8	30.4	2.9
16 10	29.71	59.41	89.12	118.83	148.54	178.24	207.95	237.66	267.37	1782.4	3564.9	5347.3	7129.8	8912.2
11	.71	.41	.11	.82	.53	.23	.93	.64	.35	2.3	4.6	6.9	9.2	1.5
12	.70	.40	.11	.81	.51	.21	.92	.62	.32	2.1	4.3	6.4	8.6	0.7
13	.70	.40	.10	.80	.50	.20	.90	.60	.30	2.0	4.0	6.0	8.0	10.0
14	.70	.39	.09	.79	.49	.18	.88	.58	.28	1.8	3.7	5.5	7.4	09.2
16 15	29.69	59.39	89.08	118.78	148.47	178.17	207.87	237.56	267.26	1781.7	3563.4	5345.1	7126.8	8908.5
16	.69	.38	.08	.77	.46	.15	.85	.54	.23	1.5	3.1	4.6	6.2	7.7
17	.69	.38	.07	.76	.45	.14	.83	.52	.21	1.4	2.8	4.2	5.6	7.0
18	.69	.37	.06	.75	.44	.12	.81	.50	.19	1.2	2.5	3.7	5.0	6.2
19	.68	.37	.06	.74	.42	.11	.80	.48	.16	1.1	2.2	3.3	4.4	5.5
16 20	29.68	59.36	89.05	118.73	148.41	178.09	207.78	237.46	267.14	1780.9	3561.9	5342.8	7123.8	8904.7
21	.68	.36	.04	.72	.40	.08	.76	.44	.12	0.8	1.6	2.4	3.2	3.9
22	.68	.35	.03	.71	.39	.06	.74	.42	.09	0.6	1.3	1.9	2.6	3.1
23	.67	.35	.02	.70	.37	.05	.73	.40	.07	0.5	1.0	1.5	1.9	2.4
24	.67	.34	.02	.69	.36	.03	.71	.38	.05	0.3	0.7	1.0	1.3	1.6
16 25	29.67	59.34	89.01	118.68	148.35	178.02	207.69	237.36	267.02	1780.2	3560.4	5340.6	7120.7	8900.8
26	.67	.33	9.00	.67	.34	8.00	.67	.34	7.00	80.0	60.1	40.1	20.1	900.0
27	.67	.33	8.99	.66	.33	7.99	.65	.32	6.98	79.9	59.8	39.7	19.5	899.3
28	.66	.32	.99	.65	.31	.97	.64	.30	.96	9.7	9.5	9.2	8.9	8.6
29	.66	.32	.98	.64	.30	.96	.62	.28	.93	9.6	9.2	8.8	8.3	7.9
16 30	29.66	59.31	88.97	118.63	148.29	177.94	207.60	237.26	266.91	1779.4	3558.9	5338.3	7117.7	8897.1
31	.66	.31	.96	.62	.28	.93	.58	.24	.89	9.3	8.6	7.8	7.1	6.3
32	.65	.30	.96	.61	.26	.91	.56	.22	.86	9.1	8.3	7.4	6.5	5.6
33	.65	.30	.95	.60	.25	.90	.55	.20	.84	9.0	7.9	6.9	5.8	4.8
34	.65	.29	.94	.59	.24	.88	.53	.18	.82	8.8	7.6	6.5	5.2	4.1
16 35	29.64	59.29	88.93	118.58	148.22	177.87	207.51	237.15	266.79	1778.7	3557.3	5336.0	7114.6	8893.3
36	.64	.28	.92	.57	.21	.85	.49	.13	.77	8.5	7.0	5.5	4.0	2.5
37	.64	.28	.92	.56	.20	.84	.47	.11	.75	8.4	6.7	5.1	3.4	1.8
38	.64	.27	.91	.55	.19	.82	.46	.09	.73	8.2	6.4	4.6	2.8	1.0
39	.63	.27	.90	.54	.17	.81	.44	.07	.70	8.1	6.1	4.2	2.2	90.3
16 40	29.63	59.26	88.89	118.53	148.16	177.79	207.42	237.05	266.68	1777.9	3555.8	5333.7	7111.6	8889.5
41	.63	.26	.89	.52	.15	.77	.40	.03	.66	7.7	5.5	3.2	1.0	8.7
42	.63	.25	.88	.51	.13	.76	.38	7.01	.63	7.6	5.2	2.8	10.4	7.9
43	.62	.25	.87	.50	.12	.74	.37	6.99	.61	7.4	4.8	2.3	09.7	7.2
44	.62	.24	.86	.49	.11	.73	.35	.97	.59	7.3	4.5	1.9	9.1	6.4
16 45	29.62	59.24	88.86	118.47	148.09	177.71	207.33	236.95	266.56	1777.1	3554.2	5331.4	7108.5	8885.6
46	.62	.23	.85	.46	.08	.70	.31	.93	.54	7.0	3.9	0.9	7.9	4.8
47	.62	.23	.84	.45	.07	.68	.29	.91	.52	6.8	3.6	0.5	7.3	4.1
48	.61	.22	.83	.44	.06	.67	.28	.89	.50	6.7	3.3	30.0	6.6	3.3
49	.61	.22	.83	.43	.04	.65	.26	.87	.47	6.5	3.0	29.6	6.0	2.6
16 50	29.61	59.21	88.82	118.42	148.03	177.64	207.24	236.85	266.45	1776.4	3552.7	5329.1	7105.4	8881.8
51	.61	.21	.81	.41	.02	.62	.22	.83	.43	6.2	2.4	8.6	4.8	1.0
52	.60	.20	.80	.40	8.00	.61	.20	.81	.40	6.1	2.1	8.1	4.2	80.2
53	.60	.20	.79	.39	7.99	.59	.19	.79	.38	5.9	1.7	7.7	3.5	79.4
54	.60	.19	.79	.38	.98	.58	.17	.77	.36	5.8	1.4	7.2	2.9	8.6
16 55	29.59	59.19	88.78	118.37	147.96	177.56	207.15	236.74	266.33	1775.6	3551.1	5326.7	7102.3	8877.8
56	.59	.18	.77	.36	.95	.54	.13	.72	.31	5.4	0.8	6.2	1.7	7.0
57	.59	.18	.76	.35	.94	.53	.11	.70	.29	5.3	0.5	5.8	1.1	6.2
58	.59	.17	.76	.34	.93	.51	.10	.68	.27	5.1	50.2	5.3	100.4	5.5
59	.58	.17	.75	.33	.91	.50	.08	.66	.24	5.0	49.9	4.9	099.8	4.7
16 60	29.58	59.16	88.74	118.32	147.90	177.48	207.06	236.64	266.22	1774.8	3549.6	5324.4	7099.2	8873.9

Lat.		Latitude 16° to 17°—Meridional arcs.						Latitude 16°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
16	00	30.737			1844.21					
	1	7	1	30.74	.21	1	1 844.2	0 1	1 783.9	0.1
	2	7	2	61.48	.21	2	3 688.4	2	3 567.9	0.3
	3	7	3	92.21	.22	3	5 532.6	3	5 351.8	0.6
	4	7	4	122.95	.22	4	7 376.9	4	7 135.7	1.1
16	05	30.737	5	153.69	1844.22	5	9 221.1	0 5	8 919.7	1.8
	6	7	6	184.43	.23	6	11 065.3	6	10 703.6	2.6
	7	7	7	215.17	.23	7	12 909.5	7	12 487.5	3.5
	8	7	8	245.91	.23	8	14 753.7	8	14 271.4	4.6
	9	7	9	276.64	.23	9	16 598.0	9	16 055.4	5.8
16	10	30.737	10	307.38	1844.24	10	18 442.2	0 10	17 839.3	7.2
	11	7	1	338.12	.24	1	20 286.5	15	26 758.9	16.1
	12	7	2	368.86	.24	2	22 130.7	20	35 678.6	28.6
	13	7	3	399.60	.25	3	23 975.0	25	44 598.2	44.7
	14	7	4	430.34	.25	4	25 819.2	30	53 517.9	64.4
16	15	30.738	15	461.07	1844.25	15	27 663.5	0 35	62 437.5	87.6
	16	8	6	491.81	.26	6	29 507.7	40	71 357.1	114.4
	17	8	7	522.55	.26	7	31 352.0	45	80 276.7	144.8
	18	8	8	553.29	.26	8	33 196.3	50	89 196.3	178.8
	19	8	9	584.03	.26	9	35 040.5	55	98 115.9	216.4
16	20	30.738	20	614.77	1844.27	20	36 884.8	1 00	107 035.4	257.5
	21	8	1	645.50	.27	1	38 729.1	05	115 955.0	302.2
	22	8	2	676.24	.27	2	40 573.3	10	124 874.5	350.4
	23	8	3	706.98	.28	3	42 417.6	15	133 794.0	402.3
	24	8	4	737.72	.28	4	44 261.9	20	142 713.5	457.7
16	25	30.738	25	768.46	1844.28	25	46 106.2	1 25	151 633.0	516.7
	26	8	6	799.20	.28	6	47 950.5	30	160 552.4	579.3
	27	8	7	829.93	.29	7	49 794.7	35	169 471.8	645.4
	28	8	8	860.67	.29	8	51 639.0	40	178 391.2	715.2
	29	8	9	891.41	.29	9	53 483.3	45	187 310.5	788.5
16	30	30.738	30	922.15	1844.30	30	55 327.6	1 50	196 229.8	865.4
	31	8	1	952.89	.30	1	57 171.9	55	205 149.1	945.8
	32	8	2	983.63	.30	2	59 016.2	2 00	214 068	1 030
	33	8	3	1 014.36	.31	3	60 860.5	3 00	321 097	2 317
	34	8	4	1 045.10	.31	4	62 704.8	4 00	428 117	4 119
16	35	30.739	35	1 075.84	1844.31	35	64 549.2	5 00	535 127	6 436
	36	9	6	1 106.58	.31	6	66 393.5	6 00	642 126	9 268
	37	9	7	1 137.32	.32	7	68 237.8	7 00	749 110	12 614
	38	9	8	1 168.06	.32	8	70 082.1	8 00	856 075	16 476
	39	9	9	1 198.79	.32	9	71 926.4	9 00	963 022	20 852
16	40	30.739	40	1 229.53	1844.33	40	73 770.8	10 00	1 069 946	25 741
	41	9	1	1 260.27	.33	1	75 615.1	11 00	1 176 845	31 145
	42	9	2	1 291.01	.33	2	77 459.4	12 00	1 283 717	37 064
	43	9	3	1 321.75	.34	3	79 303.8	13 00	1 390 559	43 497
	44	9	4	1 352.48	.34	4	81 148.1	14 00	1 497 369	50 444
16	45	30.739	45	1 383.22	1844.34	45	82 992.4	15 00	1 604 146	57 904
	46	9	6	1 413.96	.34	6	84 836.8	16 00	1 710 883	65 878
	47	9	7	1 444.70	.35	7	86 681.1	17 00	1 817 582	74 365
	48	9	8	1 475.44	.35	8	88 525.5	18 00	1 924 239	83 366
	49	9	9	1 506.18	.35	9	90 369.8	19 00	2 030 851	92 880
16	50	30.739	50	1 536.91	1844.36	50	92 214.2	20 00	2 137 416	102 906
	51	9	1	1 567.65	.36	1	94 058.5	21 00	2 243 932	113 445
	52	9	2	1 598.39	.36	2	95 902.9	22 00	2 350 395	124 496
	53	9	3	1 629.13	.36	3	97 747.2	23 00	2 456 804	136 059
	54	39	4	1 659.87	.37	4	99 591.6	24 00	2 563 157	148 134
16	55	30.740	55	1 690.61	1844.37	55	101 436.0	25 00	2 669 451	160 720
	56	0	6	1 721.34	.37	6	103 280.3	26 00	2 775 682	173 818
	57	0	7	1 752.08	.38	7	105 124.7	27 00	2 881 849	187 427
	58	0	8	1 782.82	.38	8	106 969.1	28 00	2 987 949	201 546
	59	0	9	1 813.56	.38	9	108 813.5	29 00	3 093 980	216 175
16	60	30.740	60	1 844.30	1844.39	60	110 657.8	30 00	3 199 941	231 315

Latitude 17° to 18°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
17 00	29.58	59.16	88.74	118.32	147.90	177.48	207.06	236.64	266.22	1774.8	3549.6	5324.4	7099.2	8873.9
1	.58	.16	.73	.31	.89	.46	.04	.62	.20	4.6	9.3	3.9	8.6	3.1
2	.57	.15	.72	.30	.87	.45	.02	.60	.17	4.5	9.0	3.4	7.9	2.3
3	.57	.15	.72	.29	.86	.43	7.01	.58	.15	4.3	8.6	3.0	7.3	1.6
4	.57	.14	.71	.28	.85	.42	6.99	.56	.12	4.2	8.3	2.5	6.6	0.8
17 05	29.56	59.14	88.70	118.26	147.83	177.40	206.97	236.53	266.10	1774.0	3548.0	5322.0	7096.0	8870.0
6	.56	.13	.69	.25	.82	.38	.95	.51	.08	3.8	7.7	1.5	5.4	69.2
7	.56	.13	.68	.24	.81	.37	.93	.49	.05	3.7	7.4	1.0	4.8	8.4
8	.56	.12	.68	.23	.80	.35	.92	.47	.03	3.5	7.0	0.6	4.1	7.7
9	.55	.12	.67	.22	.78	.34	.90	.45	6.00	3.4	6.7	20.1	3.5	6.9
17 10	29.55	59.11	88.66	118.21	147.77	177.32	206.88	236.43	5.98	1773.2	3546.4	5319.6	7092.9	8866.1
11	.55	.10	.65	.20	.76	.30	.86	.41	.96	3.0	6.1	9.1	2.3	5.3
12	.55	.10	.64	.19	.74	.29	.84	.39	.93	2.9	5.8	8.7	1.6	4.5
13	.54	.09	.64	.18	.73	.27	.82	.37	.91	2.7	5.4	8.2	1.0	3.7
14	.54	.09	.63	.17	.72	.26	.80	.35	.88	2.6	5.1	7.8	90.3	2.9
17 15	29.54	59.08	88.62	118.16	147.70	177.24	206.79	236.32	265.86	1772.4	3544.8	5317.3	7089.7	8862.1
16	.54	.07	.61	.15	.69	.22	.77	.30	.84	2.2	4.5	6.8	9.1	1.3
17	.54	.07	.60	.14	.68	.21	.75	.28	.81	2.1	4.2	6.3	8.4	60.5
18	.53	.06	.60	.13	.67	.19	.73	.26	.79	1.9	3.8	5.9	7.8	59.7
19	.53	.06	.59	.12	.65	.18	.71	.24	.77	1.8	3.5	5.4	7.1	8.9
17 20	29.53	59.05	88.58	118.11	147.64	177.16	206.69	236.22	265.74	1771.6	3543.2	5314.9	7086.5	8858.1
21	.53	.05	.57	.10	.63	.14	.67	.20	.72	1.4	2.9	4.4	5.9	7.3
22	.52	.04	.56	.09	.61	.13	.65	.18	.69	1.3	2.6	3.9	5.2	6.5
23	.52	.04	.56	.08	.60	.11	.63	.15	.67	1.1	2.2	3.5	4.6	5.7
24	.52	.03	.55	.07	.58	.10	.61	.13	.64	1.0	1.9	3.0	3.9	4.9
17 25	29.51	59.03	88.54	118.05	147.57	177.08	206.60	236.11	265.62	1770.8	3541.6	5312.5	7083.3	8854.1
26	.51	.02	.53	.04	.56	.06	.58	.09	.60	0.6	1.3	2.1	2.7	3.3
27	.51	.02	.52	.03	.54	.05	.56	.07	.57	0.5	1.0	1.6	2.0	2.5
28	.51	.01	.52	.02	.53	.03	.54	.04	.55	0.3	0.6	1.1	1.4	1.7
29	.50	.01	.51	.01	.51	.02	.52	.02	.52	0.2	0.3	0.6	0.7	0.9
17 30	29.50	59.00	88.50	118.00	147.50	177.00	206.50	236.00	265.50	1770.0	3540.0	5310.1	7080.1	8850.1
31	.50	9.00	.49	7.99	.49	6.98	.48	5.98	.48	69.8	39.7	09.6	79.4	49.3
32	.49	8.99	.48	.98	.47	.97	.46	.96	.45	9.7	9.4	9.1	8.8	8.5
33	.49	.99	.48	.97	.46	.95	.44	.94	.43	9.5	9.0	8.6	8.1	7.6
34	.49	.98	.47	.96	.45	.94	.42	.92	.40	9.4	8.7	8.1	7.5	6.8
17 35	29.48	58.98	88.46	117.94	147.43	176.92	206.41	235.89	265.38	1769.2	3538.4	5307.6	7076.8	8846.0
36	.48	.97	.45	.93	.42	.90	.39	.87	.36	9.0	8.1	7.1	6.2	5.2
37	.48	.97	.44	.92	.41	.89	.37	.85	.33	8.9	7.8	6.6	5.5	4.4
38	.48	.96	.44	.91	.40	.87	.35	.83	.31	8.7	7.4	6.2	4.9	3.6
39	.47	.96	.43	.90	.38	.86	.33	.81	.28	8.6	7.1	5.7	4.2	2.8
17 40	29.47	58.95	88.42	117.89	147.37	176.84	206.31	235.79	265.26	1768.4	3536.8	5305.2	7073.6	8842.0
41	.47	.94	.41	.88	.36	.82	.29	.77	.24	8.2	6.5	4.7	2.9	1.2
42	.47	.94	.40	.87	.34	.81	.27	.75	.21	8.1	6.2	4.2	2.3	40.4
43	.46	.93	.40	.86	.33	.79	.25	.72	.19	7.9	5.8	3.7	1.6	39.5
44	.46	.93	.39	.85	.31	.78	.23	.70	.16	7.8	5.5	3.2	1.0	8.7
17 45	29.46	58.92	88.38	117.83	147.30	176.76	206.22	235.68	265.14	1767.6	3535.2	5302.7	7070.3	8837.9
46	.46	.91	.37	.82	.29	.74	.20	.66	.11	7.4	4.9	2.2	69.6	7.1
47	.46	.91	.36	.81	.27	.73	.18	.64	.09	7.3	4.5	1.7	9.0	6.3
48	.45	.90	.35	.80	.26	.71	.16	.61	.06	7.1	4.2	1.3	8.3	5.4
49	.45	.90	.35	.79	.24	.70	.14	.59	.03	7.0	3.8	0.8	7.7	4.6
17 50	29.45	58.89	88.34	117.78	147.23	176.68	206.12	235.57	265.01	1766.8	3533.5	5300.3	7067.0	8833.8
51	.45	.89	.33	.77	.22	.66	.10	.55	4.99	6.6	3.2	299.8	6.3	3.0
52	.44	.88	.32	.76	.20	.64	.08	.53	.96	6.4	2.9	9.3	5.7	2.2
53	.44	.88	.31	.75	.19	.63	.06	.50	.94	6.3	2.5	8.8	5.0	1.3
54	.44	.87	.31	.74	17	.61	.04	.48	.91	6.1	2.2	8.3	4.4	30.5
17 55	29.43	58.87	88.30	117.72	147.16	176.59	206.03	235.46	264.89	1765.9	3531.9	5297.8	7063.7	8829.7
56	.43	.86	.29	.71	.15	.58	6.01	.44	.87	5.8	1.6	7.3	3.0	8.9
57	.43	.86	.28	.70	.13	.56	5.99	.42	.84	5.6	1.2	6.8	2.4	8.0
58	.43	.85	.27	.69	.12	.54	.97	.39	.82	5.4	0.9	6.3	1.7	7.2
59	.42	.85	.26	.68	.10	.53	.95	.37	.79	5.3	0.5	5.8	1.1	6.3
17 60	29.42	58.84	88.26	117.67	147.09	176.51	205.93	235.35	264.77	1765.1	3530.2	5295.3	7060.4	8825.5

Lat.		Latitude 17° to 18°—Meridional arcs.						Latitude 17°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
17	00	30.740			1844.39					
	1	0	1	30.74	.39	1	1 844.4	0 1	1 774.8	0.1
	2	0	2	61.48	.39	2	3 688.8	2	3 549.6	0.3
	3	0	3	92.22	.39	3	5 533.2	3	5 324.4	0.7
	4	0	4	122.97	.40	4	7 377.6	4	7 099.2	1.2
17	05	30.740	5	153.71	1844.40	5	9 222.0	0 5	8 873.9	1.9
	6	0	6	184.45	.40	6	11 066.4	6	10 648.7	2.7
	7	0	7	215.19	.41	7	12 910.8	7	12 423.5	3.7
	8	0	8	245.93	.41	8	14 755.2	8	14 198.3	4.8
	9	0	9	276.67	.41	9	16 599.6	9	15 973.1	6.1
17	10	30.740	10	307.41	1844.42	10	18 444.0	0 10	17 747.9	7.5
	11	0	1	338.15	.42	11	20 288.5	15	26 621.8	17.0
	12	0	2	368.90	.42	12	22 132.9	20	35 495.8	30.2
	13	0	3	399.64	.43	13	23 977.3	25	44 369.6	47.2
	14	0	4	430.38	.43	14	25 821.7	30	53 243.6	67.9
17	15	30.741	15	461.12	1844.43	15	27 666.2	0 35	62 117.5	92.4
	16	1	6	491.86	.44	16	29 510.6	40	70 991.4	120.7
	17	1	7	522.60	.44	17	31 355.0	45	79 865.3	152.8
	18	1	8	553.34	.44	18	33 199.5	50	88 739.1	188.7
	19	1	9	584.09	.44	19	35 043.9	55	97 613.0	228.3
17	20	30.741	20	614.83	1844.45	20	36 888.4	1 00	106 486.9	271.7
	21	1	1	645.57	.45	21	38 732.8	05	115 360.7	318.8
	22	1	2	676.31	.45	22	40 577.3	10	124 234.5	369.8
	23	1	3	707.05	.46	23	42 421.7	15	133 108.3	424.5
	24	1	4	737.79	.46	24	44 266.2	20	141 982.0	483.0
17	25	30.741	25	768.53	1844.46	25	46 110.7	1 25	150 855.7	545.2
	26	1	6	799.27	.47	26	47 955.1	30	159 729.4	611.3
	27	1	7	830.02	.47	27	49 799.6	35	168 603.1	681.1
	28	1	8	860.76	.47	28	51 644.1	40	177 476.8	754.7
	29	1	9	891.50	.48	29	53 488.6	45	186 350.4	832.1
17	30	30.741	30	922.24	1844.48	30	55 333.0	1 50	195 223.9	913.2
	31	1	1	952.98	.48	31	57 177.5	55	204 097.5	998.1
	32	1	2	983.72	.49	32	59 022.0	2 00	212 971	1 087
	33	1	3	1 014.46	.49	33	60 866.5	3 00	319 450	2 445
	34	2	4	1 045.21	.49	34	62 711.0	4 00	425 920	4 347
17	35	30.742	35	1 075.95	1844.50	35	64 555.5	5 00	532 378	6 792
	36	2	6	1 106.69	.50	36	66 400.0	6 00	638 824	9 779
	37	2	7	1 137.43	.50	37	68 244.5	7 00	745 253	13 310
	38	2	8	1 168.17	.50	38	70 089.0	8 00	851 662	17 386
	39	2	9	1 198.91	.51	39	71 933.5	9 00	958 049	22 004
17	40	30.742	40	1 229.65	1844.51	40	73 778.0	10 00	1 064 411	27 164
	41	2	1	1 260.39	.51	41	75 622.5	11 00	1 170 745	32 867
	42	2	2	1 291.14	.52	42	77 467.0	12 00	1 277 049	39 112
	43	2	3	1 321.88	.52	43	79 311.6	13 00	1 383 320	45 899
	44	2	4	1 352.62	.52	44	81 156.1	14 00	1 489 555	53 229
17	45	30.742	45	1 383.36	1844.53	45	83 000.6	15 00	1 595 750	61 101
	46	2	6	1 414.10	.53	46	84 845.1	16 00	1 701 905	69 515
	47	2	7	1 444.84	.53	47	86 689.7	17 00	1 808 015	78 470
	48	2	8	1 475.58	.54	48	88 534.2	18 00	1 914 078	87 967
	49	2	9	1 506.33	.54	49	90 378.7	19 00	2 020 091	98 005
17	50	30.742	50	1 537.07	1844.54	50	92 223.3	20 00	2 126 051	108 583
	51	2	1	1 567.81	.55	51	94 067.8	21 00	2 231 956	119 702
	52	2	2	1 598.55	.55	52	95 912.3	22 00	2 337 803	131 362
	53	3	3	1 629.29	.55	53	97 756.9	23 00	2 443 589	143 562
	54	3	4	1 660.03	.55	54	99 601.4	24 00	2 549 312	156 301
17	55	30.743	55	1 690.77	1844.56	55	101 446.0	25 00	2 654 968	169 578
	56	3	6	1 721.51	.56	56	103 290.6	26 00	2 760 554	183 395
	57	3	7	1 752.26	.56	57	105 135.1	27 00	2 866 069	197 751
	58	3	8	1 783.00	.57	58	106 979.7	28 00	2 971 510	212 646
	59	3	9	1 813.74	.57	59	108 824.3	29 00	3 076 874	228 079
17	60	30.743	60	1 844.48	1844.57	60	110 668.8	30 00	3 182 157	244 048

Latitude 18° to 19°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
18 00	29.42	58.84	88.26	117.67	147.09	176.51	205.93	235.35	264.77	1765.1	3530.2	5295.3	7060.4	8825.5
1	.42	.83	.25	.66	.08	.49	.91	.33	.75	4.9	29.9	4.8	59.7	4.7
2	.41	.83	.24	.65	.06	.48	.89	.31	.72	4.8	9.5	4.3	9.1	3.9
3	.41	.82	.23	.64	.05	.46	.87	.28	.70	4.6	9.2	3.8	8.4	3.0
4	.41	.82	.22	.63	.03	.44	.85	.26	.67	4.4	8.8	3.3	7.8	2.2
18 05	29.40	58.81	88.21	117.61	147.02	176.43	205.84	235.24	264.65	1764.3	3528.5	5292.8	7057.1	8821.4
6	.40	.80	.21	.60	7.01	.41	.82	.22	.62	4.1	8.2	2.3	6.4	20.6
7	.40	.80	.20	.59	6.99	.39	.80	.20	.60	3.9	7.9	1.8	5.8	19.7
8	.40	.79	.19	.58	.98	.38	.78	.17	.57	3.8	7.5	1.3	5.1	8.9
9	.39	.79	.18	.57	.96	.36	.76	.15	.55	3.6	7.2	0.8	4.5	8.0
18 10	29.39	58.78	88.17	117.56	146.95	176.34	205.74	235.13	264.52	1763.4	3526.9	5290.3	7053.8	8817.2
11	.39	.78	.16	.55	.94	.32	.72	.11	.49	3.2	6.6	89.8	3.1	6.4
12	.38	.77	.15	.54	.92	.31	.70	.08	.47	3.1	6.2	9.3	2.4	5.5
13	.38	.77	.15	.53	.91	.29	.68	.06	.44	2.9	5.9	8.8	1.8	4.7
14	.38	.76	.14	.52	.89	.28	.66	.04	.42	2.8	5.5	8.3	1.1	3.8
18 15	29.37	58.76	88.13	117.50	146.88	176.26	205.64	235.01	264.39	1762.6	3525.2	5287.8	7050.4	8813.0
16	.37	.75	.12	.49	.87	.24	.62	4.99	.36	2.4	4.9	7.3	49.7	2.2
17	.37	.75	.11	.48	.85	.23	.60	.97	.34	2.3	4.5	6.8	9.1	1.3
18	.37	.74	.11	.47	.84	.21	.58	.95	.31	2.1	4.2	6.3	8.4	10.5
19	.36	.74	.10	.46	.82	.20	.56	.92	.29	2.0	3.8	5.8	7.8	09.6
18 20	29.36	58.73	88.09	117.45	146.81	176.18	205.54	234.90	264.26	1761.8	3523.5	5285.3	7047.1	8808.8
21	.36	.72	.08	.44	.80	.16	.52	.88	.24	1.6	3.2	4.8	6.4	8.0
22	.35	.72	.07	.43	.78	.14	.50	.86	.21	1.4	2.8	4.3	5.7	7.1
23	.35	.71	.06	.42	.77	.13	.48	.83	.19	1.3	2.5	3.7	5.1	6.3
24	.35	.71	.05	.41	.75	.11	.46	.81	.16	1.1	2.1	3.2	4.4	5.4
18 25	29.34	58.70	88.05	117.39	146.74	176.09	205.44	234.79	264.14	1760.9	3521.8	5282.7	7043.7	8804.6
26	.34	.69	.04	.38	.73	.07	.42	.77	.11	0.7	1.5	2.2	3.0	3.7
27	.34	.69	.03	.37	.71	.06	.40	.75	.09	0.6	1.1	1.7	2.3	2.9
28	.34	.68	.02	.36	.70	.04	.38	.72	.06	0.4	0.8	1.2	1.7	2.0
29	.33	.68	.01	.35	.68	.03	.36	.70	.04	0.3	0.4	0.7	1.0	1.2
18 30	29.33	58.67	88.00	117.34	146.67	176.01	205.34	234.68	264.01	1760.1	3520.1	5280.2	7040.3	8800.3
31	.33	.66	7.99	.33	.66	5.99	.32	.66	3.98	59.9	19.8	79.7	39.6	799.5
32	.33	.66	.99	.32	.64	.97	.30	.63	.96	9.7	9.4	9.2	8.9	8.6
33	.32	.65	.98	.30	.63	.96	.28	.61	.93	9.6	9.1	8.6	8.2	7.7
34	.32	.65	.97	.29	.61	.94	.26	.59	.91	9.4	8.7	8.1	7.5	6.9
18 35	29.32	58.64	87.96	117.28	146.60	175.92	205.24	234.56	263.88	1759.2	3518.4	5277.6	7036.8	8796.1
36	.32	.63	.95	.27	.59	.90	.22	.54	.85	9.0	8.1	7.1	6.1	5.2
37	.32	.63	.94	.26	.57	.89	.20	.52	.83	8.9	7.7	6.6	5.4	4.4
38	.31	.62	.94	.24	.56	.87	.18	.50	.80	8.7	7.4	6.1	4.8	3.5
39	.31	.62	.93	.23	.54	.86	.16	.47	.78	8.6	7.0	5.6	4.1	2.7
18 40	29.31	58.61	87.92	117.22	146.53	175.84	205.14	234.45	263.75	1758.4	3516.7	5275.1	7033.4	8791.8
41	.31	.60	.91	.21	.52	.82	.12	.43	.72	8.2	6.4	4.6	2.7	0.9
42	.30	.60	.90	.20	.50	.80	.10	.40	.70	8.0	6.0	4.1	2.0	90.1
43	.30	.59	.89	.19	.49	.79	.08	.38	.67	7.9	5.7	3.5	1.4	89.2
44	.30	.59	.88	.18	.47	.77	.06	.36	.65	7.7	5.3	3.0	0.7	8.4
18 45	29.29	58.58	87.87	117.16	146.46	175.75	205.04	234.33	263.62	1757.5	3515.0	5272.5	7030.0	8787.5
46	.29	.57	.87	.15	.45	.73	.02	.31	.59	7.3	4.7	2.0	29.3	6.6
47	.29	.57	.86	.14	.43	.71	5.00	.29	.57	7.1	4.3	1.5	8.6	5.8
48	.29	.56	.85	.13	.42	.70	4.98	.27	.54	7.0	4.0	0.9	7.9	4.9
49	.28	.56	.84	.12	.40	.68	.96	.24	.52	6.8	3.6	70.4	7.2	4.1
18 50	29.28	58.55	87.83	117.11	146.39	175.66	204.94	234.22	263.49	1756.6	3513.3	5269.9	7026.5	8783.2
51	.28	.55	.82	.10	.38	.64	.92	.20	.46	6.4	2.9	9.4	5.8	2.3
52	.27	.54	.81	.09	.36	.63	.90	.17	.44	6.3	2.6	8.9	5.1	1.4
53	.27	.54	.81	.07	.35	.61	.88	.15	.41	6.1	2.2	8.3	4.4	80.6
54	.27	.53	.80	.06	.33	.59	.86	.13	.39	5.9	1.9	7.8	3.7	79.7
18 55	29.26	58.53	87.79	117.05	146.32	175.58	204.84	234.10	263.37	1755.8	3511.5	5267.3	7023.0	8778.8
56	.26	.52	.78	.04	.30	.56	.82	.08	.35	5.6	1.2	6.8	2.3	7.9
57	.26	.52	.77	.03	.29	.54	.80	.06	.31	5.4	0.8	6.3	1.6	7.1
58	.26	.51	.76	.01	.27	.52	.78	.04	.28	5.2	0.5	5.7	1.0	6.2
59	.25	.51	.75	7.00	.26	.51	.76	4.01	.26	5.1	10.1	5.2	20.3	5.4
18 60	29.25	58.50	87.74	116.99	146.24	175.49	204.74	233.99	263.23	1754.9	3509.8	5264.7	7019.6	8774.5

Lat.		Latitude 18° to 19°—Meridional arcs.						Latitude 18°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
18	00	30.743			1844.57					
	1	3	1	30.74	.58	1	1 844.6	0 1	1 765.1	0.1
	2	3	2	61.49	.58	2	3 689.2	2	3 530.2	0.3
	3	3	3	92.23	.58	3	5 533.7	3	5 295.3	0.7
	4	3	4	122.98	.59	4	7 378.3	4	7 060.4	1.3
18	05	30.743	5	153.72	1844.59	5	9 222.9	0 5	8 825.5	2.0
	6	3	6	184.47	.59	6	11 067.5	6	10 590.6	2.9
	7	3	7	215.21	.60	7	12 912.1	7	12 355.7	3.9
	8	3	8	245.96	.60	8	14 756.7	8	14 120.8	5.1
	9	3	9	276.70	.60	9	16 601.3	9	15 886.0	6.4
18	10	30.743	10	307.45	1844.61	10	18 445.9	0 10	17 651.1	7.9
	11	3	1	338.19	.61	1	20 290.5	15	26 476.6	17.8
	12	4	2	368.93	.61	2	22 135.1	20	35 302.1	31.7
	13	4	3	399.68	.62	3	23 979.8	25	44 127.7	49.6
	14	4	4	430.42	.62	4	25 824.4	30	52 953.2	71.4
18	15	30.744	15	461.17	1844.62	15	27 669.0	0 35	61 778.7	97.2
	16	4	6	491.91	.62	6	29 513.6	40	70 604.2	126.9
	17	4	7	522.66	.63	7	31 358.2	45	79 429.7	160.6
	18	4	8	553.40	.63	8	33 202.9	50	88 255.1	198.3
	19	4	9	584.15	.63	9	35 047.5	55	97 080.6	240.0
18	20	30.744	20	614.89	1844.64	20	36 892.2	1 00	105 906.0	285.6
	21	4	1	645.64	.64	1	38 736.8	05	114 731.4	335.2
	22	4	2	676.38	.64	2	40 581.4	10	123 556.8	388.7
	23	4	3	707.12	.65	3	42 426.1	15	132 382.1	446.2
	24	4	4	737.87	.65	4	44 270.7	20	141 207.5	507.7
18	25	30.744	25	768.61	1844.65	25	46 115.4	1 25	150 032.8	573.2
	26	4	6	799.36	.66	6	47 960.0	30	158 858.0	642.6
	27	4	7	830.10	.66	7	49 804.7	35	167 683.3	716.0
	28	4	8	860.85	.66	8	51 649.4	40	176 508.5	793.3
	29	4	9	891.59	.67	9	53 494.0	45	185 333.6	874.6
18	30	30.744	30	922.33	1844.67	30	55 338.7	1 50	194 158.8	959.9
	31	5	1	953.08	.67	1	57 183.4	55	202 983.8	1 049.2
	32	5	2	983.83	.68	2	59 028.1	2 00	211 809	1 142
	33	5	3	1 014.57	.68	3	60 872.7	3 00	317 706	2 570
	34	5	4	1 045.31	.68	4	62 717.4	4 00	423 593	4 569
18	35	30.745	35	1 076.06	1844.69	35	64 562.1	5 00	529 468	7 139
	36	5	6	1 106.80	.69	6	66 406.8	6 00	635 328	10 280
	37	5	7	1 137.55	.69	7	68 251.5	7 00	741 169	13 992
	38	5	8	1 168.29	.70	8	70 096.2	8 00	846 989	18 275
	39	5	9	1 199.04	.70	9	71 940.9	9 00	952 784	23 129
18	40	30.745	40	1 229.78	1844.70	40	73 785.6	10 00	1 058 552	28 553
	41	5	1	1 260.53	.71	1	75 630.3	11 00	1 164 289	34 547
	42	5	2	1 291.27	.71	2	77 475.0	12 00	1 269 991	41 112
	43	5	3	1 322.02	.71	3	79 319.7	13 00	1 375 657	48 246
	44	5	4	1 352.76	.72	4	81 164.4	14 00	1 481 283	55 950
18	45	30.745	45	1 383.50	1844.72	45	83 009.2	15 00	1 586 865	64 224
	46	5	6	1 414.25	.72	6	84 853.9	16 00	1 692 402	73 067
	47	5	7	1 444.99	.73	7	86 698.6	17 00	1 797 890	82 479
	48	5	8	1 475.74	.73	8	88 543.3	18 00	1 903 324	92 461
	49	6	9	1 506.48	.73	9	90 388.0	19 00	2 008 704	103 011
18	50	30.746	50	1 537.23	1844.74	50	92 232.8	20 00	2 114 025	114 128
	51	6	1	1 567.97	.74	1	94 077.5	21 00	2 219 285	125 813
	52	6	2	1 598.72	.74	2	95 922.3	22 00	2 324 480	138 066
	53	6	3	1 629.46	.75	3	97 767.0	23 00	2 429 607	150 887
	54	6	4	1 660.21	.75	4	99 611.8	24 00	2 534 664	164 274
18	55	30.746	55	1 690.95	1844.75	55	101 456.5	25 00	2 639 647	178 227
	56	6	6	1 721.69	.76	6	103 301.3	26 09	2 744 554	192 746
	57	6	7	1 752.44	.76	7	105 146.1	27 00	2 849 381	207 831
	58	6	8	1 783.18	.76	8	106 990.8	28 00	2 954 124	223 482
	59	6	9	1 813.93	.77	9	108 835.6	29 00	3 058 782	239 697
18	60	30.746	60	1 844.67	1844.77	60	110 680.4	30 00	3 163 350	256 476

Latitude 19° to 20°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
19 00	29.25	58.50	87.74	116.99	146.24	175.49	204.74	233.99	263.23	1754.9	3509.8	5264.7	7019.6	8774.5
1	.25	.49	.74	.98	.23	.47	.72	.97	.20	4.7	9.4	4.2	8.9	3.6
2	.24	.49	.73	.97	.21	.45	.70	.94	.18	4.5	9.1	3.6	8.2	2.7
3	.24	.48	.72	.96	.20	.44	.68	.92	.15	4.4	8.7	3.1	7.5	1.9
4	.24	.48	.71	.95	.18	.42	.66	.89	.13	4.2	8.4	2.5	6.8	1.0
19 05	29.23	58.47	87.70	116.93	146.17	175.40	204.63	233.87	263.10	1754.0	3508.0	5262.0	7016.1	8770.1
6	.23	.46	.69	.92	.16	.38	.61	.85	.07	3.8	7.7	1.5	5.4	69.2
7	.23	.46	.68	.91	.14	.36	.59	.82	.05	3.6	7.3	1.0	4.7	8.3
8	.23	.45	.68	.90	.13	.35	.57	.80	.02	3.5	7.0	60.4	4.0	7.5
9	.22	.45	.67	.89	.11	.33	.55	.77	63.00	3.3	6.6	59.9	3.3	6.6
19 10	29.22	58.44	87.66	116.88	146.10	175.31	204.53	233.75	262.97	1753.1	3506.3	5259.4	7012.6	8765.7
11	.22	.43	.65	.87	.09	.29	.51	.73	.94	2.9	5.9	8.9	1.9	4.8
12	.21	.43	.64	.86	.07	.28	.49	.70	.92	2.8	5.6	8.4	1.2	3.9
13	.21	.42	.63	.84	.06	.26	.47	.68	.89	2.6	5.2	7.8	10.4	3.1
14	.21	.42	.62	.83	.04	.24	.45	.66	.87	2.4	4.9	7.3	09.7	2.2
19 15	29.20	58.41	87.61	116.82	146.03	175.23	204.43	233.63	262.84	1752.3	3504.5	5256.8	7009.0	8761.3
16	.20	.40	.60	.81	.01	.21	.41	.61	.81	2.1	4.1	6.3	8.3	60.4
17	.20	.40	.60	.80	6.00	.19	.39	.59	.79	1.9	3.8	5.7	7.6	59.5
18	.20	.39	.59	.78	5.98	.17	.37	.57	.76	1.7	3.4	5.2	6.9	8.7
19	.19	.39	.58	.77	.97	.16	.35	.54	.74	1.6	3.1	4.6	6.2	7.8
19 20	29.19	58.38	87.57	116.76	145.95	175.14	204.33	233.52	262.71	1751.4	3502.7	5254.1	7005.5	8756.9
21	.19	.37	.56	.75	.94	.12	.31	.50	.68	1.2	2.4	3.6	4.8	6.0
22	.18	.37	.55	.74	.92	.10	.29	.47	.66	1.0	2.0	3.0	4.1	5.1
23	.18	.36	.54	.72	.91	.09	.27	.45	.63	0.9	1.7	2.5	3.3	4.2
24	.18	.36	.53	.71	.89	.07	.25	.42	.60	0.7	1.3	1.9	2.6	3.3
19 25	29.17	58.35	87.52	116.70	145.88	175.05	204.22	233.40	262.57	1750.5	3501.0	5251.4	7001.9	8752.4
26	.17	.34	.52	.69	.86	.03	.20	.38	.55	0.3	0.6	0.9	1.2	1.5
27	.17	.34	.51	.68	.85	.01	.18	.35	.52	0.1	500.3	50.4	7000.5	50.6
28	.17	.33	.50	.66	.83	5.00	.16	.33	.49	50.0	499.9	49.8	6999.7	49.7
29	.16	.33	.49	.65	.82	4.98	.14	.30	.47	49.8	9.6	9.3	9.0	8.8
19 30	29.16	58.32	87.48	116.64	145.80	174.96	204.12	233.28	262.44	1749.6	3499.2	5248.8	6998.3	8747.9
31	.16	.31	.47	.63	.79	.94	.10	.26	.41	9.4	8.8	8.3	7.6	7.0
32	.15	.31	.46	.62	.77	.92	.08	.23	.39	9.2	8.5	7.7	6.9	6.1
33	.15	.30	.45	.60	.76	.91	.06	.21	.36	9.1	8.1	7.2	6.1	5.2
34	.15	.30	.44	.59	.74	.89	.04	.18	.33	8.9	7.8	6.6	5.4	4.3
19 35	29.14	58.29	87.43	116.58	145.73	174.87	204.01	233.16	262.30	1748.7	3497.4	5246.1	6994.7	8743.4
36	.14	.28	.43	.57	.71	.85	3.99	.14	.28	8.5	7.0	5.6	4.0	2.5
37	.14	.28	.42	.56	.70	.83	.97	.11	.25	8.3	6.7	5.0	3.3	1.6
38	.14	.27	.41	.54	.68	.82	.95	.09	.22	8.2	6.3	4.5	2.6	40.7
39	.13	.27	.40	.53	.67	.80	.93	.06	.20	8.0	6.0	3.9	1.9	39.8
19 40	29.13	58.26	87.39	116.52	145.65	174.78	203.91	233.04	262.17	1747.8	3495.6	5243.4	6991.2	8738.9
41	.13	.25	.38	.51	.64	.76	.89	3.02	.14	7.6	5.2	2.8	90.5	8.0
42	.12	.25	.37	.50	.62	.74	.87	2.99	.12	7.4	4.9	2.3	89.7	7.1
43	.12	.24	.36	.48	.61	.73	.85	.97	.09	7.3	4.5	1.7	9.0	6.2
44	.12	.24	.35	.47	.59	.71	.83	.94	.06	7.1	4.2	1.2	8.2	5.3
19 45	29.11	58.23	87.34	116.46	145.58	174.69	203.80	232.92	262.03	1746.9	3493.8	5240.6	6987.5	8734.4
46	.11	.22	.34	.45	.56	.67	.78	.90	2.01	6.7	3.4	40.1	6.8	3.5
47	.11	.22	.33	.44	.55	.65	.76	.87	1.98	6.5	3.0	39.5	6.1	2.6
48	.11	.21	.32	.42	.53	.64	.74	.85	.95	6.4	2.7	9.0	5.3	1.7
49	.10	.21	.31	.41	.52	.62	.72	.82	.93	6.2	2.3	8.4	4.6	30.8
19 50	29.10	58.20	87.30	116.40	145.50	174.60	203.70	232.80	261.90	1746.0	3491.9	5237.9	6983.9	8729.9
51	.10	.19	.29	.39	.49	.58	.68	.78	.87	5.8	1.5	7.4	3.2	9.0
52	.09	.19	.28	.38	.47	.56	.66	.75	.84	5.6	1.2	6.8	2.4	8.1
53	.09	.18	.27	.36	.46	.54	.63	.73	.82	5.4	0.8	6.3	1.7	7.1
54	.09	.18	.26	.35	.44	.52	.61	.70	.79	5.2	0.5	5.7	0.9	6.2
19 55	29.08	58.17	87.25	116.34	145.43	174.51	203.59	232.68	261.76	1745.1	3490.1	5235.2	6980.2	8725.3
56	.08	.16	.24	.33	.41	.49	.57	.65	.73	4.9	89.7	4.6	79.5	4.4
57	.08	.16	.24	.32	.40	.47	.55	.63	.70	4.7	9.4	4.1	8.8	3.5
58	.08	.15	.23	.30	.38	.45	.52	.60	.68	4.5	9.0	3.5	8.0	2.5
59	.07	.15	.22	.29	.37	.43	.50	.58	.65	4.3	8.7	3.0	7.3	1.6
19 60	29.07	58.14	87.21	116.28	145.35	174.41	203.48	232.55	261.62	1744.1	3488.3	5232.4	6976.6	8720.7

Lat.	Latitude 19° to 20°—Meridional arcs.						Latitude 19°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
19 00	30.746			1844.77					
1	6	1	30.75	.77	1	1 844.8	0 1	1 754.9	0.1
2	6	2	61.50	.78	2	3 689.5	2	3 509.8	0.3
3	6	3	92.24	.78	3	5 534.3	3	5 264.7	0.7
4	6	4	122.99	.78	4	7 379.1	4	7 019.6	1.3
19 05	30.746	5	153.74	1844.79	5	9 223.9	0 5	8 774.5	2.1
6	6	6	184.49	.79	6	11 068.7	6	10 529.3	3.0
7	7	7	215.24	.79	7	12 913.5	7	12 284.2	4.1
8	7	8	245.98	.80	8	14 758.3	8	14 039.1	5.3
9	7	9	276.73	.80	9	16 603.1	9	15 794.0	6.7
19 10	30.747	10	307.48	1844.80	10	18 447.9	0 10	17 548.9	8.3
11	7	1	338.23	.81	1	20 292.7	15	26 323.4	18.7
12	7	2	368.97	.81	2	22 137.5	20	35 097.8	33.2
13	7	3	399.72	.81	3	23 982.3	25	43 872.3	51.9
14	7	4	430.47	.82	4	25 827.1	30	52 646.7	74.8
19 15	30.747	15	461.22	1844.82	15	27 672.0	0 35	61 421.1	101.8
16	7	6	491.97	.82	6	29 516.8	40	70 195.5	133.0
17	7	7	522.71	.83	7	31 361.6	45	78 969.9	168.3
18	7	8	553.46	.83	8	33 206.4	50	87 744.3	207.7
19	7	9	584.21	.83	9	35 051.3	55	96 518.7	251.4
19 20	30.747	20	614.96	1844.84	20	36 896.1	1 00	105 293.0	299.2
21	7	1	645.71	.84	1	38 741.0	05	114 067.3	351.1
22	7	2	676.45	.84	2	40 585.8	10	122 841.6	407.2
23	7	3	707.20	.85	3	42 430.6	15	131 615.9	467.4
24	8	4	737.95	.85	4	44 275.5	20	140 390.1	531.8
19 25	30.748	25	768.70	1844.85	25	46 120.4	1 25	149 164.3	600.4
26	8	6	799.45	.86	6	47 965.2	30	157 938.5	673.1
27	8	7	830.19	.86	7	49 810.1	35	166 712.6	750.0
28	8	8	860.94	.86	8	51 654.9	40	175 486.7	831.0
29	8	9	891.69	.87	9	53 499.8	45	184 260.7	916.1
19 30	30.748	30	922.44	1844.87	30	55 344.7	1 50	193 034.7	1 005.5
31	8	1	953.18	.87	1	57 189.6	55	201 808.7	1 099.0
32	8	2	983.93	.88	2	59 034.4	2 00	210 583	1 197
33	8	3	1 014.68	.88	3	60 879.3	3 00	315 866	2 692
34	8	4	1 045.43	.89	4	62 724.2	4 00	421 138	4 786
19 35	30.748	35	1 076.18	1844.89	35	64 569.1	5 00	526 397	7 478
36	8	6	1 106.92	.89	6	66 414.0	6 00	631 639	10 768
37	8	7	1 137.67	.90	7	68 258.9	7 00	736 861	14 656
38	8	8	1 168.42	.90	8	70 103.8	8 00	842 059	19 142
39	8	9	1 199.17	.90	9	71 948.7	9 00	947 230	24 226
19 40	30.748	40	1 229.92	1844.91	40	73 793.6	10 00	1 052 369	29 907
41	8	1	1 260.66	.91	1	75 638.5	11 00	1 157 475	36 186
42	9	2	1 291.41	.91	2	77 483.4	12 00	1 262 544	43 061
43	9	3	1 322.16	.92	3	79 328.3	13 00	1 367 572	50 534
44	9	4	1 352.91	.92	4	81 173.3	14 00	1 472 556	58 603
19 45	30.749	45	1 383.66	1844.92	45	83 018.2	15 00	1 577 492	67 268
46	9	6	1 414.40	.93	6	84 863.1	16 00	1 682 377	76 530
47	9	7	1 445.15	.93	7	86 708.0	17 00	1 787 208	86 388
48	9	8	1 475.90	.93	8	88 553.0	18 00	1 891 981	96 841
49	9	9	1 506.65	.94	9	90 397.9	19 00	1 996 693	107 889
19 50	30.749	50	1 537.39	1844.94	50	92 242.8	20 00	2 101 342	119 532
51	9	1	1 568.14	.94	1	94 087.8	21 00	2 205 922	131 770
52	9	2	1 598.89	.95	2	95 932.7	22 00	2 310 430	144 601
53	9	3	1 629.64	.95	3	97 777.7	23 00	2 414 864	158 026
54	9	4	1 660.39	.95	4	99 622.6	24 00	2 519 221	172 044
19 55	30.749	55	1 691.13	1844.96	55	101 467.6	25 00	2 623 495	186 655
56	9	6	1 721.88	.96	6	103 312.6	26 00	2 727 685	201 859
57	9	7	1 752.63	.97	7	105 157.5	27 00	2 831 787	217 654
58	49	8	1 783.38	.97	8	107 002.5	28 00	2 935 798	234 040
59	50	9	1 814.13	.97	9	108 847.5	29 00	3 039 714	251 017
19 60	30.750	60	1 844.87	1844.98	60	110 692.4	30 00	3 143 531	268 585

Latitude 20° to 21°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
20 00	29.07	58.14	87.21	116.28	145.35	174.41	203.48	232.55	261.62	1744.1	3488.3	5232.4	6976.6	8720.7
1	.07	.13	.20	.27	.33	.39	.46	.53	.59	3.9	7.9	1.9	5.9	19.8
2	.06	.13	.19	.25	.32	.37	.44	.50	.57	3.7	7.5	1.3	5.1	8.9
3	.06	.12	.18	.24	.30	.36	.42	.48	.54	3.6	7.2	0.8	4.4	7.9
4	.06	.12	.17	.23	.29	.34	.40	.45	.51	3.4	6.8	30.2	3.6	7.0
20 05	29.05	58.11	87.16	116.21	145.27	174.32	203.37	232.43	261.48	1743.2	3486.4	5229.7	6972.9	8716.1
6	.05	.10	.15	.20	.25	.30	.35	.41	.46	3.0	6.0	9.1	2.2	5.2
7	.05	.10	.14	.19	.24	.28	.33	.38	.43	2.8	5.7	8.6	1.4	4.3
8	.05	.09	.13	.18	.22	.27	.31	.36	.40	2.7	5.3	8.0	70.7	3.3
9	.04	.09	.12	.16	.21	.25	.29	.33	.38	2.5	5.0	7.5	69.9	2.4
20 10	29.04	58.08	87.12	116.15	145.19	174.23	203.27	232.31	261.35	1742.3	3484.6	5226.9	6969.2	8711.5
11	.04	.07	.11	.14	.18	.21	.25	.29	.32	2.1	4.2	6.3	8.5	10.6
12	.03	.07	.10	.13	.16	.19	.23	.26	.29	1.9	3.8	5.8	7.7	09.7
13	.03	.06	.09	.11	.15	.17	.20	.24	.27	1.7	3.5	5.2	7.0	8.7
14	.03	.05	.08	.10	.13	.16	.18	.21	.24	1.6	3.1	4.7	6.2	7.8
20 15	29.02	58.04	87.07	116.09	145.12	174.14	203.16	232.19	261.21	1741.4	3482.7	5224.1	6965.5	8706.9
16	.02	.04	.06	.08	.10	.12	.14	.16	.18	1.2	2.3	3.5	4.8	6.0
17	.02	.03	.05	.07	.09	.10	.12	.14	.15	1.0	2.0	3.0	4.0	5.0
18	.02	.02	.04	.05	.07	.08	.09	.11	.13	0.8	1.7	2.4	3.3	4.1
19	.01	.02	.03	.04	.06	.06	.07	.09	.10	0.6	1.3	1.9	2.5	3.1
20 20	29.01	58.01	87.02	116.03	145.04	174.04	203.05	232.06	261.07	1740.4	3480.9	5221.3	6961.8	8702.2
21	.01	.00	.01	.02	.02	.02	.03	.04	.04	0.2	0.5	0.7	1.0	1.3
22	.00	8.00	7.00	6.00	5.01	4.00	3.01	2.01	1.01	40.0	80.1	20.2	60.3	700.3
23	.00	7.99	6.99	5.99	4.99	3.99	2.98	1.99	0.99	39.9	79.8	19.6	59.5	699.4
24	9.00	.99	.98	.98	.98	.97	.96	.96	.96	9.7	9.4	9.1	8.8	8.4
20 25	28.99	57.98	86.97	115.96	144.96	173.95	202.94	231.94	260.93	1739.5	3479.0	5218.5	6958.0	8697.5
26	.99	.97	.97	.95	.94	.93	.92	.91	.90	9.3	8.6	7.9	7.3	6.6
27	.99	.97	.96	.94	.93	.91	.90	.89	.87	9.1	8.2	7.4	6.5	5.7
28	.99	.96	.95	.93	.91	.90	.87	.86	.85	9.0	7.9	6.8	5.8	4.7
29	.98	.96	.94	.91	.90	.88	.85	.84	.82	8.8	7.5	6.3	5.0	3.8
20 30	28.98	57.95	86.93	115.90	144.88	173.86	202.83	231.81	260.79	1738.6	3477.1	5215.7	6954.3	8692.9
31	.98	.94	.92	.89	.86	.84	.81	.79	.76	8.4	6.7	5.1	3.5	1.9
32	.97	.94	.91	.88	.85	.82	.79	.76	.73	8.2	6.4	4.6	2.8	1.0
33	.97	.93	.90	.86	.83	.80	.76	.74	.70	8.0	6.0	4.0	2.0	90.0
34	.96	.93	.89	.85	.82	.78	.74	.71	.67	7.8	5.7	3.5	1.3	89.1
20 35	28.96	57.92	86.88	115.84	144.80	173.76	202.72	231.69	260.65	1737.6	3475.3	5212.9	6950.5	8688.1
36	.96	.91	.87	.83	.78	.74	.70	.66	.62	7.4	4.9	2.3	49.7	7.2
37	.95	.91	.86	.82	.77	.72	.68	.64	.59	7.2	4.5	1.8	9.0	6.2
38	.95	.90	.85	.80	.75	.71	.65	.61	.56	7.1	4.2	1.2	8.2	5.3
39	.94	.90	.84	.79	.74	.69	.63	.59	.53	6.9	3.8	0.7	7.5	4.3
20 40	28.94	57.89	86.83	115.78	144.72	173.67	202.61	231.56	260.50	1736.7	3473.4	5210.1	6946.7	8683.4
41	.94	.88	.82	.77	.71	.65	.59	.53	.47	6.5	3.0	09.5	5.9	2.5
42	.93	.88	.81	.75	.69	.63	.57	.51	.44	6.3	2.6	8.9	5.2	1.5
43	.93	.87	.81	.74	.68	.61	.54	.48	.42	6.1	2.3	8.4	4.4	80.6
44	.93	.87	.80	.73	.66	.59	.52	.46	.39	5.9	1.9	7.8	3.7	79.6
20 45	28.92	57.86	86.79	115.71	144.65	173.57	202.50	231.43	260.36	1735.7	3471.5	5207.2	6942.9	8678.7
46	.92	.85	.78	.70	.63	.55	.48	.40	.33	5.5	1.1	6.6	2.1	7.7
47	.92	.85	.77	.69	.62	.54	.46	.38	.30	5.4	0.7	6.1	1.4	6.8
48	.92	.84	.76	.68	.60	.52	.43	.35	.28	5.2	0.4	5.5	40.6	5.8
49	.91	.84	.75	.66	.59	.50	.41	.33	.25	5.0	70.0	5.0	39.9	4.9
20 50	28.91	57.83	86.74	115.65	144.57	173.48	202.39	231.30	260.22	1734.8	3469.6	5204.4	6939.1	8673.9
51	.91	.82	.73	.64	.55	.46	.37	.28	.19	4.6	9.2	3.8	8.3	2.9
52	.90	.82	.72	.62	.54	.44	.35	.25	.16	4.4	8.8	3.2	7.6	2.0
53	.90	.81	.71	.61	.52	.42	.32	.23	.13	4.2	8.5	2.7	6.8	1.0
54	.90	.80	.70	.60	.51	.40	.30	.20	.10	4.0	8.1	2.1	6.1	70.1
20 55	28.89	57.79	86.69	115.58	144.49	173.38	202.28	231.18	260.07	1733.8	3467.7	5201.5	6935.3	8669.1
56	.89	.79	.68	.57	.47	.36	.26	.15	.05	3.6	7.3	0.9	4.5	8.1
57	.89	.78	.67	.56	.46	.34	.24	.13	60.02	3.4	6.9	200.3	3.8	7.2
58	.89	.77	.66	.55	.44	.33	.21	.10	59.99	3.3	6.5	199.8	3.1	6.2
59	.88	.77	.65	.53	.43	.31	.19	.08	.96	3.1	6.1	9.2	2.3	5.3
20 60	28.88	57.76	86.64	115.52	144.41	173.29	202.17	231.05	259.93	1732.9	3465.7	5198.6	6931.5	8664.3

Lat.		Latitude 20° to 21°—Meridional arcs.						Latitude 20°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value o 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
20	00	30.750			1844.98					
	1	0	1	30.75	.98	1	1 845.0	0 1	1 744.1	0.1
	2	0	2	61.50	.98	2	3 690.0	2	3 488.3	0.3
	3	0	3	92.25	.99	3	5 534.9	3	5 232.4	0.8
	4	0	4	123.01	.99	4	7 379.9	4	6 976.6	1.4
20	05	30.750	5	153.76	1844.99	5	9 224.9	0 5	8 720.7	2.2
	6	0	6	184.51	5.00	6	11 069.9	6	10 464.9	3.1
	7	0	7	215.26	.00	7	12 914.9	7	12 209.0	4.3
	8	0	8	246.01	.00	8	14 759.9	8	13 953.1	5.6
	9	0	9	276.76	.01	9	16 604.9	9	15 697.3	7.0
20	10	30.750	10	307.51	1845.01	10	18 450.0	0 10	17 441.4	8.7
	11	0	1	338.27	.01	1	20 295.0	15	26 162.1	19.5
	12	0	2	369.02	.02	2	22 140.0	20	34 882.8	34.7
	13	0	3	399.77	.02	3	23 985.0	25	43 603.5	54.2
	14	0	4	430.52	.02	4	25 830.0	30	52 324.2	78.1
20	15	30.750	15	461.27	1845.03	15	27 675.1	0 35	61 044.9	106.3
	16	1	6	492.02	.03	9	29 520.1	40	69 765.6	138.8
	17	1	7	522.77	.04	7	31 365.1	45	78 486.2	175.7
	18	1	8	553.53	.04	8	33 210.2	50	87 206.9	216.9
	19	1	9	584.28	.04	9	35 055.2	55	95 927.5	262.5
20	20	30.751	20	615.03	1845.05	20	36 900.3	1 00	104 648.0	312.3
	21	1	1	645.78	.05	1	38 745.3	05	113 368.6	366.6
	22	1	2	676.53	.05	2	40 590.4	10	122 089.1	425.1
	23	1	3	707.28	.06	3	42 435.4	15	130 809.6	488.0
	24	1	4	738.03	.06	4	44 280.5	20	139 530.1	555.3
20	25	30.751	25	768.79	1845.06	25	46 125.5	1 25	148 250.5	626.8
	26	1	6	799.54	.07	6	47 970.6	30	156 970.9	702.8
	27	1	7	830.29	.07	7	49 815.7	35	165 691.3	783.0
	28	1	8	861.04	.07	8	51 660.8	40	174 411.6	867.6
	29	1	9	891.79	.08	9	53 505.8	45	183 131.8	956.5
20	30	30.751	30	922.54	1845.08	30	55 350.9	1 50	191 852.1	1 049.8
	31	1	1	953.29	.09	1	57 196.0	55	200 572.3	1 147.4
	32	1	2	984.04	.09	2	59 041.1	2 00	209 292	1 249
	33	2	3	1 014.80	.09	3	60 886.2	3 00	313 929	2 811
	34	2	4	1 045.55	.10	4	62 731.3	4 00	418 555	4 997
20	35	30.752	35	1 076.30	1845.10	35	64 576.4	5 00	523 166	7 808
	36	2	6	1 107.05	.10	6	66 421.5	6 00	627 758	11 243
	37	2	7	1 137.80	.11	7	68 266.6	7 00	732 328	15 302
	38	2	8	1 168.55	.11	8	70 111.7	8 00	836 871	19 986
	39	2	9	1 199.30	.11	9	71 956.8	9 00	941 385	25 294
20	40	30.752	40	1 230.06	1845.12	40	73 801.9	10 00	1 045 865	31 225
	41	2	1	1 260.81	.12	1	75 647.1	11 00	1 150 308	37 780
	42	2	2	1 291.56	.12	2	77 492.2	12 00	1 254 710	44 958
	43	2	3	1 322.31	.13	3	79 337.3	13 00	1 359 067	52 760
	44	2	4	1 353.06	.13	4	81 182.4	14 00	1 463 376	61 184
20	45	30.752	45	1 383.81	1845.14	45	83 027.6	15 00	1 567 633	70 230
	46	2	6	1 414.56	.14	6	84 872.7	16 00	1 671 834	79 899
	47	2	7	1 445.32	.14	7	86 717.9	17 00	1 775 975	90 190
	48	2	8	1 476.07	.15	8	88 563.0	18 00	1 880 054	101 102
	49	2	9	1 506.82	.15	9	90 408.2	19 00	1 984 064	112 635
20	50	30.753	50	1 537.57	1845.15	50	92 253.3	20 00	2 088 005	124 789
	51	3	1	1 568.32	.16	1	94 098.5	21 00	2 191 871	137 563
	52	3	2	1 599.07	.16	2	95 943.6	22 00	2 295 659	150 957
	53	3	3	1 629.82	.16	3	97 788.8	23 00	2 399 364	164 970
	54	3	4	1 660.58	.17	4	99 634.0	24 00	2 502 985	179 602
20	55	30.753	55	1 691.33	1845.17	55	101 479.1	25 00	2 606 516	194 853
	56	3	6	1 722.08	.18	6	103 324.3	26 00	2 709 955	210 721
	57	3	7	1 752.83	.18	7	105 169.5	27 00	2 813 297	227 206
	58	3	8	1 783.58	.18	8	107 014.7	28 00	2 916 538	244 308
	59	3	9	1 814.33	.19	9	108 859.9	29 00	3 019 676	262 026
20	60	30.753	60	1 845.08	1845.19	60	110 705.1	30 00	3 122 706	280 359

Latitude 21° to 22°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
21 00	28.88	57.76	86.64	115.52	144.41	173.29	202.17	231.05	259.93	1732.9	3465.7	5198.6	6931.5	8664.3
1	.88	.75	.63	.51	.39	.27	.15	.02	.90	2.7	5.3	8.0	30.7	3.3
2	.87	.75	.62	.50	.38	.25	.12	1.00	.87	2.5	4.9	7.4	29.9	2.4
3	.87	.74	.61	.48	.36	.23	.10	0.97	.84	2.3	4.6	6.9	9.2	1.4
4	.87	.74	.60	.47	.34	.21	.08	.95	.81	2.1	4.2	6.3	8.4	60.5
21 05	28.86	57.73	86.59	115.46	144.32	173.19	202.05	230.92	259.79	1731.9	3463.8	5195.7	6927.6	8659.5
6	.86	.72	.59	.45	.31	.17	.03	.89	.76	1.7	3.4	5.1	6.8	8.5
7	.86	.72	.58	.44	.29	.15	2.01	.87	.73	1.5	3.0	4.5	6.0	7.6
8	.86	.71	.57	.42	.27	.13	1.99	.84	.70	1.3	2.7	4.0	5.3	6.6
9	.85	.71	.56	.41	.26	.11	.96	.82	.67	1.1	2.3	3.4	4.5	5.7
21 10	28.85	57.70	86.55	115.40	144.24	173.09	201.94	230.79	259.64	1730.9	3461.9	5192.8	6923.7	8654.7
11	.85	.69	.54	.39	.22	.07	.92	.76	.61	0.7	1.5	2.2	2.9	3.7
12	.84	.69	.53	.37	.21	.05	.90	.74	.58	0.5	1.1	1.6	2.1	2.7
13	.84	.68	.52	.36	.19	.04	.87	.71	.55	0.4	0.7	1.1	1.4	1.8
14	.84	.67	.51	.35	.18	.02	.85	.69	.52	0.2	60.3	90.5	20.6	50.8
21 15	28.83	57.66	86.50	115.34	144.16	173.00	201.83	230.66	259.50	1730.0	3459.8	5189.9	6919.8	8649.8
16	.83	.66	.49	.32	.14	2.98	.81	.63	.47	29.8	9.4	9.3	9.0	8.8
17	.83	.65	.48	.31	.13	.96	.79	.61	.44	9.6	9.1	8.7	8.3	7.9
18	.83	.64	.47	.30	.11	.94	.76	.58	.41	9.4	8.7	8.2	7.5	6.9
19	.82	.64	.46	.28	.10	.92	.74	.56	.38	9.2	8.4	7.6	6.8	6.0
21 20	28.82	57.63	86.45	115.27	144.08	172.90	201.72	230.53	259.35	1729.0	3458.0	5187.0	6916.0	8645.0
21	.82	.62	.44	.26	.06	.88	.70	.50	.32	8.8	7.6	6.4	5.2	4.0
22	.81	.62	.43	.24	.05	.86	.67	.48	.29	8.6	7.2	5.8	4.4	3.0
23	.81	.61	.42	.23	.03	.84	.65	.45	.26	8.4	6.8	5.2	3.6	2.1
24	.80	.61	.41	.22	.02	.82	.63	.43	.23	8.2	6.4	4.6	2.8	1.1
21 25	28.80	57.60	86.40	115.21	144.00	172.80	201.60	230.40	259.21	1728.0	3456.0	5184.0	6912.0	8640.1
26	.80	.59	.39	.19	3.98	.78	.58	.37	.18	7.8	5.6	3.4	1.2	39.1
27	.79	.59	.38	.18	.97	.76	.56	.35	.15	7.6	5.2	2.8	10.4	8.1
28	.79	.58	.37	.17	.95	.74	.54	.32	.12	7.4	4.9	2.3	09.7	7.2
29	.78	.58	.36	.15	.94	.72	.51	.30	.09	7.2	4.5	1.7	8.9	6.2
21 30	28.78	57.57	86.35	115.14	143.92	172.70	201.49	230.27	259.06	1727.0	3454.1	5181.1	6908.1	8635.2
31	.78	.56	.34	.13	.90	.68	.47	.24	.03	6.8	3.7	80.5	7.3	4.2
32	.77	.56	.33	.11	.89	.66	.44	.22	9.00	6.6	3.3	79.9	6.5	3.2
33	.77	.55	.32	.10	.87	.64	.42	.19	8.97	6.4	2.9	9.3	5.8	2.2
34	.77	.54	.31	.08	.85	.62	.40	.17	.94	6.2	2.5	8.7	5.0	1.2
21 35	28.76	57.53	86.30	115.07	143.83	172.60	201.37	230.14	258.91	1726.0	3452.1	5178.1	6904.2	8630.2
36	.76	.53	.29	.06	.82	.58	.35	.11	.88	5.8	1.7	7.5	3.4	29.2
37	.76	.52	.28	.04	.80	.56	.33	.09	.85	5.6	1.3	6.9	2.6	8.2
38	.76	.51	.27	.03	.78	.55	.31	.06	.82	5.5	0.9	6.4	1.8	7.3
39	.75	.51	.26	.01	.77	.53	.28	.04	.79	5.3	0.5	5.8	1.0	6.3
21 40	28.75	57.50	86.25	115.00	143.75	172.51	201.26	230.01	258.76	1725.1	3450.1	5175.2	6900.2	8625.3
41	.75	.49	.24	4.99	.73	.49	.24	29.98	.73	4.9	49.7	4.6	899.4	4.3
42	.74	.49	.23	.97	.71	.47	.21	.96	.70	4.7	9.3	4.0	8.6	3.3
43	.74	.48	.22	.96	.69	.45	.19	.93	.67	4.5	8.9	3.4	7.8	2.3
44	.74	.48	.21	.95	.67	.43	.16	.90	.64	4.3	8.5	2.8	7.0	1.3
21 45	28.73	57.47	86.20	114.94	143.66	172.41	201.14	229.87	258.61	1724.1	3448.1	5172.2	6896.2	8620.3
46	.73	.46	.19	.92	.65	.39	.12	.85	.58	3.9	7.7	1.6	5.4	19.3
47	.73	.46	.18	.91	.64	.37	.09	.83	.55	3.7	7.3	1.0	4.6	8.3
48	.73	.45	.17	.90	.62	.35	.07	.79	.52	3.5	6.9	70.4	3.9	7.3
49	.72	.45	.16	.88	.61	.33	.04	.77	.49	3.3	6.5	69.8	3.1	6.3
21 50	28.72	57.44	86.15	114.87	143.59	172.31	201.02	229.74	258.46	1723.1	3446.1	5169.2	6892.3	8615.3
51	.72	.43	.14	.86	.57	.29	1.00	.71	.43	2.9	5.7	8.6	1.5	4.3
52	.71	.43	.13	.84	.56	.27	0.97	.69	.40	2.7	5.3	8.0	90.7	3.3
53	.71	.42	.12	.83	.54	.25	.95	.66	.37	2.5	4.9	7.4	89.9	2.3
54	.70	.41	.11	.82	.52	.23	.93	.64	.34	2.3	4.5	6.8	9.1	1.3
21 55	28.70	57.40	86.10	114.80	143.50	172.21	200.90	229.61	258.31	1722.1	3444.1	5166.2	6888.3	8610.3
56	.70	.40	.09	.79	.49	.19	.88	.58	.28	1.9	3.7	5.6	7.5	09.3
57	.69	.39	.08	.78	.47	.17	.86	.56	.25	1.7	3.3	5.0	6.7	8.3
58	.69	.38	.07	.77	.45	.15	.84	.53	.22	1.5	2.9	4.4	5.9	7.3
59	.68	.38	.06	.75	.44	.13	.81	.51	.19	1.3	2.5	3.8	5.1	6.3
21 60	28.68	57.37	86.05	114.74	143.42	172.11	200.79	229.48	258.16	1721.1	3442.1	5163.2	6884.3	8605.3

Lat.		Latitude 21° to 22°—Meridional arcs.						Latitude 21°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
21	00	30.753			1845.19					
	1	3	1	30.76	.20	1	1 845.2	0 1	1 732.9	0.1
	2	3	2	61.51	.20	2	3 690.4	2	3 465.7	0.4
	3	3	3	92.27	.20	3	5 535.6	3	5 198.6	0.8
	4	3	4	123.02	.21	4	7 380.8	4	6 931.5	1.4
21	05	30.753	5	153.78	1845.21	5	9 226.0	0 5	8 664.3	2.2
	6	4	6	184.53	.21	6	11 071.2	6	10 397.2	3.2
	7	4	7	215.29	.22	7	12 916.4	7	12 130.0	4.4
	8	4	8	246.04	.22	8	14 761.7	8	13 862.9	5.8
	9	4	9	276.80	.23	9	16 606.9	9	15 595.8	7.3
21	10	30.754	10	307.55	1845.23	10	18 452.1	0 10	17 328.6	9.0
	11	4	1	338.31	.23	1	20 297.3	15	25 993.0	20.3
	12	4	2	369.06	.24	2	22 142.6	20	34 657.3	36.1
	13	4	3	399.82	.24	3	23 987.8	25	43 321.6	56.4
	14	4	4	430.57	.24	4	25 833.1	30	51 985.9	81.3
21	15	30.754	15	461.33	1845.25	15	27 678.3	0 35	60 650.2	110.7
	16	4	6	492.08	.25	6	29 523.6	40	69 314.5	144.5
	17	4	7	522.84	.25	7	31 368.8	45	77 978.7	182.9
	18	4	8	553.59	.26	8	33 214.1	50	86 643.0	225.8
	19	4	9	584.35	.26	9	35 059.3	55	95 307.2	273.2
21	20	30.754	20	615.10	1845.27	20	36 904.6	1 00	103 971.3	325.2
	21	4	1	645.86	.27	1	38 749.9	05	112 635.5	381.6
	22	5	2	676.61	.27	2	40 595.1	10	121 299.6	442.5
	23	5	3	707.37	.28	3	42 440.4	15	129 963.7	508.0
	24	5	4	738.12	.28	4	44 285.7	20	138 627.7	578.0
21	25	30.755	25	768.88	1845.28	25	46 131.0	1 25	147 291.8	652.5
	26	5	6	799.63	.29	6	47 976.3	30	155 955.7	731.6
	27	5	7	830.39	.29	7	49 821.5	35	164 619.7	815.1
	28	5	8	861.14	.30	8	51 666.8	40	173 283.6	903.2
	29	5	9	891.90	.30	9	53 512.1	45	181 947.4	995.8
21	30	30.755	30	922.65	1845.30	30	55 357.4	1 50	190 611.2	1 092.9
	31	5	1	953.41	.31	1	57 202.7	55	199 274.9	1 194.5
	32	5	2	984.16	.31	2	59 048.0	2 00	207 939	1 301
	33	5	3	1 014.92	.31	3	60 893.4	3 00	311 898	2 926
	34	5	4	1 045.67	.32	4	62 738.7	4 00	415 845	5 202
21	35	30.755	35	1 076.43	1845.32	35	64 584.0	5 00	519 775	8 128
	36	5	6	1 107.18	.33	6	66 429.3	6 00	623 686	11 704
	37	5	7	1 137.94	.33	7	68 274.6	7 00	727 572	15 930
	38	6	8	1 168.69	.33	8	70 120.0	8 00	831 429	20 806
	39	6	9	1 199.45	.34	9	71 965.3	9 00	935 254	26 331
21	40	30.756	40	1 230.20	1845.34	40	73 810.6	10 00	1 039 042	32 505
	41	6	1	1 260.96	.34	1	75 656.0	11 00	1 142 790	39 328
	42	6	2	1 291.71	.35	2	77 501.3	12 00	1 246 493	46 801
	43	6	3	1 322.47	.35	3	79 346.7	13 00	1 350 147	54 922
	44	6	4	1 353.22	.36	4	81 192.0	14 00	1 453 749	63 690
21	45	30.756	45	1 383.98	1845.36	45	83 037.4	15 00	1 557 294	73 107
	46	6	6	1 414.73	.36	6	84 882.8	16 00	1 660 777	83 171
	47	6	7	1 445.49	.37	7	86 728.1	17 00	1 764 195	93 882
	48	6	8	1 476.24	.37	8	88 573.5	18 00	1 867 545	105 240
	49	6	9	1 507.00	.37	9	90 418.9	19 00	1 970 822	117 244
21	50	30.756	50	1 537.75	1845.38	50	92 264.2	20 00	2 074 021	129 893
	51	6	1	1 568.51	.38	1	94 109.6	21 00	2 177 139	143 188
	52	6	2	1 599.26	.39	2	95 955.0	22 00	2 280 173	157 128
	53	6	3	1 630.02	.39	3	97 800.4	23 00	2 383 117	171 712
	54	7	4	1 660.77	.39	4	99 645.8	24 00	2 485 967	186 939
21	55	30.757	55	1 691.53	1845.40	55	101 491.2	25 00	2 588 720	202 809
	56	7	6	1 722.28	.40	6	103 336.6	26 00	2 691 373	219 322
	57	7	7	1 753.04	.40	7	105 182.0	27 00	2 793 920	236 476
	58	7	8	1 783.79	.41	8	107 027.4	28 00	2 896 358	254 272
	59	7	9	1 814.55	.41	9	108 872.8	29 00	2 998 682	272 708
21	60	30.757	60	1 845.30	1845.42	60	110 718.2	30 00	3 100 889	291 784

Latitude 22° to 23°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
22 00	28.68	57.37	86.05	114.74	143.42	172.11	200.79	229.48	258.16	1721.1	3442.1	5163.2	6884.3	8605.3
1	.68	.36	.04	.73	.40	.09	.77	.45	.13	0.9	1.7	2.6	3.5	4.3
2	.67	.36	.03	.71	.39	.07	.74	.43	.10	0.7	1.3	2.0	2.7	3.3
3	.67	.35	.02	.70	.37	.05	.72	.40	.07	0.5	0.9	1.4	1.8	2.3
4	.67	.34	.01	.68	.35	.03	.69	.37	.04	0.3	0.5	0.8	1.0	1.3
22 05	28.66	57.33	86.00	114.67	143.33	172.01	200.67	229.35	258.01	1720.1	3440.1	5160.2	6880.2	8600.3
6	.66	.33	5.99	.66	.32	1.99	.65	.32	7.98	19.9	39.7	59.6	79.4	599.3
7	.66	.32	.98	.64	.30	.97	.62	.29	.95	9.7	9.3	9.0	8.6	8.3
8	.66	.31	.97	.63	.28	.94	.60	.26	.92	9.4	8.9	8.3	7.8	7.2
9	.65	.31	.96	.61	.27	.92	.57	.24	.89	9.2	8.5	7.7	7.0	6.2
22 10	28.65	57.30	85.95	114.60	143.25	171.90	200.55	229.21	257.86	1719.0	3438.1	5157.1	6876.2	8595.2
11	.65	.29	.94	.59	.23	.88	.53	.18	.83	8.8	7.7	6.5	5.4	4.2
12	.64	.29	.93	.57	.22	.86	.50	.16	.80	8.6	7.3	5.9	4.6	3.2
13	.64	.28	.92	.56	.20	.84	.48	.13	.77	8.4	6.9	5.3	3.7	2.2
14	.64	.27	.91	.55	.18	.82	.46	.10	.74	8.2	6.5	4.7	2.9	1.2
22 15	28.63	57.26	85.90	114.54	143.16	171.80	200.43	229.07	257.70	1718.0	3436.1	5154.1	6872.1	8590.1
16	.63	.26	.89	.52	.15	.78	.41	.05	.67	7.8	5.7	3.5	1.3	89.1
17	.63	.25	.88	.51	.13	.76	.39	9.02	.64	7.6	5.3	2.9	70.5	8.1
18	.63	.24	.87	.50	.11	.74	.37	8.99	.61	7.4	4.8	2.2	69.7	7.1
19	.62	.24	.86	.48	.10	.72	.34	.97	.58	7.2	4.4	1.6	8.9	6.1
22 20	28.62	57.23	85.85	114.47	143.08	171.70	200.32	228.94	257.55	1717.0	3434.0	5151.0	6868.1	8585.1
21	.62	.22	.84	.46	.06	.68	.30	.91	.52	6.8	3.6	50.4	7.3	4.0
22	.61	.22	.83	.44	.05	.66	.27	.88	.49	6.6	3.2	49.8	6.5	3.0
23	.61	.21	.82	.43	.03	.64	.25	.86	.46	6.4	2.8	9.2	5.6	2.0
24	.60	.21	.81	.41	.01	.62	.22	.83	.43	6.2	2.4	8.6	4.8	81.0
22 25	28.60	57.20	85.80	114.40	143.00	171.60	200.20	228.80	257.40	1716.0	3432.0	5148.0	6864.0	8579.9
26	.60	.19	.79	.39	2.98	.58	.18	.77	.37	5.8	1.6	7.4	3.2	8.9
27	.59	.19	.78	.37	.96	.56	.15	.74	.34	5.6	1.2	6.8	2.4	7.9
28	.59	.18	.77	.36	.94	.54	.13	.72	.31	5.4	0.7	6.1	1.5	6.9
29	.58	.18	.76	.34	.93	.52	.10	.69	.28	5.2	30.3	5.5	60.7	5.9
22 30	28.58	57.17	85.75	114.33	142.91	171.50	200.08	228.66	257.25	1715.0	3429.9	5144.9	6859.9	8574.8
31	.58	.16	.74	.32	.89	.48	.06	.63	.22	4.8	9.5	4.3	9.1	3.8
32	.57	.16	.73	.30	.88	.46	.03	.60	.19	4.6	9.1	3.7	8.3	2.7
33	.57	.15	.72	.29	.86	.43	200.01	.58	.16	4.3	8.7	3.0	7.4	1.7
34	.57	.14	.71	.27	.84	.41	199.98	.55	.13	4.1	8.3	2.4	6.6	70.7
22 35	28.56	57.13	85.70	114.26	142.82	171.39	199.96	228.52	257.09	1713.9	3427.9	5141.8	6855.8	8569.7
36	.56	.13	.69	.25	.81	.37	.94	.49	.06	3.7	7.5	1.2	5.0	8.6
37	.56	.12	.68	.23	.79	.35	.91	.46	.03	3.5	7.1	40.6	4.1	7.6
38	.56	.11	.67	.22	.77	.33	89	.44	7.00	3.3	6.6	39.9	3.3	6.6
39	.55	.11	.66	.20	.76	.31	.86	.41	6.97	3.1	6.2	9.3	2.4	5.6
22 40	28.55	57.10	85.65	114.19	142.74	171.29	199.84	228.38	256.94	1712.9	3425.8	5138.7	6851.6	8564.5
41	.55	.09	.64	.18	.72	.27	.82	.35	.91	2.7	5.4	8.1	0.8	3.5
42	.54	.09	.62	.16	.71	.25	.79	.33	.88	2.5	5.0	7.5	50.0	2.4
43	.54	.08	.61	.15	.69	.23	.77	.30	.84	2.3	4.5	6.8	49.1	1.4
44	.53	.07	.60	.14	.67	.21	.74	.27	.81	2.1	4.1	6.2	8.3	60.4
22 45	28.53	57.06	85.59	114.12	142.66	171.19	199.72	228.25	256.78	1711.9	3423.7	5135.6	6847.5	8559.3
46	.53	.06	.58	.11	.64	.17	.70	.22	.75	1.7	3.3	5.0	6.7	8.3
47	.52	.05	.57	.10	.62	.15	.67	.19	.72	1.5	2.9	4.4	5.8	7.3
48	.52	.04	.56	.09	.60	.12	.65	.16	.68	1.2	2.5	3.7	5.0	6.2
49	.51	.04	.55	.07	.59	.10	.62	.14	.65	1.0	2.1	3.1	4.1	5.2
22 50	28.51	57.03	85.54	114.06	142.57	171.08	199.60	228.11	256.62	1710.8	3421.7	5132.5	6843.3	8554.1
51	.51	.02	.53	.05	.55	.06	.58	.08	.59	0.6	1.3	1.9	2.5	3.1
52	.50	.02	.52	.03	.53	.04	.55	.05	.56	0.4	0.9	1.2	1.6	2.0
53	.50	.01	.51	.02	.52	.02	.53	.03	.53	0.2	0.4	30.6	40.8	1.0
54	.50	57.00	.50	4.00	.50	1.00	.50	8.00	.50	10.0	20.0	29.9	39.9	50.0
22 55	28.49	56.99	85.49	113.99	142.48	170.98	199.48	227.97	256.46	1709.8	3419.6	5129.3	6839.1	8548.9
56	.49	.99	.48	.98	.46	.96	.45	.94	.43	9.6	9.2	8.7	8.3	7.9
57	.49	.98	.47	.96	.44	.94	.43	.91	.40	9.4	8.8	8.1	7.4	6.8
58	.49	.97	.46	.95	.43	.92	.40	.89	.37	9.2	8.3	7.4	6.5	5.8
59	.48	.97	.45	.93	.41	.89	.38	.86	.34	8.9	7.9	6.8	5.7	4.7
22 60	28.48	56.96	85.44	113.92	142.39	170.87	199.35	227.83	256.31	1708.7	3417.5	5126.2	6834.9	8543.7

Lat.		Latitude 22° to 23°—Meridional arcs.						Latitude 22°—Co-ordinates of curvature.			
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.		X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	°	′	*Meters.*	*Meters.*
22	00	30.757			1845.42						
	1	7	1	30.76	.42	1	1 845.4	0	1	1 721.1	0.1
	2	7	2	61.52	.42	2	3 690.8		2	3 442.2	0.4
	3	7	3	92.28	.43	3	5 536.3		3	5 163.2	0.8
	4	7	4	123.04	.43	4	7 381.7		4	6 884.3	1.5
22	05	30.757	5	153.79	1845.44	5	9 227.1	0	5	8 605.4	2.3
	6	7	6	184.55	.44	6	11 072.6		6	10 326.5	3.4
	7	7	7	215.31	.44	7	12 918.0		7	12 047.5	4.6
	8	7	8	246.07	.45	8	14 763.4		8	13 768.6	6.0
	9	7	9	276.83	.45	9	16 608.9		9	15 489.7	7.6
22	10	30.758	10	307.59	1845.45	10	18 454.3	0	10	17 210.7	9.4
	11	8	1	338.35	.46	1	20 299.8		15	25 816.0	21.1
	12	8	2	369.11	.46	2	22 145.3		20	34 421.3	37.5
	13	8	3	399.86	.47	3	23 990.7		25	43 026.6	58.6
	14	8	4	430.62	.47	4	25 836.2		30	51 631.8	84.4
22	15	30.758	15	461.38	1845.47	15	27 681.7	0	35	60 237.1	114.9
	16	8	6	492.14	.48	6	29 527.1		40	68 842.3	150.0
	17	8	7	522.90	.48	7	31 372.6		45	77 447.6	189.9
	18	8	8	553.66	.48	8	33 218.1		50	86 052.8	234.4
	19	8	9	584.42	.49	9	35 063.6		55	94 657.9	283.7
22	20	30.758	20	615.18	1845.49	20	36 909.1	1	00	103 263.1	337.6
	21	8	1	645.94	.50	1	38 754.6		05	111 868.2	396.2
	22	8	2	676.69	.50	2	40 600.1		10	120 473.3	459.5
	23	8	3	707.45	.50	3	42 445.6		15	129 078.3	527.5
	24	8	4	738.21	.51	4	44 291.1		20	137 683.3	600.1
22	25	30.759	25	768.97	1845.51	25	46 136.6	1	25	146 288.3	677.5
	26	9	6	799.73	.52	6	47 982.1		30	154 893.2	759.5
	27	9	7	830.49	.52	7	49 827.6		35	163 498.1	846.3
	28	9	8	861.25	.52	8	51 673.1		40	172 102.9	937.7
	29	9	9	892.01	.53	9	53 518.7		45	180 707.7	1 033.8
22	30	30.759	30	922.77	1845.53	30	55 364.2	1	50	189 312.4	1 134.6
	31	9	1	953.52	.53	1	57 209.7		55	197 917.1	1 240.1
	32	9	2	984.28	.54	2	59 055.3	2	00	206 522	1 350
	33	9	3	1 015.04	.54	3	60 900.8	3	00	309 772	3 037
	34	9	4	1 045.80	.55	4	62 746.3	4	00	413 008	5 400
22	35	30.759	35	1 076.56	1845.55	35	64 591.9	5	00	516 227	8 438
	36	9	6	1 107.32	.55	6	66 437.4	6	00	619 424	12 151
	37	9	7	1 138.08	.56	7	68 283.0	7	00	722 595	16 538
	38	9	8	1 168.84	.56	8	70 128.6	8	00	825 734	21 600
	39	9	9	1 199.59	.57	9	71 974.1	9	00	928 838	27 336
22	40	30.759	40	1 230.35	1845.57	40	73 819.7	10	00	1 031 903	33 746
	41	60	1	1 261.11	.57	1	75 665.3	11	00	1 134 923	40 829
	42	0	2	1 291.87	.58	2	77 510.8	12	00	1 237 895	48 586
	43	0	3	1 322.63	.58	3	79 356.4	13	00	1 340 814	57 016
	44	0	4	1 353.39	.58	4	81 202.0	14	00	1 443 675	66 119
22	45	30.760	45	1 384.15	1845.59	45	83 047.6	15	00	1 546 475	75 894
	46	0	6	1 414.91	.59	6	84 893.2	16	00	1 649 209	86 341
	47	0	7	1 445.67	.60	7	86 738.8	17	00	1 751 873	97 459
	48	0	8	1 476.42	.60	8	88 584.4	18	00	1 854 461	109 248
	49	0	9	1 507.18	.60	9	90 430.0	19	00	1 956 970	121 708
22	50	30.760	50	1 537.94	1845.61	50	92 275.6	20	00	2 059 396	134 838
	51	0	1	1 568.70	.61	1	94 121.2	21	00	2 161 733	148 637
	52	0	2	1 599.46	.62	2	95 966.8	22	00	2 263 978	163 105
	53	0	3	1 630.22	.62	3	97 812.4	23	00	2 366 126	178 241
	54	0	4	1 660.98	.62	4	99 658.0	24	00	2 468 174	194 045
22	55	30.760	55	1 691.74	1845.63	55	101 503.7	25	00	2 570 116	210 515
	56	1	6	1 722.50	.63	6	103 349.3	26	00	2 671 947	227 652
	57	1	7	1 753.25	.64	7	105 194.9	27	00	2 773 664	245 454
	58	1	8	1 784.01	.64	8	107 040.6	28	00	2 875 264	263 921
	59	1	9	1 814.77	.64	9	108 886.2	29	00	2 976 740	283 051
22	60	30.761	60	1 845.53	1845.65	60	110 731.8	30	00	3 078 089	302 845

Latitude 23° to 24°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
23 00	28.48	56.96	85.44	113.92	142.39	170.87	199.35	227.83	256.31	1708.7	3417.5	5126.2	6834.9	8543.7
1	.48	.95	.43	.91	.37	.85	.33	.80	.28	8.5	7.1	5.6	4.1	2.6
2	.47	.95	.42	.89	.36	.83	.30	.77	.25	8.3	6.7	5.0	3.2	1.6
3	.47	.94	.41	.88	.34	.81	.28	.75	.22	8.1	6.2	4.3	2.4	40.5
4	.46	.93	.40	.86	.32	.79	.25	.72	.19	7.9	5.8	3.7	1.5	39.5
23 05	28.46	56.92	85.38	113.85	142.31	170.77	199.23	227.69	256.15	1707.7	3415.4	5123.1	6830.7	8538.4
6	.46	.92	.37	.84	.29	.75	.21	.66	.12	7.5	5.0	2.5	29.9	7.4
7	.45	.91	.36	.82	.27	.73	.18	.63	.09	7.3	4.6	1.8	9.0	6.3
8	.45	.90	.35	.81	.25	.71	.16	.61	.06	7.1	4.1	1.2	8.2	5.3
9	.44	.90	.34	.79	.24	.68	.13	.58	.03	6.8	3.7	20.5	7.3	4.2
23 10	28.44	56.89	85.33	113.78	142.22	170.66	199.11	227.55	256.00	1706.6	3413.3	5119.9	6826.5	8533.2
11	.44	.88	.32	.77	.20	.64	.09	.52	5.97	6.4	2.9	9.3	5.7	2.1
12	.43	.88	.31	.75	.18	.62	.06	.49	.94	6.2	2.5	8.6	4.8	1.1
13	.43	.87	.30	.74	.17	.60	.04	.47	.90	6.0	2.0	8.0	4.0	30.0
14	.43	.86	.29	.72	.15	.58	9.01	.44	.87	5.8	1.6	7.3	3.1	28.9
23 15	28.42	56.85	85.28	113.71	142.13	170.56	198.99	227.41	255.84	1705.6	3411.2	5116.7	6822.3	8527.9
16	.42	.85	.27	.69	.11	.54	.96	.38	.81	5.4	0.8	6.1	1.5	6.8
17	.42	.84	.26	.68	.09	.52	.94	.35	.78	5.2	10.3	5.4	20.6	5.8
18	.42	.83	.25	.66	.08	.49	.91	.33	.74	4.9	09.9	4.8	19.8	4.7
19	.41	.83	.24	.65	.06	.47	.89	.30	.71	4.7	9.4	4.1	8.9	3.6
23 20	28.41	56.82	85.23	113.63	142.04	170.45	198.86	227.27	255.68	1704.5	3409.0	5113.5	6818.1	8522.6
21	.41	.81	.22	.62	.02	.43	.84	.24	.65	4.3	8.6	2.9	7.2	1.5
22	.40	.81	.20	.60	2.01	.41	.81	.21	.62	4.1	8.2	2.2	6.4	20.4
23	.40	.80	.19	.59	1.99	.39	.79	.18	.58	3.9	7.7	1.6	5.5	19.4
24	.39	.79	.18	.57	.97	.37	.76	.15	.55	3.7	7.3	0.9	4.7	8.3
23 25	28.39	56.78	85.17	113.56	141.96	170.34	198.74	227.13	255.52	1703.4	3406.9	5110.3	6813.8	8517.2
26	.39	.78	.16	.55	.94	.32	.71	.10	.49	3.2	6.5	09.7	2.9	6.2
27	.38	.77	.15	.53	.92	.30	.69	.07	.46	3.0	6.1	9.0	2.1	5.1
28	.38	.76	.14	.52	.90	.28	.66	.04	.42	2.8	5.6	8.4	1.2	4.0
29	.37	.76	.13	.50	.89	.26	.64	7.01	.39	2.6	5.2	7.7	10.4	3.0
23 30	28.37	56.75	85.12	113.49	141.87	170.24	198.61	226.98	255.36	1702.4	3404.8	5107.1	6809.5	8511.9
31	.37	.74	.11	.48	.85	.22	.59	.95	.33	2.2	4.4	6.5	8.6	10.8
32	.36	.73	.10	.46	.83	.20	.56	.92	.29	2.0	3.9	5.8	7.8	09.8
33	.36	.73	.09	.45	.82	.17	.54	.90	.26	1.7	3.5	5.2	6.9	8.7
34	.36	.72	.08	.43	.80	.15	.51	.87	.23	1.5	3.0	4.5	6.1	7.6
23 35	28.35	56.71	85.06	113.42	141.78	170.13	198.49	226.84	255.19	1701.3	3402.6	5103.9	6805.2	8506.5
36	.35	.70	.05	.41	.76	.11	.46	.81	.16	1.1	2.2	3.3	4.3	5.5
37	.35	.69	.04	.39	.74	.09	.44	.78	.13	0.9	1.8	2.6	3.5	4.4
38	.35	.69	.03	.38	.73	.06	.41	.76	.10	0.6	1.3	2.0	2.6	3.3
39	.34	.68	.02	.36	.71	.04	.39	.73	.06	0.4	0.9	1.3	1.8	2.2
23 40	28.34	56.67	85.01	113.35	141.69	170.02	198.36	226.70	255.03	1700.2	3400.5	5100.7	6800.9	8501.2
41	.34	.66	5.00	.34	.67	70.00	.34	.67	5.00	700.0	400.1	100.0	800.0	500.1
42	.33	.66	4.99	.32	.65	69.98	.31	.64	4.97	699.8	399.6	5099.4	799.2	499.0
43	.33	.65	.98	.31	.64	.96	.29	.61	.93	9.6	9.2	8.7	8.3	7.9
44	.32	.64	.97	.29	.62	.94	.26	.58	.90	9.4	8.7	8.1	7.5	6.8
23 45	28.32	56.63	84.96	113.28	141.60	169.92	198.24	226.56	254.87	1699.2	3398.3	5097.4	6796.6	8495.8
46	.32	.63	.95	.26	.58	.89	.21	.53	.84	8.9	7.9	6.8	5.7	4.7
47	.31	.62	.94	.25	.56	.87	.19	.50	.81	8.7	7.4	6.1	4.9	3.6
48	.31	.61	.93	.23	.55	.85	.16	.47	.77	8.5	7.0	5.5	4.0	2.5
49	.30	.61	.91	.22	.53	.83	.14	.44	.74	8.3	6.5	4.8	3.2	1.4
23 50	28.30	56.60	84.90	113.20	141.51	169.81	198.11	226.41	254.71	1698.1	3396.1	5094.2	6792.3	8490.4
51	.30	.59	.89	.19	.49	.79	.08	.38	.68	7.9	5.7	3.5	1.4	89.3
52	.29	.59	.88	.17	.47	.77	.06	.35	.64	7.7	5.3	2.9	90.5	8.2
53	.29	.58	.87	.16	.45	.74	.03	.32	.61	7.4	4.8	2.2	89.7	7.1
54	.28	.57	.86	.14	.43	.72	8.01	.29	.58	7.2	4.4	1.6	8.8	6.0
23 55	28.28	56.56	84.85	113.13	141.42	169.70	197.98	226.27	254.54	1697.0	3394.0	5090.9	6787.9	8484.9
56	.28	.56	.84	.12	.40	.68	.95	.24	.51	6.8	3.6	90.3	7.0	3.8
57	.27	.55	.83	.10	.38	.66	.93	.21	.48	6.6	3.1	89.6	6.2	2.7
58	.27	.54	.82	.09	.36	.63	.90	.18	.45	6.3	2.7	9.0	5.3	1.6
59	.26	.54	.80	.07	.34	.61	.88	.15	.41	6.1	2.2	8.3	4.5	80.5
23 60	28.26	56.53	84.79	113.06	141.32	169.59	197.85	226.12	254.38	1695.9	3391.8	5087.7	6783.6	8479.5

Lat.		Latitude 23° to 24°—Meridional arcs.						Latitude 23°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
23	00	30.761			1845.65					
	1	1	1	30.76	.65	1	1 845.6	0 1	1 708.7	0.1
	2	1	2	61.53	.66	2	3 691.3	2	3 417.5	0.4
	3	1	3	92.29	.66	3	5 537.0	3	5 126.2	0.9
	4	1	4	123.05	.66	4	7 382.6	4	6 835.0	1.6
23	05	30.761	5	153.81	1845.67	5	9 228.3	0 5	8 543.7	2.4
	6	1	6	184.58	.67	6	11 073.9	6	10 252.4	3.5
	7	1	7	215.34	.67	7	12 919.6	7	11 961.2	4.8
	8	1	8	246.10	.68	8	14 765.3	8	13 669.9	6.2
	9	1	9	276.86	.68	9	16 611.0	9	15 378.6	7.9
23	10	30.761	10	307.63	1845.69	10	18 456.7	0 10	17 087.4	9.7
	11	2	1	338.39	.69	1	20 302.3	15	25 631.0	21.8
	12	2	2	369.15	.69	2	22 148.0	20	34 174.7	38.8
	13	2	3	399.92	.70	3	23 993.7	25	42 718.4	60.7
	14	2	4	430.68	.70	4	25 839.4	30	51 262.0	87.4
23	15	30.762	15	461.44	1845.71	15	27 685.1	0 35	59 805.7	118.9
	16	2	6	492.20	.71	6	29 530.8	40	68 349.3	155.4
	17	2	7	522.97	.71	7	31 376.6	45	76 892.8	196.6
	18	2	8	553.73	.72	8	33 222.3	50	85 436.4	242.8
	19	2	9	584.49	.72	9	35 068.0	55	93 979.9	293.7
23	20	30.762	20	615.26	1845.73	20	36 913.7	1 00	102 523.4	349.6
	21	2	1	646.02	.73	1	38 759.4	05	111 066.9	410.3
	22	2	2	676.78	.73	2	40 605.2	10	119 610.3	475.8
	23	2	3	707.54	.74	3	42 450.9	15	128 153.7	546.2
	24	2	4	738.31	.74	4	44 296.7	20	136 697.1	621.5
23	25	30.762	25	769.07	1845.75	25	46 142.4	1 25	145 240.4	701.6
	26	2	6	799.83	.75	6	47 988.1	30	153 783.6	786.6
	27	3	7	830.59	.75	7	49 833.9	35	162 326.8	876.4
	28	3	8	861.36	.76	8	51 679.7	40	170 870.0	971.1
	29	3	9	892.12	.76	9	53 525.4	45	179 413.1	1 070.6
23	30	30.763	30	922.88	1845.77	30	55 371.2	1 50	187 956.1	1 175.0
	31	3	1	953.65	.77	1	57 216.9	55	196 499.1	1 284.2
	32	3	2	984.41	.77	2	59 062.7	2 00	205 042	1 398
	33	3	3	1 015.17	.78	3	60 908.5	3 00	307 551	3 146
	34	3	4	1 045.93	.78	4	62 754.3	4 00	410 046	5 593
23	35	30.763	35	1 076.70	1845.79	35	64 600.1	5 00	512 522	8 739
	36	3	6	1 107.46	.79	6	66 445.8	6 00	614 974	12 583
	37	3	7	1 138.22	.79	7	68 291.6	7 00	717 397	17 126
	38	3	8	1 168.99	.80	8	70 137.4	8 00	819 787	22 368
	39	3	9	1 199.75	.80	9	71 983.2	9 00	922 139	28 307
23	40	30.763	40	1 230.51	1845.81	40	73 829.0	10 00	1 024 448	34 945
	41	3	1	1 261.27	.81	1	75 674.8	11 00	1 126 709	42 280
	42	4	2	1 292.04	.81	2	77 520.7	12 00	1 228 918	50 312
	43	4	3	1 322.80	.82	3	79 366.5	13 00	1 331 070	59 041
	44	4	4	1 353.56	.82	4	81 212.3	14 00	1 433 160	68 466
23	45	30.764	45	1 384.32	1845.83	45	83 058.1	15 00	1 535 183	78 588
	46	4	6	1 415.09	.83	6	84 903.9	16 00	1 637 135	89 405
	47	4	7	1 445.85	.83	7	86 749.8	17 00	1 739 011	100 917
	48	4	8	1 476.61	.84	8	88 595.6	18 00	1 840 805	113 123
	49	4	9	1 507.38	.84	9	90 441.5	19 00	1 942 514	126 023
23	50	30.764	50	1 538.14	1845.85	50	92 287.3	20 00	2 044 133	139 617
	51	4	1	1 568.90	.85	1	94 133.2	21 00	2 145 657	153 903
	52	4	2	1 599.66	.85	2	95 979.0	22 00	2 247 081	168 882
	53	4	3	1 630.43	.86	3	97 824.9	23 00	2 348 400	184 552
	54	4	4	1 661.19	.86	4	99 670.7	24 00	2 449 611	200 911
23	55	30.764	55	1 691.95	1845.87	55	101 516.6	25 00	2 550 707	217 960
	56	5	6	1 722.72	.87	6	103 362.4	26 00	2 651 685	235 700
	57	5	7	1 753.48	.87	7	105 208.3	27 00	2 752 540	254 127
	58	5	8	1 784.24	.88	8	107 054.2	28 00	2 853 266	273 242
	59	5	9	1 815.00	.88	9	108 900.1	29 00	2 953 859	293 043
23	60	30.765	60	1 845.77	1845.89	60	110 746.0	30 00	3 054 316	313 530

Latitude 24° to 25°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
24 00	28.26	56.53	84.79	113.06	141.32	169.59	197.85	226.12	254.38	1695.9	3391.8	5087.7	6783.6	8479.5
1	.26	.52	.78	.05	.30	.57	.83	.09	.35	5.7	1.4	7.0	2.7	8.4
2	.26	.52	.77	.03	.28	.55	.80	.06	.32	5.5	0.9	6.4	1.8	7.3
3	.25	.51	.76	.02	.27	.52	.78	.03	.28	5.2	0.5	5.7	1.0	6.2
4	.25	.50	.75	3.00	.25	.50	.75	6.00	.25	5.0	90.0	5.1	80.1	5.1
24 05	28.25	56.50	84.74	112.99	141.23	169.48	197.73	225.98	254.22	1694.8	3389.6	5084.4	6779.2	8474.0
6	.24	.49	.73	.97	.21	.46	.70	.95	.19	4.6	9.2	3.7	8.3	2.9
7	.24	.48	.72	.96	.19	.44	.68	.92	.16	4.4	8.7	3.1	7.4	1.8
8	.24	.47	.71	.94	.18	.41	.65	.89	.12	4.1	8.3	2.4	6.6	70.7
9	.23	.47	.70	.93	.16	.39	.63	.86	.09	3.9	7.8	1.8	5.7	69.6
24 10	28.23	56.46	84.69	112.91	141.14	169.37	197.60	225.83	254.06	1693.7	3387.4	5081.1	6774.8	8468.5
11	.23	.45	.67	.90	.12	.35	.57	.80	4.03	3.5	7.0	80.4	3.9	7.4
12	.22	.44	.66	.88	.10	.33	.55	.77	3.99	3.3	6.5	79.8	3.0	6.3
13	.22	.44	.65	.87	.09	.30	.52	.74	.96	3.0	6.1	9.1	2.2	5.2
14	.21	.43	.64	.85	.07	.28	.50	.71	.92	2.8	5.6	8.5	1.3	4.1
24 15	28.21	56.42	84.63	112.84	141.05	169.26	197.47	225.68	253.89	1692.6	3385.2	5077.8	6770.4	8463.0
16	.21	.41	.62	.83	.03	.24	.44	.65	.86	2.4	4.8	7.1	69.5	1.9
17	.20	.40	.61	.81	.01	.22	.42	.62	.82	2.2	4.3	6.5	8.6	60.8
18	.20	.40	.60	.80	1.00	.19	.39	.59	.79	1.9	3.9	5.8	7.8	59.7
19	.19	.39	.59	.78	0.98	.17	.37	.56	.75	1.7	3.4	5.2	6.9	8.6
24 20	28.19	56.38	84.57	112.77	140.96	169.15	197.34	225.53	253.72	1691.5	3383.0	5074.5	6766.0	8457.5
21	.19	.37	.56	.76	.94	.13	.31	.50	.69	1.3	2.6	3.7	5.1	6.4
22	.18	.37	.55	.74	.92	.11	.29	.47	.65	1.1	2.1	3.1	4.2	5.3
23	.18	.36	.54	.73	.90	.08	.26	.44	.62	0.8	1.7	2.5	3.3	4.1
24	.17	.35	.53	.71	.88	.06	.24	.41	.59	0.6	1.2	1.9	2.4	3.0
24 25	28.17	56.34	84.52	112.70	140.87	169.04	197.21	225.39	253.55	1690.4	3380.8	5071.2	6761.5	8451.9
26	.17	.34	.51	.68	.85	.02	.18	.36	.52	0.2	80.4	70.5	60.6	50.8
27	.16	.33	.50	.66	.83	9.00	.16	.33	.49	90.0	79.9	69.8	59.7	49.7
28	.16	.32	.49	.65	.81	8.97	.13	.30	.46	89.7	9.5	9.2	8.9	8.6
29	.16	.32	.47	.63	.79	.95	.11	.27	.42	9.5	9.0	8.5	8.0	7.5
24 30	28.15	56.31	84.46	112.62	140.77	168.93	197.08	225.24	253.39	1689.3	3378.6	5067.8	6757.1	8446.4
31	.15	.30	.45	.61	.75	.91	.05	.21	.36	9.1	8.1	7.1	6.2	5.3
32	.14	.29	.44	.59	.73	.88	.03	.18	.32	8.8	7.7	6.5	5.3	4.1
33	.14	.29	.43	.58	.72	.86	7.00	.15	.29	8.6	7.2	5.8	4.4	3.0
34	.14	.28	.42	.56	.70	.84	6.98	.12	.26	8.4	6.8	5.2	3.5	1.9
24 35	28.13	56.27	84.41	112.55	140.68	168.82	196.95	225.09	253.22	1688.2	3376.3	5064.5	6752.6	8440.8
36	.13	.26	.40	.53	.66	.79	.92	.06	.19	7.9	5.9	3.8	1.7	39.7
37	.13	.25	.39	.51	.64	.77	.90	.03	.16	7.7	5.4	3.1	0.8	8.6
38	.13	.25	.37	.50	.63	.75	.87	5.00	.13	7.5	5.0	2.5	50.0	7.4
39	.12	.24	.36	.48	.61	.72	.85	4.97	.09	7.2	4.5	1.8	49.1	6.3
24 40	28.12	56.23	84.35	112.47	140.59	168.70	196.82	224.94	253.06	1687.0	3374.1	5061.1	6748.2	8435.2
41	.11	.22	.34	.46	.57	.68	.79	.91	3.03	6.8	3.6	60.4	7.3	4.1
42	.11	.22	.33	.44	.55	.66	.77	.88	2.99	6.6	3.2	59.8	6.4	3.0
43	.11	.21	.32	.43	.53	.63	.74	.85	.96	6.3	2.7	9.1	5.5	1.8
44	.10	.20	.31	.41	.51	.61	.72	.82	.92	6.1	2.3	8.5	4.6	30.7
24 45	28.10	56.20	84.30	112.40	140.50	168.59	196.69	224.79	252.89	1685.9	3371.8	5057.8	6743.7	8429.6
46	.10	.19	.28	.38	.48	.57	.66	.76	.86	5.7	1.4	7.1	2.8	8.5
47	.09	.18	.27	.37	.46	.55	.64	.73	.82	5.5	0.9	6.4	1.9	7.3
48	.09	.17	.26	.35	.44	.52	.61	.70	.79	5.2	0.5	5.8	1.0	6.2
49	.08	.17	.25	.34	.42	.50	.59	.67	.75	5.0	70.0	5.1	40.1	5.1
24 50	28.08	56.16	84.24	112.32	140.40	168.48	196.56	224.64	252.72	1684.8	3369.6	5054.4	6739.2	8424.0
51	.08	.15	.23	.31	.38	.46	.53	.61	.69	4.6	9.1	3.7	8.3	2.8
52	.07	.14	.22	.29	.36	.43	.51	.58	.65	4.3	8.7	3.0	7.4	1.7
53	.07	.14	.21	.28	.34	.41	.48	.55	.62	4.1	8.2	2.4	6.4	20.6
54	.06	.13	.19	.26	.32	.39	.46	.52	.58	3.9	7.8	1.7	5.5	19.4
24 55	28.06	56.12	84.18	112.25	140.31	168.37	196.43	224.49	252.55	1683.7	3367.3	5051.0	6734.6	8418.3
56	.06	.11	.17	.23	.29	.34	.40	.46	.52	3.4	6.9	50.3	3.7	7.2
57	.05	.10	.16	.22	.27	.32	.38	.43	.48	3.2	6.4	49.6	2.8	6.0
58	.05	.10	.15	.20	.25	.30	.35	.40	.45	3.0	6.0	9.0	1.9	4.9
59	.04	.09	.14	.19	.23	.27	.33	.37	.41	2.7	5.5	8.3	1.0	3.8
24 60	28.04	56.08	84.13	112.17	140.21	168.25	196.30	224.34	252.38	1682.5	3365.1	5047.6	6730.1	8412.7

Lat.		Latitude 24° to 25°—Meridional arcs.						Latitude 24°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
24	00	30.765			1845.89					
	1	5	1	30.77	.89	1	1 845.9	0 1	1 695.9	0.1
	2	5	2	61.53	.89	2	3 691.8	2	3 391.8	0.4
	3	5	3	92.30	.90	3	5 537.7	3	5 087.7	0.9
	4	5	4	123.07	.90	4	7 383.6	4	6 783.6	1.6
24	05	30.765	5	153.83	1845.91	5	9 229.5	0 5	8 479.5	2.5
	6	5	6	184.60	.91	6	11 075.4	6	10 175.4	3.6
	7	5	7	215.37	.92	7	12 921.3	7	11 871.2	4.9
	8	5	8	246.13	.92	8	14 767.2	8	13 567.1	6.4
	9	5	9	276.90	.92	9	16 613.1	9	15 263.0	8.1
24	10	30.765	10	307.67	1845.93	10	18 459.1	0 10	16 958.9	10.0
	11	6	1	338.44	.93	1	20 305.0	15	25 438.4	22.6
	12	6	2	369.20	.94	2	22 150.9	20	33 917.8	40.1
	13	6	3	399.97	.94	3	23 996.9	25	42 397.2	62.7
	14	6	4	430.74	.94	4	25 842.8	30	50 876.6	90.3
24	15	30.766	15	461.50	1845.95	15	27 688.8	0 35	59 356.0	122.9
	16	6	6	492.27	.95	6	29 534.7	40	67 835.4	160.5
	17	6	7	523.04	.96	7	31 380.7	45	76 314.8	203.2
	18	6	8	553.80	.96	8	33 226.6	50	84 794.1	250.8
	19	6	9	584.57	.96	9	35 072.6	55	93 273.4	303.5
24	20	30.766	20	615.34	1845.97	20	36 918.6	1 00	101 752.7	361.2
	21	6	1	646.10	.97	1	38 764.5	05	110 231.9	423.9
	22	6	2	676.87	.98	2	40 610.5	10	118 711.1	491.6
	23	6	3	707.64	.98	3	42 456.5	15	127 190.2	564.3
	24	6	4	738.40	.98	4	44 302.5	20	135 669.3	642.1
24	25	30.766	25	769.17	1845.99	25	46 148.4	1 25	144 148.3	724.8
	26	7	6	799.94	5.99	6	47 994.4	30	152 627.4	812.6
	27	7	7	830.70	6.00	7	49 840.4	35	161 106.3	905.4
	28	7	8	861.47	.00	8	51 686.4	40	169 585.2	1 003.2
	29	7	9	892.24	.01	9	53 532.4	45	178 064.0	1 106.1
24	30	30.767	30	923.00	1846.01	30	55 378.4	1 50	186 542.8	1 213.9
	31	7	1	953.77	.01	1	57 224.4	55	195 021.5	1 326.8
	32	7	2	984.54	.02	2	59 070.5	2 00	203 500	1 445
	33	7	3	1 015.31	.02	3	60 916.5	3 00	305 237	3 250
	34	7	4	1 046.07	.03	4	62 762.5	4 00	406 959	5 778
24	35	30.767	35	1 076.84	1846.03	35	64 608.5	5 00	508 660	9 028
	36	7	6	1 107.61	.03	6	66 454.6	6 00	610 336	13 001
	37	7	7	1 138.37	.04	7	68 300.6	7 00	711 981	17 695
	38	7	8	1 169.14	.04	8	70 146.6	8 00	813 590	23 109
	39	7	9	1 199.91	.05	9	71 992.7	9 00	915 159	29 245
24	40	30.768	40	1 230.67	1846.05	40	73 838.7	10 00	1 016 681	36 102
	41	8	1	1 261.44	.05	1	75 684.8	11 00	1 118 152	43 679
	42	8	2	1 292.21	.06	2	77 530.8	12 00	1 219 566	51 977
	43	8	3	1 322.97	.06	3	79 376.9	13 00	1 320 919	60 994
	44	8	4	1 353.74	.07	4	81 223.0	14 00	1 422 205	70 731
24	45	30.768	45	1 384.51	1846.07	45	83 069.0	15 00	1 523 420	81 186
	46	8	6	1 415.27	.08	6	84 915.1	16 00	1 624 558	92 360
	47	8	7	1 446.04	.08	7	86 761.2	17 00	1 725 614	104 251
	48	8	8	1 476.81	.08	8	88 607.3	18 00	1 826 583	116 859
	49	8	9	1 507.57	.09	9	90 453.3	19 00	1 927 460	130 184
24	50	30.768	50	1 538.34	1846.09	50	92 299.4	20 00	2 028 240	144 225
	51	8	1	1 569.11	.10	1	94 145.5	21 00	2 128 918	158 981
	52	8	2	1 599.87	.10	2	95 991.6	22 00	2 229 488	174 451
	53	8	3	1 630.64	.10	3	97 837.7	23 00	2 329 946	190 634
	54	8	4	1 661.41	.11	4	99 683.8	24 00	2 430 287	207 530
24	55	30.769	55	1 692.17	1846.11	55	101 529.9	25 00	2 530 505	225 138
	56	9	6	1 722.94	.12	6	103 376.1	26 00	2 630 596	243 458
	57	9	7	1 753.71	.12	7	105 222.2	27 00	2 730 554	262 487
	58	9	8	1 784.48	.13	8	107 068.3	28 00	2 830 374	282 225
	59	9	9	1 815.24	.13	9	108 914.4	29 00	2 930 052	302 671
24	60	30.769	60	1 846.01	1846.13	60	110 760.6	30 00	3 029 582	323 825

Latitude 25° to 26°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
25 00	28.04	56.08	84.13	112.17	140.21	168.25	196.30	224.34	252.38	1682.5	3365.1	5047.6	6730.1	8412.7
1	.04	.07	.12	.16	.19	.23	.27	.31	.35	2.3	4.6	6.9	29.2	1.5
2	.03	.07	.10	.14	.17	.21	.25	.28	.31	2.1	4.2	6.2	8.3	10.4
3	.03	.06	.09	.13	.15	.18	.22	.25	.28	1.8	3.7	5.6	7.4	09.2
4	.02	.05	.08	.11	.13	.16	.19	.22	.24	1.6	3.3	4.9	6.5	8.1
25 05	28.02	56.04	84.07	112.10	140.12	168.14	196.17	224.18	252.21	1681.4	3362.8	5044.2	6725.6	8407.0
6	.02	.04	.06	.08	.10	.12	.14	.15	.18	1.2	2.3	3.5	4.7	5.8
7	.01	.03	.05	.07	.08	.10	.11	.12	.14	1.0	1.9	2.8	3.8	4.7
8	.01	.02	.03	.05	.06	.07	.08	.09	.11	0.7	1.4	2.2	2.8	3.5
9	.01	.02	.02	.04	.04	.05	.06	.06	.07	0.5	1.0	1.5	1.9	2.4
25 10	28.00	56.01	84.01	112.02	140.02	168.03	196.03	224.03	252.04	1680.3	3360.5	5040.8	6721.0	8401.3
11	8.00	6.00	4.00	2.00	40.00	8.00	6.00	4.00	2.01	80.0	60.0	40.1	20.1	400.1
12	7.99	5.99	3.99	1.99	39.98	7.98	5.98	3.97	1.97	79.8	59.6	39.4	19.2	399.0
13	.99	.99	.98	.97	.96	.96	.95	.94	.94	9.6	9.1	8.7	8.2	7.8
14	.99	.98	.97	.96	.94	.93	.92	.91	.90	9.3	8.7	8.0	7.3	6.7
25 15	27.98	55.97	83.95	111.94	139.93	167.91	195.90	223.88	251.87	1679.1	3358.2	5037.3	6716.4	8395.5
16	.98	.96	.94	.92	.91	.89	.87	.85	.83	8.9	7.7	6.6	5.5	4.4
17	.98	.95	.93	.91	.89	.86	.84	.82	.80	8.6	7.3	5.9	4.6	3.2
18	.98	.95	.92	.89	.87	.84	.81	.79	.76	8.4	6.8	5.3	3.6	2.1
19	.97	.94	.91	.88	.85	.82	.79	.76	.73	8.2	6.4	4.6	2.7	91.0
25 20	27.97	55.93	83.90	111.86	139.83	167.80	195.76	223.73	251.69	1678.0	3355.9	5033.9	6711.8	8389.8
21	.96	.92	.89	.85	.81	.78	.73	.70	.66	7.8	5.4	3.2	0.9	8.7
22	.96	.92	.88	.83	.79	.75	.71	.67	.62	7.5	5.0	2.5	10.0	7.5
23	.96	.91	.86	.82	.77	.73	.68	.64	.59	7.3	4.5	1.8	09.0	6.3
24	.95	.90	.85	.80	.75	.70	.65	.61	.55	7.0	4.1	1.1	8.1	5.2
25 25	27.95	55.90	83.84	111.79	139.74	167.68	195.62	223.57	251.52	1676.8	3353.6	5030.4	6707.2	8384.0
26	.95	.89	.83	.77	.72	.66	.60	.54	.48	6.6	3.1	29.7	6.3	2.9
27	.94	.88	.82	.76	.70	.63	.57	.51	.45	6.3	2.7	9.0	5.4	1.7
28	.94	.87	.81	.74	.68	.61	.54	.48	.41	6.1	2.2	8.4	4.4	80.6
29	.93	.87	.79	.73	.66	.59	.52	.45	.38	5.9	1.8	7.7	3.5	79.4
25 30	27.93	55.86	83.78	111.71	139.64	167.57	195.49	223.42	251.34	1675.7	3351.3	5027.0	6702.6	8378.3
31	.93	.85	.77	.70	.62	.55	.46	.39	.31	5.5	0.8	6.3	1.7	7.1
32	.92	.84	.76	.68	.60	.52	.44	.36	.27	5.2	50.4	5.6	700.8	6.0
33	.92	.84	.75	.67	.58	.50	.41	.33	.24	5.0	49.9	4.9	699.8	4.8
34	.91	.83	.74	.65	.56	.47	.38	.30	.20	4.7	9.5	4.2	8.9	3.7
25 35	27.91	55.82	83.72	111.64	139.55	167.45	195.36	223.26	251.17	1674.5	3349.0	5023.5	6698.0	8372.5
36	.91	.81	.71	.62	.53	.43	.33	.23	.14	4.3	8.5	2.8	7.1	1.3
37	.90	.80	.70	.61	.51	.40	.30	.20	.10	4.0	8.1	2.1	6.2	70.2
38	.90	.80	.69	.59	.49	.38	.27	.17	.07	3.8	7.6	1.4	5.2	69.0
39	.89	.79	.68	.58	.47	.36	.25	.14	.03	3.6	7.2	0.7	4.3	7.9
25 40	27.89	55.78	83.67	111.56	139.45	167.33	195.22	223.11	251.00	1673.3	3346.7	5020.0	6693.4	8366.7
41	.89	.77	.66	.54	.43	.31	.19	.08	0.97	3.1	6.2	19.3	2.5	5.5
42	.88	.76	.64	.53	.41	.29	.17	.05	.93	2.9	5.7	8.6	1.5	4.4
43	.88	.76	.63	.51	.39	.26	.14	3.02	.90	2.6	5.3	7.9	90.6	3.2
44	.87	.75	.62	.50	.37	.24	.11	2.99	.86	2.4	4.8	7.2	89.6	2.0
25 45	27.87	55.74	83.61	111.48	139.35	167.22	195.09	222.95	250.82	1672.2	3344.3	5016.5	6688.7	8360.8
46	.87	.73	.60	.46	.33	.19	.06	.92	.79	1.9	3.8	5.8	7.8	59.7
47	.86	.72	.59	.45	.31	.17	.03	.89	.75	1.7	3.4	5.1	6.8	8.5
48	.86	.72	.57	.43	.29	.15	5.00	.86	.72	1.5	2.9	4.4	5.9	7.4
49	.85	.71	.56	.42	.27	.12	4.98	.83	.68	1.2	2.5	3.7	4.9	6.2
25 50	27.85	55.70	83.55	111.40	139.25	167.10	194.95	222.80	250.65	1671.0	3342.0	5013.0	6684.0	8355.0
51	.85	.69	.54	.38	.23	.08	.92	.77	.62	0.8	1.5	2.3	3.1	3.8
52	.84	.68	.53	.37	.21	.05	.90	.74	.58	0.5	1.1	1.6	2.1	2.7
53	.84	.68	.51	.35	.19	.03	.87	.71	.55	0.3	0.6	0.9	1.2	1.5
54	.83	.67	.50	.34	.17	7.01	.84	.68	.51	70.1	40.2	10.2	80.2	50.3
25 55	27.83	55.66	83.49	111.32	139.16	166.98	194.82	222.64	250.48	1669.8	3339.7	5009.5	6679.3	8349.2
56	.83	.65	.48	.30	.14	.96	.79	.61	.44	9.6	9.2	8.8	8.4	8.0
57	.82	.64	.47	.29	.12	.94	.76	.58	.41	9.4	8.7	8.1	7.4	6.8
58	.82	.64	.46	.27	.10	.91	.73	.55	.37	9.1	8.3	7.4	6.5	5.6
59	.81	.63	.44	.26	.08	.89	.71	.52	.34	8.9	7.8	6.7	5.5	4.5
25 60	27.81	55.62	83.43	111.24	139.06	166.87	194.68	222.49	250.30	1668.7	3337.3	5006.0	6674.6	8343.3

Lat.		Latitude 25° to 26°—Meridional arcs.						Latitude 25°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
25	00	30.769			1846.13					
	1	9	1	30.77	.14	1	1 846.1	0 1	1 682.5	0.1
	2	9	2	61.54	.14	2	3 692.3	2	3 365.1	0.4
	3	9	3	92.31	.15	3	5 538.4	3	5 047.6	0.9
	4	9	4	123.08	.15	4	7 384.6	4	6 730.1	1.7
25	05	30.769	5	153.86	1846.15	5	9 230.7	0 5	8 412.7	2.6
	6	9	6	184.63	.16	6	11 076.9	6	10 095.2	3.7
	7	9	7	215.40	.16	7	12 923.0	7	11 777.7	5.1
	8	69	8	246.17	.17	8	14 769.2	8	13 460.3	6.6
	9	70	9	276.94	.17	9	16 615.4	9	15 142.8	8.4
25	10	30.770	10	307.71	1846.18	10	18 461.5	0 10	16 825.3	10.3
	11	0	1	338.48	.18	1	20 307.7	15	25 238.0	23.3
	12	0	2	369.25	.18	2	22 153.9	20	33 650.6	41.4
	13	0	3	400.02	.19	3	24 000.1	25	42 063.2	64.6
	14	0	4	430.79	.19	4	25 846.3	30	50 475.8	93.1
25	15	30.770	15	461.57	1846.20	15	27 692.5	0 35	58 888.4	126.7
	16	0	6	492.34	.20	6	29 538.7	40	67 301.0	165.5
	17	0	7	523.11	.21	7	31 384.9	45	75 713.5	209.4
	18	0	8	553.88	.21	8	33 231.1	50	84 126,0	258.5
	19	0	9	584.65	.21	9	35 077.3	55	92 538.5	312.8
25	20	30.770	20	615.42	1846.22	20	36 923.5	1 00	100 950.9	372.3
	21	0	1	646.19	.22	1	38 769.7	05	109 363.4	436.9
	22	0	2	676.96	.23	2	40 615.9	10	117 775.7	506.8
	23	1	3	707.73	.23	3	42 462.2	15	126 188.0	581.7
	24	1	4	738.50	.23	4	44 308.4	20	134 600.3	661.9
25	25	30.771	25	769.28	1846.24	25	46 154.6	1 25	143 012.5	747.2
	26	1	6	800.05	.24	6	48 000.9	30	151 424.7	837.7
	27	1	7	830.82	.25	7	49 847.1	35	159 836.8	933.4
	28	1	8	861.59	.25	8	51 693.4	40	168 248.9	1 034.2
	29	1	9	892.36	.26	9	53 539.6	45	176 660.9	1 140.2
25	30	30.771	30	923.13	1846.26	30	55 385.9	1 50	185 072.8	1 251.4
	31	1	1	953.90	.26	1	57 232.1	55	193 484.6	1 367.7
	32	1	2	984.67	.27	2	59 078.4	2 00	201 896	1 489
	33	1	3	1 015.44	.27	3	60 924.7	3 00	302 831	3 351
	34	1	4	1 046.21	.28	4	62 771.0	4 00	403 749	5 957
25	35	30.771	35	1 076.99	1846.28	35	64 617.2	5 00	504 645	9 307
	36	1	6	1 107.76	.29	6	66 463.5	6 00	605 514	13 401
	37	1	7	1 138.53	.29	7	68 309.8	7 00	706 349	18 239
	38	2	8	1 169.30	.29	8	70 156.1	8 00	807 146	23 821
	39	2	9	1 200.07	.30	9	72 002.4	9 00	907 899	30 146
25	40	30.772	40	1 230.84	1846.30	40	73 848.7	10 00	1 008 603	37 215
	41	2	1	1 261.61	.31	1	75 695.0	11 00	1 109 252	45 026
	42	2	2	1 292.38	.31	2	77 541.3	12 00	1 209 841	53 578
	43	2	3	1 323.15	.32	3	79 387.6	13 00	1 310 364	62 873
	44	2	4	1 353.92	.32	4	81 233.9	14 00	1 410 815	72 909
25	45	30.772	45	1 384.70	1846.32	45	83 080.3	15 00	1 511 190	83 685
	46	2	6	1 415.47	.33	6	84 926.6	16 00	1 611 483	95 202
	47	2	7	1 446.24	.33	7	86 772.9	17 00	1 711 688	107 458
	48	2	8	1 477.01	.34	8	88 619.3	18 00	1 811 800	120 453
	49	2	9	1 507.78	.34	9	90 465.6	19 00	1 911 813	134 186
25	50	30.772	50	1 538.55	1846.35	50	92 311.9	20 00	2 011 722	148 656
	51	2	1	1 569.32	.35	1	94 158.3	21 00	2 111 522	163 862
	52	3	2	1 600.09	.35	2	96 004.6	22 00	2 211 207	179 805
	53	3	3	1 630.86	.36	3	97 851.0	23 00	2 310 771	196 482
	54	3	4	1 661.63	.36	4	99 697.4	24 00	2 410 210	213 894
25	55	30.773	55	1 692.41	1846.37	55	101 543.7	25 00	2 509 518	232 038
	56	3	6	1 723.18	.37	6	103 390.1	26 00	2 608 689	250 914
	57	3	7	1 753.95	.38	7	105 236.5	27 00	2 707 718	270 521
	58	3	8	1 784.72	.38	8	107 082.8	28 00	2 806 600	290 859
	59	3	9	1 815.49	.38	9	108 929.2	29 00	2 905 329	311 925
25	60	30.773	60	1 846.26	1846.39	60	110 775.6	30 00	3 003 900	333 718

Latitude 26° to 27°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
26 00	27.81	55.62	83.43	111.24	139.06	166.87	194.68	222.49	250.30	1668.7	3337.3	5006.0	6674.6	8343.3
1	.81	.61	.42	.23	.04	.85	.65	.46	.26	8.5	6.8	5.3	3.7	2.1
2	.80	.60	.41	.21	.02	.82	.62	.43	.23	8.2	6.3	4.6	2.7	40.9
3	.80	.60	.40	.20	9.00	.80	.60	.39	.19	8.0	5.9	3.8	1.8	39.7
4	.79	.59	.39	.18	8.98	.77	.57	.36	.16	7.7	5.4	3.1	70.8	8.6
26 05	27.79	55.58	83.37	111.17	138.96	166.75	194.54	222.33	250.12	1667.5	3334.9	5002.4	6669.9	8337.4
6	.79	.57	.36	.15	.94	.73	.51	.30	.08	7.3	4.4	1.7	9.0	6.2
7	.78	.56	.35	.14	.92	.70	.48	.27	.05	7.0	4.0	1.0	8.0	5.0
8	.78	.56	.34	.12	.90	.68	.46	.23	50.01	6.8	3.5	5000.3	7.1	3.8
9	.77	.55	.33	.11	.88	.65	.43	.20	49.98	6.5	3.1	4999.6	6.1	2.7
26 10	27.77	55.54	83.31	111.09	138.86	166.63	194.40	222.17	249.94	1666.3	3332.6	4998.9	6665.2	8331.5
11	.77	.53	.30	.07	.84	.61	.37	.14	.91	6.1	2.1	8.2	4.2	30.3
12	.76	.52	.29	.06	.82	.58	.34	.11	.87	5.8	1.6	7.5	3.3	29.1
13	.76	.52	.28	.04	.80	.56	.32	.08	.84	5.6	1.2	6.7	2.3	7.9
14	.75	.51	.27	.03	.78	.53	.29	.05	.80	5.3	0.7	6.0	1.4	6.7
26 15	27.75	55.50	83.25	111.01	138.76	166.51	194.26	222.01	249.77	1665.1	3330.2	4995.3	6660.4	8325.5
16	.75	.49	.24	0.99	.74	.49	.23	1.98	.73	4.9	29.7	4.6	59.5	4.4
17	.74	.48	.23	.98	.72	.46	.20	.95	.70	4.6	9.2	3.9	8.5	3.2
18	.74	.48	.22	.96	.70	.44	.18	.92	.66	4.4	8.8	3.2	7.6	2.0
19	.73	.47	.21	.95	.68	.41	.15	.89	.63	4.1	8.3	2.5	6.6	20.8
26 20	27.73	55.46	83.20	110.93	138.66	166.39	194.12	221.86	249.59	1663.9	3327.8	4991.8	6655.7	8319.6
21	.73	.45	.18	.91	.64	.37	.09	.83	.55	3.7	7.3	1.1	4.7	8.4
22	.72	.44	.17	.90	.62	.34	.07	.80	.52	3.4	6.9	90.4	3.8	7.2
23	.72	.44	.16	.88	.60	.32	.04	.76	.48	3.2	6.4	89.6	2.8	6.0
24	.71	.43	.15	.87	.58	.29	4.01	.73	.45	2.9	6.0	8.9	1.9	4.8
26 25	27.71	55.42	83.14	110.85	138.56	166.27	193.98	221.70	249.41	1662.7	3325.5	4988.2	6650.9	8313.6
26	.71	.41	.12	.83	.54	.25	.96	.67	.37	2.5	5.0	7.5	49.9	2.4
27	.70	.40	.11	.82	.52	.22	.93	.64	.34	2.2	4.5	6.8	9.0	1.2
28	.70	.40	.10	.80	.50	.20	.90	.60	.30	2.0	4.1	6.0	8.0	10.0
29	.69	.39	.09	.79	.48	.17	.88	.57	.27	1.7	3.6	5.3	7.1	08.9
26 30	27.69	55.38	83.08	110.77	138.46	166.15	193.85	221.54	249.23	1661.5	3323.1	4984.6	6646.1	8307.7
31	.69	.37	.07	.75	.44	.13	.82	.51	.19	1.3	2.6	3.9	5.1	6.5
32	.68	.36	.05	.74	.42	.10	.79	.48	.16	1.0	2.1	3.2	4.2	5.3
33	.68	.36	.04	.72	.40	.08	.76	.44	.12	0.8	1.7	2.4	3.2	4.0
34	.67	.35	.03	.71	.38	.05	.73	.41	.09	0.5	1.2	1.7	2.3	2.8
26 35	27.67	55.34	83.02	110.69	138.36	166.03	193.71	221.38	249.05	1660.3	3320.7	4981.0	6641.3	8301.6
36	.67	.33	3.00	.67	.34	6.01	.68	.35	9.01	60.1	20.2	80.3	40.3	300.4
37	.66	.32	2.99	.66	.32	5.98	.65	.32	8.98	59.8	19.7	79.6	39.4	299.2
38	.66	.32	.98	.64	.30	.96	.62	.28	.94	9.6	9.3	8.8	8.4	8.0
39	.65	.31	.97	.63	.28	.93	.59	.25	.91	9.3	8.8	8.1	7.5	6.8
26 40	27.65	55.30	82.96	110.61	138.26	165.91	193.56	221.22	248.87	1659.1	3318.3	4977.4	6636.5	8295.6
41	.65	.29	.94	.59	.24	.89	.53	.19	.83	8.9	7.8	6.7	5.5	4.4
42	.64	.28	.93	.58	.22	.86	.50	.16	.80	8.6	7.3	6.0	4.6	3.2
43	.64	.28	.92	.56	.20	.84	.48	.12	.76	8.4	6.8	5.2	3.6	2.0
44	.63	.27	.91	.55	.18	.81	.45	.09	.73	8.1	6.3	4.5	2.7	90.8
26 45	27.63	55.26	82.90	110.53	138.16	165.79	193.42	221.06	248.69	1657.9	3315.8	4973.8	6631.7	8289.6
46	.63	.25	.88	.51	.14	.77	.39	.03	.65	7.7	5.3	3.1	30.7	8.4
47	.62	.24	.87	.50	.12	.74	.36	1.00	.62	7.4	4.8	2.3	29.7	7.2
48	.62	.24	.86	.48	.10	.72	.34	0.96	.58	7.2	4.4	1.6	8.8	6.0
49	.61	.23	.85	.47	.08	.69	.31	.93	.55	6.9	3.9	0.8	7.8	4.8
26 50	27.61	55.22	82.84	110.45	138.06	165.67	193.28	220.90	248.51	1656.7	3313.4	4970.1	6626.8	8283.6
51	.61	.21	.82	.43	.04	.65	.25	.87	.47	6.5	2.9	69.4	5.8	2.3
52	.60	.20	.81	.42	.02	.62	.22	.83	.44	6.2	2.4	8.7	4.9	81.1
53	.60	.20	.80	.40	8.00	.60	.20	.80	.40	6.0	2.0	7.9	3.9	79.9
54	.59	.19	.79	.39	7.98	.57	.17	.77	.36	5.7	1.5	7.2	3.0	8.7
26 55	27.59	55.18	82.78	110.37	137.96	165.55	193.14	220.73	248.32	1655.5	3311.0	4966.5	6622.0	8277.5
56	.59	.17	.76	.35	.94	.53	.11	.70	.29	5.3	0.5	5.8	1.0	6.3
57	.58	.16	.75	.34	.92	.50	.08	.67	.25	5.0	10.0	5.0	20.0	5.0
58	.58	.16	.74	.32	.90	.48	.06	.64	.21	4.8	09.6	4.3	19.1	3.8
59	.57	.15	.73	.31	.88	.45	.03	.60	.18	4.5	9.1	3.5	8.1	2.6
26 60	27.57	55.14	82.71	110.29	137.86	165.43	193.00	220.57	248.14	1654.3	3308.6	4962.8	6617.1	8271.4

Lat.		Latitude 26° to 27°—Meridional arcs.						Latitude 26°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
26	00	30.773			1846.39					
	1	3	1	30.78	.39	1	1 846.4	0 1	1 668.7	0.1
	2	3	2	61.55	.40	2	3 692.8	2	3 337.3	0.4
	3	3	3	92.33	.40	3	5 539.2	3	5 006.0	1.0
	4	3	4	123.10	.41	4	7 385.6	4	6 674.6	1.7
26	05	30.773	5	153.88	1846.41	5	9 232.0	0 5	8 343.3	2.7
	6	4	6	184.65	.41	6	11 078.4	6	10 011.9	3.8
	7	4	7	215.43	.42	7	12 924.8	7	11 680.6	5.2
	8	4	8	246.20	.42	8	14 771.2	8	13 349.2	6.8
	9	4	9	276.98	.43	9	16 617.7	9	15 017.9	8.6
26	10	30.774	10	307.75	1846.43	10	18 464.1	0 10	16 686.6	10.6
	11	4	1	338.53	.44	1	20 310.5	15	25 029.8	23.9
	12	4	2	369.30	.44	2	22 157.0	20	33 373.1	42.6
	13	4	3	400.08	.44	3	24 003.4	25	41 716.4	66.5
	14	4	4	430.85	.45	4	25 849.9	30	50 059.6	95.8
26	15	30.774	15	461.63	1846.45	15	27 696.3	0 35	58 402.9	130.3
	16	4	6	492.40	.46	6	29 542.8	40	66 746.1	170.2
	17	4	7	523.18	.46	7	31 389.2	45	75 089.2	215.4
	18	4	8	553.96	.47	8	33 235.7	50	83 432.4	266.0
	19	5	9	584.73	.47	9	35 082.2	55	91 775.5	321.8
26	20	30.775	20	615.51	1846.47	20	36 928.6	1 00	100 118.5	383.0
	21	5	1	646.28	.48	1	38 775.1	05	108 461.5	449.5
	22	5	2	677.06	.48	2	40 621.6	10	116 804.6	521.3
	23	5	3	707.83	.49	3	42 468.1	15	125 147.5	598.4
	24	5	4	738.61	.49	4	44 314.6	20	133 490.4	680.9
26	25	30.775	25	769.38	1846.50	25	46 161.1	1 25	141 833.2	768.7
	26	5	6	800.16	.50	6	48 007.6	30	150 176.0	861.7
	27	5	7	830.93	.51	7	49 854.1	35	158 518.7	960.2
	28	5	8	861.71	.51	8	51 700.6	40	166 861.3	1 063.9
	29	5	9	892.48	.51	9	53 547.1	45	175 203.9	1 172.9
26	30	30.775	30	923.26	1846.52	30	55 393.6	1 50	183 546.4	1 287.3
	31	5	1	954.03	.52	1	57 240.1	55	191 888.9	1 407.0
	32	5	2	984.81	.53	2	59 086.7	2 00	200 231	1 532
	33	6	3	1 015.59	.53	3	60 933.2	3 00	300 332	3 447
	34	6	4	1 046.36	.54	4	62 779.7	4 00	400 416	6 128
26	35	30.776	35	1 077.14	1846.54	35	64 626.2	5 00	500 476	9 574
	36	6	6	1 107.91	.54	6	66 472.8	6 00	600 506	13 786
	37	6	7	1 138.69	.55	7	68 319.3	7 00	700 501	18 763
	38	6	8	1 169.46	.55	8	70 165.9	8 00	800 456	24 505
	39	6	9	1 200.24	.56	9	72 012.4	9 00	900 364	31 011
26	40	30.776	40	1 231.01	1846.56	40	73 859.0	10 00	1 000 218	38 282
	41	6	1	1 261.79	.57	1	75 705.6	11 00	1 100 015	46 316
	42	6	2	1 292.56	.57	2	77 552.1	12 00	1 199 747	55 114
	43	6	3	1 323.34	.58	3	79 398.7	13 00	1 299 409	64 675
	44	6	4	1 354.11	.58	4	81 245.3	14 00	1 398 994	74 998
26	45	30.776	45	1 384.89	1846.58	45	83 091.9	15 00	1 498 498	86 082
	46	6	6	1 415.66	.59	6	84 938.4	16 00	1 597 914	97 928
	47	7	7	1 446.44	.59	7	86 785.0	17 00	1 697 237	110 534
	48	7	8	1 477.21	.60	8	88 631.6	18 00	1 796 460	123 899
	49	7	9	1 507.99	.60	9	90 478.2	19 00	1 895 578	138 023
26	50	30.777	50	1 538.77	1846.61	50	92 324.8	20 00	1 994 585	152 905
	51	7	1	1 569.54	.61	1	94 171.4	21 00	2 093 475	168 544
	52	7	2	1 600.32	.61	2	96 018.1	22 00	2 192 243	184 939
	53	7	3	1 631.09	.62	3	97 864.7	23 00	2 290 882	202 089
	54	7	4	1 661.87	.62	4	99 711.3	24 00	2 389 387	219 993
26	55	30.777	55	1 692.64	1846.63	55	101 557.9	25 00	2 487 753	238 650
	56	7	6	1 723.42	.63	6	103 404.6	26 00	2 585 973	258 061
	57	7	7	1 754.19	.64	7	105 251.2	27 00	2 684 042	278 222
	58	7	8	1 784.97	.64	8	107 097.8	28 00	2 781 953	299 132
	59	7	9	1 815.74	.65	9	108 944.5	29 00	2 879 702	320 788
26	60	30.777	60	1 846.52	1846.65	60	110 791.1	30 00	2 977 281	343 197

Latitude 27° to 28°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
27 00	27.57	55.14	82.71	110.29	137.86	165.43	193.00	220.57	248.14	1654.3	3308.6	4962.8	6617.1	8271.4
1	.57	.13	.70	.27	.84	.41	2.97	.54	.10	4.1	8.1	2.1	6.1	70.2
2	.56	.12	.69	.26	.82	.38	.94	.50	.07	3.8	7.6	1.4	5.1	68.9
3	.56	.12	.68	.24	.80	.35	.91	.47	8.03	3.5	7.1	60.6	4.2	7.7
4	.55	.11	.66	.22	.78	.33	.88	.44	7.99	3.3	6.6	59.9	3.2	6.5
27 05	27.55	55.10	82.65	110.21	137.76	165.31	192.86	220.40	247.96	1653.1	3306.1	4959.2	6612.2	8265.3
6	.55	.09	.64	.19	.73	.28	.83	.37	.92	2.8	5.6	8.5	1.2	4.1
7	.54	.08	.63	.17	.71	.26	.80	.34	.88	2.6	5.1	7.7	10.2	2.8
8	.54	.08	.62	.15	.69	.23	.77	.31	.84	2.3	4.7	6.9	09.3	1.6
9	.53	.07	.60	.14	.67	.21	.74	.27	.81	2.1	4.2	6.2	8.3	60.4
27 10	27.53	55.06	82.59	110.12	137.65	165.18	192.71	220.24	247.77	1651.8	3303.7	4955.5	6607.3	8259.2
11	.53	.05	.58	.10	.63	.16	.68	.21	.73	1.6	3.2	4.8	6.3	7.9
12	.52	.04	.57	.09	.61	.13	.65	.18	.70	1.3	2.7	4.0	5.3	6.7
13	.52	.04	.55	.08	.59	.11	.63	.14	.66	1.1	2.2	3.3	4.4	5.5
14	.51	.03	.54	.06	.57	.08	.60	.11	.63	0.8	1.7	2.5	3.4	4.2
27 15	27.51	55.02	82.53	110.04	137.55	165.06	192.57	220.08	247.59	1650.6	3301.2	4951.8	6602.4	8253.0
16	.51	.01	.52	.03	.53	.04	.54	.05	.55	0.4	0.7	1.1	1.4	1.8
17	.50	.00	.51	10.01	.51	5.01	.51	20.02	.52	50.1	300.2	50.3	600.4	50.6
18	.50	5.00	.49	09.99	.49	4.99	.49	19.98	.48	49.9	299.7	49.6	599.5	49.3
19	.49	4.99	.48	.98	.47	.96	.46	.95	.45	9.6	9.2	8.8	8.5	8.1
27 20	27.49	54.98	82.47	109.96	137.45	164.94	192.43	219.92	247.41	1649.4	3298.7	4948.1	6597.5	8246.9
21	.49	.97	.46	.94	.43	.91	.40	.89	.37	9.1	8.2	7.4	6.5	5.6
22	.48	.96	.44	.93	.41	.89	.37	.85	.33	8.9	7.7	6.6	5.5	4.4
23	.48	.96	.43	.91	.39	.86	.34	.82	.30	8.6	7.3	5.9	4.5	3.2
24	.47	.95	.42	.89	.37	.84	.31	.79	.26	8.4	6.8	5.1	3.5	1.9
27 25	27.47	54.94	82.41	109.88	137.34	164.81	192.29	219.75	247.22	1648.1	3296.3	4944.4	6592.5	8240.7
26	.47	.93	.39	.86	.32	.79	.26	.72	.18	7.9	5.8	3.7	1.5	39.4
27	.46	.92	.38	.84	.30	.76	.23	.69	.14	7.6	5.3	2.9	90.5	8.2
28	.46	.92	.37	.82	.28	.74	.20	.66	.11	7.4	4.8	2.2	89.6	7.0
29	.45	.91	.36	.81	.26	.71	.17	.62	.07	7.1	4.3	1.4	8.6	5.7
27 30	27.45	54.90	82.34	109.79	137.24	164.69	192.14	219.59	247.03	1646.9	3293.8	4940.7	6587.6	8234.5
31	.45	.89	.33	.77	.22	.67	.11	.56	6.99	6.7	3.3	40.0	6.6	3.3
32	.44	.88	.32	.76	.20	.64	.08	.52	.96	6.4	2.8	39.2	5.6	2.0
33	.44	.87	.31	.74	.18	.62	.05	.49	.92	6.2	2.3	8.5	4.6	30.8
34	.43	.86	.29	.73	.16	.59	.02	.46	.88	5.9	1.8	7.7	3.6	29.5
27 35	27.43	54.86	82.28	109.71	137.13	164.57	192.00	219.42	246.84	1645.7	3291.3	4937.0	6582.6	8228.3
36	.43	.85	.27	.69	.11	.54	1.97	.39	.81	5.4	0.8	6.2	1.6	7.0
37	.42	.84	.26	.68	.09	.52	.94	.36	.77	5.2	90.3	5.5	80.6	5.8
38	.42	.83	.24	.66	.07	.49	.91	.33	.73	4.9	89.8	4.7	79.6	4.5
39	.41	.82	.23	.65	.05	.47	.88	.29	.70	4.7	9.3	4.0	8.6	3.3
27 40	27.41	54.81	82.22	109.63	137.03	164.44	191.85	219.26	246.66	1644.4	3288.8	4933.2	6577.6	8222.1
41	.40	.80	.21	.61	7.01	.42	.82	.23	.62	4.2	8.3	2.5	6.6	20.8
42	.40	.79	.20	.60	6.99	.39	.79	.19	.59	3.9	7.8	1.7	5.6	19.6
43	.40	.79	.18	.58	.97	.37	.76	.16	.55	3.7	7.3	1.0	4.6	8.3
44	.39	.78	.17	.56	.95	.34	.73	.12	.51	3.4	6.8	30.2	3.6	7.1
27 45	27.39	54.77	82.16	109.55	136.93	164.32	191.71	219.09	246.48	1643.2	3286.3	4929.5	6572.6	8215.8
46	.38	.76	.15	.53	.91	.29	.68	.06	.44	2.9	5.8	8.7	1.6	4.6
47	.38	.75	.13	.51	.89	.27	.65	9.02	.40	2.7	5.3	8.0	70.6	3.3
48	.38	.75	.12	.49	.87	.24	.62	8.99	.36	2.4	4.8	7.2	69.6	2.1
49	.37	.74	.11	.48	.85	.22	.59	.95	.33	2.2	4.3	6.5	8.6	10.8
27 50	27.37	54.73	82.10	109.46	136.83	164.19	191.56	218.92	246.29	1641.9	3283.8	4925.7	6567.6	8209.6
51	.36	.72	.08	.44	.81	.17	.53	.89	.25	1.7	3.3	5.0	6.6	8.3
52	.36	.71	.07	.43	.79	.14	.50	.85	.21	1.4	2.8	4.2	5.6	7.0
53	.36	.71	.06	.41	.77	.12	.47	.82	.18	1.2	2.3	3.5	4.6	5.8
54	.35	.70	.05	.39	.75	.09	.44	.79	.14	0.9	1.8	2.7	3.6	4.5
27 55	27.35	54.69	82.03	109.38	136.72	164.07	191.41	218.75	246.10	1640.7	3281.3	4922.0	6562.6	8203.3
56	.34	.68	.02	.36	.70	.04	.38	.72	.06	0.4	0.8	1.2	1.6	2.0
57	.34	.67	.01	.34	.68	4.02	.35	.69	6.02	40.2	80.3	20.5	60.6	200.7
58	.33	.67	2.00	.32	.66	3.99	.32	.66	5.99	39.9	79.8	19.7	59.6	199.5
59	.33	.66	1.98	.31	.64	.96	.29	.62	.95	9.6	9.3	8.9	8.6	8.2
27 60	27.32	54.65	81.97	109.29	136.62	163.94	191.26	218.59	245.91	1639.4	3278.8	4918.2	6557.6	8197.0

Lat.		Latitude 27° to 28°—Meridional arcs.						Latitude 27°—Co-ordinates of curvature.			
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.		X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	°	′	*Meters.*	*Meters.*
27	00	30.777			1846.65						
	1	8	1	30.78	.65	1	1 846.7	0	1	1 654.3	0.1
	2	8	2	61.56	.66	2	3 693.3		2	3 308.5	0.4
	3	8	3	92.34	.66	3	5 540.0		3	4 962.8	1.0
	4	8	4	123.12	.67	4	7 386.6		4	6 617.1	1.7
27	05	30.778	5	153.90	1846.67	5	9 233.3	0	5	8 271.4	2.7
	6	8	6	184.68	.68	6	11 080.0		6	9 925.7	3.9
	7	8	7	215.46	.68	7	12 926.7		7	11 579.9	5.4
	8	8	8	246.24	.69	8	14 773.3		8	13 234.2	7.0
	9	8	9	277.02	.69	9	16 620.0		9	14 888.5	8.8
27	10	30.778	10	307.80	1846.69	10	18 466.7	0	10	16 542.8	10.9
	11	8	1	338.58	.70	1	20 313.4		15	24 814.1	24.6
	12	8	2	369.36	.70	2	22 160.1		20	33 085.5	43.7
	13	8	3	400.14	.71	3	24 006.8		25	41 356.9	68.3
	14	9	4	430.92	.71	4	25 853.5		30	49 628.2	98.3
27	15	30.779	15	461.70	1846.72	15	27 700.2	0	35	57 899.5	133.8
	16	9	6	492.48	.72	6	29 547.0		40	66 170.8	174.8
	17	9	7	523.26	.73	7	31 393.7		45	74 442.1	221.2
	18	9	8	554.04	.73	8	33 240.4		50	82 713.3	273.1
	19	9	9	584.81	.73	9	35 087.2		55	90 984.5	330.4
27	20	30.779	20	615.59	1846.74	20	36 933.9	1	00	99 255.7	393.2
	21	9	1	646.37	.74	1	38 780.6		05	107 526.8	461.5
	22	9	2	677.15	.75	2	40 627.4		10	115 797.9	535.2
	23	9	3	707.93	.75	3	42 474.1		15	124 068.9	614.4
	24	9	4	738.71	.76	4	44 320.9		20	132 339.9	699.1
27	25	30.779	25	769.49	1846.76	25	46 167.6	1	25	140 610.8	789.2
	26	9	6	800.27	.77	6	48 014.4		30	148 881.6	884.8
	27	9	7	831.05	.77	7	49 861.2		35	157 152.3	985.8
	28	80	8	861.83	.77	8	51 707.9		40	165 423.1	1 092.3
	29	0	9	892.61	.78	9	53 554.7		45	173 693.7	1 204.3
27	30	30.780	30	923.39	1846.78	30	55 401.5	1	50	181 964.3	1 321.7
	31	0	1	954.17	.79	1	57 248.3		55	190 234.7	1 444.6
	32	0	2	984.95	.79	2	59 095.1	2	00	198 505	1 573
	33	0	3	1 015.73	.80	3	60 941.9	3	00	297 742	3 539
	34	0	4	1 046.51	.80	4	62 788.7	4	00	396 960	6 291
27	35	30.780	35	1 077.29	1846.81	35	64 635.5	5	00	496 154	9 829
	36	0	6	1 108.07	.81	6	66 482.3	6	00	595 316	14 154
	37	0	7	1 138.85	.81	7	68 329.1	7	00	694 440	19 264
	38	0	8	1 169.63	.82	8	70 175.9	8	00	793 522	25 159
	39	0	9	1 200.41	.82	9	72 022.7	9	00	892 554	31 839
27	40	30.780	40	1 231.19	1846.83	40	73 869.6	10	00	991 529	39 303
	41	1	1	1 261.97	.83	1	75 716.4	11	00	1 090 442	47 551
	42	1	2	1 292.75	.84	2	77 563.2	12	00	1 189 287	56 583
	43	1	3	1 323.53	.84	3	79 410.1	13	00	1 288 057	66 398
	44	1	4	1 354.31	.85	4	81 256.9	14	00	1 386 746	76 995
27	45	30.781	45	1 385.09	1846.85	45	83 103.7	15	00	1 485 348	88 374
	46	1	6	1 415.87	.86	6	84 950.6	16	00	1 583 857	100 534
	47	1	7	1 446.65	.86	7	86 797.5	17	00	1 682 267	113 474
	48	1	8	1 477.43	.86	8	88 644.3	18	00	1 780 570	127 193
	49	1	9	1 508.21	.87	9	90 491.2	19	00	1 878 762	141 690
27	50	30.781	50	1 538.99	1846.87	50	92 338.1	20	00	1 976 836	156 966
	51	1	1	1 569.77	.88	1	94 184.9	21	00	2 074 786	173 018
	52	1	2	1 600.55	.88	2	96 031.8	22	00	2 172 606	189 845
	53	1	3	1 631.33	.89	3	97 878.7	23	00	2 270 289	207 447
	54	2	4	1 662.11	.89	4	99 725.6	24	00	2 367 830	225 823
27	55	30.782	55	1 692.88	1846.90	55.	101 572.5	25	00	2 465 222	244 970
	56	2	6	1 723.66	.90	6	103 419.4	26	00	2 562 459	264 889
	57	2	7	1 754.44	.90	7	105 266.3	27	00	2 659 535	285 577
	58	2	8	1 785.22	.91	8	107 113.2	28	00	2 756 445	307 035
	59	2	9	1 816.00	.91	9	108 960.1	29	00	2 853 181	329 259
27	60	30.782	60	1 846.78	1846.92	60	110 807.0	30	00	2 949 739	352 249

Latitude 28° to 29°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
28 00	27.32	54.65	81.97	109.29	136.62	163.94	191.26	218.59	245.91	1639.4	3278.8	4918.2	6557.6	8197.0
1	.32	.64	.96	.27	.60	.91	.23	.56	.87	9.1	8.3	7.4	6.6	5.7
2	.31	.63	.94	.26	.58	.89	.20	.52	.83	8.9	7.8	6.7	5.6	4.4
3	.31	.62	.93	.24	.56	.86	.17	.49	.80	8.6	7.3	5.9	4.5	3.2
4	.30	.61	.92	.22	.54	.84	.14	.45	.76	8.4	6.8	5.2	3.5	1.9
28 05	27.30	54.60	81.91	109.21	136.51	163.81	191.12	218.42	245.72	1638.1	3276.3	4914.4	6552.5	8190.7
6	.30	.60	.89	.19	.49	.79	.09	.39	.68	7.9	5.8	3.6	1.5	89.4
7	.29	.59	.88	.17	.47	.76	.06	.35	.66	7.6	5.3	2.9	50.5	8.1
8	.29	.58	.87	.15	.45	.74	.03	.32	.61	7.4	4.7	2.1	49.5	6.9
9	.28	.57	.86	.14	.43	.71	1.00	.28	.57	7.1	4.2	1.4	8.5	5.6
28 10	27.28	54.56	81.84	109.12	136.41	163.69	190.97	218.25	245.53	1636.9	3273.7	4910.6	6547.5	8184.3
11	.28	.55	.83	.10	.39	.66	.94	.22	.49	6.6	3.2	09.8	6.5	3.1
12	.27	.54	.82	.09	.37	.64	.91	.18	.45	6.4	2.7	9.1	5.4	1.8
13	.27	.54	.80	.07	.34	.61	.88	.15	.42	6.1	2.2	8.5	4.4	80.5
14	.26	.53	.79	.05	.32	.59	.85	.11	.38	5.9	1.7	7.6	3.4	79.3
28 15	27.26	54.52	81.78	109.04	136.30	163.56	190.82	218.08	245.34	1635.6	3271.2	4906.8	6542.4	8178.0
16	.26	.51	.77	.02	.28	.53	.79	.05	.30	5.3	0.7	6.0	1.4	6.7
17	.25	.50	.75	9.00	.26	.51	.76	8.01	.26	5.1	70.2	5.3	40.3	5.4
18	.25	.50	.74	8.98	.23	.48	.73	7.98	.23	4.8	69.6	4.5	39.3	4.2
19	.24	.49	.73	.97	.21	.46	.70	.94	.19	4.6	9.1	3.8	8.3	2.9
28 20	27.24	54.48	81.72	108.95	136.19	163.43	190.67	217.91	245.15	1634.3	3268.6	4903.0	6537.3	8171.6
21	.24	.47	.70	.93	.17	.41	.64	.88	.11	4.1	8.1	2.2	6.3	70.3
22	.23	.46	.69	.92	.15	.38	.61	.84	.07	3.8	7.6	1.4	5.2	69.1
23	.23	.45	.68	.90	.13	.36	.58	.81	.03	3.6	7.1	900.7	4.2	7.8
24	.22	.44	.67	.88	.11	.33	.55	.77	5.01	3.3	6.6	899.9	3.2	6.5
28 25	27.22	54.44	81.65	108.87	136.08	163.30	190.52	217.74	244.96	1633.0	3266.1	4899.1	6532.2	8165.2
26	.22	.43	.64	.85	.06	.28	.49	.71	.92	2.8	5.6	8.3	1.2	3.9
27	.21	.42	.63	.83	.04	.25	.46	.67	.88	2.5	5.1	7.6	30.1	2.7
28	.21	.41	.61	.81	.02	.23	.43	.64	.84	2.3	4.5	6.8	29.1	1.4
29	.20	.40	.60	.80	6.00	.20	.40	.60	.80	2.0	4.0	6.1	8.1	60.1
28 30	27.20	54.39	81.59	108.78	135.98	163.18	190.37	217.57	244.76	1631.8	3263.5	4895.3	6527.1	8158.8
31	.19	.38	.58	.76	.96	.15	.34	.54	.72	1.5	3.0	4.5	6.0	7.5
32	.19	.37	.56	.75	.94	.13	.31	.50	.68	1.3	2.5	3.7	5.0	6.3
33	.19	.37	.55	.73	.92	.10	.28	.47	.65	1.0	2.0	3.0	4.0	5.0
34	.18	.36	.54	.71	.90	.08	.25	.43	.61	0.8	1.5	2.2	2.9	3.7
28 35	27.18	54.35	81.52	108.70	135.87	163.05	190.22	217.40	244.57	1630.5	3261.0	4891.4	6521.9	8152.4
36	.17	.34	.51	.68	.85	.02	.19	.37	.53	0.2	0.5	90.6	20.9	51.1
37	.17	.33	.50	.66	.83	3.00	.16	.33	.49	30.0	60.0	89.9	19.9	49.8
38	.16	.33	.49	.64	.81	2.97	.13	.30	.46	29.7	59.4	9.1	8.8	8.5
39	.16	.32	.47	.63	.79	.95	.10	.26	.42	9.5	8.9	8.4	7.8	7.3
28 40	27.15	54.31	81.46	108.61	135.77	162.92	190.07	217.23	244.38	1629.2	3258.4	4887.6	6516.8	8146.0
41	.15	.30	.45	.59	.75	.89	.04	.20	.34	8.9	7.9	6.8	5.7	4.7
42	.14	.29	.43	.58	.73	.87	90.01	.16	.30	8.7	7.4	6.0	4.7	3.4
43	.14	.28	.42	.56	.70	.84	89.98	.13	.26	8.4	6.8	5.3	3.7	2.1
44	.13	.27	.41	.54	.68	.82	.95	.09	.22	8.2	6.3	4.5	2.6	40.8
28 45	27.13	54.27	81.40	108.53	135.66	162.79	189.92	217.06	244.18	1627.9	3255.8	4883.7	6511.6	8139.5
46	.13	.26	.38	.51	.64	.76	.89	7.02	.15	7.6	5.3	2.9	10.6	8.2
47	.12	.25	.37	.49	.62	.74	.86	6.99	.11	7.4	4.8	2.1	09.5	6.9
48	.12	.24	.36	.47	.59	.71	.83	.95	.07	7.1	4.2	1.4	8.5	5.6
49	.11	.23	.34	.46	.57	.69	.80	.92	4.03	6.9	3.7	80.6	7.5	4.4
28 50	27.11	54.22	81.33	108.44	135.55	162.66	189.77	216.88	243.99	1626.6	3253.2	4879.8	6506.4	8133.1
51	.11	.21	.32	.42	.53	.64	.74	.85	.95	6.4	2.7	9.1	5.4	1.8
52	.10	.20	.30	.41	.51	.61	.71	.81	.91	6.1	2.2	8.2	4.4	30.5
53	.10	.19	.29	.39	.48	.58	.68	.78	.87	5.8	1.6	7.5	3.3	29.2
54	.09	.18	.28	.37	.46	.56	.65	.74	.83	5.6	1.1	6.7	2.3	7.9
28 55	27.09	54.18	81.27	108.36	135.44	162.53	189.62	216.71	243.80	1625.3	3250.6	4875.9	6501.2	8126.6
56	.09	.17	.25	.34	.42	.51	.59	.68	.76	5.1	50.1	5.2	500.2	5.3
57	.08	.16	.24	.32	.40	.48	.56	.64	.72	4.8	49.6	4.3	499.2	4.0
58	.08	.15	.23	.30	.37	.45	.53	.61	.68	4.5	9.0	3.6	8.1	2.7
59	.07	.14	.21	.29	.35	.43	.50	.57	.64	4.3	8.5	2.8	7.1	1.4
28 60	27.07	54.13	81.20	108.27	135.33	162.40	189.47	216.54	243.60	1624.0	3248.0	4872.0	6496.1	8120.1

Lat.		Latitude 28° to 29°—Meridional arcs.						Latitude 28°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
28	00	30.782			1846.92					
	1	2	1	30.78	.92	1	1 846.9	0 1	1 639.4	0.1
	2	2	2	61.57	.93	2	3 693.8	2	3 278.8	0.4
	3	2	3	92.35	.93	3	5 540.8	3	4 918.2	1.0
	4	2	4	123.14	.94	4	7 387.7	4	6 557.6	1.8
28	05	30.782	5	153.92	1846.94	5	9 234.6	0 5	8 197.0	2.8
	6	2	6	184.71	.95	6	11 081.6	6	9 836.4	4.0
	7	2	7	215.49	.95	7	12 928.5	7	11 475.7	5.5
	8	3	8	246.27	.95	8	14 775.5	8	13 115.1	7.2
	9	3	9	277.06	.96	9	16 622.5	9	14 754.5	9.1
28	10	30.783	10	307.84	1846.96	10	18 469.4	0 10	16 393.9	11.2
	11	3	1	338.63	.97	1	20 316.4	15	24 590.9	25.2
	12	3	2	369.41	.97	2	22 163.3	20	32 787.9	44.8
	13	3	3	400.20	.98	3	24 010.3	25	40 984.8	70.0
	14	3	4	430.98	.98	4	25 857.3	30	49 181.7	100.7
28	15	30.783	15	461.76	1846.99	15	27 704.3	0 35	57 378.6	137.1
	16	3	6	492.55	6.99	6	29 551.3	40	65 575.5	179.1
	17	3	7	523.33	7.00	7	31 398.3	45	73 772.4	226.7
	18	3	8	554.12	.00	8	33 245.3	50	81 969.2	279.8
	19	3	9	584.90	.00	9	35 092.3	55	90 165.9	338.6
28	20	30.783	20	615.69	1847.01	20	36 939.3	1 00	98 362.6	403.0
	21	4	1	646.47	.01	1	38 786.3	05	106 559.3	472.9
	22	4	2	677.25	.02	2	40 633.3	10	114 756.0	548.5
	23	4	3	708.04	.02	3	42 480.3	15	122 952.5	629.6
	24	4	4	738.82	.03	4	44 327.4	20	131 149.0	716.4
28	25	30.784	25	769.61	1847.03	25	46 174.4	1 25	139 345.5	808.7
	26	4	6	800.39	.04	6	48 021.4	30	147 541.9	906.7
	27	4	7	831.17	.04	7	49 868.5	35	155 738.2	1 010.2
	28	4	8	861.96	.05	8	51 715.5	40	163 934.5	1 119.4
	29	4	9	892.74	.05	9	53 562.5	45	172 130.7	1 234.1
28	30	30.784	30	923.53	1847.06	30	55 409.6	1 50	180 326.8	1 354.4
	31	4	1	954.31	.06	1	57 256.7	55	188 522.8	1 480.4
	32	4	2	985.10	.06	2	59 103.7	2 00	196 719	1 612
	33	4	3	1 015.88	.07	3	60 950.8	3 00	295 062	3 627
	34	5	4	1 046.66	.07	4	62 797.9	4 00	393 385	6 447
28	35	30.785	35	1 077.45	1847.08	35	64 644.9	5 00	491 682	10 073
	36	5	6	1 108.23	.08	6	66 492.0	6 00	589 945	14 505
	37	5	7	1 139.02	.09	7	68 339.1	7 00	688 168	19 741
	38	5	8	1 169.80	.09	8	70 186.2	8 00	786 347	25 782
	39	5	9	1 200.59	.10	9	72 033.3	9 00	884 472	32 627
28	40	30.785	40	1 231.37	1847.10	40	73 880.4	10 00	982 537	40 276
	41	5	1	1 262.15	.11	1	75 727.5	11 00	1 080 537	48 728
	42	5	2	1 292.94	.11	2	77 574.6	12 00	1 178 464	57 983
	43	5	3	1 323.72	.11	3	79 421.7	13 00	1 276 312	68 040
	44	5	4	1 354.51	.12	4	81 268.8	14 00	1 374 075	78 899
28	45	30.785	45	1 385.29	1847.12	45	83 115.9	15 00	1 471 745	90 558
	46	5	6	1 416.08	.13	6	84 963.1	16 00	1 569 315	103 017
	47	6	7	1 446.86	.13	7	86 810.2	17 00	1 666 781	116 275
	48	6	8	1 477.64	.14	8	88 657.3	18 00	1 764 135	130 331
	49	6	9	1 508.43	.14	9	90 504.5	19 00	1 861 371	145 185
28	50	30.786	50	1 539.21	1847.15	50	92 351.6	20 00	1 958 481	160 835
	51	6	1	1 570.00	.15	1	94 198.8	21 00	2 055 460	177 280
	52	6	2	1 600.78	.16	2	96 045.9	22 00	2 152 302	194 518
	53	6	3	1 631.57	.16	3	97 893.1	23 00	2 248 998	212 550
	54	6	4	1 662.35	.17	4	99 740.2	24 00	2 345 544	231 374
28	55	30.786	55	1 693.13	1847.17	55	101 587.4	25 00	2 441 932	250 988
	56	6	6	1 723.92	.17	6	103 434.6	26 00	2 538 156	271 391
	57	6	7	1 754.70	.18	7	105 281.8	27 00	2 634 210	292 582
	58	6	8	1 785.49	.18	8	107 128.9	28 00	2 730 087	314 559
	59	6	9	1 816.27	.19	9	108 976.1	29 00	2 825 779	337 321
28	60	30.787	60	1 847.06	1847.19	60	110 823.3	30 00	2 921 284	360 866

Latitude 29° to 30°—arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
29 00	27.07	54.13	81.20	108.27	135.33	162.40	189.47	216.54	243.60	1624.0	3248.0	4872.0	6496.1	8120.1
1	.06	.12	.19	.25	.31	.38	.44	.50	.56	3.8	7.5	1.2	5.0	18.8
2	.06	.11	.17	.23	.29	.35	.41	.47	.52	3.5	7.0	70.4	4.0	7.5
3	.06	.11	.16	.22	.27	.32	.38	.43	.48	3.2	6.4	69.7	2.9	6.1
4	.05	.10	.15	.20	.25	.30	.35	.40	.44	3.0	5.9	8.9	1.9	4.8
29 05	27.05	54.09	81.13	108.18	135.22	162.27	189.31	216.36	243.40	1622.7	3245.4	4868.1	6490.8	8113.5
6	.04	.08	.12	.16	.20	.24	.28	.33	.37	2.4	4.9	7.3	89.8	2.2
7	.04	.07	.11	.14	.18	.22	.25	.29	.33	2.2	4.4	6.5	8.7	10.9
8	.03	.07	.10	.13	.16	.19	.22	.26	.29	1.9	3.8	5.8	7.7	09.6
9	.03	.06	.08	.11	.14	.17	.19	.22	.25	1.7	3.3	5.0	6.6	8.3
29 10	27.02	54.05	81.07	108.09	135.12	162.14	189.16	216.19	243.21	1621.4	3242.8	4864.2	6485.6	8107.0
11	.02	.04	.06	.07	.10	.11	.13	.15	.17	1.1	2.3	3.4	4.6	5.7
12	.01	.03	.04	.06	.08	.09	.10	.12	.13	0.9	1.8	2.6	3.5	4.4
13	.01	.02	.03	.04	.05	.06	.07	.08	.09	0.6	1.2	1.9	2.5	3.1
14	.00	.01	.02	.02	.03	.03	.04	.05	.05	0.3	0.7	1.1	1.4	1.7
29 15	27.00	54.00	81.00	108.00	135.01	162.01	189.01	216.01	243.02	1620.1	3240.2	4860.3	6480.4	8100.4
16	7.00	4.00	0.99	7.99	4.99	1.98	8.98	5.98	2.97	19.8	39.6	59.5	79.3	099.1
17	6.99	3.99	.98	.97	.97	.96	.95	.94	.93	9.6	9.1	8.7	8.3	7.8
18	.99	.98	.97	.95	.94	.93	.92	.91	.90	9.3	8.6	7.9	7.2	6.5
19	.98	.97	.95	.94	.92	.90	.89	.87	.86	9.0	8.1	7.1	6.2	5.2
29 20	26.98	53.96	80.94	107.92	134.90	161.88	188.86	215.84	242.82	1618.8	3237.6	4856.3	6475.1	8093.9
21	.98	.95	.93	.90	.88	.85	.83	.80	.78	8.5	7.0	5.5	4.1	2.6
22	.97	.94	.91	.88	.85	.82	.80	.77	.74	8.2	6.5	4.7	3.0	91.2
23	.97	.93	.90	.87	.83	.80	.77	.73	.70	8.0	6.0	4.0	1.9	89.9
24	.96	.92	.89	.85	.81	.77	.74	.70	.66	7.7	5.4	3.2	70.9	8.6
29 25	26.96	53.91	80.87	107.83	134.79	161.75	188.70	215.66	242.62	1617.5	3234.9	4852.4	6469.8	8087.3
26	.96	.91	.86	.81	.77	.72	.67	.62	.58	7.2	4.4	1.6	8.8	6.0
27	.95	.90	.85	.79	.75	.69	.64	.59	.54	6.9	3.8	0.8	7.7	4.6
28	.95	.89	.83	.78	.72	.67	.61	.55	.50	6.7	3.3	50.0	6.6	3.3
29	.94	.88	.82	.76	.70	.64	.58	.52	.46	6.4	2.8	49.2	5.6	2.0
29 30	26.94	53.87	80.81	107.74	134.68	161.61	188.55	215.48	242.42	1616.1	3232.3	4848.4	6464.5	8080.7
31	.93	.86	.79	.72	.66	.59	.52	.45	.38	5.9	1.8	7.6	3.5	79.4
32	.93	.85	.78	.71	.64	.56	.49	.41	.34	5.6	1.2	6.8	2.4	8.0
33	.92	.84	.77	.69	.61	.53	.46	.38	.30	5.3	0.7	6.0	1.4	6.7
34	.92	.83	.75	.67	.59	.51	.43	.34	.26	5.1	30.2	5.2	60.3	5.4
29 35	26.91	53.83	80.74	107.66	134.57	161.48	188.39	215.31	242.22	1614.8	3229.6	4844.4	6459.2	8074.0
36	.91	.82	.73	.64	.55	.45	.36	.27	.18	4.5	9.1	3.6	8.2	2.7
37	.90	.81	.71	.62	.53	.43	.33	.24	.14	4.3	8.6	2.8	7.1	1.4
38	.90	.80	.70	.60	.50	.40	.30	.20	.10	4.0	8.0	2.0	6.0	70.1
39	.90	.79	.69	.59	.48	.37	.27	.17	.06	3.7	7.5	1.2	5.0	68.7
29 40	26.89	53.78	80.67	107.57	134.46	161.35	188.24	215.13	242.02	1613.5	3227.0	4840.4	6453.9	8067.4
41	.89	.77	.66	.55	.44	.32	.21	.10	1.98	3.2	6.4	39.6	2.9	6.1
42	.88	.76	.65	.53	.41	.29	.18	.06	.94	2.9	5.9	8.8	1.8	4.7
43	.88	.75	.63	.51	.39	.27	.15	5.02	.90	2.7	5.4	8.0	50.7	3.4
44	.87	.75	.62	.50	.37	.24	.12	4.99	.86	2.4	4.8	7.2	49.7	2.1
29 45	26.87	53.74	80.61	107.48	134.35	161.21	188.08	214.95	241.82	1612.1	3224.3	4836.4	6448.6	8060.7
46	.87	.73	.59	.46	.33	.19	.05	.92	.78	1.9	3.8	5.6	7.5	59.4
47	.86	.72	.58	.44	.31	.16	8.02	.88	.74	1.6	3.2	4.8	6.5	8.1
48	.86	.71	.57	.43	.28	.13	7.99	.85	.70	1.3	2.7	4.1	5.4	6.7
49	.85	.70	.55	.41	.26	.11	.96	.81	.66	1.1	2.2	3.3	4.3	5.4
29 50	26.85	53.69	80.54	107.39	134.24	161.08	187.93	214.78	241.62	1610.8	3221.6	4832.5	6443.3	8054.1
51	.84	.68	.53	.37	.21	.05	.90	.74	.58	0.5	1.1	1.7	2.2	2.7
52	.84	.67	.51	.35	.19	.03	.87	.70	.54	0.3	0.6	0.9	1.1	1.4
53	.83	.67	.50	.34	.17	1.00	.84	.67	.50	10.0	20.0	30.0	40.1	50.1
54	.83	.66	.49	.32	.15	0.97	.81	.63	.46	09.7	19.5	29.2	39.0	48.7
29 55	26.82	53.65	80.47	107.30	134.12	160.95	187.77	214.60	241.42	1609.5	3219.0	4828.4	6437.9	8047.4
56	.82	.64	.46	.28	.10	.92	.74	.56	.38	9.2	8.4	7.6	6.8	6.0
57	.82	.63	.45	.26	.08	.89	.71	.53	.34	8.9	7.9	6.8	5.8	4.7
58	.81	.62	.43	.25	.06	.87	.68	.49	.30	8.7	7.4	6.0	4.7	3.4
59	.81	.61	.42	.23	.03	.84	.65	.45	.26	8.4	6.8	5.2	3.6	2.0
29 60	26.80	53.60	80.41	107.21	134.01	160.81	187.62	214.42	241.22	1608.1	3216.3	4824.4	6432.5	8040.7

Lat.		Latitude 29° to 30°—Meridional arcs.						Latitude 29°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
29	00	30.787			1847.19					
	1	7	1	30.79	.20	1	1 847.2	0 1	1 624.0	0.1
	2	7	2	61.58	.20	2	3 694.4	2	3 248.0	0.5
	3	7	3	92.37	.21	3	5 541.6	3	4 872.0	1.0
	4	7	4	123.16	.21	4	7 388.8	4	6 496.1	1.8
29	05	30.787	5	153.94	1847.22	5	9 236.0	0 5	8 120.1	2.9
	6	7	6	184.73	.22	6	11 083.2	6	9 744.1	4.1
	7	7	7	215.52	.23	7	12 930.5	7	11 368.1	5.6
	8	7	8	246.31	.23	8	14 777.7	8	12 992.1	7.3
	9	7	9	277.10	.24	9	16 624.9	9	14 616.1	9.3
29	10	30.787	10	307.89	1847.24	10	18 472.2	0 10	16 240.1	11.5
	11	7	1	338.68	.24	1	20 319.4	15	24 360.2	25.8
	12	7	2	369.47	.25	2	22 166.7	20	32 480.2	45.8
	13	8	3	400.26	.25	3	24 013.9	25	40 600.2	71.6
	14	8	4	431.04	.26	4	25 861.2	30	48 720.3	103.1
29	15	30.788	15	461.83	1847.26	15	27 708.4	0 35	56 840.2	140.3
	16	8	6	492.62	.27	6	29 555.7	40	64 960.2	183.2
	17	8	7	523.41	.27	7	31 403.0	45	73 080.1	231.9
	18	8	8	554.20	.28	8	33 250.2	50	81 200.0	286.3
	19	8	9	584.99	.28	9	35 097.5	55	89 319.8	346.4
29	20	30.788	20	615.78	1847.29	20	36 944.8	1 00	97 439.6	412.2
	21	8	1	646.57	.29	1	38 792.1	05	105 559.4	483.8
	22	8	2	677.36	.30	2	40 639.4	10	113 679.1	561.1
	23	8	3	708.14	.30	3	42 486.7	15	121 798.7	644.1
	24	8	4	738.93	.31	4	44 334.0	20	129 918.3	732.9
29	25	30.788	25	769.72	1847.31	25	46 181.3	1 25	138 037.8	827.4
	26	9	6	800.51	.31	6	48 028.6	30	146 157.3	927.6
	27	9	7	831.30	.32	7	49 875.9	35	154 276.7	1 033.5
	28	9	8	862.09	.32	8	51 723.2	40	162 396.0	1 145.1
	29	9	9	892.88	.33	9	53 570.6	45	170 515.2	1 262.5
29	30	30.789	30	923.67	1847.33	30	55 417.9	1 50	178 634.3	1 385.6
	31	9	1	954.46	.34	1	57 265.2	55	186 753.4	1 514.4
	32	9	2	985.24	.34	2	59 112.6	2 00	194 872	1 649
	33	9	3	1 016.03	.35	3	60 959.9	3 00	292 291	3 710
	34	9	4	1 046.82	.35	4	62 807.3	4 00	389 689	6 595
29	35	30.789	35	1 077.61	1847.36	35	64 654.6	5 00	487 059	10 305
	36	9	6	1 108.40	.36	6	66 502.0	6 00	584 394	14 838
	37	9	7	1 139.19	.37	7	68 349.3	7 00	681 687	20 194
	38	90	8	1 169.98	.37	8	70 196.7	8 00	778 931	26 374
	39	0	9	1 200.77	.38	9	72 044.1	9 00	876 120	33 376
29	40	30.790	40	1 231.56	1847.38	40	73 891.5	10 00	973 246	41 199
	41	0	1	1 262.34	.38	1	75 738.9	11 00	1 070 302	49 845
	42	0	2	1 293.13	.39	2	77 586.2	12 00	1 167 282	59 313
	43	0	3	1 323.92	.39	3	79 433.6	13 00	1 264 178	69 601
	44	0	4	1 354.71	.40	4	81 281.0	14 00	1 360 983	80 706
29	45	30.790	45	1 385.50	1847.40	45	83 128.4	15 00	1 457 691	92 631
	46	0	6	1 416.29	.41	6	84 975.8	16 00	1 554 295	105 375
	47	0	7	1 447.08	.41	7	86 823.2	17 00	1 650 787	118 935
	48	0	8	1 477.87	.42	8	88 670.7	18 00	1 747 161	133 311
	49	0	9	1 508.66	.42	9	90 518.1	19 00	1 843 410	148 502
29	50	30.790	50	1 539.44	1847.43	50	92 365.5	20 00	1 939 527	164 506
	51	1	1	1 570.23	.43	1	94 212.9	21 00	2 035 505	181 324
	52	1	2	1 601.02	.44	2	96 060.4	22 00	2 131 338	198 953
	53	1	3	1 631.81	.44	3	97 907.8	23 00	2 227 020	217 392
	54	1	4	1 662.60	.45	4	99 755.3	24 00	2 322 539	236 640
29	55	30.791	55	1 693.39	1847.45	55	101 602.7	25 00	2 417 893	256 695
	56	1	6	1 724.18	.46	6	103 450.2	26 00	2 513 074	277 558
	57	1	7	1 754.97	.46	7	105 297.6	27 00	2 608 075	299 224
	58	1	8	1 785.76	.46	8	107 145.1	28 00	2 702 890	321 694
	59	1	9	1 816.54	.47	9	108 992.5	29 00	2 797 511	344 964
	60	30.791	60	1 847.33	1847.47	60	110 840.0	30 00	2 891 931	369 036

Latitude 30° to 31°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
30 00	26.80	53.60	80.41	107.21	134.01	160.81	187.62	214.42	241.22	1608.1	3216.3	4824.4	6432.5	8040.7
01	.80	.59	.39	.19	3.99	.79	.59	.38	.18	7.9	5.7	3.6	1.4	39.3
02	.79	.58	.38	.17	.97	.76	.56	.35	.14	7.6	5.2	2.8	30.4	8.0
03	.79	.57	.37	.16	.94	.73	.52	.31	.10	7.3	4.6	2.0	29.3	6.6
04	.78	.56	.35	.14	.92	.71	.49	.28	.06	7.1	4.1	1.2	8.3	5.3
30 05	26.78	53.55	80.34	107.12	133.90	160.68	187.46	214.24	241.02	1606.8	3213.6	4820.4	6427.2	8033.9
06	.78	.55	.33	.10	.88	.65	.43	.20	0.98	6.5	3.0	19.6	6.1	2.6
07	.77	.54	.31	.08	.86	.62	.40	.17	.94	6.2	2.5	8.8	5.0	31.3
08	.77	.53	.30	.07	.83	.60	.36	.13	.90	6.0	2.0	7.9	4.0	29.9
09	.76	.52	.29	.05	.81	.57	.33	.10	.86	5.7	1.4	7.1	2.9	8.6
30 10	26.76	53.51	80.27	107.03	133.79	160.54	187.30	214.06	240.82	1605.4	3210.9	4816.3	6421.8	8027.2
11	.75	.50	.26	7.01	.77	.52	.27	4.02	.78	5.2	10.4	5.5	20.7	5.9
12	.75	.49	.24	6.99	.74	.49	.24	3.99	.74	4.9	09.8	4.7	19.6	4.5
13	.74	.48	.23	.98	.72	.46	.21	.95	.70	4.6	9.3	3.9	8.6	3.2
14	.74	.47	.22	.96	.70	.44	.18	.92	.65	4.4	8.7	3.1	7.5	1.8
30 15	26.73	53.46	80.20	106.94	133.68	160.41	187.14	213.88	240.61	1604.1	3208.2	4812.3	6416.4	8020.4
16	.73	.46	.19	.92	.65	.38	.11	.84	.57	3.8	7.6	1.5	5.3	19.1
17	.73	.45	.18	.90	.63	.35	.08	.81	.53	3.5	7.1	10.7	4.2	7.7
18	.72	.44	.16	.89	.61	.33	.05	.77	.49	3.3	6.6	09.8	3.1	6.4
19	.72	.43	.15	.87	.58	.30	7.02	.73	.45	3.0	6.0	9.0	2.0	5.0
30 20	26.71	53.42	80.14	106.85	133.56	160.27	186.99	213.70	240.41	1602.7	3205.5	4808.2	6410.9	8013.7
21	.71	.41	.12	.83	.54	.24	.96	.66	37	2.4	4.9	7.4	09.8	2.3
22	.70	.40	.11	.81	.52	.22	.93	.63	.33	2.2	4.4	6.6	8.7	11.0
23	.70	.39	.10	.80	.49	.19	.89	.59	.29	1.9	3.8	5.7	7.7	09.6
24	.69	.38	.08	.78	.47	.16	.86	.56	.25	1.6	3.3	4.9	6.6	8.2
30 25	26.69	53.37	80.07	106.76	133.45	160.14	186.83	213.52	240.21	1601.4	3202.8	4804.1	6405.5	8006.9
26	.69	.37	.06	.74	.43	.11	.80	.48	.16	1.1	2.2	3.3	4.4	5.5
27	.68	.36	.04	.72	.41	.08	.77	.45	.13	0.8	1.6	2.5	3.3	4.2
28	.68	.35	.03	.71	.38	.06	.73	.41	.08	0.6	1.1	1.6	2.3	2.8
29	.67	.34	.01	.69	.36	.03	.70	.38	.04	0.3	0.6	0.8	1.2	1.4
30. 30	26.67	53.33	80.00	106.67	133.34	160.00	186.67	213.34	240.00	1600.0	3200.0	4800.0	6400.1	8000.1
31	.66	.32	79.99	.65	.32	59.97	.64	.30	39.96	599.7	199.5	799.2	399.0	7998.7
32	.66	.31	.97	.63	.29	.95	.61	.27	.92	9.5	8.9	8.4	7.9	7.3
33	.65	.30	.96	.62	.27	.92	.57	.23	.88	9.2	8.4	7.5	6.8	6.0
34	.65	.29	.95	.60	.25	.89	.54	.19	.84	8.9	7.8	6.7	5.7	4.6
30 35	26.65	53.29	79.93	106.58	133.22	159.86	186.51	213.15	239.80	1598.6	3197.3	4795.9	6394.6	7993.2
36	.64	.28	.92	.56	.20	.84	.48	.12	.76	8.4	6.8	5.1	3.5	1.9
37	.64	.27	.90	.54	.18	.81	.45	.08	.71	8.1	6.2	4.3	2.4	90.5
38	.63	.26	.89	.52	.16	.78	.41	.04	.67	7.8	5.7	3.4	1.3	89.1
39	.63	.25	.88	.51	.13	.76	.38	3.01	.63	7.6	5.1	2.6	90.2	7.8
30 40	26.62	53.24	79.86	106.49	133.11	159.73	186.35	212.97	239.59	1597.3	3194.6	4791.8	6389.1	7986.4
41	.62	.23	.85	.47	.09	.70	.32	.93	.55	7.0	4.0	1.0	8.0	5.0
42	.61	.22	.84	.45	.06	.67	.29	.90	.51	6.7	3.5	90.2	6.9	3.6
43	.61	.21	.82	.43	.04	.65	.25	.86	.47	6.5	2.9	89.3	5.8	2.3
44	.60	.20	.81	.41	.02	.62	.22	.82	.43	6.2	2.4	8.5	4.7	80.9
30 45	26.60	53.19	79.80	106.40	133.00	159.59	186.19	212.79	239.39	1595.9	3191.8	4787.7	6383.6	7979.5
46	.60	.19	.78	.38	2.97	.56	.16	.75	.35	5.6	1.3	6.9	2.5	8.2
47	.59	.18	.77	.36	.95	.53	.13	.71	.30	5.3	0.7	6.1	1.4	6.8
48	.59	.17	.75	.34	.93	.51	.09	.68	.26	5.1	90.2	5.2	80.3	5.4
49	.58	.16	.74	.32	.90	.48	.06	.64	.22	4.8	89.6	4.4	79.2	4.0
30 50	26.58	53.15	79.73	106.30	132.88	159.45	186.03	212.60	239.18	1594.5	3189.1	4783.6	6378.1	7972.7
51	.57	.14	.71	.28	.86	.42	6.00	.57	.14	4.2	8.5	2.8	7.0	71.3
52	.57	.13	.70	.26	.83	.40	5.97	.53	.10	4.0	8.0	2.0	5.9	69.9
53	.56	.12	.69	.25	.81	.37	.93	.49	.06	3.7	7.4	1.1	4.8	8.5
54	.56	.11	.67	.23	.79	.34	.90	.46	9.01	3.4	6.9	4780.3	3.7	7.1
30 55	26.55	53.10	79.66	106.21	132.76	159.32	185.87	212.42	238.97	1593.2	3186.3	4779.5	6372.6	7965.8
56	.55	.10	.64	.19	.74	.29	.84	.38	.93	2.9	5.8	8.7	1.5	4.4
57	.55	.09	.63	.17	.72	.26	.81	.35	.89	2.6	5.2	7.8	70.4	3.0
58	.54	.08	.62	.16	.70	.23	.77	.31	.85	2.3	4.6	7.0	69.3	1.6
59	.54	.07	.60	.14	.67	.21	.74	.27	.81	2.1	4.1	6.1	8.2	60.2
30 60	26.53	53.06	79.59	106.12	132.65	159.18	185.71	212.24	238.77	1591.8	3183.5	4775.3	6367.1	7958.9

Lat.		Latitude 30° to 31°—Meridional arcs.						Latitude 30°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
30	00	30.791			1847.47					
	1	1	1	30.79	.48	1	1 847.5	0 1	1 608.1	0.1
	2	1	2	61.59	.48	2	3 695.0	2	3 216.3	0.5
	3	1	3	92.38	.49	3	5 542.4	3	4 824.4	1.1
	4	2	4	123.17	.49	4	7 389.9	4	6 432.6	1.9
30	05	30.792	5	153.97	1847.50	5	9 237.4	0 5	8 040.7	2.9
	6	2	6	184.76	.50	6	11 084.9	6	9 648.8	4.2
	7	2	7	215.56	.51	7	12 932.4	7	11 257.0	5.7
	8	2	8	246.35	.51	8	14 779.9	8	12 865.1	7.5
	9	2	9	277.14	.52	9	16 627.4	9	14 473.2	9.5
30	10	30.792	10	307.94	1847.52	10	18 475.0	0 10	16 081.4	11.7
	11	2	1	338.73	.53	1	20 322.5	15	24 122.0	26.3
	12	2	2	369.52	.53	2	22 170.0	20	32 162.7	46.8
	13	2	3	400.32	.54	3	24 017.5	25	40 203.3	73.1
	14	2	4	431.11	.54	4	25 865.1	30	48 244.0	105.3
30	15	30.792	15	461.90	1847.55	15	27 712.6	0 35	56 284.6	143.3
	16	3	6	492.70	.55	6	29 560.2	40	64 325.1	187.1
	17	3	7	523.49	.56	7	31 407.7	45	72 365.6	236.8
	18	3	8	554.29	.56	8	33 255.3	50	80 406.1	292.4
	19	3	9	585.08	.56	9	35 102.8	55	88 446.6	353.8
30	20	30.793	20	615.87	1847.57	20	36 950.4	1 00	96 487.0	421.0
	21	3	1	646.67	.57	1	38 798.0	05	104 527.3	494.1
	22	3	2	677.46	.58	2	40 645.5	10	112 567.6	573.0
	23	3	3	708.25	.58	3	42 493.1	15	120 607.9	657.8
	24	3	4	739.05	.59	4	44 340.7	20	128 648.0	748.4
30	25	30.793	25	769.84	1847.59	25	46 188.3	1 25	136 688.1	844.9
	26	3	6	800.63	.60	6	48 035.9	30	144 728.2	947.3
	27	3	7	831.43	.60	7	49 883.5	35	152 768.2	1 055.4
	28	3	8	862.22	.61	8	51 731.1	40	160 808.0	1 169.4
	29	4	9	893.01	.61	9	53 578.7	45	168 847.8	1 289.3
30	30	30.794	30	923.81	1847.62	30	55 426.3	1 50	176 887.5	1 415.0
	31	4	1	954.60	.62	1	57 273.9	55	184 927.1	1 546.6
	32	4	2	985.40	.63	2	59 121.6	2 00	192 967	1 684
	33	4	3	1 016.19	.63	3	60 969.2	3 00	289 432	3 789
	34	4	4	1 046.98	.64	4	62 816.8	4 00	385 875	6 735
30	35	30.794	35	1 077.78	1847.64	35	64 664.5	5 00	482 288	10 523
	36	4	6	1 108.57	.65	6	66 512.1	6 00	578 665	15 153
	37	4	7	1 139.36	.65	7	68 359.8	7 00	674 998	20 623
	38	4	8	1 170.16	.66	8	70 207.4	8 00	771 279	26 934
	39	4	9	1 200.95	.66	9	72 055.1	9 00	867 502	34 084
30	40	30.794	40	1 231.74	1847.66	40	73 902.7	10 00	963 658	42 074
	41	4	1	1 262.54	.67	1	75 750.4	11 00	1 059 741	50 903
	42	5	2	1 293.33	.67	2	77 598.1	12 00	1 155 744	60 570
	43	5	3	1 324.13	.68	3	79 445.8	13 00	1 251 658	71 074
	44	5	4	1 354.92	.68	4	81 293.4	14 00	1 347 477	82 415
30	45	30.795	45	1 385.71	1847.69	45	83 141.1	15 00	1 443 193	94 591
	46	5	6	1 416.51	.69	6	84 988.8	16 00	1 538 800	107 603
	47	5	7	1 447.30	.70	7	86 836.5	17 00	1 634 290	121 449
	48	5	8	1 478.09	.70	8	88 684.2	18 00	1 729 654	136 127
	49	5	9	1 508.89	.71	9	90 531.9	19 00	1 824 887	151 637
30	50	30.795	50	1 539.68	1847.71	50	92 379.6	20 00	1 919 982	167 977
	51	5	1	1 570.47	.72	1	94 227.4	21 00	2 014 930	185 147
	52	5	2	1 601.27	.72	2	96 075.1	22 00	2 109 725	203 143
	53	5	3	1 632.06	.73	3	97 922.8	23 00	2 204 359	221 966
	54	6	4	1 662.86	.73	4	99 770.5	24 00	2 298 825	241 616
30	55	30.796	55	1 693.65	1847.74	55	101 618.3	25 00	2 393 116	262 089
	56	6	6	1 724.44	.74	6	103 466.0	26 00	2 487 224	283 383
	57	6	7	1 755.24	.75	7	105 313.7	27 00	2 581 144	305 498
	58	6	8	1 786.03	.75	8	107 161.5	28 00	2 674 867	328 432
	59	6	9	1 816.82	.76	9	109 009.2	29 00	2 768 385	352 183
30	60	30.796	60	1 847.62	.76	60	110 857.0	30 00	2 861 694	376 749

Latitude 31° to 32°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
31 00	26.53	53.06	79.59	106.12	132.65	159.18	185.71	212.24	238.77	1591.8	3183.5	4775.3	6367.1	7958.9
1	.53	.05	.58	.10	.63	.15	.68	.20	.73	1.5	3.0	4.5	6.0	7.5
2	.52	.04	.56	.08	.60	.12	.64	.16	.68	1.2	2.4	3.6	4.9	6.1
3	.52	.03	.55	.06	.58	.09	.61	.13	.64	0.9	1.9	2.8	3.8	4.7
4	.51	.02	.53	.04	.56	.07	.58	.09	.60	0.7	1.3	1.9	2.6	3.3
31 05	26.51	53.02	79.52	106.03	132.53	159.04	185.55	212.05	238.56	1590.4	3180.8	4771.1	6361.5	7951.9
6	.50	.01	.51	6.01	.51	9.01	.51	2.01	.52	90.1	80.2	70.3	60.4	50.5
7	.50	3.00	.49	5.99	.49	8.98	.48	1.98	.48	89.8	79.7	69.5	59.3	49.1
8	.49	2.99	.48	.97	.47	.96	.45	.94	.43	9.6	9.1	8.6	8.2	7.8
9	.49	.98	.46	.95	.44	.93	.41	.90	.39	9.3	8.6	7.8	7.1	6.4
31 10	26.48	52.97	79.45	105.93	132.42	158.90	185.38	211.87	238.35	1589.0	3178.0	4767.0	6356.0	7945.0
11	.48	.96	.44	.91	.39	.87	.35	.83	.31	8.7	7.4	6.2	4.9	3.6
12	.47	.95	.42	.90	.37	.84	.32	.79	.27	8.4	6.9	5.3	3.8	2.2
13	.47	.94	.41	.88	.35	.82	.28	.75	.22	8.2	6.3	4.5	2.6	40.8
14	.46	.93	.39	.86	.32	.79	.25	.72	.18	7.9	5.8	3.6	1.5	39.4
31 15	26.46	52.92	79.38	105.84	132.30	158.76	185.22	211.68	238.14	1587.6	3175.2	4762.8	6350.4	7938.0
16	.46	.91	.37	.82	.28	.73	.19	.64	.10	7.3	4.6	2.0	49.3	6.6
17	.45	.90	.35	.80	.25	.70	.16	.61	.06	7.0	4.1	1.1	8.2	5.2
18	.45	.89	.34	.78	.23	.68	.12	.57	8.01	6.8	3.5	60.3	7.1	3.8
19	.44	.88	.32	.77	.21	.65	.09	.53	7.97	6.5	3.0	59.4	5.9	2.4
31 20	26.44	52.87	79.31	105.75	132.18	158.62	185.06	211.49	237.93	1586.2	3172.4	4758.6	6344.8	7931.0
21	.43	.86	.30	.73	.16	.59	5.03	.46	.89	5.9	1.8	7.8	3.7	29.6
22	.43	.85	.28	.71	.13	.56	4.99	.42	.85	5.6	1.3	6.9	2.6	8.2
23	.42	.84	.27	.69	.11	.54	.96	.38	.80	5.4	0.7	6.1	1.5	6.8
24	.42	.83	.25	.67	.09	.51	.93	.34	.76	5.1	70.2	5.2	40.3	5.4
31 25	26.41	52.83	79.24	105.65	132.06	158.48	184.89	211.31	237.72	1584.8	3169.6	4754.4	6339.2	7924.0
26	.41	.82	.23	.63	.04	.45	.86	.27	.68	4.5	9.0	3.6	8.1	2.6
27	.40	.81	.21	.62	.02	.42	.83	.23	.64	4.2	8.5	2.7	7.0	21.2
28	.40	.80	.20	.60	2.00	.40	.80	.20	.59	4.0	7.9	1.9	5.9	19.8
29	.39	.79	.18	.58	1.97	.37	.76	.16	.55	3.7	7.4	1.0	4.7	8.4
31 30	26.39	52.78	79.17	105.56	131.95	158.34	184.73	211.12	237.51	1583.4	3166.8	4750.2	6333.6	7917.0
31	.39	.77	.16	.54	.93	.31	.70	.08	.47	3.1	6.2	49.4	2.5	5.6
32	.38	.76	.14	.52	.90	.28	.66	.05	.43	2.8	5.7	8.5	1.4	4.2
33	.38	.75	.13	.50	.88	.26	.63	1.01	.38	2.6	5.1	7.7	30.2	2.8
34	.37	.74	.11	.49	.86	.23	.60	0.97	.34	2.3	4.6	6.8	29.1	1.4
31 35	26.37	52.74	79.10	105.47	131.84	158.20	184.56	210.93	237.30	1582.0	3164.0	4746.0	6328.0	7910.0
36	.36	.73	.09	.45	.81	.17	.53	.90	.26	1.7	3.4	5.2	6.9	08.6
37	.36	.72	.07	.43	.79	.14	.50	.86	.22	1.4	2.9	4.3	5.7	7.2
38	.35	.71	.06	.41	.77	.12	.47	.82	.17	1.2	2.3	3.5	4.6	5.8
39	.35	.70	.04	.39	.74	.09	.43	.78	.13	0.9	1.8	2.6	3.5	4.4
31 40	26.34	52.69	79.03	105.37	131.72	158.06	184.40	210.75	237.09	1580.6	3161.2	4741.8	6322.4	7903.0
41	.34	.68	.02	.35	.69	.03	.37	.71	.05	0.3	0.6	0.9	1.2	1.5
42	.33	.67	9.00	.33	.67	8.00	.33	.67	7.00	80.0	60.0	40.1	20.1	900.1
43	.33	.66	8.99	.32	.65	7.98	.30	.63	6.96	79.8	59.5	39.2	19.0	898.7
44	.32	.65	.97	.30	.62	.95	.27	.59	.92	9.5	8.9	8.4	7.8	7.3
31 45	26.32	52.64	78.96	105.28	131.60	157.92	184.24	210.56	236.87	1579.2	3158.3	4737.5	6316.7	7895.9
46	.32	.63	.95	.26	.58	.89	.20	.52	.83	8.9	7.8	6.7	5.6	4.5
47	.31	.62	.93	.24	.55	.86	.17	.48	.79	8.6	7.2	5.8	4.4	3.0
48	.31	.61	.92	.22	.53	.84	.14	.44	.75	8.4	6.6	5.0	3.3	1.6
49	.30	.60	.90	.20	.50	.80	.11	.41	.70	8.0	6.1	4.1	2.2	90.2
31 50	26.30	52.59	78.89	105.18	131.48	157.78	184.07	210.37	236.66	1577.8	3155.5	4733.3	6311.0	7888.8
51	.29	.58	.87	.16	.46	.75	.04	.33	.62	7.5	4.9	2.4	09.9	7.4
52	.29	.57	.86	.15	.43	.72	4.00	.29	.58	7.2	4.4	1.6	8.8	6.0
53	.28	.56	.85	.13	.41	.69	3.97	.25	.53	6.9	3.8	30.7	7.6	4.5
54	.28	.55	.83	.11	.38	.66	.94	.22	.49	6.6	3.3	29.9	6.5	83.1
31 55	26.27	52.55	78.82	105.09	131.36	157.63	183.90	210.18	236.45	1576.3	3152.7	4729.0	6305.4	7881.7
56	.27	.54	.80	.07	.34	.61	.87	.14	.41	6.1	2.1	8.2	4.2	80.3
57	.26	.53	.79	.05	.31	.58	.84	.10	.37	5.8	1.5	7.3	3.1	78.9
58	.26	.52	.77	.03	.29	.55	.81	.07	.32	5.5	1.0	6.5	2.0	7.4
59	.25	.51	.76	5.01	.26	.52	.77	10.03	.28	5.2	50.4	5.6	300.8	6.0
31 60	26.25	52.50	78.75	104.99	131.24	157.49	183.74	209.99	236.24	1574.9	3149.8	4724.8	6299.7	7874.6

Lat.		Latitude 31° to 32°—Meridional arcs.						Latitude 31°.—Co-ordinates of curvature.			
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.		X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	°	′	*Meters.*	*Meters.*
31	00	30.796			1847.76						
	1	6	1	30.80	.77	1	1 847.8	0	1	1 591.8	0.1
	2	6	2	61.60	.77	2	3 695.5		2	3 183.5	0.5
	3	6	3	92.40	.78	3	5 543.3		3	4 775.3	1.1
	4	6	4	123.19	.78	4	7 391.1		4	6 367.1	1.9
31	05	30.796	5	153.99	1847.79	5	9 238.9	0	5	7 958.9	3.0
	6	7	6	184.79	.79	6	11 086.7		6	9 550.6	4.3
	7	7	7	215.59	.80	7	12 934.4		7	11 142.4	5.8
	8	7	8	246.39	.80	8	14 782.2		8	12 734.2	7.6
	9	7	9	277.19	.80	9	16 630.0		9	14 325.9	9.7
31	10	30.797	10	307.98	1847.81	10	18 477.9	0	10	15 917.7	11.9
	11	7	1	338.78	.81	1	20 325.7		15	23 876.5	26.8
	12	7	2	369.58	.82	2	22 173.5		20	31 835.4	47.7
	13	7	3	400.38	.82	3	24 021.3		25	39 794.2	74.5
	14	7	4	431.18	.83	4	25 869.1		30	47 753.0	107.3
31	15	30.797	15	461.98	1847.83	15	27 717.0	0	35	55 711.7	146.1
	16	7	6	492.78	.84	6	29 564.8		40	63 670.4	190.8
	17	7	7	523.57	.84	7	31 412.6		45	71 629.2	241.5
	18	7	8	554.37	.85	8	33 260.5		50	79 587.8	298.1
	19	8	9	585.17	.85	9	35 108.3		55	87 546.4	360.7
31	20	30.798	20	615.97	1847.86	20	36 956.2	1	00	95 505.0	429.3
	21	8	1	646.77	.86	1	38 804.0		05	103 463.5	503.8
	22	8	2	677.57	.87	2	40 651.9		10	111 421.9	584.3
	23	8	3	708.36	.87	3	42 499.8		15	119 380.3	670.7
	24	8	4	739.16	.88	4	44 347.7		20	127 338.6	763.1
31	25	30.798	25	769.96	1847.88	25	46 195.5	1	25	135 296.9	861.5
	26	8	6	800.76	.89	6	48 043.4		30	143 255.1	965.8
	27	8	7	831.56	.89	7	49 891.3		35	151 213.1	1 076.1
	28	8	8	862.36	.90	8	51 739.2		40	159 171.1	1 192.4
	29	8	9	893.15	.90	9	53 587.1		45	167 129.0	1 314.6
31	30	30.798	30	923.95	1847.91	30	55 435.0	1	50	175 086.8	1 442.8
	31	9	1	954.75	.91	1	57 282.9		55	183 044.6	1 576.9
	32	9	2	985.55	.92	2	59 130.8	2	00	191 002	1 717
	33	9	3	1 016.35	.92	3	60 978.8	3	00	286 484	3 863
	34	9	4	1 047.15	.93	4	62 826.7	4	00	381 943	6 867
31	35	30.799	35	1 077.95	1847.93	35	64 674.6	5	00	477 371	10 729
	36	9	6	1 108.74	.94	6	66 522.5	6	00	572 760	15 450
	37	9	7	1 139.54	.94	7	68 370.5	7	00	668 103	21 027
	38	9	8	1 170.34	.95	8	70 218.4	8	00	763 392	27 461
	39	9	9	1 201.14	.95	9	72 066.4	9	00	858 619	34 751
31	40	30.799	40	1 231.94	1847.96	40	73 914.3	10	00	953 777	42 897
	41	9	1	1 262.74	.96	1	75 762.3	11	00	1 048 858	51 898
	42	799	2	1 293.53	.97	2	77 610.2	12	00	1 143 854	61 753
	43	800	3	1 324.33	.97	3	79 458.2	13	00	1 238 758	72 462
	44	0	4	1 355.13	.98	4	81 306.2	14	00	1 333 561	84 024
31	45	30.800	45	1 385.93	1847.98	45	83 154.2	15	00	1 428 257	96 437
	46	0	6	1 416.73	.98	6	85 002.1	16	00	1 522 837	109 701
	47	0	7	1 447.53	.99	7	86 850.1	17	00	1 617 294	123 815
	48	0	8	1 478.33	7.99	8	88 698.1	18	00	1 711 621	138 777
	49	0	9	1 509.12	1848.00	9	90 546.1	19	00	1 805 810	154 586
31	50	30.800	50	1 539.92	1848.00	50	92 394.1	20	00	1 899 852	171 241
	51	0	1	1 570.72	.01	1	94 242.1	21	00	1 993 740	188 741
	52	0	2	1 601.52	.01	2	96 090.1	22	00	2 087 468	207 085
	53	0	3	1 632.32	.02	3	97 938.2	23	00	2 181 027	226 270
	54	0	4	1 663.12	.02	4	99 786.2	24	00	2 274 411	246 295
31	55	30.800	55	1 693.91	1848.03	55	101 634.2	25	00	2 367 610	267 159
	56	1	6	1 724.71	.03	6	103 482.2	26	00	2 460 618	288 860
	57	1	7	1 755.51	.04	7	105 330.3	27	00	2 553 427	311 396
	58	1	8	1 786.31	.04	8	107 178.3	28	00	2 646 029	334 765
	59	1	9	1 817.11	.05	9	109 026.4	29	00	2 738 418	358 966
31	60	30.801	60	1 847.91	1848.05	60	110 874.4	30	00	2 830 585	383 997

Latitude 32° to 33°—Arcs of the Parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
32 00	26.25	52.50	78.75	104.99	131.24	157.49	183.74	209.99	236.24	1574.9	3149.8	4724.8	6299.7	7874.6
1	.24	.49	.73	.98	.22	.46	.71	.95	.20	4.6	9.3	3.9	8.5	3.2
2	.24	.48	.72	.96	.19	.43	.67	.91	.15	4.3	8.7	3.1	7.4	1.7
3	.23	.47	.70	.94	.17	.41	.64	.87	.11	4.1	8.1	2.2	6.2	70.3
4	.23	.46	.69	.92	.15	.38	.61	.84	.07	3.8	7.6	1.4	5.1	68.9
32 05	26.22	52.45	78.67	104.90	131.12	157.35	183.57	209.80	236.02	1573.5	3147.0	4720.5	6294.0	7867.4
6	.22	.44	.66	.88	.10	.32	.54	.76	5.98	3.2	6.4	19.6	2.8	6.0
7	.22	.43	.65	.86	.08	.29	.51	.72	.94	2.9	5.8	8.8	1.7	4.6
8	.21	.42	.63	.84	.06	.26	.48	.68	.90	2.6	5.3	7.9	90.5	3.2
9	.21	.41	.62	.82	.03	.23	.44	.65	.85	2.3	4.7	7.1	89.4	1.7
32 10	26.20	52.40	78.60	104.80	131.01	157.21	183.41	209.61	235.81	1572.1	3144.1	4716.2	6288.3	7860.3
11	.20	.39	.59	.79	0.99	.18	.38	.57	.77	1.8	3.6	5.3	7.1	58.9
12	.19	.38	.57	.77	.96	.15	.34	.53	.72	1.5	3.0	4.5	6.0	7.4
13	.19	.37	.56	.75	.94	.12	.31	.49	.68	1.2	2.4	3.6	4.8	6.0
14	.18	.36	.55	.73	.91	.09	.27	.46	.64	0.9	1.9	2.8	3.7	4.6
32 15	26.18	52.35	78.53	104.71	130.89	157.06	183.24	209.42	235.59	1570.6	3141.3	4711.9	6282.5	7853.1
16	.17	.34	.52	.69	.87	.03	.21	.38	.55	0.3	0.7	1.0	1.4	1.7
17	.17	.34	.50	.67	.84	7.01	.17	.34	.51	70.1	40.1	10.2	80.2	50.3
18	.16	.33	.49	.65	.82	6.98	.14	.30	.47	69.8	39.5	09.3	79.1	48.8
19	.16	.32	.47	.63	.79	.95	.10	.26	.42	9.5	9.0	8.5	7.9	7.4
32 20	26.15	52.31	78.46	104.61	130.77	156.92	183.07	209.23	235.38	1569.2	3138.4	4707.6	6276.8	7846.0
21	.15	.30	.45	.59	.75	.89	.04	.19	.34	8.9	7.8	6.7	5.6	4.5
22	.14	.29	.43	.57	.72	.86	3.00	.15	.29	8.6	7.2	5.9	4.5	3.1
23	.14	.28	.42	.56	.70	.83	2.97	.11	.25	8.3	6.7	5.0	3.3	1.6
24	.13	.27	.40	.54	.67	.80	.94	.07	.21	8.0	6.1	4.1	2.2	40.2
32 25	26.13	52.26	78.39	104.52	130.65	156.78	182.90	209.03	235.16	1567.8	3135.5	4703.3	6271.0	7838.8
26	.12	.25	.37	.50	.63	.75	.87	9.00	.12	7.5	4.9	2.4	69.9	7.3
27	.12	.24	.36	.48	.60	.72	.84	8.96	.08	7.2	4.3	1.5	68.7	5.9
28	.11	.23	.34	.46	.58	.69	.81	.92	5.04	6.9	3.8	700.7	7.6	4.4
29	.11	.22	.33	.44	.55	.66	.77	.88	4.99	6.6	3.2	699.8	6.4	3.0
32 30	26.11	52.21	78.32	104.42	130.53	156.63	182.74	208.84	234.95	1566.3	3132.6	4698.9	6265.3	7831.6
31	.10	.20	.30	.40	.51	.60	.70	.80	.90	6.0	2.0	8.0	4.1	30.1
32	.10	.19	.29	.38	.48	.57	.67	.76	.86	5.7	1.5	7.2	2.9	28.7
33	.09	.18	.27	.36	.45	.54	.64	.73	.82	5.4	0.9	6.3	1.8	7.2
34	.09	.17	26	.34	.43	.52	.60	.69	.77	5.2	30.3	5.5	60.6	5.8
32 35	26.08	52.16	78.24	104.32	130.41	156.49	182.57	208.65	234.73	1564.9	3129.7	4694.6	6259.5	7824.3
36	.08	.15	.23	.30	.39	.46	.54	.61	.69	4.6	9.1	3.7	8.3	2.9
37	.07	.14	.21	.29	.36	.43	.50	.57	.64	4.3	8.6	2.9	7.1	1.4
38	.07	.13	.20	.27	.34	.40	.47	.53	.60	4.0	8.0	2.0	6.0	20.0
39	.06	.12	.18	.25	.31	.37	.43	.49	.55	3.7	7.4	1.1	4.8	18.5
32 40	26.06	52.11	78.17	104.23	130.29	156.34	182.40	208.46	234.51	1563.4	3126.8	4690.3	6253.7	7817.1
41	.05	.10	.16	.21	.26	.31	.37	.42	.47	3.1	6.2	89.4	2.5	5.6
42	.05	.09	.14	.19	.24	.28	.33	.38	.42	2.8	5.7	8.5	1.3	4.2
43	.04	.08	.13	.17	.22	.25	.30	.34	.38	2.5	5.1	7.7	50.2	2.7
44	.04	.08	.11	.15	.19	.23	.26	.30	.34	2.3	4.5	6.8	49.0	11.3
32 45	26.03	52.07	78.10	104.13	130.17	156.20	182.23	208.26	234.29	1562.0	3123.9	4685.9	6247.9	7809.8
46	.03	.06	.08	.11	.14	.17	.20	.22	.25	1.7	3.3	5.0	6.7	8.4
47	.02	.05	.07	.09	.12	.14	.16	.18	.21	1.4	2.7	4.1	5.5	6.9
48	.02	.04	.05	.07	.09	.11	.13	.15	.17	1.1	2.2	3.3	4.4	5.4
49	.01	.03	.04	.05	.07	.08	.09	.11	.12	0.8	1.6	2.4	3.2	4.0
32 50	26.01	52.02	78.03	104.03	130.04	156.05	182.06	208.07	234.08	1560.5	3121.0	4681.5	6242.0	7802.5
51	.00	.01	.01	4.01	30.02	6.02	2.03	8.03	4.03	60.2	20.4	80.6	40.9	801.1
52	6.00	2.00	8.00	3.99	29.99	5.99	1.99	7.99	3.99	59.9	19.8	79.7	39.7	799.6
53	5.99	1.99	7.98	.98	.97	.96	.96	.95	.95	9.6	9.3	8.9	8.5	8.2
54	.99	.98	.97	.96	.94	.93	.92	.91	.90	9.3	8.7	8.0	7.4	6.7
32 55	25.98	51.97	77.95	103.94	129.92	155.90	181.89	207.87	233.86	1559.0	3118.1	4677.1	6236.2	7795.2
56	.98	.96	.94	.92	.90	.88	.86	.83	.81	8.8	7.5	6.2	5.0	3.8
57	.97	.95	.92	.90	.87	.85	.82	.79	.77	8.5	6.9	5.4	3.8	2.3
58	.97	.94	.91	.88	.85	.82	.79	.76	.73	8.2	6.4	4.5	2.7	90.9
59	.96	.93	.89	.86	.82	.79	.75	.72	.68	7.9	5.8	3.7	1.5	89.4
32 60	25.96	51.92	77.88	103.84	129.80	155.76	181.72	207.68	233.64	1557.6	3115.2	4672.8	6230.3	7787.9

Lat.	Latitude 32° to 33°—Meridional arcs.						Latitude 32°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
32 00	30.801			1848.05					
01	1	1	30.80	.06	1	1 848.1	0 1	1 574.9	0.1
02	1	2	61.61	.06	2	3 696.1	2	3 149.8	0.5
03	1	3	92.41	.07	3	5 544.2	3	4 724.8	1.1
04	1	4	123.21	.07	4	7 392.3	4	6 299.7	1.9
32 05	30.801	5	154.02	1848.08	5	9 240.3	0 5	7 874.6	3.0
06	1	6	184.82	.08	6	11 088.4	6	9 449.5	4.4
07	1	7	215.62	.09	7	12 936.5	7	11 024.4	6.0
08	2	8	246.43	.09	8	14 784.6	8	12 599.4	7.8
09	2	9	277.23	.10	9	16 632.7	9	14 174.3	9.8
32 10	30.802	10	308.03	1848.10	10	18 480.8	0 10	15 749.2	12.1
11	2	1	338.84	.11	1	20 328.9	15	23 623.8	27.3
12	2	2	369.64	.11	2	22 177.0	20	31 498.3	48.6
13	2	3	400.44	.12	3	24 025.1	25	39 372.9	75.9
14	2	4	431.25	.12	4	25 873.2	30	47 247.4	109.3
32 15	30.802	15	462.05	1848.13	15	27 721.4	0 35	55 121.9	148.7
16	2	6	492.85	.13	6	29 569.5	40	62 996.4	194.2
17	2	7	523.66	.14	7	31 417.6	45	70 870.8	245.8
18	2	8	554.46	.14	8	33 265.8	50	78 745.2	303.5
19	2	9	585.26	.15	9	35 113.9	55	86 619.5	367.2
32 20	30.803	20	616.07	1848.15	20	36 962.1	1 00	94 493.8	437.0
21	3	1	646.87	.16	1	38 810.2	05	102 368.0	512.8
22	3	2	677.67	.16	2	40 658.4	10	110 242.2	594.8
23	3	3	708.48	.17	3	42 506.6	15	118 116.3	682.8
24	3	4	739.28	.17	4	44 354.7	20	125 990.3	776.9
32 25	30.803	25	770.08	1848.18	25	46 202.9	1 25	133 864.3	877.0
26	3	6	800.89	.18	6	48 051.1	30	141 738.2	983.2
27	3	7	831.69	.19	7	49 899.3	35	149 612.0	1 095.5
28	3	8	862.49	.19	8	51 747.5	40	157 485.7	1 213.8
29	3	9	893.30	.20	9	53 595.6	45	165 359.3	1 338.2
32 30	30.803	30	924.10	1848.20	30	55 443.8	1 50	173 232.8	1 468.7
31	3	1	954.90	.21	1	57 292.0	55	181 106.2	1 605.3
32	4	2	985.71	.21	2	59 140.3	2 00	188 980	1 748
33	4	3	1 016.51	.22	3	60 988.5	3 00	283 449	3 933
34	4	4	1 047.31	.22	4	62 836.7	4 00	377 894	6 991
32 35	30.804	35	1 078.12	1848.23	35	64 684.9	5 00	472 307	10 922
36	4	6	1 108.92	.23	6	66 533.1	6 00	566 680	15 727
37	4	7	1 139.72	.24	7	68 381.4	7 00	661 004	21 404
38	4	8	1 170.53	.24	8	70 229.6	8 00	755 272	27 954
39	4	9	1 201.33	.25	9	72 077.8	9 00	849 475	35 375
32 40	30.804	40	1 232.13	1848.25	40	73 926.1	10 00	943 605	43 667
41	4	1	1 262.94	.26	1	75 774.4	11 00	1 037 655	52 829
42	4	2	1 293.74	.26	2	77 622.6	12 00	1 131 616	62 861
43	4	3	1 324.54	.27	3	79 470.9	13 00	1 225 480	73 761
44	5	4	1 355.35	.27	4	81 319.1	14 00	1 319 239	85 529
32 45	30.805	45	1 386.15	1848.28	45	83 167.4	15 00	1 412 885	98 164
46	5	6	1 416.95	.28	6	85 015.7	16 00	1 506 411	111 664
47	5	7	1 447.76	.29	7	86 864.0	17 00	1 599 808	126 029
48	5	8	1 478.56	.29	8	88 712.3	18 00	1 693 067	141 256
49	5	9	1 509.36	.30	9	90 560.5	19 00	1 786 182	157 346
32 50	30.805	50	1 540.17	1848.30	50	92 408.8	20 00	1 879 144	174 296
51	5	1	1 570.97	.31	1	94 257.1	21 00	1 971 946	192 105
52	5	2	1 601.77	.31	2	96 105.5	22 00	2 064 579	210 772
53	5	3	1 632.58	.32	3	97 953.8	23 00	2 157 035	230 295
54	5	4	1 663.38	.32	4	99 802.1	24 00	2 249 305	250 672
32 55	30.805	55	1 694.18	1848.33	55	101 650.4	25 00	2 341 385	271 901
56	6	6	1 724.99	.33	6	103 498.7	26 00	2 433 264	293 981
57	6	7	1 755.79	.34	7	105 347.1	27 00	2 524 935	316 910
58	6	8	1 786.59	.34	8	107 195.4	28 00	2 616 390	340 686
59	6	9	1 817.40	.35	9	109 043.8	29 00	2 707 621	365 307
32 60	30.806	60	1 848.20	1848.35	60	110 892.1	30 00	2 798 621	390 770

Latitude 33° to 34°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
33 00	25.96	51.92	77.88	103.84	129.80	155.76	181.72	207.68	233.64	1557.6	3115.2	4672.8	6230.3	7787.9
1	.96	.91	.87	.82	.78	.73	.69	.64	.60	7.3	4.6	1.9	29.2	6.5
2	.95	.90	.85	.80	.75	.70	.65	.60	.55	7.0	4.0	1.0	8.0	5.0
3	.95	.89	.84	.78	.73	.67	.62	.56	.51	6.7	3.4	70.1	6.8	3.5
4	.94	.88	.82	.76	.70	.64	.58	.52	.46	6.4	2.8	69.3	5.6	2.1
33 05	25.94	51.87	77.81	103.74	129.68	155.61	181.55	207.48	233.42	1556.1	3112.2	4668.4	6224.5	7780.6
6	.93	.86	.79	.72	.65	.58	.51	.44	.38	5.8	1.6	7.5	3.3	79.1
7	.93	.85	.78	.70	.63	.55	.48	.40	.33	5.5	1.1	6.6	2.1	7.7
8	.92	.84	.76	.68	.60	.53	.45	.37	.29	5.3	10.5	5.7	21.0	6.2
9	.92	.83	.75	.66	.58	.50	.41	.33	.24	5.0	09.9	4.8	19.8	4.7
33 10	25.91	51.82	77.73	103.64	129.55	155.47	181.38	207.29	233.20	1554.7	3109.3	4664.0	6218.6	7773.3
11	.91	.81	.72	.62	.53	.44	.35	.25	.16	4.4	8.7	3.1	7.4	1.8
12	.90	.80	.70	.60	.50	.41	.31	.21	.11	4.1	8.1	2.2	6.2	70.3
13	.90	.79	.69	.58	.48	.38	.28	.17	.07	3.8	7.5	1.3	5.1	68.8
14	.89	.78	.67	.57	.46	.35	.24	.13	3.02	3.5	7.0	60.4	3.9	7.4
33 15	25.89	51.77	77.66	103.55	129.43	155.32	181.21	207.09	232.98	1553.2	3106.4	4659.5	6212.7	7765.9
16	.88	.76	.64	.53	.41	.29	.17	.05	.93	2.9	5.8	8.6	1.5	4.4
17	.88	.75	.63	.51	.38	.26	.14	7.01	.89	2.6	5.2	7.7	10.4	2.9
18	.87	.74	.62	.49	.36	.23	.10	6.97	.85	2.3	4.6	6.9	09.2	1.5
19	.87	.73	.60	.47	.33	.20	.07	.93	.80	2.0	4.0	6.0	8.0	60.0
33 20	25.86	51.72	77.59	103.45	129.31	155.17	181.03	206.89	232.76	1551.7	3103.4	4655.1	6206.8	7758.5
21	.86	.71	.57	.43	.29	.14	1.00	.85	.71	1.4	2.8	4.2	5.6	7.0
22	.85	.70	.56	.41	.26	.11	0.96	.81	.67	1.1	2.2	3.3	4.4	5.6
23	.85	.69	.54	.39	.24	.08	.93	.78	.63	0.8	1.6	2.5	3.3	4.1
24	.84	.68	.53	.37	.21	.05	.89	.74	.58	0.5	1.0	1.6	2.1	2.6
33 25	25.84	51.67	77.51	103.35	129.19	155.02	180.86	206.70	232.54	1550.2	3100.4	4650.7	6200.9	7751.1
26	.83	.66	.50	.33	.16	4.99	.82	.66	.49	49.9	099.8	49.8	199.7	49.6
27	.83	.65	.48	.31	.14	.96	.79	.62	.45	9.6	9.3	8.9	8.5	8.2
28	.82	.64	.47	.29	.11	.93	.76	.58	.40	9.3	8.7	8.0	7.3	6.7
29	.82	.63	.45	.27	.09	.90	.72	.54	.36	9.0	8.1	7.1	6.2	5.2
33 30	25.81	51.62	77.44	103.25	129.06	154.87	180.69	206.50	232.31	1548.7	3097.5	4646.2	6195.0	7743.7
31	.81	.61	.42	.23	.04	.84	.65	.46	.27	8.4	6.9	5.3	3.8	2.2
32	.80	.60	.41	.21	9.01	.81	.62	.42	.22	8.1	6.3	4.4	2.6	40.7
33	.80	.59	.39	.19	8.99	.78	.58	.38	.18	7.8	5.7	3.5	1.4	39.2
34	.79	.59	.38	.17	.96	.76	.55	.34	.13	7.6	5.1	2.7	90.2	7.8
33 35	25.79	51.58	77.36	103.15	128.94	154.73	180.52	206.30	232.09	1547.3	3094.5	4641.8	6189.0	7736.3
36	.78	.57	.35	.13	.91	.70	.48	.26	.05	7.0	3.9	0.9	7.8	4.8
37	.78	.56	.33	.11	.89	.67	.45	.22	2.00	6.7	3.3	40.0	6.6	3.3
38	.77	.55	.32	.09	.86	.64	.41	.18	1.96	6.4	2.7	39.1	5.5	1.8
39	.77	.54	.30	.07	.84	.61	.38	.14	.91	6.1	2.1	8.2	4.3	30.3
33 40	25.76	51.53	77.29	103.05	128.81	154.58	180.34	206.10	231.87	1545.8	3091.5	4637.3	6183.1	7728.8
41	.76	.52	.27	.03	.79	.55	.31	.06	.82	5.5	0.9	6.4	1.9	7.3
42	.75	.51	.26	3.01	.76	.52	.27	6.02	.78	5.2	90.3	5.5	80.7	5.9
43	.75	.50	.24	2.99	.74	.49	.24	5.98	.73	4.9	89.8	4.6	79.5	4.4
44	.74	.49	.23	.97	.71	.46	.20	.94	.69	4.6	9.2	3.7	8.3	2.9
33 45	25.74	51.48	77.21	102.95	128.69	154.43	180.17	205.90	231.64	1544.3	3088.6	4632.8	6177.1	7721.4
46	.73	.47	.20	.93	.67	.40	.13	.86	.60	4.0	8.0	1.9	5.9	19.9
47	.73	.46	.18	.91	.64	.37	.10	.82	.55	3.7	7.4	1.0	4.7	8.4
48	.72	.45	.17	.89	.62	.34	.06	.78	.51	3.4	6.8	30.1	3.5	6.9
49	.72	.44	.15	.87	.59	.31	80.03	.74	.46	3.1	6.2	29.2	2.3	5.4
33 50	25.71	51.43	77.14	102.85	128.57	154.28	179.99	205.70	231.42	1542.8	3085.6	4628.3	6171.1	7713.9
51	.71	.42	.12	.83	.55	.25	.96	.66	.37	2.5	5.0	7.4	69.9	2.4
52	.70	.41	.11	.81	.52	.22	.92	.62	.33	2.2	4.4	6.5	8.7	10.9
53	.70	.40	.09	.79	.49	.19	.89	.58	.28	1.9	3.8	5.6	7.5	09.4
54	.69	.39	.08	.77	.47	.16	.85	.54	.24	1.6	3.2	4.7	6.3	7.9
33 55	25.69	51.38	77.06	102.75	128.44	154.13	179.82	205.50	231.19	1541.3	3082.6	4623.8	6165.1	7706.4
56	.68	.37	.05	.73	.42	.10	.78	.46	.15	1.0	2.0	2.9	3.9	4.9
57	.68	.36	.03	.71	.39	.07	.75	.42	.10	0.7	1.4	2.0	2.7	3.4
58	.67	.35	.02	.69	.37	.04	.71	.38	.06	0.4	0.8	1.1	1.5	1.9
59	.67	.34	7.00	.67	.34	4.01	.68	.34	1.01	40.1	80.2	20.2	60.3	700.4
33 60	25.66	51.33	76.99	102.65	128.32	153.98	179.64	205.30	230.97	1539.8	3079.6	4619.3	6159.1	7698.9

Lat.		Latitude 33° to 34°—Meridional arcs.						Latitude 33°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
33	00	30 806			1848. 35					
	1	6	1	30. 81	. 36	1	1 848. 4	0 1	1 557. 6	0. 1
	2	6	2	61. 62	. 36	2	3 696. 7	2	3 115. 2	0. 5
	3	6	3	92. 43	. 37	3	5 545. 1	3	4 672. 8	1. 1
	4	6	4	123. 23	. 37	4	7 393. 4	4	6 230. 3	2. 0
33	05	30. 806	5	154. 04	1848. 38	5	9 241. 8	0 5	7 787. 9	3. 1
	6	6	6	184. 85	. 38	6	11 090. 2	6	9 345. 5	4. 4
	7	6	7	215. 66	. 39	7	12 938. 6	7	10 903. 1	6. 0
	8	7	8	246. 47	. 39	8	14 787. 0	8	12 460. 7	7. 9
	9	7	9	277. 28	. 40	9	16 635. 4	9	14 018. 3	10. 0
33	10	30. 807	10	308. 08	1848. 40	10	18 483. 8	0 10	15 575. 9	12. 3
	11	7	1	338. 89	. 41	1	20 332. 2	15	23 363. 8	27. 8
	12	7	2	369. 70	. 41	2	22 180. 6	20	31 151. 7	49. 4
	13	7	3	400. 51	. 42	3	24 029. 0	25	38 939. 6	77. 1
	14	7	4	431. 32	. 42	4	25 877. 4	30	46 727. 4	111. 0
33	15	30. 807	15	462. 13	1848. 43	15	27 725. 8	0 35	54 515. 3	151. 1
	16	7	6	492. 93	. 43	6	29 574. 2	40	62 303. 1	197. 4
	17	7	7	523. 74	. 44	7	31 422. 7	45	70 090. 8	249. 8
	18	7	8	554. 55	. 44	8	33 271. 1	50	77 878. 6	308. 4
	19	7	9	585. 36	. 45	9	35 119. 6	55	85 666. 2	373. 2
33	20	30. 808	20	616. 17	1848. 45	20	36 968. 0	1 00	93 453. 8	444. 2
	21	8	1	646. 98	. 46	1	38 816. 5	05	101 241. 4	521. 3
	22	8	2	677. 78	. 46	2	40 664. 9	10	109 028. 9	604. 6
	23	8	3	708. 59	. 47	3	42 513. 4	15	116 816. 3	694. 0
	24	8	4	739. 40	. 47	4	44 361. 9	20	124 603. 7	789. 6
33	25	30. 808	25	770. 21	1848. 48	25	46 210. 3	1 25	132 390. 9	891. 4
	26	8	6	801. 02	. 48	6	48 058. 8	30	140 178. 1	999. 4
	27	8	7	831. 83	. 49	7	49 907. 3	35	147 965. 2	1 113. 5
	28	8	8	862. 63	. 49	8	51 755. 8	40	155 752. 2	1 233. 8
	29	8	9	893. 44	. 50	9	53 604. 3	45	163 539. 1	1 360. 3
33	30	30. 808	30	924. 25	1848. 50	30	55 452. 8	1 50	171 326. 0	1 492. 9
	31	8	1	955. 06	. 51	1	57 301. 3	55	179 112. 7	1 631. 7
	32	9	2	985. 87	. 51	2	59 149. 8	2 00	186 899	1 777
	33	9	3	1 016. 68	. 52	3	60 998. 3	3 00	280 328	3 997
	34	9	4	1 047. 48	. 52	4	62 846. 8	4 00	373 731	7 106
33	35	30. 809	35	1 078. 29	1848. 53	35	64 695. 3	5 00	467 100	11 102
	36	9	6	1 109. 10	. 53	6	66 543. 9	6 00	560 428	15 986
	37	9	7	1 139. 91	. 54	7	68 392. 4	7 00	653 704	21 757
	38	9	8	1 170. 72	. 54	8	70 241. 0	8 00	746 922	28 414
	39	9	9	1 201. 53	. 55	9	72 089. 5	9 00	840 072	35 957
33	40	30. 809	40	1 232. 33	1848. 55	40	73 938. 0	10 00	933 146	44 385
	41	9	1	1 263. 14	. 56	1	75 786. 6	11 00	1 026 136	53 697
	42	9	2	1 293. 95	. 56	2	77 635. 2	12 00	1 119 033	63 893
	43	09	3	1 324. 76	. 57	3	79 483. 7	13 00	1 211 829	74 971
	44	10	4	1 355. 57	. 57	4	81 332. 3	14 00	1 304 515	86 931
33	45	30. 810	45	1 386. 38	1848. 58	45	83 180. 9	15 00	1 397 083	99 771
	46	0	6	1 417. 18	. 58	6	85 029. 4	16 00	1 489 526	113 491
	47	0	7	1 447. 99	. 59	7	86 878. 0	17 00	1 581 834	128 089
	48	0	8	1 478. 80	. 59	8	88 726. 6	18 00	1 673 998	143 564
	49	0	9	1 509. 61	. 60	9	90 575. 2	19 00	1 766 011	159 914
33	50	30. 810	50	1 540. 42	1848. 60	50	92 423. 8	20 00	1 857 866	177 138
	51	0	1	1 571. 23	. 61	1	94 272. 4	21 00	1 949 553	195 234
	52	0	2	1 602. 03	. 61	2	96 121. 0	22 00	2 041 062	214 201
	53	0	3	1 632. 84	. 62	3	97 969. 6	23 00	2 132 387	234 037
	54	0	4	1 663. 65	. 62	4	99 818. 2	24 00	2 223 521	254 740
33	55	30. 810	55	1 694. 46	1848. 63	55	101 666. 9	25 00	2 314 453	276 309
	56	1	6	1 725. 27	. 63	6	103 515. 5	26 00	2 405 175	298 741
	57	1	7	1 756. 08	. 64	7	105 364. 1	27 00	2 495 680	322 034
	58	1	8	1 786. 88	. 64	8	107 212. 8	28 00	2 585 961	346 187
	59	1	9	1 817. 69	. 65	9	109 061. 4	29 00	2 676 007	371 197
33	60	30. 811	60	1 848. 50	1848. 65	60	110 910. 1	30 00	2 765 812	397 061

Latitude 34° to 35°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
34 00	25.66	51.33	76.99	102.65	128.32	153.98	179.64	205.30	230.97	1539.8	3079.6	4619.3	6159.1	7698.9
1	.66	.32	.97	.63	.29	.95	.61	.26	.92	9.5	9.0	8.4	7.9	7.4
2	.65	.31	.96	.61	.27	.92	.57	.22	.88	9.2	8.4	7.5	6.7	5.9
3	.65	.30	.94	.59	.24	.89	.54	.18	.83	8.9	7.7	6.6	5.5	4.4
4	.64	.29	.93	.57	.22	.86	.50	.14	.79	8.6	7.1	5.7	4.3	2.9
34 05	25.64	51.28	76.91	102.55	128.19	153.83	179.47	205.10	230.74	1538.3	3076.5	4614.8	6153.1	7691.4
6	.63	.27	.90	.53	.16	.80	.43	.06	.70	8.0	5.9	3.9	1.9	89.9
7	.63	.26	.88	.51	.14	.77	.40	5.02	.65	7.7	5.3	3.0	50.7	8.4
8	.62	.25	.87	.49	.11	.74	.36	4.98	.60	7.4	4.7	2.1	49.5	6.8
9	.62	.24	.85	.47	.09	.71	.33	.94	.56	7.1	4.1	1.2	8.3	5.3
34 10	25.61	51.23	76.84	102.45	128.06	153.68	179.29	204.90	230.51	1536.8	3073.5	4610.3	6147.1	7683.8
11	.61	.22	.82	.43	.04	.65	.26	.86	.47	6.5	2.9	09.4	5.9	2.3
12	.60	.21	.81	.41	8.01	.62	.22	.82	.42	6.2	2.3	8.5	4.6	80.8
13	.60	.20	.79	.39	7.99	.59	.19	.78	.38	5.9	1.7	7.6	3.4	79.3
14	.59	.19	.78	.37	.96	.56	.15	.74	.33	5.6	1.1	6.7	2.2	7.8
34 15	25.59	51.18	76.76	102.35	127.94	153.53	179.12	204.70	230.29	1535.3	3070.5	4605.8	6141.0	7676.3
16	.58	.16	.75	.33	.91	.50	.08	.66	.24	5.0	69.9	4.9	39.8	4.8
17	.58	.15	.73	.31	.89	.46	.04	.62	.20	4.6	9.3	3.9	8.6	3.2
18	.57	.14	.72	.29	.86	.43	9.01	.58	.15	4.3	8.7	3.0	7.4	1.7
19	.57	.13	.70	.27	.84	.40	8.97	.54	.11	4.0	8.1	2.1	6.2	70.2
34 20	25.56	51.12	76.69	102.25	127.81	153.37	178.94	204.50	230.06	1533.7	3067.5	4601.2	6135.0	7668.7
21	.56	.11	.67	.23	.79	.34	.90	.46	30.02	3.4	6.9	600.3	3.7	7.2
22	.55	.10	.66	.21	.76	.31	.87	.42	29.97	3.1	6.3	599.4	2.5	5.7
23	.55	.09	.64	.19	.74	.28	.83	.38	.92	2.8	5.6	8.5	1.3	4.1
24	.54	.08	.63	.17	.71	.25	.80	.34	.88	2.5	5.0	7.6	30.1	2.6
34 25	25.54	51.07	76.61	102.15	127.69	153.22	178.76	204.30	229.83	1532.2	3064.4	4596.7	6128.9	7661.1
26	.53	.06	.60	.13	.66	.19	.72	.26	.79	1.9	3.8	5.8	7.7	59.6
27	.53	.05	.58	.11	.64	.16	.69	.21	.74	1.6	3.2	4.9	6.4	8.1
28	.52	.04	.57	.09	.61	.13	.65	.17	.70	1.3	2.6	3.9	5.2	6.5
29	.52	.03	.55	.07	.59	.10	.62	.13	.65	1.0	2.0	3.0	4.0	5.0
34 30	25.51	51.02	76.54	102.05	127.56	153.07	178.58	204.09	229.61	1530.7	3061.4	4592.1	6122.8	7653.5
31	.51	.01	.52	.03	.53	.04	.55	.05	.56	0.4	0.8	1.2	1.6	2.0
32	.50	1.00	.50	2.01	.51	3.01	.51	4.01	.51	30.1	60.2	90.3	20.4	50.4
33	.50	0.99	.49	1.99	.48	2.98	.48	3.97	.47	29.8	59.6	89.3	19.1	48.9
34	.49	.98	.47	.97	.46	.95	.44	.93	.42	9.5	9.0	8.4	7.9	7.4
34 35	25.49	50.97	76.46	101.94	127.43	152.92	178.41	203.89	229.38	1529.2	3058.3	4587.5	6116.7	7645.9
36	.48	.96	.44	.92	.40	.89	.37	.85	.33	8.9	7.7	6.6	5.5	4.3
37	.48	.95	.43	.90	.38	.86	.34	.81	.28	8.6	7.1	5.7	4.2	2.8
38	.47	.94	.41	.88	.35	.83	.30	.77	.24	8.3	6.5	4.8	3.0	41.3
39	.47	.93	.40	.86	.33	.80	.27	.73	.19	8.0	5.9	3.9	1.8	39.8
34 40	25.46	50.92	76.38	101.84	127.30	152.76	178.23	203.69	229.15	1527.6	3055.3	4582.9	6110.6	7638.2
41	.46	.91	.37	.82	.28	.73	.19	.65	.10	7.3	4.7	2.0	09.4	6.7
42	.45	.90	.35	.80	.25	.70	.16	.61	.06	7.0	4.1	1.1	8.2	5.2
43	.45	.89	.34	.78	.23	.67	.12	.56	9.01	6.7	3.4	80.1	6.9	3.6
44	.44	.88	.32	.76	.20	.64	.08	.52	8.96	6.4	2.8	79.2	5.7	2.1
34 45	25.44	50.87	76.31	101.74	127.17	152.61	178.05	203.48	228.92	1526.1	3052.2	4578.3	6104.5	7630.6
46	.43	.86	.29	.72	.15	.58	8.01	.44	.87	5.8	1.6	7.4	3.2	29.0
47	.43	.85	.28	.70	.12	.55	7.98	.40	.83	5.5	1.0	6.5	2.0	7.5
48	.42	.84	.26	.68	.10	.52	.94	.36	.78	5.2	50.4	5.5	100.8	6.0
49	.42	.83	.24	.66	.07	.49	.91	.32	.73	4.9	49.8	4.6	099.6	4.4
34 50	25.41	50.82	76.23	101.64	127.05	152.46	177.87	203.28	228.69	1524.6	3049.2	4573.7	6098.3	7622.9
51	.41	.81	.21	.62	.02	.43	.83	.24	.64	4.3	8.6	2.8	7.1	21.4
52	.40	.80	.20	.60	7.00	.40	.80	.20	.59	4.0	8.0	1.9	5.9	19.8
53	.40	.79	.18	.58	6.97	.37	.76	.15	.55	3.7	7.3	1.0	4.6	8.3
54	.39	.78	.17	.56	.95	.34	.73	.11	.50	3.4	6.7	70.1	3.4	6.8
34 55	25.39	50.77	76.15	101.54	126.92	152.30	177.69	203.07	228.46	1523.0	3046.1	4569.1	6092.2	7615.2
56	.38	.76	.14	.52	.89	.27	.65	3.03	.41	2.7	5.5	8.2	90.9	3.7
57	.38	.75	.12	.49	.87	.24	.62	2.99	.36	2.4	4.8	7.3	89.7	2.1
58	.37	.74	.11	.47	.84	.21	.58	.95	.32	2.1	4.2	6.3	8.5	10.6
59	.37	.73	.09	.45	.82	.18	.55	.91	.27	1.8	3.6	5.4	7.2	09.1
34 60	25.36	50.72	76.08	101.43	126.79	152.15	177.51	202.87	228.23	1521.5	3043.0	4564.5	6086.0	7607.5

Lat.	Latitude 34° to 35°—Meridional arcs.						Latitude 34°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
34 00	30.811			1848.65					
1	1	1	30.81	.66	1	1 848.7	0 1	1 539.8	0.1
2	1	2	61.63	.66	2	3 697.3	2	3 079.6	0.5
3	1	3	92.44	.67	3	5 546.0	3	4 619.3	1.1
4	1	4	123.25	.67	4	7 394.6	4	6 159.1	2.0
34 05	30.811	5	154.07	1848.68	5	9 243.3	0 5	7 698.9	3.1
6	1	6	184.88	.68	6	11 092.0	6	9 238.7	4.5
7	1	7	215.69	.69	7	12 940.7	7	10 778.5	6.1
8	2	8	246.51	.69	8	14 789.4	8	12 318.3	8.0
9	2	9	277.32	.70	9	16 638.1	9	13 858.0	10.1
34 10	30.812	10	308.13	1848.70	10	18 486.8	0 10	15 397.9	12.5
11	2	1	338.95	.71	1	20 335.5	15	23 096.7	28.2
12	2	2	369.76	.71	2	22 184.2	20	30 795.6	50.1
13	2	3	400.57	.72	3	24 032.9	25	38 494.4	78.3
14	2	4	431.39	.72	4	25 881.6	30	46 193.2	112.7
34 15	30.812	15	462.20	1848.73	15	27 730.4	0 35	53 892.0	153.4
16	2	6	493.01	.73	6	29 579.1	40	61 590.8	200.4
17	2	7	523.83	.74	7	31 427.8	45	69 289.5	253.6
18	2	8	554.64	.74	8	33 276.6	50	76 988.2	313.1
19	2	9	585.46	.75	9	35 125.3	55	84 686.8	378.8
34 20	30.813	20	616.27	1848.75	20	36 974.1	1 00	92 385.4	450.8
21	3	1	647.08	.76	1	38 822.8	05	100 083.9	529.1
22	3	2	677.90	.76	2	40 671.6	10	107 782.3	613.6
23	3	3	708.71	.77	3	42 520.3	15	115 480.7	704.4
24	3	4	739.52	.78	4	44 369.1	20	123 179.0	801.5
34 25	30.813	25	770.34	1848.78	25	46 217.9	1 25	130 877.2	904.8
26	3	6	801.15	.79	6	48 066.7	30	138 575.3	1 014.4
27	3	7	831.96	.79	7	49 915.5	35	146 273.4	1 130.2
28	3	8	862.78	.80	8	51 764.3	40	153 971.3	1 252.3
29	3	9	893.59	.80	9	53 613.1	45	161 669.2	1 380.7
34 30	30.813	30	924.40	1848.81	30	55 461.9	1 50	169 366.9	1 515.3
31	4	1	955.22	.81	1	57 310.7	55	177 064.5	1 656.1
32	4	2	986.03	.82	2	59 159.5	2 00	184 762	1 803
33	4	3	1 016.84	.82	3	61 008.3	3 00	277 121	4 057
34	4	4	1 047.66	.83	4	62 857.1	4 00	369 454	7 212
34 35	30.814	35	1 078.47	1848.83	35	64 705.9	5 00	461 751	11 268
36	4	6	1 109.28	.84	6	66 554.8	6 00	554 004	16 225
37	4	7	1 140.10	.84	7	68 403.6	7 00	646 205	22 082
38	4	8	1 170.91	.85	8	70 252.5	8 00	738 344	28 839
39	4	9	1 201.72	.85	9	72 101.3	9 00	830 413	36 494
34 40	30.814	40	1 232.54	1848.86	40	73 950.2	10 00	922 403	45 048
41	4	1	1 263.35	.86	1	75 799.0	11 00	1 014 305	54 499
42	4	2	1 294.16	.87	2	77 647.9	12 00	1 106 110	64 846
43	5	3	1 324.98	.87	3	79 496.8	13 00	1 197 809	76 089
44	5	4	1 355.79	.88	4	81 345.6	14 00	1 289 395	88 227
34 45	30.815	45	1 386.60	1848.88	45	83 194.5	15 00	1 380 858	101 258
46	5	6	1 417.42	.89	6	85 043.4	16 00	1 472 190	115 180
47	5	7	1 448.23	.89	7	86 892.3	17 00	1 563 381	129 993
48	5	8	1 479.04	.90	8	88 741.2	18 00	1 654 423	145 696
49	5	9	1 509.86	.90	9	90 590.1	19 00	1 745 308	162 287
34 50	30.815	50	1 540.67	1848.91	50	92 439.0	20 00	1 836 026	179 763
51	5	1	1 571.48	.91	1	94 287.9	21 00	1 926 569	198 124
52	5	2	1 602.30	.92	2	96 136.8	22 00	2 016 929	217 368
53	5	3	1 633.11	.92	3	97 985.7	23 00	2 107 097	237 493
54	5	4	1 663.93	.93	4	99 834.7	24 00	2 197 065	258 497
34 55	30.816	55	1 694.74	1848.93	55	101 683.6	25 00	2 286 823	280 378
56	6	6	1 725.55	.94	6	103 532.5	26 00	2 376 363	303 134
57	6	7	1 756.37	.94	7	105 381.5	27 00	2 465 677	326 763
58	6	8	1 787.18	.95	8	107 230.4	28 00	2 554 756	351 262
59	6	9	1 817.99	.95	9	109 079.4	29 00	2 643 591	376 629
34 60	30.816	60	1 848.81	1848.96	60	110 928.3	30 00	2 732 175	402 863

Latitude 35° to 36°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
35 00	25.36	50.72	76.08	101.43	126.79	152.15	177.51	202.87	228.23	1521.5	3043.0	4564.5	6086.0	7607.5
1	.35	.71	.06	.41	.76	.12	.47	.83	.18	1.2	2.4	3.6	4.8	6.0
2	.35	.70	.04	.39	.74	.09	.44	.78	.14	0.9	1.8	2.7	3.5	4.4
3	.34	.69	.03	.37	.71	.06	.40	.74	.09	0.6	1.2	1.7	2.3	2.9
4	.34	.68	.01	.35	.69	.03	.37	.70	.04	0.3	40.5	60.8	81.1	601.3
35 05	25.33	50.67	76.00	101.33	126.66	152.00	177.33	202.66	228.00	1520.0	3039.9	4559.9	6079.8	7599.8
6	.33	.65	5.98	.31	.63	1.96	.29	.62	7.95	19.6	9.3	9.0	8.6	8.2
7	.32	.64	.97	.29	.61	.93	.26	.58	.91	9.3	8.7	8.0	7.4	6.7
8	.32	.63	.95	.27	.58	.90	.22	.54	.86	9.0	8.0	7.1	6.1	5.1
9	.31	.62	.94	.25	.56	.87	.19	.50	.81	8.7	7.4	6.1	4.9	3.6
35 10	25.31	50.61	75.92	101.23	126.53	151.84	177.15	202.46	227.76	1518.4	3036.8	4555.2	6073.7	7592.1
11	.30	.60	.91	.21	.51	.81	.11	.41	.72	8.1	6.2	4.3	2.4	90.5
12	.30	.59	.89	.19	.48	.78	.08	.37	.67	7.8	5.6	3.4	71.1	88.9
13	.29	.58	.87	.17	.46	.75	.04	.33	.62	7.5	5.0	2.4	69.9	7.4
14	.29	.57	.86	.14	.43	.72	7.01	.29	.58	7.2	4.3	1.5	8.6	5.8
35 15	25.28	50.56	75.84	101.12	126.41	151.69	176.97	202.25	227.53	1516.9	3033.7	4550.6	6067.4	7584.3
16	.28	.55	.83	.10	.38	.65	.93	.21	.49	6.5	3.1	49.7	6.2	2.7
17	.27	.54	.81	.08	.35	.62	.90	.17	.44	6.2	2.5	8.7	5.0	81.2
18	.27	.53	.80	.06	.33	.59	.86	.12	.39	5.9	1.8	7.8	3.7	79.6
19	.26	.52	.78	.04	.30	.56	.82	.08	.34	5.6	1.2	6.8	2.5	8.1
35 20	25.26	50.51	75.77	101.02	126.28	151.53	176.79	202.04	227.30	1515.3	3030.6	4545.9	6061.2	7576.5
21	.25	.50	.75	1.00	.25	.50	.75	2.00	.25	5.0	30.0	5.0	60.0	5.0
22	.24	.49	.73	0.98	.23	.47	.72	1.96	.20	4.7	29.4	4.0	58.7	3.4
23	.24	.48	.72	.96	.20	.44	.68	.92	.16	4.4	8.8	3.1	7.5	1.9
24	.23	.47	.70	.94	.18	.41	.64	.87	.11	4.1	8.1	2.1	6.2	70.3
35 25	25.23	50.46	75.69	100.92	126.15	151.37	176.60	201.83	227.06	1513.7	3027.5	4541.2	6055.0	7568.7
26	.22	.45	.67	.90	.12	.34	.57	.79	7.02	3.4	6.9	40.3	3.8	7.2
27	.22	.44	.66	.87	.09	.31	.53	.75	6.97	3.1	6.2	39.4	2.5	5.6
28	.21	.43	.64	.85	.07	.28	.49	.71	.92	2.8	5.6	8.4	1.3	4.1
29	.21	.42	.63	.83	.04	.25	.46	.67	.88	2.5	5.0	7.5	50.0	2.5
35 30	25.20	50.41	75.61	100.81	126.02	151.22	176.42	201.63	226.83	1512.2	3024.4	4536.6	6048.8	7561.0
31	.20	.40	.59	.79	5.99	.19	.38	.58	.78	1.9	3.8	5.7	7.5	59.4
32	.19	.39	.58	.77	.97	.16	.35	.54	.74	1.6	3.1	4.7	6.2	7.8
33	.19	.38	.56	.75	.94	.13	.31	.50	.69	1.3	2.5	3.8	5.0	6.3
34	.18	.36	.55	.73	.91	.09	.28	.46	.64	0.9	1.9	2.8	3.8	4.7
35 35	25.18	50.35	75.53	100.71	125.88	151.06	176.24	201.42	226.60	1510.6	3021.2	4531.9	6042.5	7553.1
36	.17	.34	.52	.69	.86	.03	.20	.38	.55	0.3	0.6	1.0	1.3	1.6
37	.17	.33	.50	.67	.84	1.00	.17	.33	.50	10.0	20.0	30.0	40.0	50.0
38	.16	.32	.48	.65	.81	0.97	.13	.29	.45	09.7	19.4	29.1	38.7	48.4
39	.16	.31	.47	.63	.79	.94	.10	.25	.41	9.4	8.8	8.1	7.5	6.9
35 40	25.15	50.30	75.45	100.60	125.76	150.91	176.06	201.21	226.36	1509.1	3018.1	4527.2	6036.2	7545.3
41	.15	.29	.44	.58	.73	.87	6.02	.17	.31	8.7	7.5	6.3	5.0	3.7
42	.14	.28	.42	.56	.70	.84	5.99	.13	.27	8.4	6.9	5.3	3.8	2.2
43	.14	.27	.41	.54	.68	.81	.95	.08	.22	8.1	6.2	4.4	2.5	40.6
44	.13	.26	.39	.52	.65	.78	.91	.04	.17	7.8	5.6	3.4	31.2	39.0
35 45	25.12	50.25	75.37	100.50	125.62	150.75	175.87	201.00	226.12	1507.5	3015.0	4522.5	6029.9	7537.4
46	.12	.24	.36	.48	.60	.72	.84	0.96	.08	7.2	4.4	1.6	8.7	5.9
47	.11	.23	.34	.46	.57	.69	.80	.91	6.03	6.9	3.7	20.6	7.4	4.3
48	.11	.22	.33	.44	.54	.65	.76	.87	5.98	6.5	3.1	19.7	6.2	2.7
49	.10	.21	.31	.42	.52	.62	.72	.83	.94	6.2	2.5	8.7	5.0	31.2
35 50	25.10	50.20	75.30	100.39	125.49	150.59	175.69	200.79	225.89	1505.9	3011.8	4517.8	6023.7	7529.6
51	.09	.19	.28	.37	.46	.56	.65	.75	.84	5.6	1.2	6.8	2.4	8.0
52	.09	.18	.26	.35	.44	.53	.62	.70	.79	5.3	0.6	5.9	21.1	6.4
53	.08	.17	.25	.33	.41	.50	.58	.66	.75	5.0	10.0	4.9	19.9	4.9
54	.08	.16	.23	.31	.39	.47	.54	.62	.70	4.7	09.3	4.0	8.6	3.3
35 55	25.07	50.14	75.22	100.29	125.36	150.43	175.50	200.58	225.65	1504.3	3008.7	4513.0	6017.4	7521.7
56	.07	.13	.20	.27	.33	.40	.47	.54	.60	4.0	8.0	2.1	6.1	20.1
57	.06	.12	.19	.25	.31	.37	.43	.49	.55	3.7	7.4	1.1	4.8	18.5
58	.06	.11	.17	.23	.28	.34	.39	.45	.51	3.4	6.8	10.2	3.6	7.0
59	.05	.10	.15	.21	.26	.31	.36	.41	.46	3.1	6.2	09.2	2.3	5.4
35 60	25.05	50.09	75.14	100.18	125.23	150.28	175.32	200.37	225.41	1502.8	3005.5	4508.3	6011.0	7513.8

Lat.		Latitude 35° to 36°—Meridional arcs.						Latitude 35°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
35	00	30.816			1848.96					
	1	6	1	30.82	.96	1	1 849.0	0 1	1 521.5	0.1
	2	6	2	61.64	.97	2	3 697.9	2	3 043.0	0.5
	3	6	3	92.46	.97	3	5 546.9	3	4 564.5	1.1
	4	6	4	123.27	.98	4	7 395.9	4	6 086.0	2.0
35	05	30.816	5	154.09	1848.99	5	9 244.9	0 5	7 607.5	3.2
	6	7	6	184.91	8.99	6	11 093.9	6	9 129.0	4.6
	7	7	7	215.73	9.00	7	12 942.8	7	10 650.5	6.2
	8	7	8	246.55	.00	8	14 791.8	8	12 172.0	8.1
	9	7	9	277.37	.01	9	16 640.8	9	13 693.5	10.3
35	10	30.817	10	308.19	1849.01	10	18 489.9	0 10	15 215.0	12.7
	11	7	1	339.00	.02	11	20 338.9	15	22 822.5	28.6
	12	7	2	369.82	.02	12	22 187.9	20	30 430.0	50.8
	13	7	3	400.64	.03	13	24 036.9	25	38 037.5	79.3
	14	7	4	431.46	.03	14	25 885.9	30	45 645.0	114.2
35	15	30.817	15	462.28	1849.04	15	27 735.0	0 35	53 252.4	155.5
	16	7	6	493.10	.04	16	29 584.0	40	60 859.7	203.1
	17	7	7	523.92	.05	17	31 433.1	45	68 467.1	257.0
	18	8	8	554.73	.05	18	33 282.1	50	76 074.3	317.3
	19	8	9	585.55	.06	19	35 131.2	55	83 681.6	384.0
35	20	30.818	20	616.37	1849.06	20	36 980.2	1 00	91 288.8	456.9
	21	8	1	647.19	.07	21	38 829.3	05	98 895.9	536.3
	22	8	2	678.01	.07	22	40 678.4	10	106 502.9	622.0
	23	8	3	708.83	.08	23	42 527.4	15	114 109.9	714.0
	24	8	4	739.65	.08	24	44 376.5	20	121 716.8	812.4
35	25	30.818	25	770.46	1849.09	25	46 225.6	1 25	129 323.6	917.1
	26	8	6	801.28	.09	26	48 074.7	30	136 930.3	1 028.1
	27	8	7	832.10	.10	27	49 923.8	35	144 536.9	1 145.5
	28	8	8	862.92	.10	28	51 772.9	40	152 143.4	1 269.3
	29	8	9	893.74	.11	29	53 622.0	45	159 749.8	1 399.4
35	30	30.819	30	924.56	1849.11	30	55 471.1	1 50	167 356.1	1 535.8
	31	9	1	955.38	.12	31	57 320.2	55	174 962.3	1 678.6
	32	9	2	986.19	.12	32	59 169.4	2 00	182 568	1 828
	33	9	3	1 017.01	.13	33	61 018.5	3 00	273 830	4 112
	34	9	4	1 047.83	.13	34	62 867.6	4 00	365 064	7 310
35	35	30.819	35	1 078.65	1849.14	35	64 716.7	5 00	456 261	11 421
	36	9	6	1 109.47	.15	36	66 565.9	6 00	547 412	16 445
	37	9	7	1 140.29	.15	37	68 415.0	7 00	638 509	22 381
	38	9	8	1 171.11	.16	38	70 264.2	8 00	729 542	29 229
	39	9	9	1 201.92	.16	39	72 113.3	9 00	820 501	36 987
35	40	30.819	40	1 232.74	1849.17	40	73 962.5	10 00	911 379	45 656
	41	20	1	1 263.56	.17	41	75 811.7	11 00	1 002 165	55 234
	42	0	2	1 294.38	.18	42	77 660.8	12 00	1 092 850	65 721
	43	0	3	1 325.20	.18	43	79 510.0	13 00	1 183 426	77 115
	44	0	4	1 356.02	.19	44	81 359.2	14 00	1 273 884	89 415
35	45	30.820	45	1 386.84	1849.19	45	83 208.4	15 00	1 364 214	102 619
	46	0	6	1 417.65	.20	46	85 057.6	16 00	1 454 407	116 728
	47	0	7	1 448.47	.20	47	86 906.8	17 00	1 544 454	131 738
	48	0	8	1 479.29	.21	48	88 756.0	18 00	1 634 347	147 650
	49	0	9	1 510.11	.21	49	90 605.2	19 00	1 724 076	164 460
35	50	30.820	50	1 540.93	1849.22	50	92 454.4	20 00	1 813 632	182 168
	51	0	1	1 571.75	.22	51	94 303.6	21 00	1 903 006	200 772
	52	0	2	1 602.57	.23	52	96 152.9	22 00	1 992 190	220 268
	53	1	3	1 633.38	.23	53	98 002.1	23 00	2 081 174	240 657
	54	1	4	1 664.20	1849.24	54	99 851.3	24 00	2 169 949	261 936
35	55	30.821	55	1 695.02	.24	55	101 700.6	25 00	2 258 507	284 102
	56	1	6	1 725.84	.25	56	103 549.8	26 00	2 346 838	307 154
	57	1	7	1 756.66	.25	57	105 399.1	27 00	2 434 934	331 089
	58	1	8	1 787.48	.26	58	107 248.3	28 00	2 522 787	355 905
	59	1	9	1 818.30	.26	59	109 097.6	29 00	2 610 386	381 598
35	60	30.821	60	1 849.11	1849.27	60	110 946.9	30 00	2 697 724	408 168

Latitude 36° to 37°—Arcs of the Parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
36 00	25.05	50.09	75.14	100.18	125.23	150.28	175.32	200.37	225.41	1502.8	3005.5	4508.3	6011.0	7513.8
1	.04	.08	.12	.16	.20	.25	.29	.33	.36	2.5	4.9	7.3	09.8	2.2
2	.04	.07	.11	.14	.18	.22	.25	.28	.32	2.2	4.3	6.4	8.5	10.6
3	.03	.06	.09	.12	.15	.18	.21	.24	.27	1.8	3.6	5.4	7.2	09.1
4	.03	.05	.08	.10	.13	.15	.17	.20	.22	1.5	3.0	4.5	6.0	7.5
36.05	25.02	50.04	75.06	100.08	125.10	150.12	175.14	200.16	225.17	1501.2	3002.4	4503.5	6004.7	7505.9
6	.01	.03	.04	.06	.07	.09	.10	.11	.13	0.9	1.7	2.6	3.4	4.3
7	.01	.02	.03	.04	.05	.06	.06	.07	.08	0.6	1.1	1.6	2.2	2.7
8	.00	.01	.01	100.02	5.02	50.02	5.02	200.03	5.03	500.2	3000.5	500.7	6000.9	501.1
9	5.00	50.00	5.00	99.99	4.99	49.99	4.99	199.99	4.99	499.9	2999.8	499.7	5999.6	499.6
36 10	24.99	49.99	74.98	99.97	124.97	149.96	174.95	199.95	224.94	1499.6	2999.2	4498.8	5998.4	7498.0
11	.99	.98	.96	.95	.94	.93	.91	.90	.89	9.3	8.6	7.8	7.1	6.4
12	.98	.97	.95	.93	.92	.90	.88	.86	.84	9.0	7.9	6.9	5.8	4.8
13	.98	.95	.93	.91	.89	.86	.84	.82	.80	8.6	7.3	5.9	4.6	3.2
14	.97	.94	.92	.89	.86	.83	.80	.78	.75	8.3	6.6	5.0	3.3	1.6
36 15	24.97	49.93	74.90	99.87	124.84	149.80	174.77	199.73	224.70	1498.0	2996.0	4494.0	5992.0	7490.0
16	.96	.92	.88	.85	.81	.77	.73	.69	.65	7.7	5.4	3.0	90.7	88.4
17	.96	.91	.87	.82	.78	.74	.69	.65	.60	7.4	4.7	2.1	89.5	6.8
18	.95	.90	.85	.80	.75	.70	.65	.61	.56	7.0	4.1	1.1	8.2	5.2
19	.95	.89	.84	.78	.73	.67	.62	.56	.51	6.7	3.4	90.2	6.9	3.7
36 20	24.94	49.88	74.82	99.76	124.70	149.64	174.58	199.52	224.46	1496.4	2992.8	4489.2	5985.7	7482.1
21	.94	.87	.80	.74	.67	.61	.54	.48	.41	6.1	2.2	8.3	4.4	80.5
22	.93	.86	.79	.72	.65	.58	.51	.44	.36	5.8	1.5	7.3	3.1	78.9
23	.93	.85	.77	.70	.62	.54	.47	.39	.32	5.4	0.9	6.4	1.8	7.3
24	.92	.84	.76	.67	.59	.51	.43	.35	.27	5.1	90.2	5.4	80.5	5.7
36 25	24.91	49.83	74.74	99.65	124.57	149.48	174.39	199.31	224.22	1494.8	2989.6	4484.5	5979.3	7474.1
26	.91	.82	.72	.63	.54	.45	.36	.27	.17	4.5	9.0	3.5	8.0	2.5
27	.90	.81	.71	.61	.52	.42	.32	.22	.13	4.2	8.3	2.6	6.7	70.9
28	.90	.79	.69	.59	.49	.38	.28	.18	.08	3.8	7.7	1.6	5.4	69.3
29	.89	.78	.68	.57	.46	.35	.25	.14	4.03	3.5	7.0	80.7	4.2	7.7
36 30	24.89	49.77	74.66	99.55	124.44	149.32	174.21	199.10	223.98	1493.2	2986.4	4479.7	5972.9	7466.1
31	.88	.76	.64	.53	.41	.29	.17	.05	.93	2.9	5.8	8.7	1.6	4.5
32	.88	.75	.63	.50	.38	.26	.14	9.01	.88	2.6	5.1	7.7	70.3	2.9
33	.87	.74	.61	.48	.35	.22	.10	8.97	.84	2.2	4.5	6.8	69.0	61.3
34	.87	.73	.60	.46	.33	.19	.06	.92	.79	1.9	3.8	5.8	7.7	59.7
36 35	24.86	49.72	74.58	99.44	124.30	149.16	174.02	198.88	223.74	1491.6	2983.2	4474.8	5966.5	7458.1
36	.85	.71	.56	.42	.28	.13	3.99	.84	.69	1.3	2.6	3.8	5.2	6.5
37	.85	.70	.55	.40	.25	.10	.95	.80	.64	1.0	1.9	2.9	3.9	4.9
38	.84	.69	.53	.38	.22	.06	.91	.75	.60	0.6	1.3	1.9	2.6	3.3
39	.84	.68	.52	.35	.19	.03	.87	.71	.55	0.3	0.6	1.0	1.3	1.7
36 40	24.83	49.67	74.50	99.33	124.17	149.00	173.84	198.67	223.50	1490.0	2980.0	4470.0	5960.1	7450.1
41	.83	.66	.48	.31	.14	8.97	.80	.63	.45	89.7	79.4	69.0	58.8	48.5
42	.82	.65	.47	.29	.12	.94	.76	.58	.40	9.4	8.7	8.1	7.5	6.8
43	.82	.63	.45	.27	.09	.90	.72	.54	.36	9.0	8.1	7.1	6.2	5.2
44	.81	.62	.44	.25	.06	.87	.69	.50	.31	8.7	7.4	6.2	4.9	3.6
36 45	24.81	49.61	74.42	99.23	124.03	148.84	173.65	198.45	223.26	1488.4	2976.8	4465.2	5953.6	7442.0
46	.80	.60	.40	.21	4.01	.81	.61	.41	.21	8.1	6.2	4.2	2.3	40.4
47	.80	.59	.39	.18	3.98	.78	.57	.37	.16	7.8	5.5	3.3	51.0	38.8
48	.79	.58	.37	.16	.95	.74	.54	.33	.12	7.4	4.9	2.3	49.8	7.2
49	.79	.57	.36	.14	.93	.71	.50	.28	.07	7.1	4.2	1.4	8.5	5.6
36 50	24.78	49.56	74.34	99.12	123.90	148.68	173.46	198.24	223.02	1486.8	2973.6	4460.4	5947.2	7434.0
51	.78	.55	.32	.10	.87	.65	.42	.20	2.97	6.5	3.0	59.4	5.9	2.4
52	.77	.54	.31	.08	.85	.62	.38	.15	.92	6.2	2.3	8.4	4.6	30.7
53	.76	.53	.29	.06	.82	.58	.35	.11	.87	5.8	1.7	7.5	3.3	29.1
54	.76	.52	.28	.03	.79	.55	.31	.07	.82	5.5	1.0	6.5	2.0	7.5
36 55	24.75	49.51	74.26	99.01	123.76	148.52	173.27	198.02	222.78	1485.2	2970.4	4455.5	5940.7	7425.9
56	.75	.50	.24	8.99	.74	.49	.23	7.98	.73	4.9	69.7	4.5	39.4	4.3
57	.74	.49	.23	.97	.71	.46	.20	.94	.68	4.6	9.1	3.6	8.1	2.7
58	.74	.47	.21	.95	.68	.42	.16	.89	.63	4.2	8.4	2.6	6.8	21.0
59	.73	.46	.19	.93	.66	.39	.12	.85	.58	3.9	7.8	1.7	5.5	19.4
36 60	24.73	49.45	74.18	98.90	123.63	148.36	173.08	197.81	222.53	1483.6	2967.1	4450.7	5934.3	7417.8

Lat.		Latitude 36° to 37°—Meridional arcs.						Latitude 36°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
36	00	30.821			1849.27					
	1	1	1	30.82	.28	1	1 849.3	0 1	1 502.8	0.1
	2	1	2	61.65	.28	2	3 698.5	2	3 005.5	0.5
	3	1	3	92.47	.29	3	5 547.8	3	4 508.3	1.2
	4	2	4	123.29	.29	4	7 397.1	4	6 011.1	2.1
36	05	30.822	5	154.12	1849.30	5	9 246.4	0 5	7 513.8	3.2
	6	2	6	184.94	.30	6	11 095.7	6	9 016.6	4.6
	7	2	7	215.77	.31	7	12 945.0	7	10 519.3	6.3
	8	2	8	246.59	.31	8	14 794.3	8	12 022.1	8.2
	9	2	9	277.41	.32	9	16 643.6	9	13 524.8	10.4
36	10	30.822	10	308.24	1849.32	10	18 493.0	0 10	15 027.6	12.8
	11	2	1	339.06	.33	1	20 342.3	15	22 541.4	28.9
	12	2	2	369.89	.33	2	22 191.6	20	30 055.2	51.4
	13	2	3	400.71	.34	3	24 040.9	25	37 568.9	80.3
	14	2	4	431.53	.34	4	25 890.3	30	45 082.7	115.6
36	15	30.822	15	462.36	1849.35	15	27 739.6	0 35	52 596.4	157.4
	16	3	6	493.18	.35	6	29 589.0	40	60 110.0	205.6
	17	3	7	524.00	.36	7	31 438.3	45	67 623.6	260.2
	18	3	8	554.83	.36	8	33 287.7	50	75 137.3	321.2
	19	3	9	585.65	.37	9	35 137.1	55	82 650.8	388.7
36	20	30.823	20	616.48	1849.37	20	36 986.4	1 00	90 164.3	462.5
	21	3	1	647.30	.38	1	38 835.8	05	97 677.7	542.8
	22	3	2	678.12	.38	2	40 685.2	10	105 191.0	629.5
	23	3	3	708.95	.39	3	42 534.6	15	112 704.2	722.6
	24	3	4	739.77	.40	4	44 384.0	20	120 217.4	822.2
36	25	30.823	25	770.59	1849.40	25	46 233.4	1 25	127 730.4	928.2
	26	3	6	801.42	.41	6	48 082.8	20	135 243.4	1 040.6
	27	4	7	832.24	.41	7	49 932.2	35	142 756.3	1 159.4
	28	4	8	863.07	.42	8	51 781.6	40	150 269.1	1 284.7
	29	4	9	893.89	.42	9	53 631.0	45	157 781.7	1 416.4
36	30	30.824	30	924.71	1849.43	30	55 480.4	1 50	165 294.3	1 554.5
	31	4	1	955.54	.43	1	57 329.9	55	172 806.8	1 699.0
	32	4	2	986.36	.44	2	59 179.3	2 00	180 319	1 850
	33	4	3	1 017.18	.44	3	61 028.7	3 00	270 455	4 162
	34	4	4	1 048.01	.45	4	62 878.2	4 00	360 562	7 399
36	35	30.824	35	1 078.83	1849.45	35	64 727.6	5 00	450 631	11 560
	36	4	6	1 109.66	.46	6	66 577.1	6 00	540 653	16 645
	37	4	7	1 140.48	.46	7	68 426.6	7 00	630 618	22 652
	38	4	8	1 171.30	.47	8	70 276.0	8 00	720 517	29 583
	39	5	9	1 202.13	.47	9	72 125.5	9 00	810 340	37 435
36	40	30.825	40	1 232.95	1849.48	40	73 975.0	10 00	900 078	46 209
	41	5	1	1 263.77	.48	1	75 824.5	11 00	989 720	55 993
	42	5	2	1 294.60	.49	2	77 673.9	12 00	1 079 259	66 515
	43	5	3	1 325.42	.49	3	79 523.4	13 00	1 168 684	78 046
	44	5	4	1 356.25	.50	4	81 372.9	14 00	1 257 987	90 494
36	45	30.825	45	1 387.07	1849.51	45	83 222.4	15 00	1 347 156	103 856
	46	5	6	1 417.89	.51	6	85 071.9	16 00	1 436 184	118 133
	47	5	7	1 448.72	.52	7	86 922.5	17 00	1 525 061	133 323
	48	5	8	1 479.54	.52	8	88 772.0	18 00	1 613 777	149 423
	49	5	9	1 510.36	.53	9	90 620.5	19 00	1 702 324	166 433
36	50	30.826	50	1 541.19	1849.53	50	92 470.0	20 00	1 790 691	184 350
	51	6	1	1 572.01	.54	1	94 319.6	21 00	1 878 870	203 173
	52	6	2	1 602.84	.54	2	96 169.1	22 00	1 966 851	222 899
	53	6	3	1 633.66	.55	3	98 018.6	23 00	2 054 625	243 527
	54	6	4	1 664.48	.55	4	99 868.2	24 00	2 142 183	265 055
36	55	30.826	55	1 695.31	1849.56	55	101 717.8	25 00	2 229 516	287 479
	56	6	6	1 726.13	.56	6	103 567.3	26 00	2 316 613	310 798
	57	6	7	1 756.95	.57	7	105 416.9	27 00	2 403 467	335 009
	58	6	8	1 787.78	.57	8	107 266.5	28 00	2 490 068	360 111
	59	6	9	1 818.60	.58	9	109 116.0	29 00	2 576 407	386 099
36	60	30.826	60	1 849.43	1849.58	60	110 965.6	30 00	2 662 475	412 971

Latitude 37° to 38°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
37 00	24.73	49.45	74.18	98.90	123.63	148.36	173.08	197.81	222.53	1483.6	2967.1	4450.7	5934.3	7417.8
1	.72	.44	.16	.88	.60	.33	.05	.77	.48	3.3	6.5	49.7	3.0	6.3
2	.72	.43	.15	.86	.57	.29	3.00	.72	.43	2.9	5.8	8.7	1.7	4.6
3	.71	.42	.13	.84	.55	.26	2.97	.68	.39	2.6	5.2	7.8	30.4	2.9
4	.70	.41	.11	.82	.52	.23	.93	.64	.34	2.3	4.5	6.8	29.1	1.3
37 05	24.70	49.40	74.10	98.80	123.49	148.19	172.89	197.59	222.29	1481.9	2963.9	4445.8	5927.8	7409.7
6	.69	.39	.08	.77	.46	.16	.85	.55	.24	1.6	3.2	4.8	6.5	8.1
7	.69	.38	.07	.75	.43	.13	.82	.51	.19	1.3	2.6	3.9	5.2	6.5
8	.68	.36	.05	.73	.41	.10	.78	.46	.15	1.0	1.9	2.9	3.9	4.8
9	.68	.35	.03	.71	.38	.06	.74	.42	.10	0.6	1.3	2.0	2.6	3.2
37 10	24.67	49.34	74.02	98.69	123.36	148.03	172.70	197.38	222.05	1480.3	2960.6	4441.0	5921.3	7401.6
11	.67	.33	4.00	.67	.33	8.00	.66	.33	2.00	80.0	60.0	40.0	20.0	400.0
12	.66	.32	3.98	.64	.30	7.97	.63	.29	1.95	79.7	59.3	39.0	18.7	398.3
13	.66	.31	.97	.62	.27	.93	.59	.25	.90	9.3	8.7	8.1	7.4	6.7
14	.65	.30	.95	.60	.25	.90	.55	.20	.85	9.0	8.0	7.1	6.1	5.1
37 15	24.64	49.29	73.93	98.58	123.22	147.87	172.51	197.16	221.81	1478.7	2957.4	4436.1	5914.8	7393.4
16	.64	.28	.92	.56	.20	.84	.48	.12	.76	8.4	6.7	5.1	3.5	1.8
17	.63	.27	.90	.54	.17	.81	.44	.07	.71	8.1	6.1	4.1	2.2	90.2
18	.63	.26	.89	.51	.14	.77	.40	7.03	.66	7.7	5.4	3.2	10.8	88.6
19	.62	.25	.87	.49	.12	.74	.36	6.98	.61	7.4	4.8	2.2	09.5	6.9
37 20	24.62	49.24	73.85	98.47	123.09	147.71	172.32	196.94	221.56	1477.1	2954.1	4431.2	5908.2	7385.3
21	.61	.23	.84	.45	.06	.68	.29	.90	.51	6.8	3.5	30.2	6.9	3.7
22	.61	.21	.82	.43	.04	.64	.24	.85	.46	6.4	2.8	29.2	5.6	2.0
23	.60	.20	.80	.41	3.01	.61	.21	.81	.41	6.1	2.2	8.3	4.3	80.4
24	.60	.19	.79	.38	2.98	.58	.17	.77	.36	5.8	1.5	7.3	3.0	78.8
37 25	24.59	49.18	73.77	98.36	122.95	147.54	172.13	196.72	221.32	1475.4	2950.9	4426.3	5901.7	7377.1
26	.58	.17	.75	.34	.93	.51	.09	.68	.27	5.1	50.2	5.3	900.4	5.5
27	.58	.16	.74	.32	.90	.48	.06	.64	.22	4.8	49.6	4.3	899.1	3.9
28	.57	.15	.72	.30	.87	.44	2.02	.59	.17	4.4	8.9	3.4	7.8	2.2
29	.57	.14	.71	.28	.85	.41	1.98	.55	.12	4.1	8.3	2.4	6.5	70.6
37 30	24.56	49.13	73.69	98.25	122.82	147.38	171.94	196.51	221.07	1473.8	2947.6	4421.4	5895.2	7369.0
31	.56	.12	.67	.23	.79	.35	.91	.46	1.02	3.5	6.9	20.4	4.9	7.3
32	.55	.11	.66	.21	.76	.31	.86	.42	0.97	3.1	6.3	19.4	3.5	5.7
33	.55	.09	.64	.19	.74	.28	.83	.37	.92	2.8	5.6	8.4	2.2	4.0
34	.54	.08	.62	.17	.71	.25	.79	.33	.87	2.5	5.0	7.5	90.9	2.4
37 35	24.54	49.07	73.61	98.14	122.68	147.22	171.75	196.29	220.82	1472.2	2944.3	4416.5	5888.6	7360.8
36	.53	.06	.59	.12	.65	.18	.71	.24	.78	1.8	3.6	5.5	7.3	59.1
37	.53	.05	.58	.10	.62	.15	.67	.20	.73	1.5	3.0	4.5	6.0	7.5
38	.52	.04	.56	.08	.60	.12	.64	.16	.68	1.2	2.3	3.5	4.7	5.8
39	.51	.03	.54	.06	.57	.08	.60	.11	.63	0.8	1.7	2.5	3.4	4.2
37 40	24.51	49.02	73.53	98.03	122.54	147.05	171.56	196.07	220.58	1470.5	2941.0	4411.5	5882.0	7352.6
41	.50	.01	.51	8.01	.51	7.02	.52	6.02	.53	70.2	40.3	10.5	80.7	50.9
42	.50	9.00	.49	7.99	.49	6.99	.48	5.98	.48	69.9	39.7	09.5	79.4	49.3
43	.49	8.98	.48	.97	.46	.95	.45	.94	.43	9.5	9.0	8.6	8.1	7.6
44	.49	.97	.46	.95	.43	.92	.41	.89	.38	9.2	8.4	7.6	6.8	6.0
37 45	24.48	48.96	73.44	97.92	122.40	146.89	171.37	195.85	220.33	1468.9	2937.7	4406.6	5875.5	7344.3
46	.47	.95	.43	.90	.38	.85	.33	.80	.28	8.5	7.0	5.6	4.1	2.7
47	.47	.94	.41	.88	.35	.82	.29	.76	.23	8.2	6.4	4.6	2.8	41.0
48	.46	.93	.39	.86	.32	.79	.26	.72	.18	7.9	5.7	3.7	1.5	39.4
49	.46	.92	.38	.84	.30	.75	.21	.67	.13	7.5	5.1	2.7	70.2	7.7
37 50	24.45	48.91	73.36	97.81	122.27	146.72	171.17	195.63	220.08	1467.2	2934.4	4401.7	5868.9	7336.1
51	.45	.90	.34	.79	.24	.69	.14	.58	20.03	6.9	3.7	400.7	7.5	4.4
52	.44	.89	.33	.77	.21	.66	.10	.54	19.98	6.6	3.1	399.7	6.2	2.8
53	.44	.87	.31	.75	.19	.62	.06	.50	.93	6.2	2.4	8.7	4.9	31.1
54	.43	.86	.30	.73	.16	.59	1.02	.45	.88	5.9	1.8	7.7	3.6	29.5
37 55	24.43	48.85	73.28	97.70	122.13	146.56	170.98	195.41	219.83	1465.6	2931.1	4396.7	5862.3	7327.8
56	.42	.84	.26	.68	.10	.52	.94	.36	.79	5.2	30.5	5.7	60.9	6.2
57	.42	.83	.25	.66	.07	.49	.91	.32	.74	4.9	29.8	4.7	59.6	4.5
58	.41	.82	.23	.64	.05	.46	.87	.28	.69	4.6	9.1	3.7	8.3	2.9
59	.40	.81	.21	.62	2.02	.42	.83	.23	.64	4.2	8.5	2.7	7.0	21.2
37 60	24.40	48.80	73.20	97.59	121.99	146.39	170.79	195.19	219.59	1463.9	2927.8	4391.7	5855.6	7319.6

Lat.	Latitude 37° to 38°—Meridional arcs.						Latitude 37°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
37 00	30.826			1849.58					
1	6	1	30.83	.59	1	1 849.6	0 1	1 483.6	0.1
2	7	2	61.66	.59	2	3 699.2	2	2 967.1	0.5
3	7	3	92.49	.60	3	5 548.8	3	4 450.7	1.2
4	7	4	123.32	.61	4	7 398.4	4	5 934.2	2.1
37 05	30.827	5	154.15	1849.61	5	9 248.0	0 5	7 417.8	3.3
6	7	6	184.97	.62	6	11 097.6	6	8 901.4	4.7
7	7	7	215.80	.62	7	12 947.2	7	10 384.9	6.4
8	7	8	246.63	.63	8	14 796.8	8	11 868.5	8.3
9	7	9	277.46	.63	9	16 646.5	9	13 352.1	10.5
37 10	30.827	10	308.29	1849.64	10	18 496.1	0 10	14 835.6	13.0
11	7	1	339.12	.64	1	20 345.7	15	22 253.4	29.2
12	7	2	369.95	.65	2	22 195.4	20	29 671.2	51.9
13	8	3	400.78	.65	3	24 045.0	25	37 089.0	81.2
14	8	4	431.61	.66	4	25 894.7	30	44 506.7	116.9
37 15	30.828	15	462.44	1849.66	15	27 744.4	0 35	51 924.4	159.1
16	8	6	493.26	.67	6	29 594.0	40	59 342.1	207.8
17	8	7	524.09	.67	7	31 443.7	45	66 759.7	263.0
18	8	8	554.92	.68	8	33 293.4	50	74 177.2	324.6
19	8	9	585.75	.68	9	35 143.1	55	81 594.7	392.8
37 20	30.828	20	616.58	1849.69	20	36 992.7	1 00	89 012.2	467.5
21	8	1	647.41	.69	1	38 842.4	05	96 429.6	548.6
22	8	2	678.24	.70	2	40 692.1	10	103 846.9	636.3
23	8	3	709.07	.71	3	42 541.8	15	111 264.1	730.4
24	9	4	739.90	.71	4	44 391.5	20	118 681.2	831.1
37 25	30.829	25	770.73	1849.72	25	46 241.3	1 25	126 098.3	938.2
26	9	6	801.56	.72	6	48 091.0	30	133 515.2	1 051.8
27	9	7	832.38	.73	7	49 940.7	35	140 932.1	1 171.9
28	9	8	863.21	.73	8	51 790.4	40	148 348.8	1 298.5
29	9	9	894.04	.74	9	53 640.2	45	155 765.4	1 431.6
37 30	30.829	30	924.87	1849.74	30	55 489.9	1 50	163 181.9	1 571.2
31	9	1	955.70	.75	1	57 339.6	55	170 598.3	1 717.3
32	9	2	986.53	.75	2	59 189.4	2 00	178 015	1 870
33	9	3	1 017.36	.76	3	61 039.1	3 00	266 997	4 207
34	9	4	1 048.19	.76	4	62 888.9	4 00	355 951	7 479
37 35	30.829	35	1 079.02	1849.77	35	64 738.7	5 00	444 865	11 685
36	30	6	1 109.85	.77	6	66 588.4	6 00	533 730	16 824
37	0	7	1 140.67	.78	7	68 438.2	7 00	622 536	22 896
38	0	8	1 171.50	.78	8	70 288.0	8 00	711 273	29 901
39	0	9	1 202.33	.79	9	72 137.8	9 00	799 932	37 838
37 40	30.830	40	1 233.16	1849.80	40	73 987.6	10 00	888 503	46 706
41	0	1	1 263.99	.80	1	75 837.4	11 00	976 975	56 503
42	0	2	1 294.82	.81	2	77 687.2	12 00	1 065 340	67 229
43	0	3	1 325.65	.81	3	79 537.0	13 00	1 153 587	78 882
44	0	4	1 356.48	.82	4	81 386.8	14 00	1 241 707	91 462
37 45	30.830	45	1 387.31	1849.82	45	83 236.6	15 00	1 329 690	104 967
46	0	6	1 418.14	.83	6	85 086.5	16 00	1 417 526	119 395
47	1	7	1 448.96	.83	7	86 936.3	17 00	1 505 206	134 745
48	1	8	1 479.79	.84	8	88 786.1	18 00	1 592 721	151 015
49	1	9	1 510.62	.84	9	90 636.0	19 00	1 680 059	168 203
37 50	30.831	50	1 541.45	1849.85	50	92 485.8	20 00	1 767 211	186 307
51	1	1	1 572.28	.85	1	94 335.7	21 00	1 854 169	205 326
52	1	2	1 603.11	.86	2	96 185.5	22 00	1 940 922	225 258
53	1	3	1 633.94	.86	3	98 035.4	23 00	2 027 462	246 099
54	1	4	1 664.77	.87	4	99 885.2	24 00	2 113 777	267 849
37 55	30.831	55	1 695.60	1849.88	55	101 735.1	25 00	2 199 860	290 503
56	1	6	1 726.43	.88	6	103 585.0	26 00	2 285 699	314 061
57	1	7	1 757.26	.89	7	105 434.9	27 00	2 371 287	338 519
58	2	8	1 788.08	.89	8	107 284.8	28 00	2 456 612	363 874
59	2	9	1 818.91	.90	9	109 134.7	29 00	2 541 667	390 125
37 60	30.832	60	1 849.74	1849.90	60	110 984.5	30 00	2 626 441	417 267

Latitude 38° to 39°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
38 00	24.40	48.80	73.20	97.59	121.99	146.39	170.79	195.19	219.59	1463.9	2927.8	4391.7	5855.6	7319.6
1	.39	.79	.18	.57	.96	.36	.75	.15	.54	3.6	7.1	90.7	4.3	7.9
2	.39	.78	.16	.55	.94	.32	.71	.10	.49	3.2	6.5	89.7	3.0	6.2
3	.38	.77	.15	.53	.91	.29	.67	.06	.44	2.9	5.8	8.7	1.7	4.6
4	.38	.76	.13	.51	.88	.26	.63	5.01	.39	2.6	5.2	7.7	50.3	2.9
38 05	24.37	48.74	73.11	97.48	121.86	146.22	170.60	194.97	219.34	1462.3	2924.5	4386.7	5849.0	7311.3
6	.36	.73	.10	.46	.83	.19	.56	.93	.29	1.9	3.8	5.7	7.7	09.6
7	.36	.72	.08	.44	.80	.16	.52	.88	.24	1.6	3.2	4.7	6.3	7.9
8	.35	.71	.06	.42	.77	.13	.48	.84	.19	1.3	2.5	3.8	5.0	6.3
9	.35	.70	.05	.39	.75	.09	.44	.79	.14	0.9	1.9	82.8	3.7	4.6
38 10	24.34	48.69	73.03	97.37	121.72	146.06	170.40	194.75	219.09	1460.6	2921.2	4381.8	5842.4	7303.0
11	.34	.68	.01	.35	.69	6.03	.36	.71	9.04	60.3	20.5	80.8	41.0	301.3
12	.33	.67	3.00	.33	.66	5.99	.32	.66	8.99	59.9	19.8	79.8	39.7	299.6
13	.33	.66	2.98	.31	.64	.96	.29	.62	.94	9.6	9.2	8.8	8.4	8.0
14	.32	.65	.96	.29	.61	.93	.25	.57	.89	9.3	8.5	7.8	7.0	6.3
38 15	24.32	48.63	72.95	97.26	121.58	145.89	170.21	194.53	218.84	1458.9	2917.8	4376.8	5835.7	7294.6
16	.31	.62	.93	.24	.55	.86	.17	.48	.79	8.6	7.2	5.8	4.4	3.0
17	.31	.61	.91	.22	.52	.83	.13	.44	.74	8.3	6.5	4.8	3.0	91.3
18	.30	60	.90	.19	.50	.79	.09	.39	.69	7.9	5.8	3.8	1.7	89.6
19	.30	.59	.88	.17	.47	.76	.05	.35	.64	7.6	5.2	2.8	30.4	8.0
38 20	24.29	48.58	72.86	97.15	121.44	145.73	170.01	194.30	218.59	1457.3	2914.5	4371.8	5829.0	7286.3
21	.28	.57	.85	.13	.41	.69	69.97	.26	.54	6.9	3.8	70.8	7.7	4.6
22	.28	.56	.83	.11	.38	.66	.93	.21	.49	6.6	3.2	69.8	6.4	2.9
23	.27	.54	.81	.08	.36	.63	.89	.17	.44	6.3	2.5	8.8	5.0	81.3
24	.27	.53	.80	.06	.33	.59	.85	.12	.39	5.9	1.9	7.8	3.7	79.6
38 25	24.26	48.52	72.78	97.04	121.30	145.56	169.82	194.08	218.34	1455.6	2911.2	4366.8	5822.3	7277.9
26	.25	.51	.76	.02	.27	.53	.78	4.04	.29	5.3	10.5	5.8	21.0	6.3
27	.25	.50	.75	7.00	.24	.49	.74	3.99	.24	4.9	09.8	4.8	19.7	4.6
28	.24	.48	.73	6.97	.22	.46	.70	.95	.19	4.6	9.2	3.7	8.3	2.9
29	.24	.47	.71	.95	.19	.42	.66	.90	.14	4.2	8.5	2.7	7.0	71.2
38 30	24.23	48.46	72.70	96.93	121.16	145.39	169.62	193.86	218.09	1453.9	2907.8	4361.7	5815.7	7269.6
31	.23	.45	.68	.91	.13	.36	.58	.82	8.04	3.6	7.1	60.7	4.3	7.9
32	.22	.44	.66	.88	.10	.32	.54	.77	7.99	3.2	6.5	59.7	3.0	6.2
33	.22	.43	.65	.86	.08	.29	.50	.73	.94	2.9	5.8	8.7	1.6	4.5
34	.21	.42	63	.84	.05	.26	.46	.68	.89	2.6	5.2	7.7	10.3	2.9
38 35	24.20	48.40	72.61	96.81	121.02	145.22	169.43	193.63	217.83	1452.2	2904.5	4356.7	5808.9	7261.2
36	.20	.39	.60	.79	0.99	.19	.39	.59	.78	1.9	3.8	5.7	7.6	59.5
37	.19	.38	.58	.77	.96	.16	.35	.55	.73	1.6	3.1	4.7	6.3	7.8
38	.19	.37	.56	.75	.94	.12	.31	.50	.68	1.2	2.5	3.7	4.9	6.1
39	.18	.36	.55	.73	.91	.09	.27	.45	.63	0.9	1.8	2.7	3.6	4.5
38 40	24.18	48.35	72.53	96.70	120.88	145.06	169.23	193.41	217.58	1450.6	2901.1	4351.7	5802.2	7252.8
41	.17	.34	.51	.68	.85	5.02	.19	.37	.53	0.2	900.4	50.7	800.9	51.1
42	.17	.33	.49	.66	.82	4.99	.15	.32	.48	49.9	899.7	49.7	799.5	49.4
43	.16	.32	.48	.64	.80	.96	.11	.28	.43	9.6	9.1	8.6	8.2	7.7
44	.16	.31	.46	.61	.77	.92	.07	.23	.38	9.2	8.4	7.6	6.8	6.1
38 45	24.15	48.29	72.44	96.59	120.74	144.89	169.04	193.19	217.33	1448.9	2897.7	4346.6	5795.5	7244.4
46	.14	.28	.43	.57	.71	.85	9.00	.14	.28	8.5	7.0	5.6	4.1	2.7
47	.14	.27	.41	.55	.68	.82	8.96	.10	.23	8.2	6.4	4.6	2.8	41.0
48	.13	.26	.39	.52	.66	.79	.92	.05	.18	7.9	5.7	3.6	1.5	39.3
49	.13	.25	.38	.50	.63	.75	.88	3.01	.13	7.5	5.1	2.6	90.1	7.6
38 50	24.12	48.24	72.36	96.48	120.60	144.72	168.84	192.96	217.08	1447.2	2894.4	4341.6	5788.8	7236.0
51	.11	.23	.34	.46	.57	.69	.80	.92	7.03	6.9	3.7	40.6	7.4	4.3
52	.11	.22	.33	.43	.54	.65	.76	.87	6.98	6.5	3.0	39.6	6.1	2.6
53	.10	.21	.31	.41	.52	.62	.72	.83	.93	6.2	2.4	8.5	4.7	30.9
54	.10	.20	.29	.39	49	.58	.68	.78	.88	5.8	1.7	7.5	3.3	29.2
38 55	24.09	48.18	72.28	96.36	120.46	144.55	168.64	192.74	216.82	1445.5	2891.0	4336.5	5782.0	7227.5
56	.08	.17	.26	.34	.43	.52	.60	.69	.77	5.2	90.3	5.5	80.6	5.8
57	.08	.16	.24	.32	.40	.48	.56	.65	.72	4.8	89.6	4.5	79.3	4.1
58	.07	.15	.22	.30	.38	.45	.52	.60	.67	4.5	9.0	3.4	7.9	2.4
59	.07	.14	.21	.28	.35	.41	.48	.56	.62	4.1	8.3	2.4	6.6	20.7
38 60	24.06	48.13	72.19	96.25	120.32	144.38	168.44	192.51	216.57	1443.8	2887.6	4331.4	5775.2	7219.0

Lat.		Latitude 38° to 39°—Meridional arcs.						Latitude 38°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
38	00	30.832			1849.90					
	1	2	1	30.83	.91	1	1 849.9	0 1	1 463.9	0.1
	2	2	2	61.67	.91	2	3 699.8	2	2 927.8	0.5
	3	2	3	92.50	.92	3	5 549.7	3	4 391.7	1.2
	4	2	4	123.34	.92	4	7 399.6	4	5 855.6	2.1
38	05	30.832	5	154.17	1849.93	5	9 249.6	0 5	7 319.6	3.3
	6	2	6	185.01	.93	6	11 099.5	6	8 783.5	4.7
	7	2	7	215.84	.94	7	12 949.4	7	10 247.4	6.4
	8	2	8	246.67	.94	8	14 799.4	8	11 711.3	8.4
	9	2	9	277.51	.95	9	16 649.3	9	13 175.2	10.6
38	10	30.833	10	308.34	1849.95	10	18 499.3	0 10	14 639.1	13.1
	11	3	1	339.18	.96	1	20 349.2	15	21 958.6	29.5
	12	3	2	370.01	.97	2	22 199.2	20	29 278.2	52.4
	13	3	3	400.85	.97	3	24 049.2	25	36 597.6	81.9
	14	3	4	431.68	.98	4	25 899.1	30	43 917.1	118.0
38	15	30.833	15	462.52	1849.98	15	27 749.1	0 35	51 236.5	160.6
	16	3	6	493.35	.99	6	29 599.1	40	58 555.9	209.8
	17	3	7	524.18	49.99	7	31 449.1	45	65 875.3	265.5
	18	3	8	555.02	50.00	8	33 299.1	50	73 194.6	327.7
	19	3	9	585.85	.00	9	35 149.1	55	80 513.8	396.5
38	20	30.833	20	616.69	1850.01	20	36 999.1	1 00	87 833.0	471.9
	21	4	1	647.52	.01	1	38 849.1	05	95 152.1	553.8
	22	4	2	678.36	.02	2	40 699.1	10	102 471.1	642.3
	23	4	3	709.19	.02	3	42 549.1	15	109 790.0	737.3
	24	4	4	740.02	.03	4	44 399.2	20	117 108.9	838.9
38	25	30.834	25	770.86	1850.03	25	46 249.2	1 25	124 427.6	947.1
	26	4	6	801.69	.04	6	48 099.2	30	131 746.3	1 061.8
	27	4	7	832.53	.05	7	49 949.3	35	139 064.8	1 183.0
	28	4	8	863.36	.05	8	51 799.3	40	146 383.3	1 310.8
	29	4	9	894.20	.06	9	53 649.4	45	153 701.6	1 445.2
38	30	30.834	30	925.03	1850.06	30	55 499.4	1 50	161 019.8	1 586.1
	31	4	1	955.87	.07	1	57 349.5	55	168 337.9	1 733.5
	32	5	2	986.70	.07	2	59 199.6	2 00	175 656	1 888
	33	5	3	1 017.53	.08	3	61 049.7	3 00	263 458	4 247
	34	5	4	1 048.37	.08	4	62 899.7	4 00	351 230	7 549
38	35	30.835	35	1 079.20	1850.09	35	64 749.8	5 00	438 962	11 795
	36	5	6	1 110.04	.09	6	66 599.9	6 00	526 643	16 983
	37	5	7	1 140.87	.10	7	68 450.0	7 00	614 263	23 112
	38	5	8	1 171.71	.10	8	70 300.1	8 00	701 812	30 183
	39	5	9	1 202.54	.11	9	72 150.2	9 00	789 280	38 195
38	40	30.835	40	1 233.37	1850.11	40	74 000.3	10 00	876 657	47 145
	41	5	1	1 264.21	.12	1	75 850.4	11 00	963 933	57 034
	42	5	2	1 295.04	.13	2	77 700.6	12 00	1 051 098	67 860
	43	6	3	1 325.88	.13	3	79 550.7	13 00	1 138 141	79 622
	44	6	4	1 356.71	.14	4	81 400.8	14 00	1 225 053	92 319
38	45	30.836	45	1 387.55	1850.14	45	83 251.0	15 00	1 311 823	105 949
	46	6	6	1 418.38	.15	6	85 101.1	16 00	1 398 441	120 511
	47	6	7	1 449.21	.15	7	86 951.3	17 00	1 484 899	136 002
	48	6	8	1 480.05	.16	8	88 801.4	18 00	1 571 185	152 421
	49	6	9	1 510.88	.16	9	90 651.6	19 00	1 657 289	169 767
38	50	30.836	50	1 541.72	1850.17	50	92 501.8	20 00	1 743 202	188 037
	51	6	1	1 572.55	.17	1	94 351.9	21 00	1 828 914	207 229
	52	6	2	1 603.39	.18	2	96 202.1	22 00	1 914 415	227 341
	53	6	3	1 634.22	.18	3	98 052.3	23 00	1 999 694	248 370
	54	6	4	1 665.06	.19	4	99 902.5	24 00	2 084 743	270 315
38	55	30.837	55	1 695.89	1850.20	55	101 752.7	25 00	2 169 551	293 172
	56	7	6	1 726.72	.20	6	103 602.9	26 00	2 254 109	316 939
	57	7	7	1 757.56	.21	7	105 453.1	27 00	2 338 406	341 613
	58	7	8	1 788.39	.21	8	107 303.3	28 00	2 422 433	367 192
	59	7	9	1 819.23	.22	9	109 153.5	29 00	2 506 181	393 672
38	60	30.837	60	1 850.06	1850.22	60	111 003.7	30 00	2 589 639	421 050

Latitude 39° to 40°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
39 00	24.06	48.13	72.19	96.25	120.32	144.38	168.44	192.51	216.57	1443.8	2887.6	4331.4	5775.2	7219.0
1	.06	.12	.17	.23	.29	.35	.40	.47	.52	3.5	6.9	30.4	3.9	7.4
2	.05	.11	.16	.21	.26	.31	.36	.42	.47	3.1	6.2	29.4	2.5	5.7
3	.05	.09	.14	.19	.23	.28	.32	.38	.42	2.8	5.6	8.4	71.2	4.0
4	.04	.08	.12	.16	.20	.25	.28	.33	.37	2.5	4.9	7.4	69.8	2.3
39 05	24.04	48.07	72.11	96.14	120.18	144 21	168.24	192.29	216.32	1442.1	2884.2	4326.3	5768.4	7210.6
6	.03	.06	.09	.12	.15	.18	.21	.24	.26	1.8	3.5	5.3	7.1	08.9
7	.03	.05	.07	.10	.12	.14	.17	.20	.21	1.4	2.8	4.3	5.7	7.2
8	.02	.03	.05	.07	.09	.11	.13	.15	.16	1.1	2.2	3.3	4.4	5.5
9	.01	.02	.04	.05	.06	.08	.09	.11	.11	0.8	1.5	2.3	3.0	3.8
39 10	24.01	48.01	72.02	96.03	120.03	144.04	168.05	192.06	216.06	1440.4	2880.8	4321.3	5761.7	7202.1
11	.00	8.00	2.00	6.01	20.01	4.01	8.01	2.01	6.01	40.1	80.1	20.2	60.3	200.4
12	4.00	7.99	1.99	5.98	19.97	3.97	7.97	1.97	5.96	39.7	79.4	19.2	58.9	198.7
13	3.99	.98	.97	.96	.95	.94	.93	.92	.91	9.4	8.8	8.2	7.6	7.0
14	.99	.97	.95	.94	.92	.91	.89	.88	.86	9.1	8.1	7.2	6.2	5.3
39 15	23.98	47.96	71.94	95.91	119.89	143.87	167.85	191.83	215.80	1438.7	2877.4	4316.1	5754.9	7193.6
16	.97	.94	.92	.89	.86	.84	.81	.78	.75	8.4	6.7	5.1	3.5	1.9
17	.97	.93	.90	.87	.83	.80	.77	.74	.70	8.0	6.0	4.1	2.1	90.2
18	.96	.92	.88	.85	.81	.77	.73	.69	.65	7.7	5.4	3.1	50.8	88.5
19	.96	.91	.87	.82	.78	.74	.69	.65	.60	7.4	4.7	2.0	49.4	6.8
39 20	23.95	47.90	71.85	95.80	119.75	143.70	167.65	191.60	215.55	1437.0	2874.0	4311.0	5748.0	7185.1
21	.94	.89	.83	.78	.72	.67	.61	.56	.50	6.7	3.3	10.0	6.7	3.3
22	.94	.88	.82	.75	.69	.63	.57	.51	.45	6.3	2.6	09.0	5.3	81.6
23	.93	.87	.80	.73	.67	.60	.53	.47	.40	6.0	2.0	8.0	3.9	79.9
24	.93	.86	.78	.71	.64	.56	.49	.42	.35	5.6	1.3	6.9	2.6	8.2
39 25	23.92	47.84	71.77	95.69	119.61	143.53	167.45	191.38	215.29	1435.3	2870.6	4305.9	5741.2	7176.5
26	.91	.83	.75	.66	.58	.50	.41	.33	.24	5.0	69.9	4.9	39.8	4.8
27	.91	.82	.73	.64	.55	.46	.37	.29	.19	4.6	9.2	3.9	8.5	3.1
28	.90	.81	.71	.62	.53	.43	.33	.24	.14	4.3	8.6	2.8	7.1	71.4
29	.90	.80	.70	.60	.50	.39	.29	.20	.09	3.9	7.9	1.8	5.7	69.7
39 30	23.89	47.79	71.68	95.57	119.47	143.36	167.25	191.15	215.04	1433.6	2867.2	4300.8	5734.4	7168.0
31	.89	.78	.66	.55	.44	.33	.21	.10	4.99	3.3	6.5	299.8	3.0	6.3
32	.88	.77	.65	.53	.41	.29	.17	.06	.94	2.9	5.8	8.7	1.6	4.5
33	.88	.75	.63	.50	.38	.26	.13	1.01	.88	2.6	5.2	7.7	30.3	2.8
34	.87	.74	.61	.48	.35	.22	.09	0.97	.83	2.2	4.5	6.7	28.9	61.1
39 35	23.87	47.73	71.59	95.46	119.33	143.19	167.05	190.92	214.78	1431.9	2863.8	4295.6	5727.5	7159.4
36	.86	.72	.58	.44	.30	.16	7.01	.87	.73	1.6	3.1	4.6	6.1	7.7
37	.86	.71	.56	.42	.27	.12	6.97	.83	.68	1.2	2.4	3.6	4.8	6.0
38	.85	.69	.54	.39	.24	.09	.93	.78	.62	0.9	1.7	2.5	3.4	4.2
39	.84	.68	.53	.37	.21	.05	.89	.74	.57	0.5	1.0	1.5	2.0	2.5
39 40	23.84	47.67	71.51	95.35	119.18	143.02	166.85	190.69	214.52	1430.2	2860.3	4290.5	5720.7	7150.8
41	.83	.66	.49	.32	15	2.98	.81	.64	.47	29.8	59.6	89.5	19.3	49.1
42	.83	.65	.47	.30	.12	.95	.77	.60	.42	9.5	8.9	8.4	7.9	7.4
43	.82	.64	.46	.28	.09	.91	.73	.55	.37	9.1	8.3	7.4	6.5	5.6
44	.82	.63	.44	.25	.06	.88	.69	.51	.32	8.8	7.6	6.4	5.1	3.9
39 45	23.81	47.61	71.42	95.23	119.03	142.84	166.65	190.46	214.26	1428.4	2856.9	4285.3	5713.8	7142.2
46	.80	.60	.41	.21	9.01	.81	.61	.41	.21	8.1	6.2	4.3	2.4	40.5
47	.80	.59	.39	.18	8.98	.78	.57	.37	.16	7.8	5.5	3.3	11.0	38.8
48	.79	.58	.37	.16	.95	.74	.53	.32	.11	7.4	4.8	2.2	09.6	7.0
49	.79	.57	.35	.14	.92	.71	.49	.28	.06	7.1	4.1	1.2	8.3	5.3
39 50	23.78	47.56	71.34	95.11	118.89	142.67	166.45	190.23	214.01	1426.7	2853.4	4280.2	5706.9	7133.6
51	.77	.55	.32	.09	.86	.64	.41	.18	3.96	6.4	2.7	79.1	5.5	1.9
52	.77	.53	.30	.07	.83	.60	.37	.14	.91	6.0	2.0	8.1	4.1	30.1
53	.76	.52	.28	.04	.81	.57	.33	.09	.85	5.7	1.4	7.1	2.7	28.4
54	.76	.51	.27	5.02	.78	.53	.29	.05	.80	5.3	0.7	6.0	1.4	6.7
39 55	23.75	47.50	71.25	94.99	118.75	142.50	166.25	190.00	213.75	1425.0	2850.0	4275.0	5700.0	7125.0
56	.74	.49	.23	.97	.72	.47	.21	89.95	.70	4.7	49.3	3.9	698.6	3.2
57	.74	.48	.21	.95	.69	.43	.17	.91	.65	4.3	8.6	2.9	7.2	21.5
58	.73	.46	.20	.93	.67	.40	.13	.86	.59	4.0	7.9	1.9	5.8	19.8
59	.73	.45	.18	.90	.63	.36	.09	.81	.54	3.6	7.2	70.8	4.4	8.1
39 60	23.72	47.44	71.16	94.88	118.61	142.33	166.05	189.77	213.49	1423.3	2846.5	4269.8	5693.1	7116.3

Lat.	Latitude 39° to 40°—Meridional arcs.						Latitude 39°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
39 00	30.837			1850.22					
1	7	1	30.84	.23	1	1 850.2	0 1	1 443.8	0.1
2	7	2	61.68	.23	2	3 700.5	2	2 887.6	0.5
3	7	3	92.52	.24	3	5 550.7	3	4 331.4	1.2
4	7	4	123.36	.24	4	7 400.9	4	5 775.2	2.1
39 05	30.837	5	154.20	1850.25	5	9 251.2	0 5	7 219.0	3.3
6	8	6	185.04	.25	6	11 101.4	6	8 662.9	4.8
7	8	7	215.88	.26	7	12 951.7	7	10 106.7	6.5
8	8	8	246.72	.26	8	14 801.9	8	11 550.5	8.5
9	8	9	277.56	.27	9	16 652.2	9	12 994.3	10.7
39 10	30.838	10	308.40	1850.28	10	18 502.5	0 10	14 438.1	13.2
11	8	1	339.24	.28	1	20 352.8	15	21 657.1	29.7
12	8	2	370.08	.29	2	22 203.0	20	28 876.1	52.9
13	8	3	400.92	.29	3	24 053.3	25	36 095.1	82.6
14	8	4	431.76	.30	4	25 903.6	30	43 314.1	118.9
39 15	30.838	15	462.60	1850.30	15	27 753.9	0 35	50 533.0	161.9
16	8	6	493.44	.31	6	29 604.2	40	57 751.9	211.5
17	9	7	524.28	.31	7	31 454.5	45	64 970.7	267.6
18	9	8	555.11	.32	8	33 304.9	50	72 189.5	330.4
19	9	9	585.95	.32	9	35 155.2	55	79 408.2	399.8
39 20	30.839	20	616.79	1850.33	20	37 005.5	1 00	86 626.9	475.8
21	9	1	647.63	.33	1	38 855.8	05	93 845.4	558.4
22	9	2	678.47	.34	2	40 706.2	10	101 063.9	647.6
23	9	3	709.31	.35	3	42 556.5	15	108 282.4	743.4
24	9	4	740.15	.35	4	44 406.9	20	115 500.7	845.8
39 25	30.839	25	770.99	1850.36	25	46 257.2	1 25	122 718.9	954.8
26	9	6	801.83	.36	6	48 107.6	30	129 937.1	1 070.4
27	9	7	832.67	.37	7	49 957.9	35	137 155.1	1 192.6
28	40	8	863.51	.37	8	51 808.3	40	144 373.0	1 321.4
29	0	9	894.35	.38	9	53 658.7	45	151 590.8	1 456.8
39 30	30.840	30	925.19	1850.38	30	55 509.1	1 50	158 808.4	1 598.8
31	0	1	956.03	.39	1	57 359.4	55	166 025.9	1 747.5
32	0	2	986.87	.39	2	59 209.8	2 00	173 243	1 903
33	0	3	1 017.71	.40	3	61 060.2	3 00	259 839	4 281
34	0	4	1 048.55	.40	4	62 910.6	4 00	346 403	7 611
39 35	30.840	35	1 079.39	1850.41	35	64 761.0	5 00	432 925	11 891
36	0	6	1 110.23	.42	6	66 611.4	6 00	519 396	17 121
37	0	7	1 141.07	.42	7	68 461.9	7 00	605 803	23 300
38	0	8	1 171.91	.43	8	70 312.3	8 00	692 138	30 428
39	1	9	1 202.75	.43	9	72 162.7	9 00	778 388	38 504
39 40	30.841	40	1 233.59	1850.44	40	74 013.2	10 00	864 545	47 527
41	1	1	1 264.43	.44	1	75 863.6	11 00	950 598	57 496
42	1	2	1 295.27	.45	2	77 714.0	12 00	1 036 536	68 409
43	1	3	1 326.11	.45	3	79 564.5	13 00	1 122 349	80 266
44	1	4	1 356.95	.46	4	81 414.9	14 00	1 208 027	93 064
39 45	30.841	45	1 387.79	1850.46	45	83 265.4	15 00	1 293 559	106 802
46	1	6	1 418.63	.47	6	85 115.9	16 00	1 378 934	121 479
47	1	7	1 449.47	.47	7	86 966.3	17 00	1 464 144	137 093
48	1	8	1 480.31	.48	8	88 816.8	18 00	1 549 177	153 642
49	1	9	1 511.15	.49	9	90 667.3	19 00	1 634 023	171 124
39 50	30.842	50	1 541.99	1850.49	50	92 517.8	20 00	1 718 671	189 537
51	2	1	1 572.83	.50	1	94 368.3	21 00	1 803 113	208 878
52	2	2	1 603.67	.50	2	96 218.8	22 00	1 887 337	229 146
53	2	3	1 634.50	.51	3	98 069.3	23 00	1 971 333	250 337
54	2	4	1 665.34	.51	4	99 919.8	24 00	2 055 091	272 450
39 55	30.842	55	1 696.18	1850.52	55	101 770.3	25 00	2 138 602	295 481
56	2	6	1 727.02	.52	6	103 620.8	26 00	2 221 854	319 429
57	2	7	1 757.86	.53	7	105 471.4	27 00	2 304 838	344 289
58	2	8	1 788.70	.53	8	107 321.9	28 00	2 387 545	370 059
59	2	9	1 819.54	.54	9	109 172.4	29 00	2 469 963	396 736
39 60	30.842	60	1 850.38	1850.54	60	111 023.0	30 00	2 552 084	424 317

Latitude 40° to 41°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
40 00	23.72	47.44	71.16	94.88	118.61	142.33	166.05	189.77	213.49	1423.3	2846.5	4269.8	5693.1	7116.3
1	.72	.43	.15	.86	.58	.29	6.01	.72	.44	2.9	5.8	8.8	1.7	4.6
2	.71	.42	.13	.84	.55	.26	5.97	.68	.39	2.6	5.1	7.7	90.3	2.9
3	.70	.41	.11	.82	.52	.22	.93	.63	.33	2.2	4.5	6.7	88.9	11.1
4	.70	.40	.09	.79	.49	.19	.89	.58	.28	1.9	3.8	5.6	7.5	09.4
40 05	23.69	47.38	71.08	94.77	118.46	142.15	165.84	189.54	213.23	1421.5	2843.1	4264.6	5686.1	7107.7
6	.69	.37	.06	.75	.44	.12	.80	.49	.18	1.2	2.4	3.6	4.7	5.9
7	.68	.36	.04	.72	.41	.08	.76	.45	.13	0.8	1.7	2.5	3.4	4.2
8	.67	.35	.02	.70	.38	.05	.72	.40	.07	0.5	1.0	1.5	2.0	2.5
9	.67	.34	1.01	.68	.35	2.01	.68	.35	3.02	20.1	40.3	60.4	80.6	100.7
40 10	23.66	47.33	70.99	94.65	118.32	141.98	165.64	189.31	212.97	1419.8	2839.6	4259.4	5679.2	7099.0
11	.66	.32	.97	.63	.29	.95	.60	.26	.92	9.5	8.9	8.4	7.8	7.3
12	.65	.30	.96	.61	.26	.91	.56	.21	.87	9.1	8.2	7.3	6.4	5.5
13	.65	.29	.94	.58	.23	.88	.52	.17	.81	8.8	7.5	6.3	5.0	3.8
14	.64	.28	.92	.56	.20	.84	.48	.12	.76	8.4	6.8	5.2	3.6	2.0
40 15	23.63	47.27	70.90	94.54	118.18	141.81	165.44	189.07	212.71	1418.1	2836.1	4254.2	5672.2	7090.3
16	.63	.26	.89	.51	.15	.77	.40	9.03	.66	7.7	5.4	3.1	70.9	88.6
17	.62	.25	.87	.49	.12	.74	.36	8.98	.61	7.4	4.7	2.1	69.5	6.8
18	.62	.23	.85	.47	.09	.70	.32	.94	.55	7.0	4.0	1.1	8.1	5.1
19	.61	.22	.83	.44	.06	.67	.28	.89	.50	6.7	3.3	50.0	6.7	3.4
40 20	23.61	47.21	70.82	94.42	118.03	141.63	165.24	188.84	212.45	1416.3	2832.6	4249.0	5665.3	7081.6
21	.60	.20	.80	.40	8.00	.60	.20	.80	.40	6.0	1.9	7.9	3.9	79.9
22	.59	.19	.78	.37	7.97	.56	.16	.75	.34	5.6	1.2	6.9	2.5	8.1
23	.59	.18	.76	.35	.94	.53	.12	.70	.29	5.3	30.6	5.8	61.1	6.4
24	.58	.16	.75	.33	.91	.49	.08	.66	.24	4.9	29.9	4.8	59.7	4.6
40 25	23.58	47.15	70.73	94.31	117.89	141.46	165.03	188.61	212.18	1414.6	2829.2	4243.7	5658.3	7072.9
26	.57	.14	.71	.28	.85	.42	4.99	.56	.13	4.2	8.5	2.7	6.9	71.1
27	.56	.13	.69	.26	.83	.39	.95	.52	.08	3.9	7.8	1.6	5.5	69.4
28	.56	.12	.68	.24	.80	.35	.91	.47	2.03	3.5	7.1	40.6	4.1	7.7
29	.55	.10	.66	.21	.77	.32	.87	.42	1.97	3.2	6.4	39.5	2.7	5.9
40 30	23.55	47.09	70.64	94.19	117.74	141.28	164.83	188.38	211.92	1412.8	2825.7	4238.5	5651.3	7064.2
31	.54	.08	.62	.17	.71	.25	.79	.33	.87	2.5	5.0	7.4	49.9	2.4
32	.54	.07	.61	.14	.68	.21	.75	.28	.82	2.1	4.3	6.4	8.5	60.7
33	.53	.06	.59	.12	.65	.18	.71	.24	.76	1.8	3.6	5.3	7.1	58.9
34	.52	.05	.57	.10	.62	.14	.67	.19	.71	1.4	2.9	4.3	5.7	7.2
40 35	23.52	47.04	70.55	94.07	117.59	141.11	164.63	188.14	211.66	1411.1	2822.2	4233.2	5644.3	7055.4
36	.51	.02	.54	.05	.56	.07	.58	.10	.61	0.7	1.5	2.2	2.9	3.7
37	.51	.01	.52	.03	.53	.04	.54	.05	.56	0.4	0.8	1.1	1.5	1.9
38	.50	7.00	.50	4.00	.50	1.00	.50	8.00	.50	10.0	20.1	30.1	40.1	50.2
39	.49	6.99	.48	3.98	.47	0.97	.46	7.96	.45	09.7	19.4	29.0	38.7	48.4
40 40	23.49	46.98	70.47	93.96	117.44	140.93	164.42	187.91	211.40	1409.3	2818.7	4228.0	5637.3	7046.7
41	.48	.97	.45	.93	.41	.90	.38	.86	.35	9.0	8.0	6.9	5.9	4.9
42	.48	.95	.43	.91	.38	.86	.34	.82	.29	8.6	7.3	5.9	4.5	3.1
43	.47	.94	.41	.88	.35	.83	.30	.77	.24	8.3	6.5	4.8	3.1	41.4
44	.47	.93	.40	.86	.32	.79	.26	.72	.19	7.9	5.8	3.8	1.7	39.6
40 45	23.46	46.92	70.38	93.84	117.30	140.76	164.22	187.68	211.13	1407.6	2815.1	4222.7	5630.3	7037.9
46	.45	.91	.36	.81	.27	.72	.17	.63	.08	7.2	4.4	1.7	28.9	6.1
47	.45	.90	.34	.79	.24	.69	.13	.58	1.03	6.9	3.7	20.6	7.5	4.4
48	.44	.88	.33	.77	.21	.65	.09	.54	0.98	6.5	3.0	19.6	6.1	2.6
49	.44	.87	.31	.74	.18	.62	.05	.49	.92	6.2	2.3	8.5	4.7	30.8
40 50	23.43	46.86	70.29	93.72	117.15	140.58	164.01	187.44	210.87	1405.8	2811.6	4217.5	5623.3	7029.1
51	.42	.85	.27	.70	.12	.55	3.97	.40	.82	5.5	0.9	6.4	1.9	7.3
52	.42	.84	.26	.67	.09	.51	.93	.35	.77	5.1	10.2	5.3	20.4	5.6
53	.41	.83	.24	.65	.06	.48	.89	.30	.71	4.8	09.5	4.3	19.0	3.8
54	.41	.81	.22	.63	.03	.44	.85	.25	.66	4.4	8.8	3.2	7.6	2.0
40 55	23.40	46.80	70.20	93.60	117.01	140.41	163.81	187.21	210.61	1404.1	2808.1	4212.2	5616.2	7020.3
56	.39	.79	.18	.58	6.98	.37	.76	.16	.55	3.7	7.4	1.1	4.8	18.5
57	.39	.78	.17	.56	.95	.33	.72	.11	.50	3.3	6.7	10.0	3.4	6.7
58	.38	.77	.15	.53	.92	.30	.68	.07	.45	3.0	6.0	09.0	2.0	5.0
59	.38	.75	.13	.51	.89	.26	.64	7.02	.39	2.6	5.3	7.9	10.6	3.2
40 60	23.37	46.74	70.11	93.49	116.86	140.23	163.60	186.97	210.34	1402.3	2804.6	4206.9	5609.2	7011.5

Lat.		Latitude 40° to 41°—Meridional arcs.						Latitude 40°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
40	00	30.842			1850.54					
	1	2	1	30.85	.55	1	1 850.5	0 1	1 423.3	0.1
	2	3	2	61.69	.56	2	3 701.1	2	2 846.5	0.5
	3	3	3	92.54	.56	3	5 551.7	3	4 269.8	1.2
	4	3	4	123.38	.57	4	7 402.2	4	5 693.0	2.1
40	05	30.843	5	154.13	1850.57	5	9 252.8	0 5	7 116.3	3.3
	6	3	6	185.07	.58	6	11 103.4	6	8 539.6	4.8
	7	3	7	215.92	.58	7	12 953.9	7	9 962.8	6.5
	8	3	8	246.76	.59	8	14 804.5	8	11 386.1	8.5
	9	3	9	277.61	.59	9	16 655.1	9	12 809.3	10.8
40	10	30.843	10	308.45	1850.60	10	18 505.7	0 10	14 232.6	13.3
	11	3	1	339.30	.60	1	20 356.3	15	21 349.0	29.9
	12	3	2	370.14	.61	2	22 206.9	20	28 465.3	53.2
	13	4	3	400.99	.61	3	24 057.5	25	35 581.6	83.2
	14	4	4	431.83	.62	4	25 908.2	30	42 697.8	119.8
40	15	30.844	15	462.68	1850.63	15	27 758.8	0 35	49 814.0	163.0
	16	4	6	493.52	.63	6	29 609.4	40	56 930.2	212.9
	17	4	7	524.37	.64	7	31 460.0	45	64 046.3	269.4
	18	4	8	555.21	.64	8	33 310.7	50	71 162.4	332.6
	19	4	9	586.06	.65	9	35 161.3	55	78 278.4	402.5
40	20	30.844	20	616.90	1850.65	20	37 012.0	1 00	85 394.3	479.0
	21	4	1	647.75	.66	1	38 862.6	05	92 510.1	562.2
	22	4	2	678.59	.66	2	40 713.3	10	99 625.9	652.0
	23	4	3	709.44	.67	3	42 564.0	15	106 741.6	748.5
	24	5	4	740.28	.67	4	44 414.6	20	113 857.2	851.6
40	25	30.845	25	771.13	1850.68	25	46 265.3	1 25	120 972.7	961.4
	26	5	6	801.97	.68	6	48 116.0	30	128 088.1	1 077.8
	27	5	7	832.82	.69	7	49 966.7	35	135 203.4	1 200.8
	28	5	8	863.66	.70	8	51 817.4	40	142 318.5	1 330.5
	29	5	9	894.51	.70	9	53 668.1	45	149 433.6	1 466.9
40	30	30.845	30	925.35	1850.71	30	55 518.8	1 50	156 548.5	1 609.9
	31	5	1	956.20	.71	1	57 369.5	55	163 663.3	1 759.6
	32	5	2	987.04	.72	2	59 220.2	2 00	170 778	1 916
	33	5	3	1 017.89	.72	3	61 070.9	3 00	256 140	4 311
	34	5	4	1 048.73	.73	4	62 921.6	4 00	341 470	7 663
40	35	30.846	35	1 079.58	1850.73	35	64 772.4	5 00	426 757	11 972
	36	6	6	1 110.42	.74	6	66 623.1	6 00	511 990	17 238
	37	6	7	1 141.27	.74	7	68 473.8	7 00	597 158	23 460
	38	6	8	1 172.11	.75	8	70 324.6	8 00	682 252	30 637
	39	6	9	1 202.96	.76	9	72 175.3	9 00	767 260	38 768
40	40	30.846	40	1 233.80	1850.76	40	74 026.1	10 00	852 171	47 852
	41	6	1	1 264.65	.77	1	75 876.9	11 00	936 975	57 888
	42	6	2	1 295.49	.77	2	77 727.6	12 00	1 021 661	68 875
	43	6	3	1 326.34	.78	3	79 578.4	13 00	1 106 218	80 811
	44	6	4	1 357.18	.78	4	81 429.2	14 00	1 190 636	93 695
40	45	30.846	45	1 388.03	1850.79	45	83 280.0	15 00	1 274 904	107 525
	46	7	6	1 418.88	.79	6	85 130.8	16 00	1 359 012	122 300
	47	7	7	1 449.72	.80	7	86 981.6	17 00	1 442 949	138 017
	48	7	8	1 480.57	.80	8	88 832.4	18 00	1 526 704	154 675
	49	7	9	1 511.41	.81	9	90 683.2	19 00	1 610 267	172 272
40	50	30.847	50	1 542.26	1850.81	50	92 534.0	20 00	1 693 628	190 805
	51	7	1	1 573.10	.82	1	94 384.8	21 00	1 776 775	210 272
	52	7	2	1 603.95	.83	2	96 235.6	22 00	1 859 698	230 671
	53	7	3	1 634.79	.83	3	98 086.5	23 00	1 942 387	251 998
	54	7	4	1 665.64	.84	4	99 937.3	24 00	2 024 833	274 252
40	55	30.847	55	1 696.48	1850.84	55	101 788.1	25 00	2 107 023	297 430
	56	7	6	1 727.33	.85	6	103 639.0	26 00	2 188 948	321 528
	57	8	7	1 758.17	.85	7	105 489.8	27 00	2 270 597	346 543
	58	8	8	1 789.02	.86	8	107 340.7	28 00	2 351 961	372 473
	59	8	9	1 819.86	.86	9	109 191.5	29 00	2 433 029	399 314
40	60	30.848	60	1 850.71	1850.87	60	111 042.4	30 00	2 513 790	427 063

Latitude 41° to 42°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
41 00	23.37	46.74	70.11	93.49	116.86	140.23	163.60	186.97	210.34	1402.3	2804.6	4206.9	5609.2	7011.5
1	.37	.73	.10	.46	.83	.19	.56	.92	.29	1.9	3.9	5.8	7.7	009.7
2	.36	.72	.08	.44	.80	.16	.52	.88	.23	1.6	3.2	4.7	6.3	7.9
3	.35	.71	.06	.41	.77	.12	.48	.83	.18	1.2	2.4	3.7	4.9	6.1
4	.35	.70	.04	.39	.74	.09	.44	.78	.13	0.9	1.7	2.6	3.5	4.4
41 05	23.34	46.68	70.03	93.37	116.71	140.05	163.39	186.74	210.08	1400.5	2801.0	4201.6	5602.1	7002.6
6	.34	.67	70.01	.34	.68	40.02	.35	.69	10.02	400.2	800.3	200.5	600.7	7000.8
7	.33	.66	69.99	.32	.65	39.98	.31	.64	09.97	399.8	799.6	199.4	599.2	6999.1
8	.32	.65	.97	.30	.62	.95	.27	.59	.92	9.5	8.9	8.4	7.8	7.3
9	.32	.64	.96	.27	.59	.91	.23	.55	.86	9.1	8.2	7.3	6.4	5.5
41 10	23.31	46.63	69.94	93.25	116.56	139.88	163.19	186.50	209.81	1398.8	2797.5	4196.3	5595.0	6993.8
11	.31	.61	.92	.23	.53	.84	.15	.45	.76	8.4	6.8	5.2	3.6	2.0
12	.30	.60	.90	.20	.50	.80	.11	.41	.71	8.0	6.1	4.1	2.2	90.2
13	.29	.59	.88	.18	.47	.77	.06	.36	.65	7.7	5.4	3.1	90.7	88.4
14	.29	.58	.87	.16	.44	.73	3.02	.31	.60	7.3	4.7	2.0	89.3	6.7
41 15	23.28	46.57	69.85	93.13	116.42	139.70	162.98	186.26	209.54	1397.0	2794.0	4190.9	5587.9	6984.9
16	.28	.55	.83	.11	.39	.66	.94	.22	.49	6.6	3.3	89.9	6.5	3.1
17	.27	.54	.81	.08	.36	.63	.90	.17	.44	6.3	2.5	8.8	5.0	81.3
18	.27	.53	.80	.06	.33	.59	.86	.12	.39	5.9	1.8	7.7	3.6	79.6
19	.26	.52	.78	.04	.30	.56	.81	.07	.33	5.6	1.1	6.7	2.2	7.8
41 20	23.25	46.51	69.76	93.01	116.27	139.52	162.77	186.03	209.28	1395.2	2790.4	4185.6	5580.8	6976.0
21	.25	.49	.74	2.99	.23	.48	.72	5.97	.22	4.8	89.7	4.5	79.4	4.2
22	.24	.48	.72	.97	.21	.45	.69	.93	.17	4.5	9.0	3.5	8.0	2.4
23	.24	.47	.71	.94	.18	.41	.65	.88	.12	4.1	8.2	2.4	6.5	70.7
24	.23	.46	.69	.92	.15	.38	.61	.84	.07	3.8	7.5	1.3	5.1	68.9
41 25	23.22	46.45	69.67	92.89	116.12	139.34	162.56	185.79	209.01	1393.4	2786.8	4180.3	5573.7	6967.1
26	.22	.44	.65	.87	.09	.31	.52	.74	8.96	3.1	6.1	79.2	2.3	5.3
27	.21	.42	.63	.85	.06	.27	.48	.69	.91	2.7	5.4	8.1	70.8	3.5
28	.21	.41	.62	.82	.03	.24	.44	.65	.85	2.4	4.7	7.1	69.4	1.8
29	.20	.40	.60	.80	6.00	.20	.40	.60	.80	2.0	4.0	6.0	8.0	60.0
41 30	23.19	46.39	69.58	92.78	115.97	139.16	162.36	185.55	208.75	1391.6	2783.3	4174.9	5566.6	6958.2
31	.19	.38	.56	.75	.94	.13	.32	.50	.69	1.3	2.6	3.8	5.1	6.4
32	.18	.36	.55	.73	.91	.09	.28	.46	.64	0.9	1.9	2.8	3.7	4.6
33	.18	.35	.53	.70	.88	.06	.23	.41	.58	0.6	1.1	1.7	2.3	2.8
34	.17	.34	.51	.68	.85	9.02	.19	.36	.53	90.2	80.4	70.7	60.8	51.1
41 35	23.16	46.33	69.49	92.66	115.82	138.99	162.15	185.31	208.48	1389.9	2779.7	4169.6	5559.4	6949.3
36	.16	.32	.47	.63	.79	.95	.11	.27	.43	9.5	9.0	8.5	8.0	7.5
37	.15	.30	.46	.61	.76	.91	.07	.22	.37	9.1	8.3	7.4	6.6	5.7
38	.15	.29	.44	.59	.73	.88	2.02	.17	.32	8.8	7.5	6.3	5.1	3.9
39	.14	.28	.42	.56	.70	.84	1.98	.12	.26	8.4	6.8	5.3	3.7	2.1
41 40	23.13	46.27	69.40	92.54	115.67	138.81	161.94	185.08	208.21	1388.1	2776.1	4164.2	5552.3	6940.3
41	.13	.26	.38	.51	.64	.77	.90	5.03	.16	7.7	5.4	3.1	50.8	38.5
42	.12	.24	.37	.49	.61	.73	.86	4.98	.10	7.3	4.7	2.0	49.4	6.7
43	.12	.23	.35	.47	.58	.70	.82	.93	8.05	7.0	4.0	61.0	8.0	5.0
44	.11	.22	.33	.44	.55	.66	.77	.88	7.99	6.6	3.2	59.9	6.5	3.2
41 45	23.10	46.21	69.31	92.42	115.52	138.63	161.73	184.84	207.94	1386.3	2772.5	4158.8	5545.1	6931.4
46	.10	.20	.30	.39	.49	.59	.69	.79	.89	5.9	1.8	7.7	3.7	29.6
47	.09	.19	.28	.37	.46	.56	.65	.74	.83	5.6	1.1	6.7	2.2	7.8
48	.09	.17	.26	.35	.43	.52	.61	.69	.78	5.2	70.4	5.6	40.8	6.0
49	.08	.16	.24	.32	.40	.48	.56	.65	.72	4.8	69.7	4.5	39.4	4.2
41 50	23.07	46.15	69.22	92.30	115.37	138.45	161.52	184.60	207.67	1384.5	2769.0	4153.4	5537.9	6922.4
51	.07	.14	.21	.27	.34	.41	.48	.55	.62	4.1	8.3	2.4	6.5	20.6
52	.06	.13	.19	.25	.31	.38	.44	.50	.56	3.8	7.5	1.3	5.0	18.8
53	.06	.11	.17	.23	.28	.34	.40	.45	.51	3.4	6.8	50.2	3.6	7.0
54	.05	.10	.15	.20	.25	.30	.35	.41	.45	3.0	6.1	49.1	2.2	5.2
41 55	23.04	46.09	69.13	92.18	115.22	138.27	161.31	184.36	207.40	1382.7	2765.4	4148.9	5530.7	6913.4
56	.04	.08	.12	.16	.19	.23	.27	.31	.35	2.3	4.7	7.0	29.3	11.6
57	.03	.07	.10	.13	.16	.20	.23	.26	.29	2.0	3.9	5.9	7.8	09.8
58	.03	.05	.08	.11	.13	.16	.19	.21	.24	1.6	3.2	4.8	6.4	8.0
59	.02	.04	.06	.08	.10	.12	.14	.17	.18	1.2	2.5	3.7	5.0	6.2
41 60	23.01	46.03	69.04	92.06	115.07	138.09	161.10	184.12	207.13	1380.9	2761.8	4142.7	5523.5	6904.4

Lat.		Latitude 41° to 42°—Meridional arcs.						Latitude 41°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
41	00	30.848			1850.87					
	1	8	1	30.85	.87	1	1 850.9	0 1	1 402.3	0.1
	2	8	2	61.70	.88	2	3 701.7	2	2 804.6	0.5
	3	8	3	92.55	.89	3	5 552.6	3	4 206.9	1.2
	4	8	4	123.40	.89	4	7 403.5	4	5 609.2	2.1
41	05	30.848	5	154.25	1850.90	5	9 254.4	0 5	7 011.5	3.3
	6	8	6	185.10	.90	6	11 105.3	6	8 413.7	4.8
	7	8	7	215.95	.91	7	12 956.2	7	9 816.0	6.6
	8	9	8	246.80	.91	8	14 807.1	8	11 218.3	8.6
	9	9	9	277.65	.92	9	16 658.0	9	12 620.6	10.8
41	10	30.849	10	308.51	1850.92	10	18 509.0	0 10	14 022.9	13.4
	11	9	1	339.36	.93	11	20 359.9	15	21 034.3	30.1
	12	9	2	370.21	.93	12	22 210.8	20	28 045.7	53.5
	13	9	3	401.06	.94	13	24 061.8	25	35 057.1	83.6
	14	9	4	431.91	.95	14	25 912.7	30	42 068.5	120.4
41	15	30.849	15	462.76	1850.95	15	27 763.7	0 35	49 079.8	163.9
	16	9	6	493.61	.96	16	29 614.6	40	56 091.1	214.1
	17	9	7	524.46	.96	17	31 465.6	45	63 102.3	270.9
	18	49	8	555.31	.97	18	33 316.5	50	70 113.5	334.5
	19	50	9	586.16	.97	19	35 167.5	55	77 124.6	404.7
41	20	30.850	20	617.01	1850.98	20	37 018.5	1 00	84 135.6	481.7
	21	0	1	647.86	.98	21	38 869.5	05	91 146.6	565.3
	22	0	2	678.71	.99	22	40 720.4	10	98 157.4	655.6
	23	0	3	709.56	0.99	23	42 571.4	15	105 168.2	752.6
	24	0	4	740.41	1.00	24	44 422.4	20	112 178.9	856.3
41	25	30.850	25	771.26	1851.01	25	46 273.4	1 25	119 189.5	966.7
	26	0	6	802.11	.01	26	48 124.4	30	126 200.0	1 083.8
	27	0	7	832.96	.02	27	49 975.4	35	133 210.3	1 207.6
	28	0	8	863.82	.02	28	51 826.5	40	140 220.6	1 338.0
	29	0	9	894.67	.03	29	53 677.5	45	147 230.7	1 475.1
41	30	30.851	30	925.52	1851.03	30	55 528.5	1 50	154 240.7	1 619.0
	31	1	1	956.37	.04	31	57 379.6	55	161 250.5	1 769.5
	32	1	2	987.22	.04	32	59 230.6	2 00	168 260	1 927
	33	1	3	1 018.07	.05	33	61 081.6	3 00	252 363	4 335
	34	1	4	1 048.92	.05	34	62 932.7	4 00	336 432	7 706
41	35	30.851	35	1 079.77	1851.06	35	64 783.8	5 00	420 457	12 039
	36	1	6	1 110.62	.07	36	66 634.8	6 00	504 428	17 335
	37	1	7	1 141.47	.07	37	68 485.9	7 00	588 332	23 591
	38	1	8	1 172.32	.08	38	70 337.0	8 00	672 159	30 807
	39	1	9	1 203.17	.08	39	72 188.0	9 00	755 897	38 983
41	40	30.851	40	1 234.02	1851.09	40	74 039.1	10 00	839 537	48 118
	41	2	1	1 264.87	.09	41	75 890.2	11 00	923 067	58 209
	42	2	2	1 295.72	.10	42	77 741.3	12 00	1 006 475	69 256
	43	2	3	1 326.57	.10	43	79 592.4	13 00	1 089 752	81 258
	44	2	4	1 357.42	.11	44	81 443.5	14 00	1 172 886	94 212
41	45	30.852	45	1 388.27	1851.11	45	83 294.6	15 00	1 255 866	108 117
	46	2	6	1 419.12	.12	46	85 145.7	16 00	1 338 681	122 971
	47	2	7	1 449.98	.12	47	86 996.9	17 00	1 421 321	138 773
	48	2	8	1 480.83	.13	48	88 848.0	18 00	1 503 775	155 520
	49	2	9	1 511.68	.14	49	90 699.1	19 00	1 586 031	173 210
41	50	30.852	50	1 542.53	1851.14	50	92 550.3	20 00	1 668 079	191 841
	51	2	1	1 573.38	.15	51	94 401.4	21 00	1 749 909	211 409
	52	3	2	1 604.23	.15	52	96 252.5	22 00	1 831 509	231 914
	53	3	3	1 635.08	.16	53	98 103.7	23 00	1 912 869	253 352
	54	3	4	1 665.93	.16	54	99 954.9	24 00	1 993 978	275 719
41	55	30.853	55	1 696.78	1851.17	55	101 806.0	25 00	2 074 826	299 014
	56	3	6	1 727.63	.17	56	103 657.2	26 00	2 155 402	323 233
	57	3	7	1 758.48	.18	57	105 508.4	27 00	2 235 695	348 374
	58	3	8	1 789.33	.18	58	107 359.6	28 00	2 315 695	374 432
	59	3	9	1 820.18	.19	59	109 210.7	29 00	2 395 392	401 404
41	60	30.853	60	1 851.03	1851.20	60	111 061.9	30 00	2 474 774	429 287

Latitude 42° to 43°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
42 00	23.01	46.03	69.04	92.06	115.07	138.09	161.10	184.12	207.13	1380.9	2761.8	4142.7	5523.5	6904.4
1	.01	.02	.03	.04	.04	.05	.06	.07	.08	0.5	1.1	1.6	2.1	2.6
2	.00	6.01	9.01	2.01	5.01	8.02	1.02	4.02	7.02	0.2	60.4	40.5	20.6	900.8
3	3.00	5.99	8.99	1.99	4.98	7.98	0.98	3.97	6.97	79.8	59.6	39.4	19.2	899.0
4	2.99	.98	.97	.96	.95	.94	.93	.93	.91	9.4	8.9	8.3	7.8	7.2
42 05	22.98	45.97	68.95	91.94	114.92	137.91	160.89	183.88	206.86	1379.1	2758.2	4137.2	5516.3	6895.4
6	.98	.96	.94	.92	.89	.87	.85	.83	.81	8.7	7.5	6.2	4.9	3.6
7	.97	.95	.92	.89	.86	.84	.81	.78	.75	8.4	6.7	5.1	3.4	1.8
8	.97	.93	.90	.87	.83	.80	.76	.73	.70	8.0	6.0	4.0	2.0	90.0
9	.96	.92	.88	.84	.80	.76	.72	.68	.64	7.6	5.2	2.9	10.5	88.2
42 10	22.95	45.91	68.86	91.82	114.77	137.73	160.68	183.64	206.59	1377.3	2754.5	4131.8	5509.1	6886.4
11	.95	.90	.85	.79	.74	.69	.64	.59	.54	6.9	3.8	30.7	7.6	4.6
12	.94	.88	.83	.77	.71	.65	.60	.54	.48	6.5	3.1	29.6	6.2	2.7
13	.94	.87	.81	.75	.68	.62	.55	.49	.43	6.2	2.3	8.6	4.7	80.9
14	.93	.86	.79	.72	.65	.58	.51	.44	.37	5.8	1.6	7.5	3.3	79.1
42 15	22.92	45.85	68.77	91.70	114.62	137.55	160.47	183.40	206.32	1375.5	2750.9	4126.4	5501.9	6877.3
16	.92	.84	.75	.67	.59	.51	.43	.35	.27	5.1	50.2	5.3	500.4	5.5
17	.91	.82	.74	.65	.56	.47	.39	.30	.21	4.7	49.5	4.2	499.0	3.7
18	.91	.81	.72	.62	.53	.44	.34	.25	.16	4.4	8.7	3.1	7.5	1.9
19	.90	.80	.70	.60	.50	.40	.30	.20	.10	4.0	8.0	2.0	6.1	70.1
42 20	22.89	45.79	68.68	91.58	114.47	137.37	160.26	183.15	206.05	1373.7	2747.3	4121.0	5494.6	6868.3
21	.89	.78	.66	.55	.44	.33	.22	.11	6.00	3.3	6.6	19.9	3.2	6.4
22	.88	.76	.65	.53	.41	.29	.18	.06	5.94	2.9	5.9	8.8	1.7	4.6
23	.88	.75	.63	.50	.38	.26	.13	3.01	.89	2.6	5.1	7.7	90.2	2.8
24	.87	.74	.61	.48	.35	.22	.09	2.96	.83	2.2	4.4	6.6	88.8	61.0
42 25	22.86	45.73	68.59	91.46	114.32	137.18	160.05	182.91	205.78	1371.8	2743.7	4115.5	5487.3	6859.2
26	.86	.72	.57	.43	.29	.15	60.01	.86	.72	1.5	3.0	4.4	5.9	7.4
27	.85	.70	.56	.41	.26	.11	59.97	.81	.67	1.1	2.2	3.3	4.4	5.6
28	.85	.69	.54	.38	.23	.07	.92	.77	.61	0.7	1.5	2.2	3.0	3.7
29	.84	.68	.52	.36	.20	.04	.88	.72	.56	0.4	0.7	1.2	1.5	1.9
42 30	22.83	45.67	68.50	91.33	114.17	137.00	159.84	182.67	205.50	1370.0	2740.0	4110.1	5480.1	6850.1
31	.83	.66	.48	.31	.14	6.97	.80	.62	.45	69.7	39.3	09.0	78.6	48.3
32	.82	.64	.46	.29	.11	.93	.75	.57	.39	9.3	8.6	7.9	7.2	6.5
33	.82	.63	.45	.26	.08	.89	.71	.52	.34	8.9	7.8	6.8	5.7	4.6
34	.81	.62	.43	.24	.05	.86	.67	.48	.28	8.6	7.1	5.7	4.3	2.8
42 35	22.80	45.61	68.41	91.21	114.02	136.82	159.62	182.43	205.23	1368.2	2736.4	4104.6	5472.8	6841.0
36	.80	.59	.39	.19	3.99	.78	.58	.38	.17	7.8	5.7	3.5	71.3	39.2
37	.79	.58	.37	.17	.96	.75	.54	.33	.12	7.5	5.0	2.4	69.9	7.4
38	.78	.57	.36	.14	.93	.71	.50	.28	.07	7.1	4.2	1.3	8.4	5.5
39	.78	.56	.34	.12	.90	.67	.45	.23	5.01	6.7	3.5	100.2	7.0	3.7
42 40	22.77	45.55	68.32	91.09	113.87	136.64	159.41	182.18	204.96	1366.4	2732.8	4099.1	5465.5	6831.9
41	.77	.53	.30	.07	.84	.60	.37	.14	.90	6.0	2.0	8.0	4.0	30.1
42	.76	.52	.28	.04	.81	.56	.32	.09	.85	5.6	1.3	6.9	2.6	28.2
43	.75	.51	.26	1.02	.77	.53	.28	2.04	.79	5.3	30.6	5.8	61.1	6.4
44	.75	.50	.25	0.99	.75	.49	.24	1.99	.74	4.9	29.8	4.7	59.7	4.6
42 45	22.74	45.48	68.23	90.97	113.71	136.45	159.19	181.94	204.68	1364.5	2729.1	4093.6	5458.2	6822.7
46	.74	.47	.21	.95	.68	.42	.15	.89	.63	4.2	8.4	2.6	6.7	20.9
47	.73	.46	.19	.92	.65	.38	.11	.84	.57	3.8	7.6	1.5	5.3	19.1
48	.72	.45	.17	.90	.62	.35	.07	.79	.52	3.5	6.9	90.4	3.8	7.3
49	.72	.44	.15	.87	.59	.31	9.02	.74	.46	3.1	6.1	89.3	2.3	5.4
42 50	22.71	45.42	68.14	90.85	113.56	136.27	158.98	181.70	204.41	1362.7	2725.4	4088.2	5450.9	6813.6
51	.71	.41	.12	.82	.53	.24	.94	.65	.36	2.4	4.7	7.1	49.4	11.8
52	.70	.40	.10	.80	.50	.20	.90	.60	.30	2.0	4.0	6.0	7.9	09.9
53	.69	.39	.08	.77	.47	.16	.86	.55	.24	1.6	3.2	4.9	6.5	8.1
54	.69	.38	.06	.75	.44	.13	.81	.50	.19	1.3	2.5	3.8	5.0	6.3
42 55	22.68	45.36	68.04	90.73	113.40	136.09	158.77	181.45	204.14	1360.9	2721.8	4082.7	5443.5	6804.4
56	.68	.35	.03	.70	.38	.05	.73	.40	.08	0.5	1.1	1.6	2.1	2.6
57	.67	.34	8.01	.68	.35	6.02	.69	.35	4.02	60.2	20.3	80.5	40.6	800.8
58	.66	.33	7.99	.65	.31	5.98	.64	.30	3.96	59.8	19.6	79.4	39.1	798.9
59	.66	.31	.97	.63	.28	.94	.60	.26	.91	9.4	8.8	8.3	7.7	7.1
42 60	22.65	45.30	67.95	90.60	113.25	135.91	158.56	181.21	203.86	1359.1	2718.1	4077.2	5436.2	6795.3

Lat.		Latitude 42° to 43°—Meridional arcs.						Latitude 42°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
42	00	30.853			1851.20					
	1	3	1	30.86	.20	1	1 851.2	0 1	1 380.9	0.1
	2	3	2	61.71	.21	2	3 702.4	2	2 761.8	0.5
	3	4	3	92.57	.21	3	5 553.6	3	4 142.7	1.2
	4	4	4	123.42	.22	4	7 404.8	4	5 523.5	2.2
42	05	30.854	5	154.28	1851.22	5	9 256.0	0 5	6 904.4	3.4
	6	4	6	185.14	.23	6	11 107.3	6	8 285.3	4.8
	7	4	7	215.99	.23	7	12 958.5	7	9 666.2	6.6
	8	4	8	246.85	.24	8	14 809.7	8	11 047.1	8.6
	9	4	9	277.70	.24	9	16 661.0	9	12 428.0	10.9
42	10	30.854	10	308.56	1851.25	10	18 512.2	0 10	13 808.8	13.4
	11	4	1	339.42	.26	1	20 363.5	15	20 713.2	30.2
	12	4	2	370.27	.26	2	22 214.7	20	27 617.6	53.8
	13	4	3	401.13	.27	3	24 066.0	25	34 522.0	84.0
	14	5	4	431.98	.27	4	25 917.3	30	41 426.3	120.9
42	15	30.855	15	462.84	1851.28	15	27 768.5	0 35	48 330.6	164.6
	16	5	6	493.70	.28	6	29 619.8	40	55 234.8	215.0
	17	5	7	524.55	.29	7	31 471.1	45	62 139.0	272.1
	18	5	8	555.41	.29	8	33 322.4	50	69 043.1	336.0
	19	5	9	586.26	.30	9	35 173.7	55	75 947.2	406.5
42	20	30.855	20	617.12	1851.30	20	37 025.0	1 00	82 851.2	483.8
	21	5	1	647.98	.31	1	38 876.3	05	89 755.1	567.8
	22	5	2	678.83	.32	2	40 727.6	10	96 658.9	658.5
	23	5	3	709.69	.32	3	42 578.9	15	103 562.6	755.9
	24	5	4	740.54	.33	4	44 430.3	20	110 466.3	860.1
42	25	30.856	25	771.40	1851.33	25	46 281.6	1 25	117 369.8	971.0
	26	6	6	802.26	.34	6	48 132.9	30	124 273.2	1 088.5
	27	6	7	833.11	.34	7	49 984.3	35	131 176.5	1 212.8
	28	6	8	863.97	.35	8	51 835.6	40	138 079.7	1 343.8
	29	6	9	894.82	.35	9	53 686.9	45	144 982.7	1 481.6
42	30	30.856	30	925.68	1851.36	30	55 538.3	1 50	151 885.6	1 626.1
	31	6	1	956.54	.37	1	57 389.7	55	158 788.4	1 777.2
	32	6	2	987.39	.37	2	59 241.0	2 00	165 691	1 935
	33	6	3	1 018.25	.38	3	61 092.4	3 00	248 508	4 354
	34	6	4	1 049.10	.38	4	62 943.8	4 00	331 292	7 739
42	35	30.856	35	1 079.96	1851.39	35	64 795.2	5 00	414 030	12 092
	36	7	6	1 110.82	.39	6	66 646.6	6 00	496 712	17 410
	37	7	7	1 141.67	.40	7	68 498.0	7 00	579 325	23 693
	38	7	8	1 172.53	.40	8	70 349.4	8 00	661 861	30 941
	39	7	9	1 203.38	.41	9	72 200.8	9 00	744 305	39 152
42	40	30.857	40	1 234.24	1851.41	40	74 052.2	10 00	826 648	48 325
	41	7	1	1 265.10	.42	1	75 903.6	11 00	908 879	58 459
	42	7	2	1 295.95	.43	2	77 755.0	12 00	990 985	69 553
	43	7	3	1 326.81	.43	3	79 606.4	13 00	1 072 956	81 605
	44	7	4	1 357.66	.44	4	81 457.9	14 00	1 154 781	94 614
42	45	30.857	45	1 388.52	1851.44	45	83 309.3	15 00	1 236 449	108 577
	46	7	6	1 419.38	.45	6	85 160.8	16 00	1 317 948	123 493
	47	8	7	1 450.23	.45	7	87 012.2	17 00	1 399 267	139 360
	48	8	8	1 481.09	.46	8	88 863.7	18 00	1 480 395	156 175
	49	8	9	1 511.94	.46	9	90 715.1	19 00	1 561 321	173 937
42	50	30.858	50	1 542.80	1851.47	50	92 566.6	20 00	1 642 035	192 642
	51	8	1	1 573.66	.47	1	94 418.1	21 00	1 722 524	212 289
	52	8	2	1 604.51	.48	2	96 269.5	22 00	1 802 779	232 874
	53	8	3	1 635.37	.49	3	98 121.0	23 00	1 882 788	254 396
	54	8	4	1 666.22	.49	4	99 972.5	24 00	1 962 540	276 850
42	55	30.858	55	1 697.08	1851.50	55	101 824.0	25 00	2 042 024	300 234
	56	8	6	1 727.94	.50	6	103 675.5	26 00	2 121 230	324 544
	57	8	7	1 758.79	.51	7	105 527.0	27 00	2 200 146	349 778
	58	9	8	1 789.65	.51	8	107 378.5	28 00	2 278 762	375 932
	59	9	9	1 820.50	.52	9	109 230.0	29 00	2 357 067	403 002
42	60	30.859	60	1 851.36	1851.52	60	111 081.6	30 00	2 435 052	430 985

Latitude 43° to 44°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
43 00	22.65	45.30	67.95	90.60	113.25	135.91	158.56	181.21	203.86	1359.1	2718.1	4077.2	5436.2	6795.3
1	.64	.29	.93	.58	.22	.87	.52	.16	.81	8.7	7.4	6.1	4.7	3.4
2	.64	.28	.92	.55	.19	.83	.47	.11	.75	8.3	6.6	5.0	3.3	91.6
3	.63	.26	.90	.53	.16	.79	.43	.06	.69	7.9	5.9	3.8	1.8	89.7
4	.63	.25	.88	.50	.13	.76	.39	1.01	.64	7.6	5.1	2.7	30.3	7.9
43 05	22.62	45.24	67.86	90.48	113.10	135.72	158.34	180.96	203.58	1357.2	2714.4	4071.6	5428.9	6786.1
6	.61	.23	.84	.46	.07	.68	.30	.91	.53	6.8	3.7	70.5	7.4	4.2
7	.61	.22	.82	.43	.04	.65	.26	.86	.47	6.5	3.0	69.4	5.9	2.4
8	.60	.20	.81	.41	3.01	.61	.22	.81	.42	6.1	2.2	8.3	4.4	80.6
9	.60	.19	.79	.38	2.98	.57	.17	.77	.36	5.7	1.5	7.2	3.0	78.7
43 10	22.59	45.18	67.77	90.36	112.95	135.54	158.13	180.72	203.31	1355.4	2710.8	4066.1	5421.5	6776.9
11	.58	.17	.75	.34	.92	.50	.09	.67	.25	5.0	10.1	5.0	20.0	5.0
12	.58	.15	.73	.31	.89	.46	.04	.62	.19	4.6	09.3	3.9	18.5	3.2
13	.57	.14	.71	.29	.86	.43	8.00	.57	.14	4.3	8.6	2.8	7.1	71.3
14	.57	.13	.69	.26	.83	.39	7.96	.52	.09	3.9	7.8	1.7	5.6	69.5
43 15	22.56	45.12	67.68	90.24	112.79	135.35	157.91	180.47	203.03	1353.5	2707.1	4060.6	5414.1	6767.6
16	.55	.11	.66	.21	.76	.32	.87	.42	2.97	3.2	6.3	59.5	2.6	5.8
17	.55	.09	.64	.19	.73	.28	.83	.37	.92	2.8	5.6	8.4	11.2	4.0
18	.54	.08	.62	.16	.70	.24	.79	.32	.86	2.4	4.9	7.3	09.7	2.1
19	.53	.07	.60	.14	.67	.21	.74	.27	.81	2.1	4.1	6.2	8.2	60.3
43 20	22.53	45.06	67.58	90.11	112.64	135.17	157.70	180.22	202.75	1351.7	2703.4	4055.1	5406.7	6758.4
21	.52	.04	.57	.09	.61	.13	.65	.18	.70	1.3	2.7	4.0	5.3	6.6
22	.52	.03	.55	.06	.58	.09	.61	.13	.64	0.9	1.9	2.8	3.8	4.7
23	.51	.02	.53	.04	.55	.06	.57	.08	.59	0.6	1.2	1.7	2.3	2.9
24	.50	5.01	.51	90.01	.52	5.02	.52	80.03	.53	50.2	700.4	50.6	400.8	51.0
43 25	22.50	44.99	67.49	89.99	112.49	134.98	157.48	179.98	202.48	1349.8	2699.7	4049.5	5399.3	6749.2
26	.49	.98	.47	.96	.45	.95	.44	.93	.42	9.5	8.9	8.4	7.8	7.3
27	.49	.97	.45	.94	.42	.91	.39	.88	.37	9.1	8.2	7.3	6.4	5.5
28	.48	.96	.44	.92	.39	.87	.35	.83	.31	8.7	7.5	6.2	4.9	3.6
29	.48	.95	.42	.89	.36	.84	.31	.78	.25	8.4	6.7	5.1	3.4	41.8
43 30	22.46	44.93	67.40	89.87	112.33	134.80	157.26	179.73	202.20	1348.0	2696.0	4043.9	5391.9	6739.9
31	.46	.92	.38	.84	.30	.76	.22	.68	.14	7.6	5.2	2.8	90.4	8.1
32	.45	.91	.36	.82	.27	.72	.18	.63	.09	7.2	4.5	1.7	89.0	6.2
33	.45	.90	.34	.79	.24	.69	.13	.58	2.03	6.9	3.8	40.6	7.5	4.3
34	.44	.88	.32	.77	.21	.65	.09	.53	1.98	6.5	3.0	39.5	6.0	2.5
43 35	22.44	44.87	67.31	89.74	112.18	134.61	157.05	179.48	201.92	1346.1	2692.3	4038.4	5384.5	6730.6
36	.43	.86	.29	.72	.14	.55	7.01	.43	.86	5.8	1.5	7.3	3.0	28.8
37	.42	.85	.27	.69	.11	.54	6.96	.38	.81	5.4	0.8	6.1	1.5	6.9
38	.42	.83	.25	.67	.08	.50	.92	.34	.75	5.0	90.0	5.0	80.0	5.1
39	.41	.82	.23	.64	.05	.46	.87	.29	.70	4.6	89.3	3.9	78.6	3.2
43 40	22.40	44.81	67.21	89.62	112.02	134.43	156.83	179.24	201.64	1344.3	2688.5	4032.8	5377.1	6721.3
41	.40	.80	.19	.59	1.99	.39	.79	.19	.58	3.9	7.8	1.7	5.6	19.5
42	.39	.78	.18	.57	.96	.35	.74	.14	.53	3.5	7.0	30.6	4.1	7.6
43	.39	.77	.16	.54	.93	.32	.70	.09	.47	3.2	6.3	29.5	2.6	5.8
44	.38	.76	.14	.52	.90	.28	.66	9.04	.42	2.8	5.5	8.3	71.1	3.9
43 45	22.37	44.75	67.12	89.49	111.87	134.24	156.61	178.99	201.36	1342.4	2684.8	4027.2	5369.6	6712.0
46	.37	.73	.10	.47	.83	.20	.57	.94	.30	2.0	4.1	6.1	8.1	10.2
47	.36	.72	.08	.44	.80	.17	.53	.89	.25	1.7	3.3	5.0	6.6	08.3
48	.35	.71	.06	.42	.77	.13	.49	.84	.19	1.3	2.6	3.9	5.2	6.4
49	.35	.70	.05	.39	.74	.09	.44	.79	.14	0.9	1.8	2.7	3.7	4.6
43 50	22.34	44.68	67.03	89.37	111.71	134.05	156.40	178.74	201.08	1340.5	2681.1	4021.6	5362.2	6702.7
51	.34	.67	7.01	.35	.68	4.02	.36	.69	1.03	40.2	80.3	20.5	60.7	700.9
52	.33	.66	6.99	.32	.65	3.98	.31	.64	0.97	39.8	79.6	19.4	59.2	6699.0
53	.32	.65	.97	.29	.62	.94	.27	.59	.91	9.4	8.9	8.3	7.7	7.1
54	.32	.64	.95	.27	.59	.91	.22	.54	.86	9.1	8.1	7.2	6.2	5.3
43 55	22.31	44.62	66.93	89.25	111.56	133.87	156.18	178.49	200.80	1338.7	2677.4	4016.0	5354.7	6693.4
56	.30	.61	.92	.22	.52	.83	.14	.44	.74	8.3	6.6	4.9	3.2	91.5
57	.30	.60	.90	.20	.49	.79	.09	.39	.69	7.9	5.9	3.8	1.7	89.6
58	.29	.59	.88	.17	.46	.76	.05	.34	.63	7.6	5.1	2.7	50.2	7.8
59	.29	.57	.86	.15	.43	.72	6.00	.29	.58	7.2	4.4	1.5	48.7	5.9
43 60	22.28	44.56	66.84	89.12	111.40	133.68	155.96	178.24	200.52	1336.8	2673.6	4010.4	5347.2	6684.0

Lat.		Latitude 43° to 44°—Meridional arcs.						Latitude 43°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
43	00	30.859			1851.52					
	1	9	1	30.86	.53	1	1 851.5	0 1	1 359.1	0.1
	2	9	2	61.72	.53	2	3 703.1	2	2 718.1	0.5
	3	9	3	92.58	.54	3	5 554.6	3	4 077.2	1.2
	4	9	4	123.45	.55	4	7 406.1	4	5 436.2	2.2
43	05	30.859	5	154.31	1851.55	5	9 257.7	0 5	6 795.3	3.4
	6	9	6	185.17	.56	6	11 109.2	6	8 154.3	4.9
	7	9	7	216.03	.56	7	12 960.8	7	9 513.4	6.6
	8	59	8	246.89	.57	8	14 812.4	8	10 872.4	8.6
	9	60	9	277.75	.57	9	16 663.9	9	12 231.5	10.9
43	10	30.860	10	308.61	1851.58	10	18 515.5	0 10	13 590.5	13.5
	11	0	1	339.48	.58	1	20 367.1	15	20 385.8	30.3
	12	0	2	370.34	.59	2	22 218.7	20	27 181.0	53.9
	13	0	3	401.20	.59	3	24 070.3	25	33 976.2	84.3
	14	0	4	432.06	.60	4	25 921.9	30	40 771.4	121.3
43	15	30.860	15	462.92	1851.61	15	27 773.5	0 35	47 566.5	165.1
	16	0	6	493.78	.61	6	29 625.1	40	54 361.6	215.7
	17	0	7	524.64	.62	7	31 476.7	45	61 156.7	273.0
	18	0	8	555.51	.62	8	33 328.3	50	67 951.6	337.0
	19	0	9	586.37	.63	9	35 179.9	55	74 746.5	407.8
43	20	30.861	20	617.23	1851.63	20	37 031.6	1 00	81 541.3	485.3
	21	1	1	648.09	.64	1	38 883.2	05	88 336.1	569.6
	22	1	2	678.95	.64	2	40 734.8	10	95 130.7	660.5
	23	1	3	709.81	.65	3	42 586.5	15	101 925.3	758.3
	24	1	4	740.68	.65	4	44 438.1	20	108 719.8	862.8
43	25	30.861	25	771.54	1851.66	25	46 289.8	1 25	115 514.2	974.0
	26	1	6	802.40	.67	6	48 141.4	30	122 308.4	1 091.9
	27	1	7	833.26	.67	7	49 993.1	35	129 102.5	1 216.6
	28	1	8	864.12	.68	8	51 844.8	40	135 896.5	1 348.0
	29	1	9	894.98	.68	9	53 696.5	45	142 690.4	1 486.2
43	30	30.861	30	925.84	1851.69	30	55 548.2	1 50	149 484.1	1 631.1
	31	2	1	956.71	.69	1	57 399.9	55	156 277.7	1 782.8
	32	2	2	987.57	.70	2	59 251.6	2 00	163 071	1 941
	33	2	3	1 018.43	.70	3	61 103.3	3 00	244 578	4 367
	34	2	4	1 049.29	.71	4	62 955.0	4 00	326 050	7 763
43	35	30.862	35	1 080.15	1851.72	35	64 806.7	5 00	407 476	12 129
	36	2	6	1 111.01	.72	6	66 658.4	6 00	488 844	17 464
	37	2	7	1 141.87	.73	7	68 510.1	7 00	570 148	23 766
	38	2	8	1 172.74	.73	8	70 361.9	8 00	651 361	31 036
	39	2	9	1 203.60	.74	9	72 213.6	9 00	732 486	39 272
43	40	30.862	40	1 234.46	1851.74	40	74 065.3	10 00	813 508	48 474
	41	2	1	1 265.32	.75	1	75 917.1	11 00	894 415	58 639
	42	3	2	1 296.18	.75	2	77 768.8	12 00	975 195	69 766
	43	3	3	1 327.04	.76	3	79 620.5	13 00	1 055 837	81 854
	44	3	4	1 357.90	.76	4	81 472.3	14 00	1 136 329	94 901
43	45	30.863	45	1 388.77	1851.77	45	83 324.1	15 00	1 216 661	108 905
	46	3	6	1 419.63	.78	6	85 175.8	16 00	1 296 820	123 864
	47	3	7	1 450.49	.78	7	87 027.6	17 00	1 376 795	139 777
	48	3	8	1 481.35	.79	8	88 879.4	18 00	1 456 575	156 640
	49	3	9	1 512.21	.79	9	90 731.2	19 00	1 536 148	174 451
43	50	30.863	50	1 543.07	1851.80	50	92 583.0	20 00	1 615 505	193 209
	51	3	1	1 573.93	.80	1	94 434.8	21 00	1 694 632	212 909
	52	3	2	1 604.80	.81	2	96 286.6	22 00	1 773 519	233 551
	53	4	3	1 635.66	.81	3	98 138.4	23 00	1 852 155	255 129
	54	4	4	1 666.52	.82	4	99 990.3	24 00	1 930 528	277 642
43	55	30.864	55	1 697.38	1851.82	55	101 842.1	25 00	2 008 628	301 087
	56	4	6	1 728.24	.83	6	103 693.9	26 00	2 086 443	325 459
	57	4	7	1 759.10	.84	7	105 545.7	27 00	2 163 963	350 756
	58	4	8	1 789.96	.84	8	107 397.6	28 00	2 241 176	376 974
	59	4	9	1 820.83	.85	9	109 249.4	29 00	2 318 071	404 109
43	60	30.864	60	1 851.69	1851.85	60	111 101.3	30 00	2 394 639	432 157

Latitude 44° to 45°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
44 00	22.28	44.56	66.84	89.12	111.40	133.68	155.96	178.24	200.52	1336.8	2673.6	4010.4	5347.2	6684.0
1	.27	.55	.82	.10	.37	.64	.92	.19	.46	6.4	2.9	09.3	5.7	2.2
2	.27	.54	.80	.07	.34	.61	.87	.14	.41	6.1	2.1	8.2	4.2	80.3
3	.26	.52	.78	.05	.31	.57	.83	.09	.35	5.7	1.4	7.0	2.7	78.4
4	.26	.51	.76	.02	.28	.53	.78	8.04	.30	5.3	70.6	5.9	41.2	6.5
44 05	22.25	44.50	66.75	89.00	111.24	133.49	155.74	177.99	200.24	1334.9	2669.9	4004.8	5339.7	6674.7
6	.24	.49	.73	8.97	.21	.46	.70	.94	.18	4.6	9.1	3.7	8.2	2.8
7	.24	.47	.71	.95	.18	.42	.65	.89	.13	4.2	8.4	2.6	6.7	70.9
8	.23	.46	.69	.92	.15	.38	.61	.84	.07	3.8	7.6	1.4	5.2	69.0
9	.22	.45	.67	.90	.13	.34	.57	.79	200.02	3.4	6.9	4000.3	3.7	7.2
44 10	22.22	44.44	66.65	88.87	111.09	133.31	155.52	177.74	199.96	1333.1	2666.1	3999.2	5332.2	6665.3
11	.21	.42	.63	.85	.06	.27	.48	.69	.90	2.7	5.4	8.1	30.7	3.4
12	.21	.41	.61	.82	.03	.23	.43	.64	.85	2.3	4.6	6.9	29.2	61.5
13	.20	.40	.60	.80	1.00	.19	.39	.59	.79	1.9	3.9	5.8	7.7	59.7
14	.20	.39	.58	.77	0.97	.16	.35	.54	.74	1.6	3.1	4.7	6.2	7.8
44 15	22.19	44.37	66.56	88.75	110.93	133.12	155.30	177.49	199.68	1331.2	2662.4	3993.5	5324.7	6655.9
16	.18	.36	.54	.72	.90	.08	.26	.44	.62	0.8	1.6	2.4	3.2	4.0
17	.17	.35	.52	.70	.87	.04	.22	.39	.57	0.4	0.9	1.3	1.7	2.1
18	.17	.34	.50	.67	.84	3.01	.18	.34	.51	30.1	60.1	90.2	20.2	50.3
19	.16	.32	.48	.65	.81	2.97	.13	.29	.45	29.7	59.4	89.0	18.7	48.4
44 20	22.16	44.31	66.47	88.62	110.78	132.93	155.09	177.24	199.40	1329.3	2658.6	3987.9	5317.2	6646.5
21	.15	.30	.45	.59	.74	.89	.04	.19	.34	8.9	7.8	6.8	5.7	4.6
22	.14	.28	.43	.57	.71	.85	5.00	.14	.28	8.5	7.1	5.6	4.2	2.7
23	.14	.27	.41	.54	.68	.82	4.96	.09	.23	8.2	6.3	4.5	2.7	40.8
24	.13	.26	.39	.52	.65	.78	.91	7.04	.17	7.8	5.6	3.4	11.2	39.0
44 25	22.12	44.25	66.37	88.49	110.62	132.74	154.87	176.99	199.11	1327.4	2654.8	3982.2	5309.7	6637.1
26	.12	.23	.35	.47	.59	.70	.82	.94	.06	7.0	4.1	1.1	8.2	5.2
27	.11	.22	.33	.44	.55	.67	.77	.89	9.00	6.7	3.3	80.0	6.6	3.3
28	.10	.21	.31	.42	.52	.63	.74	.84	8.94	6.3	2.6	78.9	5.1	31.4
29	.10	.20	.30	.39	.49	.59	.69	.79	.89	5.9	1.8	7.7	3.6	29.5
44 30	22.09	44.18	66.28	88.37	110.46	132.55	154.65	176.74	198.83	1325.5	2651.1	3976.6	5302.1	6627.7
31	.08	.17	.26	.34	.42	.52	.61	.69	.77	5.2	50.3	5.5	300.6	5.8
32	.08	.16	.24	.32	.40	.48	.56	.64	.72	4.8	49.6	4.3	299.1	3.9
33	.07	.15	.22	.29	.37	.44	.52	.59	.66	4.4	8.8	3.2	7.6	2.0
34	.07	.13	.20	.27	.34	.40	.47	.54	.60	4.0	8.1	2.0	6.1	20.1
44 35	22.06	44.12	66.18	88.24	110.30	132.36	154.43	176.49	198.55	1323.6	2647.3	3970.9	5294.6	6618.2
36	.05	.11	.16	.22	.27	.33	.38	.43	.49	3.3	6.5	69.8	3.0	6.3
37	.05	.10	.14	.19	.24	.29	.34	.38	.43	2.9	5.8	8.6	1.5	4.4
38	.04	.08	.13	.17	.21	.25	.29	.33	.37	2.5	5.0	7.5	90.0	2.5
39	.04	.07	.11	.14	.18	.21	.25	.28	.32	2.1	4.3	6.4	88.5	10.6
44 40	22.03	44.06	66.09	88.12	110.15	132.17	154.20	176.23	198.26	1321.7	2643.5	3965.2	5287.0	6608.7
41	.02	.04	.07	.09	.12	.14	.16	.18	.20	1.4	2.7	4.1	5.5	6.8
42	.02	.03	.05	.07	.09	.10	.11	.13	.15	1.0	2.0	3.0	4.0	4.9
43	.01	.02	.03	.04	.05	.06	.07	.08	.09	0.6	1.2	1.8	2.4	3.1
44	.00	.01	6.01	8.02	10.02	2.02	4.02	6.03	8.03	20.2	40.5	60.7	80.9	601.2
44 45	22.00	44.00	65.99	87.99	109.99	131.99	153.98	175.98	197.98	1319.9	2639.7	3959.6	5279.4	6599.3
46	1.99	3.98	.97	.96	.96	.95	.94	.93	.92	9.5	8.9	8.4	7.9	7.4
47	.99	.97	.96	.94	.93	.91	.89	.88	.86	9.1	8.2	7.3	6.4	5.5
48	.98	.96	.94	.91	.89	.87	.85	.83	.80	8.7	7.4	6.1	4.9	3.6
49	.97	.95	.92	.89	.86	.83	.80	.78	.75	8.3	6.7	5.0	3.3	91.7
44 50	21.97	43.93	65.90	87.86	109.83	131.80	153.76	175.73	197.69	1318.0	2635.9	3953.9	5271.8	6589.8
51	.96	.92	.88	.84	.80	.76	.72	.68	.63	7.6	5.1	2.7	70.3	7.9
52	.95	.91	.86	.81	.77	.72	.67	.63	.58	7.2	4.4	1.6	68.8	6.0
53	.95	.89	.84	.79	.73	.68	.63	.58	.52	6.8	3.6	50.4	7.3	4.1
54	.94	.88	.82	.76	.70	.64	.58	.52	.46	6.4	2.9	49.3	5.7	2.2
44 55	21.93	43.87	65.80	87.74	109.67	131.61	153.54	175.47	197.41	1316.1	2632.1	3948.2	5264.2	6580.3
56	.93	.86	.78	.71	.64	.57	.50	.42	.35	5.7	1.3	7.0	2.7	78.4
57	.92	.84	.77	.69	.61	.53	.45	.37	.29	5.3	30.6	5.9	61.2	6.5
58	.92	.83	.75	.66	.57	.49	.41	.32	.23	4.9	29.8	4.7	59.6	4.6
59	.91	.82	.73	.64	.54	.45	.36	.27	.18	4.5	9.1	3.6	8.1	2.7
44 60	21.90	43.81	65.71	87.61	109.51	131.42	153.32	175.22	197.12	1314.2	2628.3	3942.5	5256.6	6570.8

Lat.		Latitude 44° to 45°—Meridional arcs.						Latitude 44°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
44	00	30.864			1851.85					
	1	4	1	30.87	.86	1	1 851.9	0 1	1 336.8	0.1
	2	4	2	61.73	.86	2	3 703.7	2	2 673.6	0.5
	3	4	3	92.60	.87	3	5 555.6	3	4 010.4	1.2
	4	5	4	123.47	.87	4	7 407.4	4	5 347.2	2.2
44	05	30.865	5	154.33	1851.88	5	9 259.3	0 5	6 684.0	3.4
	6	5	6	185.20	.89	6	11 111.2	6	8 020.8	4.9
	7	5	7	216.07	.89	7	12 963.1	7	9 357.7	6.6
	8	5	8	246.94	.90	8	14 815.0	8	10 694.5	8.6
	9	5	9	277.80	.90	9	16 666.9	9	12 031.3	10.9
44	10	30.865	10	308.67	1851.91	10	18 518.8	0 10	13 368.1	13.5
	11	5	1	339.54	.91	1	20 370.7	15	20 052.1	30.4
	12	5	2	370.40	.92	2	22 222.6	20	26 736.1	54.0
	13	5	3	401.27	.92	3	24 074.5	25	33 420.1	84.4
	14	5	4	432.14	.93	4	25 926.5	30	40 104.0	121.5
44	15	30.866	15	463.00	1851.93	15	27 778.4	0 35	46 787.9	165.4
	16	6	6	493.87	.94	6	29 630.3	40	53 471.8	216.1
	17	6	7	524.74	.95	7	31 482.3	45	60 155.6	273.5
	18	6	8	555.61	.95	8	33 334.2	50	66 839.3	337.7
	19	6	9	586.47	.96	9	35 186.2	55	73 523.0	408.6
44	20	30.866	20	617.34	1851.96	20	37 038.1	1 00	80 206.5	486.2
	21	6	1	648.21	.97	1	38 890.1	05	86 890.0	570.6
	22	6	2	679.07	.97	2	40 742.0	10	93 573.5	661.8
	23	6	3	709.94	.98	3	42 594.0	15	100 256.8	759.7
	24	6	4	740.81	.98	4	44 446.0	20	106 940.0	864.4
44	25	30.866	25	771.67	1851.99	25	46 298.0	1 25	113 623.1	975.8
	26	7	6	802.54	1.99	6	48 150.0	30	120 306.1	1 094.0
	27	7	7	833.41	2.00	7	50 002.0	35	126 989.0	1 218.9
	28	7	8	864.27	.01	8	51 854.0	40	133 671.8	1 350.6
	29	7	9	895.14	.01	9	53 706.0	45	140 354.4	1 489.0
44	30	30.867	30	926.01	1852.02	30	55 558.0	1 50	147 036.8	1 634.2
	31	7	1	956.88	.02	1	57 410.0	55	153 719.1	1 786.1
	32	7	2	987.74	.03	2	59 262.0	2 00	160 401	1 945
	33	7	3	1 018.61	.03	3	61 114.1	3 00	240 572	4 375
	34	7	4	1 049.48	.04	4	62 966.1	4 00	320 708	7 778
44	35	30.867	35	1 080.34	1852.04	35	64 818.1	5 00	400 797	12 152
	36	7	6	1 111.21	.05	6	66 670.2	6 00	480 827	17 496
	37	8	7	1 142.08	.06	7	68 522.2	7 00	560 786	23 811
	38	8	8	1 172.94	.06	8	70 374.3	8 00	640 662	31 094
	39	8	9	1 203.81	.07	9	72 226.4	9 00	720 445	39 345
44	40	30.868	40	1 234.68	1852.07	40	74 078.4	10 00	800 122	48 563
	41	8	1	1 265.54	.08	1	75 930.5	11 00	879 681	58 746
	42	8	2	1 296.41	.08	2	77 782.6	12 00	959 110	69 893
	43	8	3	1 327.28	.09	3	79 634.7	13 00	1 038 399	82 002
	44	8	4	1 358.15	.09	4	81 486.8	14 00	1 117 535	95 072
44	45	30.868	45	1 389.01	1852.10	45	83 338.9	15 00	1 196 507	109 100
	46	8	6	1 419.88	.10	6	85 191.0	16 00	1 275 303	124 084
	47	9	7	1 450.75	.11	7	87 043.1	17 00	1 353 911	140 023
	48	9	8	1 481.61	.12	8	88 895.2	18 00	1 432 320	156 913
	49	9	9	1 512.48	.12	9	90 747.3	19 00	1 510 519	174 753
44	50	30.869	50	1 543.35	1852.13	50	92 599.5	20 00	1 588 496	193 540
	51	9	1	1 574.21	.13	1	94 451.6	21 00	1 666 240	213 270
	52	9	2	1 605.08	.14	2	96 303.7	22 00	1 743 738	233 942
	53	9	3	1 635.95	.14	3	98 155.9	23 00	1 820 980	255 552
	54	9	4	1 666.82	.15	4	100 008.0	24 00	1 897 955	278 096
44	55	30.869	55	1 697.68	1852.15	55	101 860.2	25 00	1 974 650	301 572
	56	9	6	1 728.55	.16	6	103 712.3	26 00	2 051 055	325 977
	57	69	7	1 759.42	.16	7	105 564.5	27 00	2 127 159	351 306
	58	70	8	1 790.28	.17	8	107 416.7	28 00	2 202 950	377 555
	59	0	9	1 821.15	.18	9	109 268.8	29 00	2 278 417	404 722
44	60	30.870	60	1 852.02	1852.18	60	111 121.0	30 00	2 353 550	432 801

Latitude 45° to 46°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
45 00	21.90	43.81	65.71	87.61	109.51	131.42	153.32	175.22	197.12	1314.2	2628.3	3942.5	5256.6	6570.8
1	.90	.79	.69	.58	.48	.38	.28	.17	.06	3.8	7.5	1.3	5.1	68.8
2	.89	.78	.67	.56	.45	.34	.23	.12	7.01	3.4	6.8	40.2	3.6	6.9
3	.88	.77	.65	.53	.42	.30	.19	.07	6.95	3.0	6.0	39.0	2.0	5.0
4	.88	.75	.63	.51	.39	.26	.14	5.02	.89	2.6	5.3	7.9	50.5	3.1
45 05	21.87	43.74	65.61	87.48	109.35	131.22	153.10	174.97	196.83	1312.2	2624.5	3936.7	5249.0	6561.2
6	.86	.73	.59	.46	.32	.19	.05	.91	.78	1.9	3.7	5.6	7.4	59.3
7	.86	.72	.57	.43	.29	.15	3.01	.86	.72	1.5	3.0	4.4	5.9	7.4
8	.85	.70	.56	.41	.26	.11	2.96	.81	.66	1.1	2.2	3.3	4.4	5.5
9	.85	.69	.54	.38	.23	.07	.92	.76	.61	0.7	1.5	2.2	2.9	3.6
45 10	21.84	43.68	65.52	87.36	109.20	131.03	152.87	174.71	196.55	1310.3	2620.7	3931.0	5241.3	6551.7
11	.83	.67	.50	.33	.17	1.00	.83	.66	.49	10.0	19.9	29.9	39.8	49.8
12	.83	.65	.48	.30	.13	0.96	.78	.61	.44	09.6	09.1	8.7	8.3	7.9
13	.82	.64	.46	.28	.10	.92	.74	.56	.38	9.2	8.4	7.6	6.8	5.9
14	.81	.63	.44	.25	.07	.88	.69	.51	.32	8.8	7.6	6.4	5.2	4.0
45 15	21.81	43.61	65.42	87.23	109.04	130.84	152.65	174.46	196.26	1308.4	2616.8	3925.3	5233.7	6542.1
16	.80	.60	.40	.20	9.01	.80	.61	.41	.21	8.0	6.1	4.1	2.2	40.2
17	.79	.59	.38	.18	8.98	.77	.56	.35	.15	7.7	5.3	3.0	30.6	38.3
18	.79	.58	.36	.15	.94	.73	.52	.30	.09	7.3	4.5	1.8	29.1	6.4
19	.78	.56	.35	.13	.91	.69	.47	.25	6.04	6.9	3.8	20.7	7.6	4.5
45 20	21.78	43.55	65.33	87.10	108.88	130.65	152.43	174.20	195.98	1306.5	2613.0	3919.5	5226.0	6532.5
21	.77	.54	.31	.07	.85	.61	.39	.15	.92	6.1	2.2	8.4	4.5	30.6
22	.76	.52	.29	.05	.82	.57	.34	.10	.86	5.7	1.5	7.2	3.0	28.7
23	.76	.51	.27	.02	.78	.54	.30	.05	.81	5.4	0.7	6.1	21.4	6.8
24	.75	.50	.25	7.00	.75	.50	.25	4.00	.75	5.0	10.0	4.9	19.9	4.9
45 25	21.74	43.49	65.23	86.97	108.72	130.46	152.21	173.95	195.69	1304.6	2609.2	3913.8	5218.4	6523.0
26	.74	.47	.21	.95	.69	.42	.16	.89	.63	4.2	8.4	2.6	6.8	21.0
27	.73	.46	.19	.92	.66	.38	.12	.84	.57	3.8	7.6	1.5	5.3	19.1
28	.72	.45	.17	.90	.62	.34	.07	.79	.52	3.4	6.9	10.3	3.8	7.2
29	.72	.44	.15	.87	.59	.31	2.03	.74	.46	3.1	6.1	09.2	2.2	5.3
45 30	21.71	43.42	65.13	86.84	108.56	130.27	151.98	173.69	195.40	1302.7	2605.3	3908.0	5210.7	6513.4
31	.70	.41	.11	.82	.53	.23	.94	.64	.34	2.3	4.5	6.9	09.1	11.4
32	.70	.40	.09	.79	.50	.19	.89	.59	.28	1.9	3.8	5.7	7.6	09.5
33	.69	.38	.08	.77	.46	.15	.85	.54	.23	1.5	3.0	4.6	6.1	7.6
34	.69	.37	.06	.74	.43	.11	.80	.48	.17	1.1	2.3	3.4	4.5	5.7
45 35	21.68	43.36	65.04	86.72	108.40	130.07	151.76	173.43	195.11	1300.7	2601.5	3902.2	5203.0	6503.7
36	.67	.35	.02	.69	.37	.04	.71	.38	5.05	0.4	600.7	901.1	201.4	501.8
37	.67	.33	5.00	.66	.34	30.00	.67	.33	4.99	300.0	599.9	899.9	199.9	499.9
38	.66	.32	4.98	.64	.30	29.96	.62	.28	.94	299.6	9.2	8.8	8.4	8.0
39	.65	.31	.96	.61	.27	.92	.58	.23	.88	9.2	8.4	7.6	6.8	6.0
45 40	21.65	43.29	64.94	86.59	108.24	129.88	151.53	173.18	194.82	1298.8	2597.6	3896.5	5195.3	6494.1
41	.64	.28	.92	.56	.20	.84	.48	.12	.76	8.4	6.8	5.3	3.7	2.2
42	.63	.27	.90	.54	.17	.81	.44	.07	.71	8.1	6.1	4.2	2.2	90.3
43	.63	.26	.88	.51	.14	.77	.40	3.02	.65	7.7	5.3	3.0	90.7	88.3
44	.62	.24	.86	.49	.11	.73	.35	2.97	.59	7.3	4.6	1.8	89.1	6.4
45 45	21.61	43.23	64.85	86.46	108.07	129.69	151.31	172.92	194.54	1296.9	2593.8	3890.7	5187.6	6484.5
46	.61	.22	.83	.43	.04	.65	.26	.87	.48	6.5	3.0	89.5	6.0	2.5
47	.60	.20	.81	.41	8.01	.61	.22	.82	.42	6.1	2.2	8.4	4.5	80.6
48	.60	.19	.79	.38	7.98	.57	.17	.76	.36	5.7	1.5	7.2	2.9	78.7
49	.59	.18	.77	.36	.94	.53	.13	.71	.30	5.3	90.7	6.0	81.4	6.7
45 50	21.58	43.17	64.75	86.33	107.91	129.50	151.08	172.66	194.25	1295.0	2589.9	3884.9	5179.9	6474.8
51	.58	.15	.73	.30	.88	.46	1.04	.61	.19	4.6	9.1	3.7	8.3	2.9
52	.57	.14	.71	.28	.85	.42	0.99	.56	.13	4.2	8.4	2.6	6.8	70.9
53	.56	.13	.69	.25	.81	.38	.95	.51	.07	3.8	7.6	1.4	5.2	69.0
54	.56	.11	.67	.23	.78	.34	.90	.46	4.01	3.4	6.9	80.2	3.7	7.1
45 55	21.55	43.10	64.65	86.20	107.75	129.30	150.86	172.40	193.96	1293.0	2586.1	3879.1	5172.1	6465.1
56	.54	.09	.63	.18	.72	.26	.81	.35	.90	2.6	5.3	7.9	70.6	3.2
57	.54	.08	.61	.15	.69	.23	.77	.30	.84	2.3	4.5	6.8	69.0	61.3
58	.53	.06	.59	.13	.65	.19	.72	.25	.78	1.9	3.8	5.6	7.5	59.3
59	.52	.05	.57	.10	.62	.15	.68	.20	.72	1.5	3.0	4.4	5.9	7.4
45 60	21.52	43.04	64.55	86.07	107.59	129.11	150.63	172.15	193.66	1291.1	2582.2	3873.3	5164.4	6455.5

Lat.		Latitude 45° to 46°—Meridional arcs.						Latitude 45°—Co-ordinates of curvature.			
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.		X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	°	′	*Meters.*	*Meters.*
45	00	30.870			1852.18						
	1	0	1	30.87	.19	1	1 852.2	0	1	1 314.1	0.1
	2	0	2	61.74	.19	2	3 704.4		2	2 628.3	0.5
	3	0	3	92.62	.20	3	5 556.6		3	3 942.5	1.2
	4	0	4	123.49	.20	4	7 408.8		4	5 256.6	2.2
45	05	30.870	5	154.36	1852.21	5	9 261.0	0	5	6 570.8	3.4
	6	0	6	185.23	.21	6	11 113.2		6	7 884.9	4.9
	7	0	7	216.11	.22	7	12 965.4		7	9 199.1	6.6
	8	0	8	246.98	.23	8	14 817.6		8	10 513.2	8.6
	9	1	9	277.85	.23	9	16 669.9		9	11 827.4	10.9
45	10	30.871	10	308.72	1852.24	10	18 522.1	0	10	13 141.5	13.5
	11	1	1	339.60	.24	1	20 374.3		15	19 712.3	30.4
	12	1	2	370.47	.25	2	22 226.6		20	26 283.0	54.1
	13	1	3	401.34	.25	3	24 078.8		25	32 853.7	84.5
	14	1	4	432.21	.26	4	25 931.1		30	39 424.3	121.6
45	15	30.871	15	463.09	1852.26	15	27 783.3	0	35	45 994.9	165.6
	16	1	6	493.96	.27	6	29 635.6		40	52 565.5	216.2
	17	1	7	524.83	.27	7	31 487.9		45	59 136.0	273.7
	18	1	8	555.70	.28	8	33 340.1		50	65 706.5	337.9
	19	1	9	586.58	.29	9	35 192.4		55	72 276.8	408.8
45	20	30.872	20	617.45	1852.29	20	37 044.7	1	00	78 847.1	486.5
	21	2	1	648.32	.30	1	38 897.0		05	85 417.4	571.0
	22	2	2	679.19	.30	2	40 749.3		10	91 987.5	662.2
	23	2	3	710.07	.31	3	42 601.6		15	98 557.5	760.2
	24	2	4	740.94	.31	4	44 453.9		20	105 127.4	865.0
45	25	30.872	25	771.81	1852.32	25	46 306.2	1	25	111 697.3	976.5
	26	2	6	802.68	.32	6	48 158.6		30	118 267.0	1 094.7
	27	2	7	833.56	.33	7	50 010.9		35	124 836.6	1 219.7
	28	2	8	864.43	.34	8	51 863.2		40	131 406.0	1 351.5
	29	2	9	895.30	.34	9	53 715.6		45	137 975.3	1 490.0
45	30	30.872	30	926.17	1852.35	30	55 567.9	1	50	144 544.4	1 635.3
	31	3	1	957.05	.35	1	57 420.3		55	151 113.5	1 787.3
	32	3	2	987.92	.36	2	59 272.6	2	00	157 682	1 946
	33	3	3	1 018.79	.36	3	61 125.0	3	00	236 493	4 378
	34	3	4	1 049.66	.37	4	62 977.3	4	00	315 269	7 783
45	35	30.873	35	1 080.54	1852.37	35	64 829.7	5	00	393 996	12 160
	36	3	6	1 111.41	.38	6	66 682.1	6	00	472 663	17 508
	37	3	7	1 142.28	.38	7	68 534.5	7	00	551 258	23 826
	38	3	8	1 173.15	.39	8	70 386.9	8	00	629 769	31 114
	39	3	9	1 204.02	.40	9	72 239.3	9	00	708 184	39 370
45	40	30.873	40	1 234.90	1852.40	40	74 091.7	10	00	786 492	48 594
	41	3	1	1 265.77	.41	1	75 944.1	11	00	864 679	58 782
	42	4	2	1 296.64	.41	2	77 796.5	12	00	942 735	69 936
	43	4	3	1 327.51	.42	3	79 648.9	13	00	1 020 647	82 051
	44	4	4	1 358.39	.42	4	81 501.3	14	00	1 098 404	95 127
45	45	30.874	45	1 389.26	1852.43	45	83 353.7	15	00	1 175 994	109 162
	46	4	6	1 420.13	.43	6	85 206.1	16	00	1 253 404	124 153
	47	4	7	1 451.00	.44	7	87 058.6	17	00	1 330 624	140 099
	48	4	8	1 481.88	.44	8	88 911.0	18	00	1 407 640	156 996
	49	4	9	1 512.75	.45	9	90 763.5	19	00	1 484 443	174 842
45	50	30.874	50	1 543.62	1852.46	50	92 615.9	20	00	1 561 019	193 635
	51	4	1	1 574.49	.46	1	94 468.4	21	00	1 637 358	213 371
	52	4	2	1 605.37	.47	2	96 320.9	22	00	1 713 447	234 048
	53	5	3	1 636.24	.47	3	98 173.3	23	00	1 789 276	255 663
	54	5	4	1 667.11	.48	4	100 025.8	24	00	1 864 831	278 211
45	55	30.875	55	1 697.98	1852.48	55	101 878.3	25	00	1 940 103	301 690
	56	5	6	1 728.86	.49	6	103 730.8	26	00	2 015 079	326 097
	57	5	7	1 759.73	.49	7	105 583.3	27	00	2 089 749	351 427
	58	5	8	1 790.60	.50	8	107 435.8	28	00	2 164 100	377 676
	59	5	9	1 821.47	.51	9	109 288.3	29	00	2 238 121	404 841
45	60	30.875	60	1 852.35	1852.51	60	111 140.8	30	00	2 311 802	432 918

Latitude 46° to 47°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
46 00	21.52	43.04	64.55	86.07	107.59	129.11	150.63	172.15	193.66	1291.1	2582.2	3873.3	5164.4	6455.5
1	.51	.02	.53	.05	.56	.07	.58	.09	.60	0.7	1.4	2.1	2.8	3.5
2	.51	.01	.52	6.02	.53	9.03	.54	2.04	.55	90.3	80.6	70.9	61.3	51.6
3	.50	3.00	.50	5.99	.49	8.99	.49	1.99	.49	89.9	79.9	69.8	59.7	49.6
4	.49	2.98	.48	.97	.46	.95	.45	.94	.43	9.5	9.1	8.6	8.2	7.7
46 05	21.48	42.97	64.46	85.94	107.43	128.92	150.40	171.89	193.37	1289.2	2578.3	3867.5	5156.6	6445.8
6	.48	.96	.44	.92	.40	.88	.35	.84	.31	8.8	7.5	6.3	5.1	3.8
7	.47	.95	.42	.89	.37	.84	.31	.78	.25	8.4	6.7	5.1	3.5	41.9
8	.47	.93	.40	.87	.33	.80	.26	.73	.20	8.0	6.0	4.0	1.9	39.9
9	.46	.92	.38	.84	.30	.76	.22	.68	.14	7.6	5.2	2.8	50.4	8.0
46 10	21.45	42.91	64.36	85.81	107.27	128.72	150.17	171.63	193.08	1287.2	2574.4	3861.6	5148.8	6436.1
11	.45	.89	.34	.79	.24	.68	.13	.58	3.02	6.8	3.6	60.5	7.3	4.1
12	.44	.88	.32	.76	.20	.64	.08	.52	2.96	6.4	2.8	59.3	5.7	2.2
13	.43	.87	.30	.74	.17	.60	50.04	.47	.91	6.0	2.1	8.1	4.2	30.2
14	.43	.86	.28	.71	.14	.57	49.99	.42	.85	5.7	1.3	7.0	2.6	28.3
46 15	21.42	42.84	64.26	85.68	107.10	128.53	149.95	171.37	192.79	1285.3	2570.5	3855.8	5141.1	6426.3
16	.41	.83	.24	.66	.07	.49	.90	.32	.73	4.9	69.7	4.6	39.5	4.4
17	.41	.82	.22	.63	.04	.45	.86	.26	.67	4.5	8.9	3.5	7.9	2.4
18	.40	.80	.21	.61	7.01	.41	.81	.21	.62	4.1	8.2	2.3	6.4	20.5
19	.39	.79	.19	.58	6.97	.37	.77	.16	.56	3.7	7.4	1.1	4.8	18.5
46 20	21.39	42.78	64.17	85.55	106.94	128.33	149.72	171.11	192.50	1283.3	2566.6	3850.0	5133.3	6416.6
21	.38	.76	.15	.53	.91	.29	.68	.06	.44	2.9	5.8	48.8	1.7	4.6
22	.38	.75	.13	.50	.88	.25	.63	1.00	.38	2.5	5.0	7.6	30.1	2.7
23	.37	.74	.11	.48	.84	.21	.59	0.95	.32	2.1	4.3	6.4	28.6	10.7
24	.36	.73	.09	.45	.81	.18	.54	.90	.26	1.8	3.5	5.3	7.0	08.8
46 25	21.36	42.71	64.07	85.42	106.78	128.14	149.50	170.85	192.21	1281.4	2562.7	3844.1	5125.5	6406.8
26	.35	.70	.05	.40	.75	.10	.45	.80	.15	1.0	1.9	2.9	3.9	4.9
27	.34	.69	.03	.37	.72	.06	.41	.74	.09	0.6	1.1	1.8	2.3	2.9
28	.33	.67	4.01	.35	.68	8.02	.36	.69	2.03	80.2	60.4	40.6	20.8	401.0
29	.33	.66	3.99	.32	.65	7.98	.32	.64	1.97	79.8	59.6	39.4	19.2	399.0
46 30	21.32	42.65	63.97	85.29	106.62	127.94	149.27	170.59	191.91	1279.4	2558.8	3838.2	5117.7	6397.1
31	.32	.63	.95	.27	.59	.90	.22	.54	.85	9.0	8.0	7.1	6.1	5.1
32	.31	.62	.93	.24	.55	.86	.18	.48	.79	8.6	7.2	5.9	4.5	3.2
33	.30	.61	.91	.22	.52	.82	.13	.43	.73	8.2	6.5	4.7	3.0	91.2
34	.30	.59	.89	.19	.48	.78	.08	.38	.67	7.8	5.7	3.5	11.4	89.2
46 35	21.29	42.58	63.87	85.16	106.45	127.75	149.04	170.33	191.62	1277.5	2554.9	3832.4	5109.8	6387.3
36	.28	.57	.85	.14	.42	.71	8.99	.28	.56	7.1	4.1	1.2	8.3	5.3
37	.28	.56	.83	.11	.39	.67	.95	.22	.50	6.7	3.3	30.0	6.7	3.4
38	.27	.54	.81	.09	.36	.63	.90	.17	.44	6.3	2.6	28.8	5.1	81.4
39	.26	.53	.79	.06	.32	.59	.86	.12	.38	5.9	1.8	7.7	3.6	79.5
46 40	21.26	42.52	63.77	85.03	106.29	127.55	148.81	170.07	191.32	1275.5	2551.0	3826.5	5102.0	6377.5
41	.25	.50	.75	5.01	.26	.51	.76	70.01	.26	5.1	50.2	5.3	100.4	5.5
42	.25	.49	.74	4.98	.22	.47	.72	69.96	.21	4.7	49.4	4.1	098.9	3.6
43	.24	.48	.72	.96	.19	.43	.67	.91	.15	4.3	8.7	3.0	7.3	71.6
44	.23	.46	.70	.93	.16	.39	.63	.86	.09	3.9	7.9	1.8	5.7	69.6
46 45	21.23	42.45	63.68	84.90	106.12	127.35	148.58	169.80	191.03	1273.5	2547.1	3820.6	5094.1	6367.7
46	.22	.44	.66	.88	.09	.31	.53	.75	0.97	3.1	6.3	19.4	2.6	5.7
47	.21	.43	.64	.85	.06	.28	.49	.70	.91	2.8	5.5	8.3	91.0	3.8
48	.21	.41	.62	.83	6.03	.24	.44	.65	.86	2.4	4.8	7.1	89.4	61.8
49	.20	.40	.60	.80	5.99	.20	.40	.60	.80	2.0	4.0	5.9	7.9	59.8
46 50	21.19	42.39	63.58	84.77	105.96	127.16	148.35	169.54	190.74	1271.6	2543.2	3814.7	5086.3	6357.9
51	.19	.37	.56	.75	.93	.12	.30	.49	.68	1.2	2.4	3.5	4.7	5.9
52	.18	.36	.54	.72	.90	.08	.26	.44	.62	0.8	1.6	2.4	3.1	3.9
53	.17	.35	.52	.69	.86	.04	.21	.39	.56	0.4	0.8	1.2	1.6	2.0
54	.17	.33	.50	.67	.83	7.00	.17	.33	.50	70.0	40.0	10.0	80.0	50.0
46 55	21.16	42.32	63.48	84.64	105.80	126.96	148.12	169.28	190.44	1269.6	2539.2	3808.8	5078.4	6348.0
56	.15	.31	.46	.61	.77	.92	.07	.23	.38	9.2	8.4	7.6	6.9	6.1
57	.15	.29	.44	.59	.74	.88	8.03	.18	.33	8.8	7.6	6.5	5.3	4.1
58	.14	.28	.42	.56	.70	.84	7.98	.12	.27	8.4	6.9	5.3	3.7	2.1
59	.13	.27	.40	.54	.67	.80	.94	.07	.21	8.0	6.1	4.1	2.1	40.2
46 60	21.13	42.25	63.38	84.51	105.64	126.76	147.89	169.02	190.15	1267.6	2535.3	3802.9	5070.6	6338.2

Lat.	Latitude 46° to 47°—Meridional arcs.						Latitude 46°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
46 00	30.875			1852.51					
1	5	1	30.88	.52	1	1 852.5	0 1	1 291.1	0.1
2	5	2	61.76	.52	2	3 705.0	2	2 582.2	0.5
3	5	3	92.63	.53	3	5 557.6	3	3 873.3	1.2
4	6	4	123.51	.53	4	7 410.1	4	5 164.4	2.2
46 05	30.876	5	154.39	1852.54	5	9 262.6	0 5	6 455.5	3.4
6	6	6	185.27	.54	6	11 115.2	6	7 746.6	4.9
7	6	7	216.15	.55	7	12 967.7	7	9 037.6	6.6
8	6	8	247.02	.55	8	14 820.3	8	10 328.7	8.6
9	6	9	277.90	.56	9	16 672.8	9	11 619.8	10.9
46 10	30.876	10	308.78	1852.57	10	18 525.4	0 10	12 910.9	13.5
11	6	1	339.66	.57	1	20 377.9	15	19 366.4	30.4
12	6	2	370.54	.58	2	22 230.5	20	25 821.8	54.0
13	6	3	401.41	.58	3	24 083.1	25	32 277.2	84.4
14	6	4	432.29	.59	4	25 935.7	30	38 732.6	121.6
46 15	30.877	15	463.17	1852.59	15	27 788.3	0 35	45 187.9	165.5
16	7	6	494.05	.60	6	29 640.9	40	51 643.1	216.1
17	7	7	524.92	.60	7	31 493.5	45	58 098.4	273.5
18	7	8	555.80	.61	8	33 346.1	50	64 553.5	337.7
19	7	9	586.68	.61	9	35 198.7	55	71 008.6	408.6
46 20	30.877	20	617.56	1852.62	20	37 051.3	1 00	77 463.6	486.3
21	7	1	648.44	.63	1	38 903.9	05	83 918.5	570.7
22	7	2	679.31	.63	2	40 756.6	10	90 373.3	661.9
23	7	3	710.19	.64	3	42 609.2	15	96 828.0	759.8
24	7	4	741.07	.64	4	44 461.8	20	103 282.7	864.5
46 25	30.877	25	771.95	1852.65	25	46 314.5	1 25	109 737.2	975.9
26	8	6	802.83	.65	6	48 167.1	30	116 191.6	1 094.1
27	8	7	833.70	.66	7	50 019.8	35	122 645.8	1 219.0
28	8	8	864.58	.66	8	51 872.4	40	129 099.9	1 350.7
29	8	9	895.46	.67	9	53 725.1	45	135 553.9	1 489.2
46 30	30.878	30	926.34	1852.68	30	55 577.8	1 50	142 007.8	1 634.4
31	8	1	957.22	.68	1	57 430.5	55	148 461.4	1 786.3
32	8	2	988.09	.69	2	59 283.1	2 00	154 915	1 945
33	8	3	1 018.97	.69	3	61 135.8	3 00	232 342	4 376
34	8	4	1 049.85	.70	4	62 988.5	4 00	309 732	7 779
46 35	30.878	35	1 080.73	1852.70	35	64 841.2	5 00	387 074	12 153
36	8	6	1 111.61	.71	6	66 693.9	6 00	464 354	17 498
37	9	7	1 142.48	.71	7	68 546.6	7 00	541 562	23 813
38	9	8	1 173.36	.72	8	70 399.4	8 00	618 684	31 096
39	9	9	1 204.24	.72	9	72 252.1	9 00	695 708	39 347
46 40	30.879	40	1 235.12	1852.73	40	74 104.8	10 00	772 623	48 565
41	9	1	1 265.99	.74	1	75 957.5	11 00	849 416	58 747
42	9	2	1 296.87	.74	2	77 810.3	12 00	926 075	69 893
43	9	3	1 327.75	.75	3	79 663.0	13 00	1 002 588	82 000
44	9	4	1 358.63	.75	4	81 515.8	14 00	1 078 943	95 067
46 45	30.879	45	1 389.51	1852.76	45	83 368.5	15 00	1 155 128	109 091
46	9	6	1 420.38	.76	6	85 221.3	16 00	1 231 131	124 071
47	79	7	1 451.26	.77	7	87 074.1	17 00	1 306 940	140 003
48	80	8	1 482.14	.77	8	88 926.8	18 00	1 382 543	156 887
49	0	9	1 513.02	.78	9	90 779.6	19 00	1 457 928	174 718
46 50	30.880	50	1 543.90	1852.78	50	92 632.4	20 00	1 533 083	193 494
51	0	1	1 574.77	.79	1	94 485.2	21 00	1 607 997	213 212
52	0	2	1 605.65	.80	2	96 338.0	22 00	1 682 657	233 869
53	0	3	1 636.53	.80	3	98 190.8	23 00	1 757 052	255 462
54	0	4	1 667.41	.81	4	100 043.6	24 00	1 831 170	277 987
46 55	30.880	55	1 698.29	1852.81	55	101 896.4	25 00	1 904 999	301 441
56	0	6	1 729.16	.82	6	103 749.2	26 00	1 978 528	325 820
57	0	7	1 760.04	.82	7	105 602.0	27 00	2 051 745	351 120
58	0	8	1 790.92	.83	8	107 454.8	28 00	2 124 639	377 337
59	1	9	1 821.80	.83	9	109 307.7	29 00	2 197 197	404 468
46 60	30.881	60	1 852.68	1852.84	60	111 160.5	30 00	2 269 410	432 507

Latitude 47° to 48°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
47 00	21.13	42.25	63.38	84.51	105.64	126.76	147.89	169.02	190.15	1267.6	2535.3	3802.9	5070.6	6338.2
1	.12	.24	.36	.48	.61	.72	.84	8.97	.09	7.2	4.5	1.7	69.0	6.2
2	.11	.23	.34	.46	.57	.68	.80	.91	90.03	6.8	3.7	800.5	7.4	4.2
3	.11	.22	.32	.43	.54	.65	.75	.86	89.97	6.5	2.9	799.4	5.8	2.3
4	.10	.20	.30	.40	.51	.61	.71	.81	.91	6.1	2.1	8.2	4.2	30.3
47 05	21.09	42.19	63.28	84.38	105.47	126.57	147.66	168.76	189.85	1265.7	2531.3	3797.0	5062.7	6328.3
6	.09	.18	.26	.35	.44	.53	.61	.70	.79	5.3	30.5	5.8	61.1	6.4
7	.08	.16	.24	.32	.41	.49	.57	.65	.73	4.9	29.7	4.6	59.5	4.4
8	.07	.15	.22	.30	.38	.45	.52	.60	.67	4.5	9.0	3.4	7.9	2.4
9	.07	.14	.20	.27	.34	.41	.48	.54	.61	4.1	8.2	2.3	6.3	20.4
47 10	21.06	42.12	63.18	84.25	105.31	126.37	147.43	168.49	189.55	1263.7	2527.4	3791.1	5054.8	6318.5
11	.05	.11	.16	.22	.28	.33	.38	.44	.49	3.3	6.6	89.9	3.2	6.5
12	.05	.10	.14	.19	.24	.29	.34	.39	.43	2.9	5.8	8.7	1.6	4.5
13	.04	.08	.12	.17	.21	.25	.29	.33	.37	2.5	5.0	7.5	50.0	2.5
14	.04	.07	.10	.14	.18	.21	.25	.28	.31	2.1	4.2	6.3	48.4	10.5
47 15	21.03	42.06	63.09	84.11	105.15	126.17	147.20	168.23	189.26	1261.7	2523.4	3785.1	5046.8	6308.6
16	.02	.04	.07	.09	.11	.13	.15	.18	.20	1.3	2.6	3.9	5.3	6.6
17	.02	.03	.05	.06	.08	.09	.11	.12	.14	0.9	1.8	2.8	3.7	4.6
18	.01	.02	.03	.04	.05	.05	.06	.07	.08	0.5	1.1	1.6	2.1	2.6
19	.00	2.00	3.01	4.01	5.01	6.01	7.02	8.02	9.02	60.1	20.3	80.4	40.5	300.6
47 20	21.00	41.99	62.99	83.98	104.98	125.97	146.97	167.96	188.96	1259.7	2519.5	3779.2	5038.9	6298.7
21	0.99	.98	.97	.96	.95	.93	.92	.91	.90	9.3	8.7	8.0	7.3	6.7
22	.98	.96	.95	.93	.91	.89	.88	.86	.84	8.9	7.9	6.8	5.8	4.7
23	.98	.95	.93	.90	.88	.85	.83	.81	.78	8.5	7.1	5.6	4.2	2.7
24	.97	.94	.91	.88	.85	.81	.79	.75	.72	8.1	6.3	4.4	2.6	90.7
47 25	20.96	41.92	62.89	83.85	104.81	125.77	146.74	167.70	188.66	1257.7	2515.5	3773.2	5031.0	6288.7
26	.96	.91	.87	.82	.78	.74	.69	.65	.60	7.4	4.7	2.1	29.4	6.8
27	.95	.90	.85	.80	.75	.70	.65	.59	.54	7.0	3.9	70.9	7.8	4.8
28	.94	.89	.83	.77	.72	.66	.60	.54	.48	6.6	3.1	69.7	6.2	2.8
29	.94	.87	.81	.74	.68	.62	.56	.49	.42	6.2	2.3	8.5	4.6	80.8
47 30	20.93	41.86	62.79	83.72	104.65	125.58	146.51	167.44	188.36	1255.8	2511.5	3767.3	5023.1	6278.8
31	.92	.85	.77	.69	.62	.54	.46	.38	.30	5.4	10.7	6.1	21.5	6.8
32	.92	.83	.75	.66	.58	.50	.42	.33	.24	5.0	09.9	4.9	19.9	4.8
33	.91	.82	.73	.64	.55	.46	.37	.28	.18	4.6	9.1	3.7	8.3	2.9
34	.90	.81	.71	.61	.52	.42	.32	.22	.12	4.2	8.3	2.5	6.7	70.9
47 35	20.90	41.79	62.69	83.58	104.48	125.38	146.28	167.17	188.07	1253.8	2507.5	3761.3	5015.1	6268.9
36	.89	.78	.67	.56	.45	.34	.23	.12	8.01	3.4	6.7	60.1	3.5	6.9
37	.88	.77	.65	.53	.42	.30	.18	.06	7.95	3.0	5.9	58.9	1.9	4.9
38	.88	.75	.63	.51	.39	.26	.13	7.01	.89	2.6	5.2	7.7	10.3	2.9
39	.87	.74	.61	.48	.35	.22	.09	6.96	.83	2.2	4.4	6.5	08.7	60.9
47 40	20.86	41.73	62.59	83.45	104.32	125.18	146.04	166.90	187.77	1251.8	2503.6	3755.4	5007.1	6258.9
41	.86	.71	.57	.43	.29	.14	5.99	.85	.71	1.4	2.8	4.2	5.5	6.9
42	.85	.70	.55	.40	.25	.10	.95	.80	.65	1.0	2.0	3.0	4.0	4.9
43	.84	.69	.53	.37	.22	.06	.90	.75	.59	0.6	1.2	1.8	2.4	2.9
44	.84	.67	.51	.35	.18	5.02	.86	.69	.53	50.2	500.4	50.6	5000.8	50.9
47 45	20.83	41.66	62.49	83.32	104.15	124.98	145.81	166.64	187.47	1249.8	2499.6	3749.4	4999.2	6248.9
46	.82	.65	.47	.29	.12	.94	.76	.59	.41	9.4	8.8	8.2	7.6	7.0
47	.82	.63	.45	.27	.08	.90	.72	.53	.35	9.0	8.0	7.0	6.0	5.0
48	.81	.62	.43	.24	.05	.86	.67	.48	.29	8.6	7.2	5.8	4.4	3.0
49	.80	.61	.41	.21	4.01	.82	.63	.43	.23	8.2	6.4	4.6	2.8	41.0
47 50	20.80	41.59	62.39	83.19	103.98	124.78	145.58	166.37	187.17	1247.8	2495.6	3743.4	4991.2	6239.0
51	.79	.58	.37	.16	.95	.74	.53	.32	.11	7.4	4.8	2.2	89.6	7.0
52	.78	.57	.35	.13	.91	.70	.49	.27	7.05	7.0	4.0	41.0	8.0	5.0
53	.78	.55	.33	.11	.88	.66	.44	.21	6.99	6.6	3.2	39.8	6.4	3.0
54	.77	.54	.31	.08	.85	.62	.39	.16	.93	6.2	2.4	8.6	4.8	31.0
47 55	20.76	41.53	62.29	83.05	103.81	124.58	145.35	166.11	186.87	1245.8	2491.6	3737.4	4983.2	6229.0
56	.76	.51	.27	.03	.78	.54	.30	.05	.81	5.4	0.8	6.2	1.6	7.0
57	.75	.50	.25	3.00	.75	.50	.25	6.00	.75	5.0	90.0	5.0	80.0	5.0
58	.74	.49	.23	2.97	.72	.46	.20	5.95	.69	4.6	89.2	3.8	78.4	3.0
59	.74	.47	.21	.95	.68	.42	.16	.89	.63	4.2	8.4	2.6	6.8	21.0
47 60	20.73	41.46	62.19	82.92	103.65	124.38	145.11	165.84	186.57	1243.8	2487.6	3731.4	4975.2	6219.0

Lat.		Latitude 47° to 48°—Meridional arcs.						Latitude 47°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
47	00	30.881			1852.84					
	1	1	1	30.88	.85	1	1 852.8	0 1	1 267.6	0.1
	2	1	2	61.77	.85	2	3 705.7	2	2 535.3	0.5
	3	1	3	92.65	.86	3	5 558.5	3	3 802.9	1.2
	4	1	4	123.53	.86	4	7 411.4	4	5 070.5	2.2
47	05	30.881	5	154.42	1852.87	5	9 264.3	0 5	6 338.2	3.4
	6	1	6	185.30	.87	6	11 117.1	6	7 605.8	4.8
	7	1	7	216.18	.88	7	12 970.0	7	8 873.5	6.6
	8	1	8	247.07	.88	8	14 822.9	8	10 141.1	8.6
	9	1	9	277.95	.89	9	16 675.8	9	11 408.7	10.9
47	10	30.882	10	308.83	1852.89	10	18 528.7	0 10	12 676.4	13.5
	11	2	1	339.72	.90	1	20 381.6	15	19 014.6	30.3
	12	2	2	370.60	.91	2	22 234.5	20	25 352.7	53.9
	13	2	3	401.48	.91	3	24 087.4	25	31 690.8	84.3
	14	2	4	432.37	.92	4	25 940.3	30	38 028.9	121.4
47	15	30.882	15	463.25	1852.92	15	27 793.2	0 35	44 366.9	165.2
	16	2	6	494.13	.93	6	29 646.1	40	50 704.9	215.7
	17	2	7	525.02	.93	7	31 499.1	45	57 042.9	273.0
	18	2	8	555.90	.94	8	33 352.0	50	63 380.7	337.1
	19	2	9	586.78	.94	9	35 204.9	55	69 718.5	407.9
47	20	30.882	20	617.67	1852.95	20	37 057.9	1 00	76 056.3	485.4
	21	3	1	648.55	.95	1	38 910.8	05	82 393.9	569.7
	22	3	2	679.43	.96	2	40 763.8	10	88 731.4	660.7
	23	3	3	710.32	.97	3	42 616.8	15	95 068.9	758.4
	24	3	4	741.20	.97	4	44 469.7	20	101 406.2	862.9
47	25	30.883	25	772.08	1852.98	25	46 322.7	1 25	107 743.4	974.2
	26	3	6	802.97	.98	6	48 175.7	30	114 080.5	1 092.2
	27	3	7	833.85	.99	7	50 028.7	35	120 417.5	1 216.9
	28	3	8	864.74	2.99	8	51 881.7	40	126 754.3	1 348.3
	29	3	9	895.62	3.00	9	53 734.7	45	133 091.0	1 486.5
47	30	30.883	30	926.50	1853.00	30	55 587.7	1 50	139 427.6	1 631.5
	31	3	1	957.39	.01	1	57 440.7	55	145 764.0	1 783.2
	32	4	2	988.27	.01	2	59 293.7	2 00	152 100	1 942
	33	4	3	1 019.15	.02	3	61 146.7	3 00	228 119	4 368
	34	4	4	1 050.04	.03	4	62 999.7	4 00	304 101	7 765
47	35	30.884	35	1 080.92	1853.03	35	64 852.7	5 00	380 034	12 131
	36	4	6	1 111.80	.04	6	66 705.8	6 00	455 904	17 467
	37	4	7	1 142.69	.04	7	68 558.8	7 00	531 700	23 770
	38	4	8	1 173.57	.05	8	70 411.9	8 00	607 410	31 040
	39	4	9	1 204.45	.05	9	72 264.9	9 00	683 020	39 276
47	40	30.884	40	1 235.34	1853.06	40	74 118.0	10 00	758 520	48 477
	41	4	1	1 266.22	.06	1	75 971.0	11 00	833 895	58 640
	42	4	2	1 297.10	.07	2	77 824.1	12 00	909 135	69 765
	43	5	3	1 327.99	.08	3	79 677.2	13 00	984 227	81 849
	44	5	4	1 358.87	.08	4	81 530.2	14 00	1 059 158	94 890
47	45	30.885	45	1 389.75	1853.09	45	83 383.3	15 00	1 133 917	108 887
	46	5	6	1 420.64	.09	6	85 236.4	16 00	1 208 491	123 837
	47	5	7	1 451.52	.10	7	87 089.5	17 00	1 282 868	139 738
	48	5	8	1 482.40	.10	8	88 942.6	18 00	1 357 036	156 587
	49	5	9	1 513.29	.11	9	90 795.7	19 00	1 430 984	174 381
47	50	30.885	50	1 544.17	1853.11	50	92 648.8	20 00	1 504 697	193 118
	51	5	1	1 575.05	.12	1	94 501.9	21 00	1 578 166	212 793
	52	5	2	1 605.94	.12	2	96 355.1	22 00	1 651 377	233 405
	53	5	3	1 636.82	.13	3	98 208.2	23 00	1 724 320	254 950
	54	6	4	1 667.70	.14	4	100 061.3	24 00	1 796 982	277 425
47	55	30.886	55	1 698.59	1853.14	55	101 914.5	25 00	1 869 351	300 824
	56	6	6	1 729.47	.15	6	103 767.6	26 00	1 941 415	325 146
	57	6	7	1 760.35	.15	7	105 620.8	27 00	2 013 163	350 386
	58	6	8	1 791.24	.16	8	107 473.9	28 00	2 084 583	376 539
	59	6	9	1 822.12	.16	9	109 327.1	29 00	2 155 663	403 602
47	60	30.886	60	1 853.00	1853.17	60	111 180.2	30 00	2 226 392	431 569

Latitude 48° to 49°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
48 00	20.73	41.46	62.19	82.92	103.65	124.38	145.11	165.84	186.57	1243.8	2487.6	3731.4	4975.2	6219.0
01	.72	.45	.17	.89	.62	.34	.06	.79	.51	3.4	6.8	30.2	3.6	7.0
02	.72	.43	.15	.87	.58	.30	5.02	.73	.45	3.0	6.0	29.0	2.0	5.0
03	.71	.42	.13	.84	.55	.26	4.97	.68	.39	2.6	5.2	7.8	70.4	3.0
04	.70	.41	.11	.81	.52	.22	.92	.63	.33	2.2	4.4	6.6	68.8	10.9
48 05	20.70	41.39	62.09	82.79	103.48	124.18	144.88	165.57	186.27	1241.8	2483.6	3725.4	4967.2	6208.9
06	.69	.38	.07	.76	.45	.14	.83	.52	.21	1.4	2.8	4.2	5.5	6.9
07	.68	.37	.05	.73	.42	.10	.78	.46	.15	1.0	2.0	3.0	3.9	4.9
08	.68	.35	.03	.71	.39	.06	.73	.41	.09	0.6	1.2	1.8	2.3	2.9
09	.67	.34	2.01	.68	.35	4.02	.69	.36	6.03	40.2	80.4	20.6	60.7	200.9
48 10	20.66	41.33	61.99	82.65	103.32	123.98	144.64	165.30	185.97	1239.8	2479.6	3719.4	4959.1	6198.9
11	.66	.31	.97	.63	.29	.94	.59	.25	.91	9.4	8.8	8.1	7.5	6.9
12	.65	.30	.95	.60	.25	.90	.55	.20	.85	9.0	8.0	6.9	5.9	4.9
13	.64	.29	.93	.57	.22	.86	.50	.14	.79	8.6	7.1	5.7	4.3	2.9
14	.64	.27	.91	.54	.18	.82	.45	.09	.73	8.2	6.3	4.5	2.7	90.9
48 15	20.63	41.26	61.89	82.52	103.15	123.78	144.41	165.04	185.66	1237.8	2475.5	3713.3	4951.1	6188.9
16	.62	.25	.87	.49	.12	.74	.36	4.98	.60	7.4	4.7	2.1	49.5	6.8
17	.62	.23	.85	.46	.08	.70	.31	.93	.54	7.0	3.9	10.9	7.9	4.8
18	.61	.22	.83	.44	.05	.66	.26	.88	.48	6.6	3.1	09.7	6.3	2.8
19	.60	.21	.81	.41	3.01	.62	.22	.82	.42	6.2	2.3	8.5	4.7	80.8
48 20	20.60	41.19	61.79	82.38	102.98	123.58	144.17	164.77	185.36	1235.8	2471.5	3707.3	4943.0	6178.8
21	.59	.18	.77	.36	.95	.54	.12	.71	.30	5.4	70.7	6.1	41.4	6.8
22	.58	.17	.75	.33	.91	.50	.08	.66	.24	5.0	69.9	4.9	39.8	4.8
23	.58	.15	.73	.30	.88	.46	4.03	.61	.18	4.6	9.1	3.7	8.2	2.8
24	.57	.14	.71	.28	.85	.42	3.98	.55	.12	4.2	8.3	2.5	6.6	70.8
48 25	20.56	41.12	61.69	82.25	102.81	123.37	143.93	164.50	185.06	1233.7	2467.5	3701.2	4935.0	6168.7
26	.56	.11	.67	.22	.78	.33	.89	.45	5.00	3.3	6.7	700.0	3.4	6.7
27	.55	.10	.65	.20	.74	.29	.84	.39	4.94	2.9	5.9	698.8	1.8	4.7
28	.54	.08	.63	.17	.71	.25	.79	.34	.88	2.5	5.1	7.6	30.1	2.7
29	.54	.07	.61	.14	.67	.21	.75	.28	.82	2.1	4.3	6.4	28.5	60.7
48 30	20.53	41.06	61.59	82.12	102.64	123.17	143.70	164.23	184.76	1231.7	2463.5	3695.2	4926.9	6158.7
31	.52	.04	.57	.09	.61	.13	.65	.18	.70	1.3	2.7	4.0	5.3	6.6
32	.52	.03	.55	.06	.57	.09	.61	.12	.64	0.9	1.9	2.8	3.7	4.6
33	.51	.02	.53	.03	.54	.05	.56	.07	.58	0.5	1.0	1.5	2.1	2.6
34	.50	1.00	.51	2.01	.51	3.01	.51	4.01	.52	30.1	60.2	90.3	20.4	50.6
48 35	20.50	40.99	61.48	81.98	102.47	122.97	143.47	163.96	184.45	1229.7	2459.4	3689.1	4918.8	6148.5
36	.49	.98	.46	.95	.44	.93	.42	.91	.39	9.3	8.6	7.9	7.2	6.5
37	.48	.96	.44	.93	.41	.89	.37	.85	.33	8.9	7.8	6.7	5.6	4.5
38	.47	.95	.42	.90	.38	.85	.32	.80	.27	8.5	7.0	5.5	4.0	2.5
39	.47	.94	.40	.87	.34	.81	.28	.75	.21	8.1	6.2	4.3	2.4	40.5
48 40	20.46	40.92	61.38	81.85	102.31	122.77	143.23	163.69	184.15	1227.7	2455.4	3683.1	4910.7	6138.4
41	.45	.91	.36	.82	.28	.73	.18	.64	.09	7.3	4.6	1.8	09.1	6.4
42	.45	.90	.34	.79	.24	.69	.14	.58	4.03	6.9	3.8	80.6	7.5	4.4
43	.44	.88	.32	.76	.21	.65	.09	.53	3.97	6.5	2.9	79.4	5.9	2.4
44	.43	.87	.30	.74	.17	.61	.04	.48	.91	6.1	2.1	8.2	4.3	30.3
48 45	20.43	40.86	61.28	81.71	102.14	122.57	143.00	163.42	183.85	1225.7	2451.3	3677.0	4902.6	6128.3
46	.42	.84	.26	.68	.11	.53	2.95	.37	.79	5.3	50.5	5.8	901.0	6.3
47	.41	.83	.24	.66	.07	.48	.90	.31	.73	4.8	49.7	4.5	899.4	4.2
48	.41	.81	.22	.63	.04	.44	.85	.26	.67	4.4	8.9	3.3	7.8	2.2
49	.40	.80	.20	.60	2.00	.40	.81	.21	.61	4.0	8.1	2.1	6.2	20.2
48 50	20.39	40.79	61.18	81.58	101.97	122.36	142.76	163.15	183.55	1223.6	2447.3	3670.9	4894.5	6118.2
51	.39	.77	.16	.55	.94	.32	.71	.10	.49	3.2	6.5	69.7	2.9	6.1
52	.38	.76	.14	.52	.90	.28	.66	3.04	.43	2.8	5.7	8.5	91.3	4.1
53	.37	.75	.12	.49	.87	.24	.62	2.99	.36	2.4	4.8	7.2	89.7	2.1
54	.37	.73	.10	.47	.83	.20	.57	.93	.30	2.0	4.0	6.0	8.0	10.0
48 55	20.36	40.72	61.08	81.44	101.80	122.16	142.52	162.88	183.24	1221.6	2443.2	3664.8	4886.4	6108.0
56	.35	.71	.06	.41	.77	.12	.47	.83	.18	1.2	2.4	3.6	4.8	6.0
57	.35	.69	.04	.39	.73	.08	.42	.77	.12	0.8	1.6	2.4	3.1	3.9
58	.34	.68	.02	.36	.70	.04	.38	.72	3.05	0.4	40.7	61.1	81.5	101.9
59	.33	.67	1.00	.33	.66	2.00	.33	.66	2.99	20.0	39.9	59.9	79.9	099.9
48 60	20.33	40.65	60.98	81.30	101.63	121.96	142.28	162.61	182.93	1219.6	2439.1	3658.7	4878.3	6097.8

Lat.		Latitude 48° to 49°—Meridional arcs.						Latitude 48°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
48	00	30.886			1853.17					
	1	6	1	30.89	.17	1	1 853.2	0 1	1 243.8	0.1
	2	6	2	61.78	.18	2	3 706.3	2	2 487.6	0.5
	3	6	3	92.67	.18	3	5 559.5	3	3 731.4	1.2
	4	6	4	123.56	.19	4	7 412.7	4	4 975.2	2.1
48	05	30.887	5	154.44	1853.20	5	9 265.9	0 5	6 219.0	3.3
	6	7	6	185.33	.20	6	11 119.1	6	7 462.8	4.8
	7	7	7	216.22	.21	7	12 972.3	7	8 706.6	6.6
	8	7	8	247.11	.21	8	14 825.5	8	9 950.4	8.6
	9	7	9	278.00	.22	9	16 678.7	9	11 194.2	10.9
48	10	30.887	10	308.89	1853.22	10	18 531.9	0 10	12 437.9	13.4
	11	7	1	339.78	.23	1	20 385.2	15	18 656.9	30.2
	12	7	2	370.67	.23	2	22 238.4	20	24 875.8	53.8
	13	7	3	401.56	.24	3	24 091.6	25	31 094.7	84.0
	14	7	4	432.44	.24	4	25 944.9	30	37 313.6	121.0
48	15	30.887	15	463.33	1853.25	15	27 798.1	0 35	43 532.4	164.7
	16	8	6	494.22	.26	6	29 651.4	40	49 751.2	215.1
	17	8	7	525.11	.26	7	31 504.6	45	55 969.9	272.2
	18	8	8	556.00	.27	8	33 357.9	50	62 188.5	336.1
	19	8	9	586.89	.27	9	35 211.2	55	68 407.1	406.7
48	20	30.888	20	617.78	1853.28	20	37 064.4	1 00	74 625.6	484.0
	21	8	1	648.67	.28	1	38 917.7	05	80 844.0	568.0
	22	8	2	679.56	.29	2	40 771.0	10	87 062.3	658.7
	23	8	3	710.44	.29	3	42 624.3	15	93 280.5	756.2
	24	8	4	741.33	.30	4	44 477.6	20	99 498.6	860.4
48	25	30.888	25	772.22	1853.30	25	46 330.9	1 25	105 716.6	971.3
	26	8	6	803.11	.31	6	48 184.2	30	111 934.5	1 088.9
	27	9	7	834.00	.32	7	50 037.5	35	118 152.2	1 213.2
	28	9	8	864.89	.32	8	51 890.8	40	124 369.8	1 344.3
	29	9	9	895.78	.33	9	53 744.2	45	130 587.3	1 482.1
48	30	30.889	30	926.67	1853.33	30	55 597.5	1 50	136 804.6	1 626.6
	31	9	1	957.55	.34	1	57 450.8	55	143 021.7	1 777.8
	32	9	2	988.44	.34	2	59 304.2	2 00	149 239	1 936
	33	9	3	1 019.33	.35	3	61 157.5	3 00	223 827	4 355
	34	9	4	1 050.22	.35	4	63 010.9	4 00	298 377	7 742
48	35	30.889	35	1 081.11	1853.36	35	64 864.2	5 00	372 877	12 095
	36	9	6	1 112.00	.36	6	66 717.6	6 00	447 314	17 414
	37	89	7	1 142.89	.37	7	68 570.9	7 00	521 677	23 698
	38	90	8	1 173.78	.38	8	70 424.3	8 00	595 951	30 946
	39	0	9	1 204.67	.38	9	72 277.7	9 00	670 125	39 157
48	40	30.890	40	1 235.55	1853.39	40	74 131.1	10 00	744 186	48 329
	41	0	1	1 266.44	.39	1	75 984.5	11 00	818 123	58 461
	42	0	2	1 297.33	.40	2	77 837.9	12 00	891 921	69 552
	43	0	3	1 328.22	.40	3	79 691.3	13 00	965 570	81 598
	44	0	4	1 359.11	.41	4	81 544.7	14 00	1 039 056	94 598
48	45	30.890	45	1 390.00	1853.41	45	83 398.1	15 00	1 112 367	108 551
	46	0	6	1 420.89	.42	6	85 251.5	16 00	1 185 491	123 453
	47	0	7	1 451.78	.42	7	87 104.9	17 00	1 258 416	139 302
	48	0	8	1 482.67	.43	8	88 958.3	18 00	1 331 129	156 096
	49	1	9	1 513.55	.44	9	90 811.8	19 00	1 403 618	173 832
48	50	30.891	50	1 544.44	1853.44	50	92 665.2	20 00	1 475 871	192 506
	51	1	1	1 575.33	.45	1	94 518.7	21 00	1 547 876	212 116
	52	1	2	1 606.22	.45	2	96 372.1	22 00	1 619 620	232 658
	53	1	3	1 637.11	.46	3	98 225.6	23 00	1 691 091	254 128
	54	1	4	1 668.00	.46	4	100 079.0	24 00	1 762 279	276 524
48	55	30.891	55	1 698.89	1853.47	55	101 932.5	25 00	1 833 170	299 842
	56	1	6	1 729.78	.47	6	103 786.0	26 00	1 903 752	324 077
	57	1	7	1 760.67	.48	7	105 639.4	27 00	1 974 015	349 225
	58	1	8	1 791.55	.48	8	107 492.9	28 00	2 043 945	375 283
	59	1	9	1 822.44	.49	9	109 346.4	29 00	2 113 531	402 245
48	60	30.892	60	1 853.33	1853.50	60	111 199.9	30 00	2 182 762	430 107

Latitude 49° to 50°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
49 00	20.33	40.65	60.98	81.30	101.63	121.96	142.28	162.61	182.93	1219.6	2439.1	3658.7	4878.3	6097.8
1	.32	.64	.96	.28	.60	.92	.23	.55	.87	9.2	8.3	7.5	6.6	5.8
2	.31	.63	.94	.25	.56	.88	.19	.50	.81	8.8	7.5	6.3	5.0	3.8
3	.31	.61	.92	.22	.53	.83	.14	.45	.75	8.3	6.7	5.0	3.4	91.7
4	.30	.60	.90	.20	.49	.79	.09	.39	.69	7.9	5.9	3.8	1.8	89.7
49 05	20.29	40.58	60.88	81.17	101.46	121.75	142.04	162.34	182.63	1217.5	2435.1	3652.6	4870.1	6087.7
6	.29	.57	.86	.14	.43	.71	2.00	.28	.57	7.1	4.3	1.4	68.5	5.6
7	.28	.56	.84	.12	.39	.67	1.95	.23	.51	6.7	3.5	50.2	6.9	3.6
8	.27	.54	.81	.09	.36	.63	.90	.17	.44	6.3	2.6	48.9	5.2	81.5
9	.27	.53	.79	.06	.32	.59	.86	.12	.38	5.9	1.8	7.7	3.6	79.5
49 10	20.26	40.52	60.77	81.03	101.29	121.55	141.81	162.07	182.32	1215.5	2431.0	3646.5	4862.0	6077.5
11	.25	.50	.75	1.01	.26	.51	.76	2.01	.26	5.1	30.2	5.3	60.3	5.4
12	.24	.49	.73	0.98	.22	.47	.71	1.96	.20	4.7	29.4	4.0	58.7	3.4
13	.24	.48	.71	.95	.19	.43	.67	.90	.14	4.3	8.5	2.8	7.1	71.3
14	.23	.46	.69	.92	.15	.39	.62	.85	.08	3.9	7.7	1.6	5.4	69.3
49 15	20.22	40.45	60.67	80.90	101.12	121.35	141.57	161.79	182.02	1213.5	2426.9	3640.4	4853.8	6067.3
16	.22	.43	.65	.87	.09	.30	.52	.74	1.95	3.0	6.1	39.1	2.2	5.2
17	.21	.42	.63	.84	.05	.26	.47	.68	.89	2.6	5.3	7.9	50.5	3.2
18	.20	.41	.61	.81	1.02	.22	.43	.63	.83	2.2	4.4	6.7	48.9	61.1
19	.20	.39	.59	.79	0.98	.18	.38	.58	.77	1.8	3.6	5.5	7.3	59.1
49 20	20.19	40.38	60.57	80.76	100.95	121.14	141.33	161.52	181.71	1211.4	2422.8	3634.2	4845.6	6057.1
21	.18	.37	.55	.73	.92	.10	.28	.47	.65	1.0	2.0	3.0	4.0	5.0
22	.18	.35	.53	.71	.88	.06	.23	.41	.59	0.6	1.2	1.8	2.4	3.0
23	.17	.34	.51	.68	.85	1.02	.19	.36	.53	10.2	20.3	30.5	40.7	50.9
24	.16	.33	.49	.65	.81	0.98	.14	.30	.47	09.8	19.5	29.3	39.1	48.9
49 25	20.16	40.31	60.47	80.62	100.78	120.94	141.09	161.25	181.41	1209.4	2418.7	3628.1	4837.4	6046.8
26	.15	.30	.45	.60	.75	.90	1.04	.19	.34	9.0	7.9	6.9	5.8	4.8
27	.14	.28	.43	.57	.71	.85	0.99	.14	.28	8.5	7.1	5.6	4.2	2.7
28	.14	.27	.41	.54	.68	.81	.95	.08	.22	8.1	6.2	4.4	2.5	40.7
29	.13	.26	.39	.51	.64	.77	.90	1.03	.16	7.7	5.4	3.2	30.9	38.6
49 30	20.12	40.24	60.37	80.49	100.61	120.73	140.85	160.98	181.10	1207.3	2414.6	3621.9	4829.3	6036.6
31	.11	.23	.35	.46	.58	.69	.80	.92	1.04	6.9	3.8	20.7	7.6	4.5
32	.11	.22	.33	.43	.54	.65	.75	.87	0.98	6.5	3.0	19.5	6.0	2.5
33	.10	.20	.30	.40	.51	.61	.71	.81	.91	6.1	2.1	8.2	4.3	30.4
34	.09	.19	.28	.38	.47	.57	.66	.76	.85	5.7	1.3	7.0	2.7	28.4
49 35	20.09	40.18	60.26	80.35	100.44	120.53	140.61	160.70	180.79	1205.3	2410.5	3615.8	4821.0	6026.3
36	.08	.16	.24	.32	.41	.49	.56	.65	.73	4.9	09.7	4.5	19.4	4.3
37	.07	.15	.22	.30	.37	.44	.51	.59	.67	4.4	8.9	3.3	7.8	2.2
38	.07	.13	.20	.27	.34	.40	.47	.54	.60	4.0	8.0	2.1	6.1	20.1
39	.06	.12	.18	.24	.30	.36	.42	.48	.54	3.6	7.2	10.9	4.5	18.1
49 40	20.05	40.11	60.16	80.21	100.27	120.32	140.37	160.43	180.48	1203.2	2406.4	3609.6	4812.8	6016.0
41	.05	.09	.14	.19	.24	.28	.32	.37	.42	2.8	5.6	8.4	11.2	4.0
42	.04	.08	.12	.16	.20	.24	.27	.32	.36	2.4	4.8	7.2	09.5	11.9
43	.03	.07	.10	.13	.17	.20	.23	.26	.29	2.0	3.9	5.9	7.9	09.9
44	.03	.05	.08	.10	.13	.16	.18	.21	.23	1.6	3.1	4.7	6.2	7.8
49 45	20.02	40.04	60.06	80.08	100.10	120.12	140.13	160.15	180.17	1201.2	2402.3	3603.4	4804.6	6005.8
46	.01	.02	.04	.05	.06	.07	.08	.10	.11	0.7	1.5	2.2	3.0	3.7
47	.01	.01	.02	80.02	100.02	20.03	40.03	60.04	80.05	200.3	400.7	601.0	801.3	6001.6
48	20.00	40.00	60.00	79.99	99.99	19.99	39.99	59.99	79.98	199.9	399.8	599.7	799.7	5999.6
49	19.99	39.98	59.97	.97	.95	.95	.94	.93	.92	9.5	9.0	8.5	8.0	7.5
49 50	19.98	39.97	59.95	79.94	99.92	119.91	139.89	159.88	179.86	1199.1	2398.2	3597.3	4796.4	5995.5
51	.98	.96	.93	.91	.89	.87	.84	.82	.80	8.7	7.4	6.0	4.7	3.4
52	.97	.94	.91	.89	.85	.83	.80	.77	.74	8.3	6.6	4.8	3.1	91.3
53	.96	.93	.89	.86	.82	.79	.75	.71	.68	7.9	5.7	3.6	91.4	89.3
54	.96	.91	.87	.83	.78	.74	.70	.66	.61	7.4	4.9	2.3	89.8	7.2
49 55	19.95	39.90	59.85	79.80	99.75	119.70	139.65	159.60	179.55	1197.0	2394.1	3591.1	4788.1	5985.1
56	.94	.89	.83	.78	.72	.66	.60	.55	.49	6.6	3.3	89.9	6.5	3.1
57	.94	.87	.81	.75	.68	.62	.55	.49	.43	6.2	2.4	8.6	4.8	81.0
58	.93	.86	.79	.72	.65	.58	.51	.44	.37	5.8	1.6	7.4	3.2	79.0
59	.92	.85	.77	.69	.61	.54	.46	.38	.30	5.4	90.7	6.1	81.5	6.9
49 60	19.92	39.83	59.75	79.66	99.58	119.50	139.41	159.33	179.24	1195.0	2389.9	3584.9	4779.9	5974.8

Lat.	Latitude 49° to 50°—Meridional arcs.						Latitude 49°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
49 00	30.892			1853.50					
01	2	1	30.89	.50	1	1 853.5	0 1	1 219.6	0.1
02	2	2	61.79	.51	2	3 707.0	2	2 439.1	0.5
03	2	3	92.68	.51	3	5 560.5	3	3 658.7	1.2
04	2	4	123.58	.52	4	7 414.0	4	4 878.3	2.1
49 05	30.892	5	154.47	1853.52	5	9 267.5	0 5	6 097.9	3.3
06	2	6	185.37	.53	6	11 121.1	6	7 317.5	4.8
07	2	7	216.26	.53	7	12 974.6	7	8 537.0	6.6
08	2	8	247.15	.54	8	14 828.1	8	9 756.6	8.6
09	2	9	278.05	.54	9	16 681.7	9	10 976.2	10.8
49 10	30.892	10	308.94	1853.55	10	18 535.2	0 10	12 195.8	13.4
11	3	1	339.84	.55	1	20 388.8	15	18 293.6	30.1
12	3	2	370.73	.56	2	22 242.3	20	24 391.3	53.5
13	3	3	401.63	.57	3	24 095.9	25	30 489.1	83.7
14	3	4	432.52	.57	4	25 949.5	30	36 586.8	120.5
49 15	30.893	15	463.41	1853.58	15	27 803.0	0 35	42 684.5	164.0
16	3	6	494.31	.58	6	29 656.6	40	48 782.1	214.2
17	3	7	525.20	.59	7	31 510.2	45	54 879.7	271.1
18	3	8	556.10	.59	8	33 363.8	50	60 977.2	334.7
19	3	9	586.99	.60	9	35 217.4	55	67 074.7	404.9
49 20	30.893	20	617.89	1853.60	20	37 071.0	1 00	73 172.0	481.9
21	3	1	648.78	.61	1	38 924.6	05	79 269.3	565.6
22	4	2	679.67	.61	2	40 778.2	10	85 366.5	656.0
23	4	3	710.57	.62	3	42 631.8	15	91 463.6	753.0
24	4	4	741.46	.63	4	44 485.4	20	97 560.5	856.7
49 25	30.894	25	772.36	1853.63	25	46 339.1	1 25	103 657.4	967.2
26	4	6	803.25	.64	6	48 192.7	30	109 754.1	1 084.3
27	4	7	834.15	.64	7	50 046.3	35	115 850.7	1 208.1
28	4	8	865.04	.65	8	51 900.0	40	121 947.1	1 338.6
29	4	9	895.93	.65	9	53 753.6	45	128 043.4	1 475.9
49 30	30.894	30	926.83	1853.66	30	55 607.3	1 50	134 139.6	1 619.8
31	4	1	957.72	.66	1	57 461.0	55	140 235.5	1 770.4
32	4	2	988.62	.67	2	59 314.6	2 00	146 331	1 928
33	5	3	1 019.51	.67	3	61 168.3	3 00	219 465	4 337
34	5	4	1 050.41	.68	4	63 022.0	4 00	292 561	7 709
49 35	30.895	35	1 081.30	1853.69	35	64 875.7	5 00	365 606	12 044
36	5	6	1 112.19	.69	6	66 729.4	6 00	438 588	17 340
37	5	7	1 143.09	.70	7	68 583.0	7 00	511 493	23 598
38	5	8	1 173.98	.70	8	70 436.7	8 00	584 310	30 815
39	5	9	1 204.88	.71	9	72 290.4	9 00	657 026	38 991
49 40	30.895	40	1 235.77	1853.71	40	74 144.2	10 00	729 627	48 123
41	5	1	1 266.67	.72	1	75 997.9	11 00	802 102	58 212
42	5	2	1 297.56	.72	2	77 851.6	12 00	874 438	69 254
43	5	3	1 328.46	.73	3	79 705.3	13 00	946 622	81 248
44	6	4	1 359.35	.73	4	81 559.1	14 00	1 018 642	94 191
49 45	30.896	45	1 390.24	1853.74	45	83 412.8	15 00	1 090 485	108 082
46	6	6	1 421.14	.75	6	85 266.5	16 00	1 162 138	122 918
47	6	7	1 452.03	.75	7	87 120.3	17 00	1 233 591	138 697
48	6	8	1 482.93	.76	8	88 974.0	18 00	1 304 829	155 416
49	6	9	1 513.82	.76	9	90 827.8	19 00	1 375 840	173 071
49 50	30.896	50	1 544.72	1853.77	50	92 681.6	20 00	1 446 613	191 660
51	6	1	1 575.61	.77	1	94 535.3	21 00	1 517 135	211 180
52	6	2	1 606.50	.78	2	96 389.1	22 00	1 587 394	231 627
53	6	3	1 637.40	.78	3	98 242.9	23 00	1 657 378	252 998
54	6	4	1 668.29	.79	4	100 096.7	24 00	1 727 073	275 288
49 55	30.897	55	1 699.19	1853.79	55	101 950.5	25 00	1 796 470	298 495
56	7	6	1 730.08	.80	6	103 804.3	26 00	1 865 554	322 614
57	7	7	1 760.98	.80	7	105 658.1	27 00	1 934 315	347 640
58	7	8	1 791.87	.81	8	107 511.9	28 00	2 002 740	373 570
59	7	9	1 822.76	.82	9	109 365.7	29 00	2 070 817	400 399
49 60	30.897	60	1 853.66	1853.82	60	111 219.5	30 00	2 138 536	428 123

Latitude 50° to 51°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
50 00	19.92	39.83	59.75	79.66	99.58	119.50	139.41	159.33	179.24	1195.0	2389.9	3584.9	4779.9	5974.8
1	.91	.82	.73	.64	.55	.46	.36	.27	.18	4.6	9.1	3.7	8.2	2.8
2	.90	.80	.71	.61	.51	.41	.31	.22	.12	4.1	8.3	2.4	6.6	70.7
3	.90	.79	.69	.58	.48	.37	.27	.16	9.06	3.7	7.4	81.2	4.9	68.6
4	.89	.78	.67	.55	.44	.33	.22	.11	9.00	3.3	6.6	79.9	3.2	6.6
50 05	19.88	39.76	59.64	79.53	99.41	119.29	139.17	159.05	178.93	1192.9	2385.8	3578.7	4771.6	5964.5
6	.87	.75	.62	.50	.38	.25	.12	9.00	.87	2.5	5.0	7.5	69.9	2.4
7	.87	.74	.60	.47	.34	.21	.07	8.94	.81	2.1	4.2	6.2	8.3	60.4
8	.86	.72	.58	.44	.31	.17	9.03	.89	.75	1.7	3.3	5.0	6.6	58.3
9	.85	.71	.56	.42	.27	.12	8.98	.83	.68	1.2	2.5	3.7	5.0	6.2
50 10	19.85	39.69	59.54	79.39	99.24	119.08	138.93	158.78	178.62	1190.8	2381.7	3572.5	4763.3	5954.2
11	.84	.68	.52	.36	.21	.04	.88	.72	.56	0.4	0.8	1.3	1.7	2.1
12	.83	.67	.50	.33	.17	9.00	.83	.67	.50	90.0	80.0	70.0	60.0	50.0
13	.83	.65	.48	.31	.14	8.96	.79	.61	.44	89.6	79.2	68.8	58.3	47.9
14	.82	.64	.46	.28	.10	.92	.74	.56	.37	9.2	8.3	7.5	6.7	5.9
50 15	19.81	39.63	59.44	79.25	99.07	118.88	138.69	158.50	178.31	1188.8	2377.5	3566.3	4755.0	5943.8
16	.81	.61	.42	.22	.03	.83	.64	.45	.25	8.3	6.7	5.0	3.4	41.7
17	.80	.60	.40	.20	9.00	.79	.59	.39	.19	7.9	5.9	3.8	1.7	39.6
18	.79	.58	.38	.17	8.96	.75	.55	.34	.13	7.5	5.0	2.5	50.1	7.6
19	.79	.57	.35	.14	.93	.71	.50	.28	.06	7.1	4.2	1.3	48.4	5.5
50 20	19.78	39.56	59.33	79.11	98.89	118.67	138.45	158.22	178.00	1186.7	2373.4	3560.1	4746.7	5933.4
21	.77	.54	.31	.09	.86	.63	.40	.17	7.94	6.3	2.6	58.8	5.1	31.4
22	.76	.53	.29	.06	.82	.59	.35	.11	.88	5.9	1.7	7.6	3.4	29.3
23	.76	.51	.27	.03	.79	.54	.30	.06	.81	5.4	0.9	6.3	1.8	7.2
24	.75	.50	.25	9.00	.75	.50	.25	8.00	.75	5.0	70.0	5.1	40.1	5.1
50 25	19.74	39.49	59.23	78.97	98.72	118.46	138.21	157.95	177.69	1184.6	2369.2	3553.8	4738.4	5923.0
26	.74	.47	.21	.95	.68	.42	.16	.89	.63	4.2	8.4	2.6	6.8	21.0
27	.73	.46	.19	.92	.65	.38	.11	.84	.57	3.8	7.6	1.3	5.1	18.9
28	.72	.45	.17	.89	.61	.34	.06	.78	.50	3.4	6.7	50.1	3.4	6.8
29	.71	.43	.15	.86	.58	.29	8.01	.73	.44	2.9	5.9	48.8	1.8	4.7
50 30	19.71	39.42	59.13	78.84	98.54	118.25	137.96	157.67	177.38	1182.5	2365.1	3547.6	4730.1	5912.6
31	.70	.40	.11	.81	.51	.21	.91	.61	.32	2.1	4.2	6.3	28.4	10.6
32	.70	.39	.09	.78	.47	.17	.86	.56	.25	1.7	3.4	5.1	6.8	08.5
33	.69	.38	.06	.75	.44	.13	.82	.50	.19	1.3	2.6	3.8	5.1	6.4
34	.68	.36	.04	.72	.40	.09	.77	.45	.13	0.9	1.7	2.6	3.5	4.3
50 35	19.67	39.35	59.02	78.70	98.37	118.04	137.72	157.39	177.06	1180.4	2360.9	3541.3	4721.8	5902.2
36	.67	.33	9.00	.67	.34	8.00	.67	.34	7.00	80.0	60.1	40.1	20.1	900.1
37	.66	.32	8.98	.64	.30	7.96	.62	.28	6.94	79.6	59.2	38.8	18.5	898.1
38	.65	.31	.96	.61	.27	.92	.58	.23	.88	9.2	8.4	7.6	6.8	6.0
39	.65	.29	.94	.58	.23	.88	.53	.17	.81	8.8	7.5	6.3	5.1	3.9
50 40	19.64	39.28	58.92	78.56	98.20	117.84	137.48	157.12	176.75	1178.4	2356.7	3535.1	4713.5	5891.8
41	.63	.26	.90	.53	.16	.79	.43	.06	.69	7.9	5.9	3.8	1.8	89.7
42	.63	.25	.88	.50	.13	.75	.38	7.00	.63	7.5	5.1	2.6	10.1	7.6
43	.62	.24	.86	.47	.10	.71	.33	6.95	.56	7.1	4.2	1.3	08.4	5.5
44	.61	.22	.84	.45	.06	.67	.28	.89	.50	6.7	3.4	30.1	6.8	3.5
50 45	19.60	39.21	58.81	78.42	98.03	117.63	137.24	156.84	176.44	1176.3	2352.6	3528.8	4705.1	5881.4
46	.60	.20	.79	.39	7.99	.59	.19	.78	.38	5.9	1.7	7.6	3.4	79.3
47	.59	.18	.77	.36	.95	.54	.14	.73	.32	5.4	0.9	6.3	1.8	7.2
48	.58	.17	.75	.34	.92	.50	.09	.67	.25	5.0	50.1	5.1	700.1	5.1
49	.58	.15	.73	.31	.89	.46	7.04	.61	.19	4.6	49.2	3.8	698.4	3.0
50 50	19.57	39.14	58.71	78.28	97.85	117.42	136.99	156.56	176.13	1174.2	2348.4	3522.6	4696.7	5870.9
51	.56	.13	.69	.25	.82	.38	.94	.50	.07	3.8	7.6	1.3	5.1	68.8
52	.56	.11	.67	.22	.78	.33	.89	.45	6.00	3.3	6.7	20.0	3.4	6.7
53	.55	.10	.65	.20	.75	.29	.84	.39	5.94	2.9	5.9	18.8	1.7	4.6
54	.54	.08	.63	.17	.71	.25	.79	.33	.88	2.5	5.0	7.5	90.0	2.6
50 55	19.53	39.07	58.60	78.14	97.68	117.21	136.75	156.28	175.81	1172.1	2344.2	3516.3	4688.4	5860.5
56	.53	.06	.58	.11	.64	.17	.70	.22	.75	1.7	3.4	5.0	6.7	58.4
57	.52	.04	.56	.08	.61	.13	.65	.17	.69	1.3	2.5	3.8	5.0	6.3
58	.51	.03	.54	.06	.57	.08	.60	.11	.63	0.8	1.7	2.5	3.3	4.2
59	.51	.01	.52	.03	.54	.04	.55	.06	.56	0.4	0.8	1.3	1.7	2.1
50 60	19.50	39.00	58.50	78.00	97.50	117.00	136.50	156.00	175.50	1170.0	2340.0	3510.0	4680.0	5850.0

Lat.	Latitude 50° to 51°—Meridional arcs.						Latitude 50°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
50 00	30.897			1853.82					
1	7	1	30.90	.83	1	1 853.8	0 1	1 195.0	0.1
2	7	2	61.80	.83	2	3 707.7	2	2 389.9	0.5
3	7	3	92.70	.84	3	5 561.5	3	3 584.9	1.2
4	7	4	123.60	.84	4	7 415.3	4	4 779.9	2.1
50 05	30.897	5	154.50	1853.85	5	9 269.2	0 5	5 974.8	3.3
6	8	6	185.40	.85	6	11 123.0	6	7 169.8	4.8
7	8	7	216.30	.86	7	12 976.9	7	8 364.8	6.5
8	8	8	247.20	.86	8	14 830.7	8	9 559.7	8.5
9	8	9	278.10	.87	9	16 684.6	9	10 754.7	10.8
50 10	30.898	10	309.00	1853.88	10	18 538.5	0 10	11 949.7	13.3
11	8	1	339.90	.88	1	20 392.4	15	17 924.5	30.0
12	8	2	370.80	.89	2	22 246.2	20	23 899.3	53.3
13	8	3	401.70	.89	3	24 100.1	25	29 874.1	83.2
14	8	4	432.60	.90	4	25 954.0	30	35 848.8	119.8
50 15	30.898	15	463.50	1853.90	15	27 807.9	0 35	41 823.5	163.1
16	8	6	494.40	.91	6	29 661.8	40	47 798.1	213.0
17	9	7	525.30	.91	7	31 515.7	45	53 772.7	269.6
18	9	8	556.19	.92	8	33 369.7	50	59 747.2	332.8
19	9	9	587.09	.92	9	35 223.6	55	65 721.6	402.8
50 20	30.899	20	617.99	1853.93	20	37 077.5	1 00	71 696.0	479.3
21	9	1	648.89	.93	1	38 931.4	05	77 670.2	562.5
22	9	2	679.79	.94	2	40 785.4	10	83 644.4	652.4
23	9	3	710.69	.95	3	42 639.3	15	89 618.5	748.9
24	9	4	741.59	.95	4	44 493.3	20	95 592.4	852.1
50 25	30.899	25	772.49	1853.96	25	46 347.2	1 25	101 566.2	961.9
26	9	6	803.39	.96	6	48 201.2	30	107 540.0	1 078.4
27	899	7	834.29	.97	7	50 055.2	35	113 513.5	1 201.5
28	900	8	865.19	.97	8	51 909.1	40	119 486.9	1 331.3
29	0	9	896.09	.98	9	53 763.1	45	125 460.2	1 467.8
50 30	30.900	30	926.99	1853.98	30	55 617.1	1 50	131 433.3	1 610.9
31	0	1	957.89	.99	1	57 471.0	55	137 406.3	1 760.7
32	0	2	988.79	3.99	2	59 325.0	2 00	143 379	1 917
33	0	3	1 019.69	4.00	3	61 179.0	3 00	215 037	4 313
34	0	4	1 050.59	.00	4	63 033.0	4 00	286 656	7 667
50 35	30.900	35	1 081.49	1854.01	35	64 887.0	5 00	358 224	11 978
36	0	6	1 112.39	.02	6	66 741.1	6 00	429 727	17 246
37	0	7	1 143.29	.02	7	68 595.1	7 00	501 154	23 469
38	0	8	1 174.19	.03	8	70 449.1	8 00	572 492	30 646
39	1	9	1 205.09	.03	9	72 303.2	9 00	643 727	38 777
50 40	30.901	40	1 235.99	1854.04	40	74 157.2	10 00	714 847	47 859
41	1	1	1 266.89	.04	1	76 011.2	11 00	785 839	57 891
42	1	2	1 297.79	.05	2	77 865.2	12 00	856 691	68 872
43	1	3	1 328.69	.05	3	79 719.3	13 00	927 389	80 798
44	1	4	1 359.59	.06	4	81 573.4	14 00	997 922	93 669
50 45	30.901	45	1 390.49	1854.06	45	83 427.4	15 00	1 068 277	107 482
46	1	6	1 421.39	.07	6	85 281.5	16 00	1 138 440	122 234
47	1	7	1 452.29	.07	7	87 135.6	17 00	1 208 400	137 923
48	1	8	1 483.19	.08	8	88 989.6	18 00	1 278 144	154 546
49	1	9	1 514.09	.09	9	90 843.7	19 00	1 347 660	172 099
50 50	30.902	50	1 544.99	1854.09	50	92 697.8	20 00	1 416 934	190 581
51	2	1	1 575.89	.10	1	94 551.9	21 00	1 485 956	209 987
52	2	2	1 606.79	.10	2	96 406.0	22 00	1 554 711	230 314
53	2	3	1 637.69	.11	3	98 260.1	23 00	1 623 189	251 559
54	2	4	1 668.58	.11	4	100 114.2	24 00	1 691 377	273 717
50 55	30.902	55	1 699.48	1854.12	55	101 968.4	25 00	1 759 262	296 785
56	2	6	1 730.38	.12	6	103 822.5	26 00	1 826 833	320 758
57	2	7	1 761.28	.13	7	105 676.6	27 00	1 894 077	345 633
58	2	8	1 792.18	.13	8	107 530.7	28 00	1 960 983	371 404
59	2	9	1 823.08	.14	9	109 384.9	29 00	2 027 538	398 068
50 60	30.902	60	1 853.98	1854.14	60	111 239.0	30 00	2 093 731	425 619

Latitude 51° to 52°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
51 00	19.50	39.00	58.50	78.00	97.50	117.00	136.50	156.00	175.50	1170.0	2340.0	3510.0	4680.0	5850.0
1	.49	8.99	.48	7.97	.47	6.96	.45	5.94	.44	69.6	39.2	08.7	78.3	47.9
2	.49	.97	.46	.94	.43	.92	.40	.89	.37	9.2	8.3	7.5	6.6	5.8
3	.48	.96	.44	.92	.40	.87	.35	.83	.31	8.7	7.5	6.2	5.0	3.7
4	.47	.94	.42	.89	.36	.83	.30	.78	.25	8.3	6.6	5.0	3.3	41.6
51 05	19.47	38.93	58.39	77.86	97.33	116.79	136.26	155.72	175.18	1167.9	2335.8	3503.7	4671.6	5839.5
6	.46	.92	.37	.83	.29	.75	.21	.66	.12	7.5	5.0	2.4	69.9	7.4
7	.45	.90	.35	.80	.26	.71	.16	.61	.06	7.1	4.1	501.2	8.2	5.3
8	.44	.89	.33	.78	.22	.66	.11	.55	5.00	6.6	3.3	499.9	6.6	3.2
9	.44	.87	.31	.75	.19	.62	.06	.50	4.93	6.2	2.4	8.7	4.9	31.1
51 10	19.43	38.86	58.29	77.72	97.15	116.58	136.01	155.44	174.87	1165.8	2331.6	3497.4	4663.2	5829.0
11	.42	.85	.27	.69	.12	.54	5.96	.38	.81	5.4	30.8	6.1	61.5	6.9
12	.42	.83	.25	.66	.08	.50	.91	.33	.74	5.0	29.9	4.9	59.8	4.8
13	.41	.82	.23	.64	.05	.45	.86	.27	.68	4.5	9.1	3.6	8.2	2.7
14	.40	.80	.21	.61	7.01	.41	.81	.22	.62	4.1	8.2	2.4	6.5	20.6
51 15	19.40	38.79	58.18	77.58	96.98	116.37	135.77	155.16	174.55	1163.7	2327.4	3491.1	4654.8	5818.5
16	.39	.78	.16	.55	.94	.33	.72	.10	.49	3.3	6.6	89.8	3.1	6.4
17	.38	.76	.14	.52	.91	.29	.67	5.05	.43	2.9	5.7	8.6	51.4	4.3
18	.37	.75	.12	.50	.87	.24	.62	4.99	.37	2.4	4.9	7.3	49.7	2.2
19	.37	.73	.10	.47	.84	.20	.57	.94	.30	2.0	4.0	6.0	8.1	10.1
51 20	19.36	38.72	58.08	77.44	96.80	116.16	135.52	154.88	174.24	1161.6	2323.2	3484.8	4646.4	5808.0
21	.35	.71	.06	.41	.77	.12	.47	.82	.18	1.2	2.4	3.5	4.7	5.9
22	.35	.69	.04	.38	.73	.08	.42	.77	.11	0.8	1.5	2.3	3.0	3.8
23	.34	.68	.02	.36	.70	6.03	.37	.71	4.05	60.3	20.7	81.0	41.3	801.7
24	.33	.66	8.00	.33	.66	5.99	.32	.65	3.99	59.9	19.8	79.7	39.6	799.5
51 25	19.32	38.65	57.97	77.30	96.63	115.95	135.28	154.60	173.92	1159.5	2319.0	3478.5	4638.0	5797.4
26	.32	.64	.95	.27	.59	.91	.23	.54	.86	9.1	8.2	7.2	6.3	5.3
27	.31	.62	.93	.24	.55	.86	.18	.49	.80	8.6	7.3	5.9	4.6	3.2
28	.30	.61	.91	.22	.52	.82	.13	.43	.74	8.2	6.5	4.7	2.9	91.1
29	.30	.59	.89	.19	.49	.78	.08	.37	.67	7.8	5.6	3.4	31.2	89.0
51 30	19.29	38.58	57.87	77.16	96.45	115.74	135.03	154.32	173.61	1157.4	2314.8	3472.1	4629.5	5786.9
31	.28	.57	.85	.13	.42	.70	4.98	.26	.55	7.0	3.9	70.9	7.8	4.8
32	.28	.55	.83	.10	.38	.65	.93	.20	.48	6.5	3.1	69.6	6.1	2.7
33	.27	.54	.81	.07	.35	.61	.88	.15	.42	6.1	2.2	8.3	4.4	80.6
34	.26	.52	.78	.05	.31	.57	.83	.09	.35	5.7	1.4	7.1	2.8	78.4
51 35	19.25	38.51	57.76	77.02	96.28	115.53	134.78	154.04	173.29	1155.3	2310.5	3465.8	4621.1	5776.3
36	.25	.49	.74	6.99	.24	.48	.73	3.98	.23	4.8	09.7	4.5	19.4	4.2
37	.24	.48	.72	.96	.21	.44	.68	.92	.16	4.4	8.8	3.3	7.7	2.1
38	.23	.47	.70	.93	.17	.40	.63	.87	.10	4.0	8.0	2.0	6.0	70.0
39	.23	.45	.68	.90	.14	.36	.58	.81	3.03	3.6	7.1	60.7	4.3	67.9
51 40	19.22	38.44	57.66	76.88	96.10	115.32	134.53	153.75	172.97	1153.2	2306.3	3459.5	4612.6	5765.8
41	.21	.42	.64	.85	.06	.27	.48	.70	.91	2.7	5.5	8.2	10.9	3.7
42	.21	.41	.62	.82	6.03	.23	.43	.64	.84	2.3	4.6	6.9	09.2	61.5
43	.20	.40	.59	.79	5.99	.19	.38	.58	.78	1.9	3.8	5.6	7.5	59.4
44	.19	.38	.57	.76	.96	.15	.33	.53	.72	1.5	2.9	4.4	5.8	7.3
51 45	19.18	38.37	57.55	76.74	95.92	115.10	134.29	153.47	172.65	1151.0	2302.1	3453.1	4604.1	5755.2
46	.18	.35	.53	.71	.88	.06	.24	.41	.59	0.6	1.2	1.8	2.4	3.1
47	.17	.34	.51	.68	.85	5.02	.19	.36	.53	50.2	300.4	50.6	600.8	50.9
48	.16	.33	.49	.65	.81	4.98	.14	.30	.47	49.8	299.5	49.3	599.1	48.8
49	.16	.31	.47	.62	.78	.93	.09	.25	.40	9.3	8.7	8.0	7.4	6.7
51 50	19.15	38.30	57.45	76.59	95.74	114.89	134.04	153.19	172.34	1148.9	2297.8	3446.8	4595.7	5744.6
51	.14	.28	.43	.57	.71	.85	3.99	.13	.28	8.5	7.0	5.5	4.0	2.5
52	.13	.27	.40	.54	.67	.81	.94	.08	.21	8.1	6.1	4.2	2.3	40.3
53	.13	.25	.38	.51	.64	.76	.89	3.02	.15	7.6	5.3	2.9	90.6	38.2
54	.12	.24	.36	.48	.60	.72	.84	2.96	.08	7.2	4.4	1.7	88.9	6.1
51 55	19.11	38.23	57.34	76.45	95.57	114.68	133.80	152.91	172.02	1146.8	2293.6	3440.4	4587.2	5734.0
56	.11	.21	.32	.42	.53	.64	.75	.85	1.96	6.4	2.7	39.1	5.5	31.8
57	.10	.20	.30	.40	.50	.59	.70	.79	.89	5.9	1.9	7.8	3.8	29.7
58	.09	.18	.28	.37	.46	.55	.65	.74	.83	5.5	1.0	6.6	2.1	7.6
59	.09	.17	.25	.34	.43	.51	.60	.68	.76	5.1	90.2	5.3	80.4	5.5
51 60	19.08	38.16	57.23	76.31	95.39	114.47	133.55	152.62	171.70	1144.7	2289.3	3434.0	4578.7	5723.4

Lat.		Latitude 51° to 52°—Meridional arcs.						Latitude 51°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
51	00	30. 902			1854. 14					
	1	3	1	30. 91	. 15	1	1 854. 1	0 1	1 170. 0	0. 1
	2	3	2	61. 81	. 16	2	3 708. 3	2	2 340. 0	0. 5
	3	3	3	92. 72	. 16	3	5 562. 5	3	3 510. 0	1. 2
	4	3	4	123. 62	. 17	4	7 416. 6	4	4 680. 0	2. 1
51	05	30. 903	5	154. 53	1854. 17	5	9 270. 8	0 5	5 850. 0	3. 3
	6	3	6	185. 43	. 18	6	11 125. 0	6	7 020. 0	4. 8
	7	3	7	216. 34	. 18	7	12 979. 1	7	8 190. 0	6. 5
	8	3	8	247. 24	. 19	8	14 833. 3	8	9 360. 0	8. 5
	9	3	9	278. 15	. 19	9	16 687. 5	9	10 530. 0	10. 7
51	10	30. 903	10	309. 05	1854. 20	10	18 541. 7	0 10	11 700. 0	13. 2
	11	3	1	339. 96	. 20	1	20 395. 9	15	17 550. 0	29. 8
	12	3	2	370. 86	. 21	2	22 250. 1	20	23 399. 9	52. 9
	13	4	3	401. 77	. 21	3	24 104. 3	25	29 249. 9	82. 7
	14	4	4	432. 67	. 22	4	25 958. 6	30	35 099. 7	119. 0
51	15	30. 904	15	463. 58	1854. 23	15	27 812. 8	0 35	40 949. 6	162. 0
	16	4	6	494. 48	. 23	6	29 667. 0	40	46 799. 4	211. 6
	17	4	7	525. 39	. 24	7	31 521. 2	45	52 649. 1	267. 8
	18	4	8	556. 29	. 24	8	33 375. 5	50	58 498. 8	330. 6
	19	4	9	587. 20	. 25	9	35 229. 7	55	64 348. 4	400. 0
51	20	30. 904	20	618. 10	1854. 25	20	37 084. 0	1 00	70 197. 9	476. 1
	21	4	1	649. 01	. 26	1	38 938. 2	05	76 047. 3	558. 7
	22	4	2	679. 91	. 26	2	40 792. 5	10	81 896. 6	648. 0
	23	4	3	710. 82	. 27	3	42 646. 8	15	87 745. 8	743. 9
	24	5	4	741. 72	. 27	4	44 501. 0	20	93 594. 9	846. 4
51	25	30. 905	25	772. 63	1854. 28	25	46 355. 3	1 25	99 443. 9	955. 5
	26	5	6	803. 53	. 28	6	48 209. 6	30	105 292. 8	1 071. 2
	27	5	7	834. 44	. 29	7	50 063. 9	35	111 141. 5	1 193. 5
	28	5	8	865. 34	. 29	8	51 918. 2	40	116 990. 1	1 322. 4
	29	5	9	896. 25	. 30	9	53 772. 5	45	122 838. 5	1 458. 0
51	30	30. 905	30	927. 15	1854. 31	30	55 626. 8	1 50	128 686. 8	1 600. 1
	31	5	1	958. 06	. 31	1	57 481. 1	55	134 534. 9	1 748. 9
	32	5	2	988. 96	. 32	2	59 335. 4	2 00	140 383	1 904
	33	5	3	1 019. 87	. 32	3	61 189. 7	3 00	210 542	4 284
	34	5	4	1 050. 77	. 33	4	63 044. 0	4 00	280 662	7 616
51	35	30. 906	35	1 081. 68	1854. 33	35	64 898. 4	5 00	350 731	11 898
	36	6	6	1 112. 58	. 34	6	66 752. 7	6 00	420 735	17 130
	37	6	7	1 143. 49	. 34	7	68 607. 0	7 00	490 662	23 311
	38	6	8	1 174. 39	. 35	8	70 461. 4	8 00	560 499	30 440
	39	6	9	1 205. 30	. 35	9	72 315. 7	9 00	630 232	38 515
51	40	30. 906	40	1 236. 20	1854. 36	40	74 170. 1	10 00	699 850	47 536
	41	6	1	1 267. 11	. 36	1	76 024. 5	11 00	769 338	57 500
	42	6	2	1 298. 01	. 37	2	77 878. 8	12 00	838 686	68 405
	43	6	3	1 328. 92	. 38	3	79 733. 2	13 00	907 879	80 251
	44	6	4	1 359. 82	. 38	4	81 587. 6	14 00	976 904	93 033
51	45	30. 906	45	1 390. 73	1854. 39	45	83 442. 0	15 00	1 045 751	106 751
	46	7	6	1 421. 63	. 39	6	85 296. 3	16 00	1 114 404	121 401
	47	7	7	1 452. 54	. 40	7	87 150. 7	17 00	1 182 853	136 981
	48	7	8	1 483. 44	. 40	8	89 005. 1	18 00	1 251 084	153 488
	49	7	9	1 514. 35	. 41	9	90 859. 5	19 00	1 319 085	170 919
51	50	30. 907	50	1 545. 25	1854. 41	50	92 713. 9	20 00	1 386 844	189 270
	51	7	1	1 576. 16	. 42	1	94 568. 4	21 00	1 454 347	208 539
	52	7	2	1 607. 06	. 42	2	96 422. 8	22 00	1 521 582	228 722
	53	7	3	1 637. 97	. 43	3	98 277. 2	23 00	1 588 538	249 815
	54	7	4	1 668. 88	. 43	4	100 131. 6	24 00	1 655 201	271 814
51	55	30. 907	55	1 699. 78	1854. 44	55	101 986. 1	25 00	1 721 561	294 715
	56	7	6	1 730. 69	. 44	6	103 840. 5	26 00	1 787 603	318 514
	57	8	7	1 761. 59	. 45	7	105 695. 0	27 00	1 853 316	343 206
	58	8	8	1 792. 50	. 46	8	107 549. 4	28 00	1 918 688	368 788
	59	8	9	1 823. 40	. 46	9	109 403. 9	29 00	1 983 708	395 254
51	60	30. 908	60	1 854. 31	1854. 47	60	111 258. 3	30 00	2 048 362	422 600

Latitude 52° to 53°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
52 00	19.08	38.16	57.23	76.31	95.39	114.47	133.55	152.62	171.70	1144.7	2289.3	3434.0	4578.7	5723.4
1	.07	.14	.21	.28	.36	.42	.50	.57	.64	4.2	8.5	2.7	7.0	21.2
2	.06	.13	.19	.25	.32	.38	.45	.51	.57	3.8	7.6	1.5	5.3	19.1
3	.06	.11	.17	.23	.29	.34	.40	.45	.51	3.4	6.8	30.2	3.6	7.0
4	.05	.10	.15	.20	.25	.30	.35	.40	.44	3.0	5.9	28.9	1.9	4.8
52 05	19.04	38.08	57.13	76.17	95.22	114.25	133.30	152.34	171.38	1142.5	2285.1	3427.6	4570.2	5712.7
6	.04	.07	.11	.14	.18	.21	.25	.28	.32	2.1	4.2	6.4	68.5	10.6
7	.03	.06	.08	.11	.14	.17	.20	.23	.25	1.7	3.4	5.1	6.8	08.5
8	.02	.04	.06	.08	.11	.13	.15	.17	.19	1.3	2.5	3.8	5.1	6.3
9	.01	.03	.04	.06	.07	.08	.10	.11	.12	0.8	1.7	2.5	3.4	4.2
52 10	19.01	38.01	57.02	76.03	95.04	114.04	133.05	152.06	171.06	1140.4	2280.8	3421.3	4561.7	5702.1
11	9.00	8.00	7.00	6.00	5.00	4.00	3.00	2.00	1.00	40.0	80.0	20.0	60.0	699.9
12	8.99	7.99	6.98	5.97	4.97	3.96	2.95	1.94	0.93	39.6	79.1	18.7	58.3	7.8
13	.99	.97	.96	.94	.93	.91	.90	.88	.87	9.1	8.3	7.4	6.5	5.7
14	.98	.96	.94	.91	.90	.87	.85	.83	.81	8.7	7.4	6.1	4.8	3.6
52 15	18.97	37.94	56.91	75.89	94.86	113.83	132.80	151.77	170.74	1138.3	2276.6	3414.9	4553.1	5691.4
16	.96	.93	.89	.86	.82	.79	.75	.71	.68	7.9	5.7	3.6	51.4	89.3
17	.96	.92	.87	.83	.79	.74	.70	.66	.61	7.4	4.9	2.3	49.7	7.2
18	.95	.90	.85	.80	.75	.70	.65	.60	.55	7.0	4.0	11.0	8.0	5.0
19	.94	.89	.83	.77	.72	.66	.60	.54	.48	6.6	3.2	09.7	6.3	2.9
52 20	18.94	37.87	56.81	75.74	94.68	113.62	132.55	151.49	170.42	1136.2	2272.3	3408.5	4544.6	5680.8
21	.93	.86	.79	.71	.64	.57	.50	.43	.36	5.7	1.4	7.2	2.9	78.6
22	.92	.84	.77	.69	.61	.53	.45	.37	.29	5.3	70.6	5.9	41.2	6.5
23	.91	.83	.74	.66	.57	.49	.40	.32	.23	4.9	69.7	4.6	39.5	4.3
24	.91	.81	.72	.63	.54	.44	.35	.26	.16	4.4	8.9	3.3	7.8	2.2
52 25	18.90	37.80	56.70	75.60	94.50	113.40	132.30	151.20	170.10	1134.0	2268.0	3402.0	4536.0	5670.1
26	.89	.79	.68	.57	.46	.36	.25	.14	70.04	3.6	7.2	400.8	4.3	67.9
27	.89	.77	.66	.54	.43	.32	.20	.09	69.97	3.2	6.3	399.5	2.6	5.8
28	.88	.76	.64	.52	.39	.27	.15	1.03	.91	2.7	5.5	8.2	30.9	3.7
29	.87	.74	.61	.49	.36	.23	.10	0.97	.84	2.3	4.6	6.9	29.2	61.5
52 30	18.86	37.73	56.59	75.46	94.32	113.19	132.05	150.92	169.78	1131.9	2263.8	3395.6	4527.5	5659.4
31	.86	.71	.57	.43	.29	.14	2.00	.86	.72	1.4	2.9	4.3	5.8	7.2
32	.85	.70	.55	.40	.25	.10	1.95	.80	.65	1.0	2.1	3.1	4.1	5.1
33	.84	.69	.53	.37	.22	.06	.90	.75	.59	0.6	1.2	1.8	2.4	2.9
34	.84	.67	.51	.35	.18	3.02	.85	.69	.52	30.2	60.3	90.5	20.6	50.8
52 35	18.83	37.66	56.49	75.32	94.15	112.97	131.80	150.63	169.46	1129.7	2259.5	3389.2	4518.9	5648.7
36	.82	.64	.46	.29	.11	.93	.75	.57	.40	9.3	8.6	7.9	7.2	6.5
37	.81	.63	.44	.26	.08	.89	.70	.52	.33	8.9	7.8	6.6	5.5	4.4
38	.81	.61	.42	.23	.04	.84	.65	.46	.27	8.4	6.9	5.3	3.8	2.2
39	.80	.60	.40	.20	4.01	.80	.60	.40	.20	8.0	6.1	4.1	2.1	40.1
52 40	18.79	37.59	56.38	75.17	93.97	112.76	131.55	150.35	169.14	1127.6	2255.2	3382.8	4510.4	5638.0
41	.79	.57	.36	.14	.93	.72	.50	.29	.08	7.2	4.3	1.5	508.6	5.8
42	.78	.56	.34	.12	.90	.67	.45	.23	9.01	6.7	3.5	80.2	6.9	3.7
43	.77	.54	.31	.09	.86	.63	.40	.17	8.95	6.3	2.6	78.9	5.2	31.5
44	.76	.53	.29	.06	.83	.59	.35	.12	.88	5.9	1.8	7.6	3.5	29.4
52 45	18.76	37.51	56.27	75.03	93.79	112.54	131.30	150.06	168.82	1125.4	2250.9	3376.3	4501.8	5627.2
46	.75	.50	.25	5.00	.75	.50	.25	50.00	.75	5.0	50.0	5.0	500.1	5.1
47	.74	.49	.23	4.97	.72	.46	.20	49.94	.69	4.6	49.2	3.8	498.3	2.9
48	.74	.47	.21	.94	.68	.42	.15	.89	.62	4.2	8.3	2.5	6.6	20.8
49	.73	.46	.19	.92	.65	.37	.10	.83	.56	3.7	7.5	71.2	4.9	18.6
52 50	18.72	37.44	56.16	74.89	93.61	112.33	131.05	149.77	168.49	1123.3	2246.6	3369.9	4493.2	5616.5
51	.71	.43	.14	.86	.57	.29	0.00	.72	.43	2.9	5.7	8.6	91.6	4.3
52	.71	.41	.12	.83	.54	.24	.95	.66	.36	2.4	4.9	7.3	89.7	2.2
53	.70	.40	.10	.80	.50	.20	.90	.60	.30	2.0	4.0	6.0	8.0	10.0
54	.69	.39	.08	.77	.47	.16	.85	.54	.23	1.6	3.2	4.7	6.3	07.9
52 55	18.69	37.37	56.06	74.74	93.43	112.11	130.80	149.49	168.17	1121.1	2242.3	3363.4	4484.6	5605.7
56	.68	.36	.03	.71	.39	.07	.75	.43	.10	0.7	1.4	2.1	2.9	3.4
57	.67	.34	6.01	.69	.36	2.03	.70	.37	8.04	20.3	40.6	60.9	81.1	601.4
58	.66	.33	5.99	.66	.32	1.99	.65	.31	7.98	19.9	39.7	59.6	79.4	599.3
59	.66	.31	.97	.63	.29	.94	.60	.26	.91	9.4	8.9	8.3	7.7	7.1
52 60	18.65	37.30	55.95	74.60	93.25	111.90	130.55	149.20	167.85	1119.0	2238.0	3357.0	4476.0	5595.0

Lat.		Latitude 52° to 53°—Meridional arcs.						Latitude 52°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X.	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
52	00	30.908			1854.47					
	1	8	1	30.91	.47	1	1 854.5	0 1	1 144.7	0.1
	2	8	2	61.82	.48	2	3 708.9	2	2 289.3	0.5
	3	8	3	92.73	.48	3	5 563.4	3	3 434.0	1.2
	4	8	4	123.64	.49	4	7 417.9	4	4 578.7	2.1
52	05	30.908	5	154.55	1854.49	5	9 272.4	0 5	5 723.4	3.3
	6	8	6	185.46	.50	6	11 126.9	6	6 868.0	4.7
	7	8	7	216.37	.50	7	12 981.4	7	8 012.7	6.4
	8	8	8	247.28	.51	8	14 835.9	8	9 157.4	8.4
	9	9	9	278.19	.51	9	16 690.4	9	10 302.0	10.6
52	10	30.909	10	309.10	1854.52	10	18 544.9	0 10	11 446.7	13.1
	11	9	1	340.01	.52	1	20 399.4	15	17 170.0	29.5
	12	9	2	370.93	.53	2	22 254.0	20	22 893.4	52.5
	13	9	3	401.84	.54	3	24 108.5	25	28 616.6	82.0
	14	9	4	432.75	.54	4	25 963.0	30	34 339.9	118.1
52	15	30.909	15	463.66	1854.55	15	27 817.6	0 35	40 063.1	160.7
	16	9	6	494.57	.55	6	29 672.1	40	45 786.3	209.9
	17	9	7	525.48	.56	7	31 526.7	45	51 509.4	265.7
	18	9	8	556.39	.56	8	33 381.3	50	57 232.4	328.0
	19	9	9	587.30	.57	9	35 235.8	55	62 955.3	396.9
52	20	30.910	20	618.21	1854.57	20	37 090.4	1 00	68 678.2	472.3
	21	0	1	649.12	.58	1	38 945.0	05	74 401.0	554.3
	22	0	2	680.03	.58	2	40 799.6	10	80 123.6	642.8
	23	0	3	710.94	.59	3	42 654.1	15	85 846.2	737.9
	24	0	4	741.85	.59	4	44 508.7	20	91 568.7	839.6
52	25	30.910	25	772.76	1854.60	25	46 363.3	1 25	97 291.0	947.8
	26	0	6	803.67	.60	6	48 217.9	30	103 013.2	1 062.6
	27	0	7	834.58	.61	7	50 072.5	35	108 735.3	1 184.0
	28	0	8	865.49	.62	8	51 927.2	40	114 457.2	1 311.9
	29	0	9	896.40	.62	9	53 781.8	45	120 179.0	1 446.3
52	30	30.910	30	927.31	1854.63	30	55 636.4	1 50	125 900.7	1 587.4
	31	1	1	958.22	.63	1	57 491.0	55	131 622.1	1 735.0
	32	1	2	989.13	.64	2	59 345.7	2 00	137 343	1 889
	33	1	3	1 020.04	.64	3	61 200.3	3 00	205 982	4 250
	34	1	4	1 050.95	.65	4	63 054.9	4 00	274 583	7 555
52	35	30.911	35	1 081.87	1854.65	35	64 909.6	5 00	343 131	11 803
	36	1	6	1 112.78	.66	6	66 764.2	6 00	411 615	16 993
	37	1	7	1 143.69	.66	7	68 618.9	7 00	480 020	23 124
	38	1	8	1 174.60	.67	8	70 473.6	8 00	548 335	30 196
	39	1	9	1 205.51	.67	9	72 328.2	9 00	616 546	38 207
52	40	30.911	40	1 236.42	1854.68	40	74 182.9	10 00	684 640	47 155
	41	1	1	1 267.33	.68	1	76 037.6	11 00	752 605	57 039
	42	1	2	1 298.24	.69	2	77 892.3	12 00	820 428	67 856
	43	2	3	1 329.15	.69	3	79 747.0	13 00	888 095	79 605
	44	2	4	1 360.06	.70	4	81 601.7	14 00	955 595	92 284
52	45	30.912	45	1 390.97	1854.71	45	83 456.4	15 00	1 022 913	105 890
	46	2	6	1 421.88	.71	6	85 311.1	16 00	1 090 038	120 420
	47	2	7	1 452.79	.72	7	87 165.8	17 00	1 156 957	135 872
	48	2	8	1 483.70	.72	8	89 020.5	18 00	1 223 658	152 243
	49	2	9	1 514.61	.73	9	90 875.3	19 00	1 290 126	169 530
52	50	30.912	50	1 545.52	1854.73	50	92 730.0	20 00	1 356 351	187 729
	51	2	1	1 576.43	.74	1	94 584.7	21 00	1 422 319	206 838
	52	2	2	1 607.34	.74	2	96 439.5	22 00	1 488 018	226 852
	53	2	3	1 638.25	.75	3	98 294.2	23 00	1 553 436	247 767
	54	3	4	1 669.16	.75	4	100 149.0	24 00	1 618 559	269 580
52	55	30.913	55	1 700.07	1854.76	55	102 003.7	25 00	1 683 377	292 287
	56	3	6	1 730.98	.76	6	103 858.5	26 00	1 747 876	315 883
	57	3	7	1 761.89	.77	7	105 713.3	27 00	1 812 045	340 364
	58	3	8	1 792.81	.77	8	107 568.0	28 00	1 875 870	365 725
	59	3	9	1 823.72	.78	9	109 422.8	29 00	1 939 342	391 961
52	60	30.913	60	1 854.63	1854.78	60	111 277.6	30 00	2 002 446	419 068

Latitude 53° to 54°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
53 00	18.65	37.30	55.95	74.60	93.25	111.90	130.55	149.20	167.85	1119.0	2238.0	3357.0	4476.0	5595.0
1	.64	.29	.93	.57	.21	.86	.50	.14	.79	8.6	7.1	5.7	4.2	2.8
2	.64	.27	.91	.54	.18	.81	.45	.08	.72	8.1	6.3	4.4	2.5	90.6
3	.63	.26	.88	.51	.14	.77	.40	9.03	.66	7.7	5.4	3.1	70.8	88.5
4	.62	.24	.86	.49	.11	.73	.35	8.97	.59	7.3	4.6	1.8	69.1	6.3
53 05	18.61	37.23	55.84	74.46	93.07	111.68	130.30	148.91	167.53	1116.8	2233.7	3350.5	4467.3	5584.2
6	.61	.21	.82	.43	.03	.64	.25	.85	.46	6.4	2.8	49.2	5.6	82.0
7	.60	.20	.80	.40	3.00	.60	.20	.80	.40	6.0	2.0	7.9	3.9	79.9
8	.59	.18	.78	.37	2.96	.55	.15	.74	.33	5.5	1.1	6.6	2.2	7.7
9	.59	.17	.75	.34	.93	.51	.10	.68	.27	5.1	30.2	5.3	60.4	5.5
53 10	18.58	37.16	55.73	74.31	92.89	111.47	130.05	148.62	167.20	1114.7	2229.4	3344.0	4458.7	5573.4
11	.57	.14	.71	.28	.85	.42	30.00	.57	.14	4.2	8.5	2.7	7.0	71.2
12	.56	.13	.69	.25	.82	.38	29.95	.51	.07	3.8	7.6	1.4	5.2	69.1
13	.56	.11	.67	.23	.78	.34	.90	.45	7.01	3.4	6.8	40.1	3.5	6.9
14	.55	.10	.65	.20	.75	.29	.85	.39	6.94	2.9	5.9	38.8	1.8	4.7
53 15	18.54	37.08	55.63	74.17	92.71	111.25	129.79	148.34	166.88	1112.5	2225.0	3337.5	4450.1	5562.6
16	.53	.07	.60	.14	.67	.21	.74	.28	.81	2.1	4.1	6.2	48.3	60.4
17	.53	.06	.58	.11	.64	.17	.69	.22	.75	1.7	3.3	5.0	6.6	58.3
18	.52	.04	.56	.08	.60	.12	.64	.16	.68	1.2	2.4	3.7	4.9	6.1
19	.51	.03	.54	.05	.57	.08	.59	.10	.62	0.8	1.6	2.4	3.1	3.9
53 20	18.51	37.01	55.52	74.02	92.53	111.04	129.54	148.05	166.55	1110.4	2220.7	3331.1	4441.4	5551.8
21	.50	7.00	.50	3.99	.49	0.99	.49	7.99	.49	09.9	19.8	29.8	39.7	49.6
22	.49	6.98	.47	.97	.46	.95	.44	.93	.42	9.5	9.0	8.5	8.0	7.4
23	.48	.97	.45	.94	.42	.91	.39	.87	.36	9.1	8.1	7.2	6.2	5.3
24	.48	.95	.43	.91	.39	.86	.34	.82	.29	8.6	7.3	5.9	4.5	3.1
53 25	18.47	36.94	55.41	73.88	92.35	110.82	129.29	147.76	166.23	1108.2	2216.4	3324.6	4432.8	5540.9
26	.46	.93	.39	.85	.31	.78	.24	.70	.16	7.8	5.5	3.3	31.0	38.8
27	.46	.91	.37	.82	.28	.73	.19	.64	.10	7.3	4.6	2.0	29.3	6.6
28	.45	.90	.34	.79	.24	.69	.14	.59	6.03	6.9	3.8	20.7	7.6	4.4
29	.44	.88	.32	.76	.21	.65	.09	.53	5.97	6.5	2.9	19.4	5.8	2.3
53 30	18.43	36.87	55.30	73.73	92.17	110.60	129.04	147.47	165.90	1106.0	2212.0	3318.1	4424.1	5530.1
31	.43	.85	.28	.70	.13	.56	8.99	.41	.84	5.6	1.2	6.8	2.3	27.9
32	.42	.84	.26	.68	.10	.52	.94	.35	.77	5.2	10.3	5.5	20.6	5.8
33	.41	.82	.24	.65	.06	.47	.89	.30	.71	4.7	09.4	4.2	18.9	3.6
34	.40	.81	.21	.62	2.03	.43	.84	.24	.64	4.3	8.6	2.9	7.1	21.4
53 35	18.40	36.80	55.19	73.59	91.99	110.39	128.78	147.18	165.58	1103.9	2207.7	3311.6	4415.4	5519.3
36	.39	.78	.17	.56	.95	.34	.73	.12	.51	3.4	6.8	10.2	3.7	7.1
37	.38	.77	.15	.53	.92	.30	.68	.06	.45	3.0	6.0	08.9	1.9	4.9
38	.38	.75	.13	.50	.88	.25	.63	7.01	.38	2.5	5.1	7.6	10.2	2.7
39	.37	.74	.11	.48	.85	.21	.58	6.95	.32	2.1	4.3	6.3	08.5	10.6
53 40	18.36	36.72	55.08	73.45	91.81	110.17	128.53	146.89	165.25	1101.7	2203.4	3305.0	4406.7	5508.4
41	.35	.71	.06	.42	.77	.12	.48	.83	.19	1.2	2.5	3.7	5.0	6.2
42	.35	.69	.04	.39	.74	.08	.43	.77	.12	0.8	1.6	2.4	3.2	4.0
43	.34	.68	.02	.36	.70	10.04	.38	.72	5.06	100.4	200.8	301.1	401.5	501.9
44	.33	.66	5.00	.33	.66	09.99	.33	.66	4.99	099.9	199.9	299.8	399.8	499.7
53 45	18.32	36.65	54.97	73.30	91.63	109.95	128.28	146.60	164.93	1099.5	2199.0	3298.5	4398.0	5497.5
46	.32	.64	.95	.27	.59	.91	.22	.54	.86	9.1	8.1	7.2	6.3	5.3
47	.31	.62	.93	.24	.55	.86	.17	.48	.80	8.6	7.3	5.9	4.5	3.2
48	.30	.61	.91	.21	.51	.82	.12	.43	.73	8.2	6.4	4.6	2.8	91.0
49	.30	.59	.89	.19	.48	.78	.07	.37	.67	7.8	5.6	3.3	1.1	88.8
53 50	18.29	36.58	54.87	73.16	91.44	109.73	128.02	146.31	164.60	1097.3	2194.7	3292.0	4389.3	5486.6
51	.28	.56	.85	.13	.40	.69	7.97	.25	.53	6.9	3.8	90.7	7.6	4.5
52	.27	.55	.82	.10	.37	.65	.92	.19	.47	6.5	2.9	89.4	5.8	2.3
53	.27	.53	.80	.07	.33	.60	.87	.14	.40	6.0	2.1	8.1	4.1	80.1
54	.26	.52	.78	.04	.30	.56	.82	.08	.34	5.6	1.2	6.7	2.3	77.9
53 55	18.25	36.50	54.76	73.01	91.26	109.51	127.76	146.02	164.27	1095.1	2190.3	3285.4	4380.6	5475.7
56	.25	.49	.74	2.98	.22	.47	.71	5.96	.21	4.7	89.4	4.1	78.8	3.6
57	.24	.48	.71	.95	.19	.43	.66	.90	.14	4.3	8.5	2.8	7.1	71.4
58	.23	.46	.69	.92	.15	.38	.61	.85	.07	3.8	7.7	1.5	5.4	69.2
59	.22	.45	.67	.89	.12	.34	.56	.79	4.01	3.4	6.8	80.2	3.6	7.0
53 60	18.22	36.43	54.65	72.86	91.08	109.30	127.51	145.73	163.94	1093.0	2185.9	3278.9	4371.9	5464.8

Lat.	Latitude 53° to 54°—Meridional arcs.						Latitude 53°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
53 00	30.913			1854.78					
1	3	1	30.92	.79	1	1 854.8	0 1	1 119.0	0.1
2	3	2	61.83	.80	2	3 709.6	2	2 238.0	0.5
3	3	3	92.75	.80	3	5 564.4	3	3 357.0	1.2
4	3	4	123.66	.81	4	7 419.2	4	4 476.0	2.1
53 05	30.914	5	154.58	1854.81	5	9 274.0	0 5	5 595.0	3.3
6	4	6	185.49	.82	6	11 128.8	6	6 714.0	4.7
7	4	7	216.41	.82	7	12 983.6	7	7 832.9	6.4
8	4	8	247.33	.83	8	14 838.5	8	8 951.9	8.3
9	4	9	278.24	.83	9	16 693.3	9	10 070.9	10.5
53 10	30.914	10	309.16	1854.84	10	18 548.1	0 10	11 189.9	13.0
11	4	1	340.07	.84	1	20 403.0	15	16 784.9	29.2
12	4	2	370.99	.85	2	22 257.8	20	22 379.8	52.0
13	4	3	401.90	.85	3	24 112.7	25	27 974.7	81.2
14	4	4	432.82	.86	4	25 967.5	30	33 569.5	117.0
53 15	30.914	15	463.74	1854.86	15	27 822.4	0 35	39 164.3	159.2
16	4	6	494.65	.87	6	29 677.2	40	44 759.1	208.0
17	5	7	525.57	.87	7	31 532.1	45	50 353.8	263.2
18	5	8	556.48	.88	8	33 387.0	50	55 948.4	325.0
19	5	9	587.40	.89	9	35 241.9	55	61 542.9	393.2
53 20	30.915	20	618.31	1854.89	20	37 096.8	1 00	67 137.4	467.9
21	5	1	649.23	.90	1	38 951.7	05	72 731.7	549.2
22	5	2	680.15	.90	2	40 806.6	10	78 326.0	636.9
23	5	3	711.06	.91	3	42 661.5	15	83 920.2	731.1
24	5	4	741.98	.91	4	44 516.4	20	89 514.2	831.8
53 25	30.915	25	772.89	1854.92	25	46 371.3	1 25	95 108.2	939.1
26	5	6	803.81	.92	6	48 226.2	30	100 702.0	1 052.8
27	5	7	834.72	.93	7	50 081.1	35	106 295.7	1 173.0
28	6	8	865.64	.93	8	51 936.1	40	111 889.2	1 299.7
29	6	9	896.56	.94	9	53 791.0	45	117 482.6	1 432.9
53 30	30.916	30	927.47	1854.94	30	55 645.9	1 50	123 075.8	1 572.6
31	6	1	958.39	.95	1	57 500.9	55	128 668.9	1 718.9
32	6	2	989.30	.95	2	59 355.8	2 00	134 262	1 872
33	6	3	1 020.22	.96	3	61 210.8	3 00	201 360	4 211
34	6	4	1 051.13	.96	4	63 065.8	4 00	268 419	7 485
53 35	30.916	35	1 082.05	1854.97	35	64 920.7	5 00	335 426	11 693
36	6	6	1 112.97	.97	6	66 775.7	6 00	402 368	16 835
37	6	7	1 143.88	.98	7	68 630.7	7 00	469 232	22 910
38	6	8	1 174.80	.99	8	70 485.6	8 00	536 004	29 916
39	7	9	1 205.71	4.99	9	72 340.6	9 00	602 672	37 852
53 40	30.917	40	1 236.63	1855.00	40	74 195.6	10 00	669 224	46 717
41	7	1	1 267.54	.00	1	76 050.6	11 00	735 645	56 508
42	7	2	1 298.46	.01	2	77 905.6	12 00	801 923	67 224
43	7	3	1 329.38	.01	3	79 760.6	13 00	868 046	78 863
44	7	4	1 360.29	.02	4	81 615.7	14 00	933 999	91 422
53 45	30.917	45	1 391.21	1855.02	45	83 470.7	15 00	999 772	104 900
46	7	6	1 422.12	.03	6	85 325.7	16 00	1 065 350	119 293
47	7	7	1 453.04	.03	7	87 180.7	17 00	1 130 721	134 598
48	7	8	1 483.95	.04	8	89 035.8	18 00	1 195 872	150 813
49	7	9	1 514.87	.04	9	90 890.8	19 00	1 260 791	167 935
53 50	30.917	50	1 545.79	1855.05	50	92 745.8	20 00	1 325 466	185 960
51	8	1	1 576.70	.05	1	94 600.9	21 00	1 389 882	204 885
52	8	2	1 607.62	.06	2	96 455.9	22 00	1 454 029	224 706
53	8	3	1 638.53	.06	3	98 311.0	23 00	1 517 893	245 418
54	8	4	1 669.45	.07	4	100 166.1	24 00	1 581 462	267 019
53 55	30.918	55	1 700.36	1855.07	55	102 021.1	25 00	1 644 724	289 504
56	8	6	1 731.28	.08	6	103 876.2	26 00	1 707 666	312 869
57	8	7	1 762.20	.08	7	105 731.3	27 00	1 770 277	337 109
58	8	8	1 793.11	.09	8	107 586.4	28 00	1 832 544	362 219
59	8	9	1 824.03	.10	9	109 441.5	20 00	1 894 455	388 194
53 60	30.918	60	1 854.94	1855.10	60	111 296.6	30 00	1 955 997	415 030

Latitude 54° to 55°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1″	2″	3″	4″	5″
° ′														
54 00	18.22	36.43	54.65	72.86	91.08	109.30	127.51	145.73	163.94	1093.0	2185.9	3278.9	4371.9	5464.8
1	.21	.42	.63	.83	.04	.25	.46	.67	.88	2.5	5.0	7.6	70.1	2.7
2	.20	.40	.61	.81	1.01	.21	.41	.61	.81	2.1	4.2	6.3	68.4	60.5
3	.19	.39	.58	.78	0.97	.17	.36	.55	.75	1.7	3.3	5.0	6.6	58.3
4	.19	.37	.56	.75	.94	.12	.31	.50	.68	1.2	2.5	3.7	4.9	6.1
54 05	18.18	36.36	54.54	72.72	90.90	109.08	127.25	145.44	163.61	1090.8	2181.6	3272.3	4363.1	5453.9
6	.17	.34	.52	.69	.86	9.03	.20	.38	.55	90.3	80.7	71.0	61.4	51.7
7	.16	.33	.50	.66	.83	8.99	.15	.32	.48	89.9	79.8	69.7	59.6	49.5
8	.16	.32	.47	.63	.79	.95	.10	.26	.42	9.5	9.0	8.4	7.9	7.4
9	.15	.30	.45	.60	.76	.90	.05	.20	.35	9.0	8.1	7.1	6.1	5.2
54 10	18.14	36.29	54.43	72.57	90.72	108.86	127.00	145.15	163.29	1088.6	2177.2	3265.8	4354.4	5443.0
11	.14	.27	.41	.54	.68	.82	6.95	.09	.22	8.2	6.3	4.5	2.6	40.8
12	.13	.26	.39	.51	.65	.77	.90	5.03	.16	7.7	5.4	3.2	50.9	38.6
13	.12	.24	.36	.49	.61	.73	.85	4.97	.09	7.3	4.6	1.8	49.1	6.4
14	.11	.23	.34	.46	.57	.68	.80	.91	3.03	6.8	3.7	60.5	7.4	4.2
54 15	18.10	36.21	54.32	72.43	90.54	108.64	126.74	144.85	162.96	1086.4	2172.8	3259.2	4345.6	5432.0
16	.10	.20	.30	.40	.50	.60	.69	.80	.89	6.0	1.9	7.9	3.9	29.8
17	.09	.18	.28	.37	.46	.55	.64	.74	.83	5.5	1.0	6.6	2.1	7.7
18	.08	.17	.25	.34	.42	.51	.59	.68	.76	5.1	70.2	5.3	40.4	5.5
19	.08	.16	.23	.31	.39	.47	.54	.62	.70	4.7	69.3	4.0	38.6	3.3
54 20	18.07	36.14	54.21	72.28	90.35	108.42	126.49	144.56	162.63	1084.2	2168.4	3252.7	4336.9	5421.1
21	.06	.13	.19	.25	.31	.38	.44	.50	.56	3.8	7.5	1.3	5.1	18.9
22	.06	.11	.17	.22	.28	.33	.39	.45	.50	3.3	6.7	50.0	3.4	6.7
23	.05	.10	.14	.19	.24	.29	.34	.39	.43	2.9	5.8	48.7	31.6	4.5
24	.04	.08	.12	.16	.21	.25	.29	.33	.37	2.5	4.9	7.4	29.8	2.3
54 25	18.03	36.07	54.10	72.13	90.17	108.20	126.23	144.27	162.30	1082.0	2164.0	3246.1	4328.1	5410.1
26	.03	.05	.08	.10	.13	.16	.18	.21	.23	1.6	3.1	4.8	6.3	07.9
27	.02	.04	.06	.08	.10	.11	.13	.15	.17	1.1	2.3	3.4	4.6	5.7
28	.01	.02	.03	.05	.06	.07	.08	.09	.10	0.7	1.4	2.1	2.8	3.5
29	.00	6.01	4.01	2.02	90.03	8.03	6.03	4.04	2.04	80.3	60.6	40.8	21.1	401.3
54 30	18.00	35.99	53.99	71.99	89.99	107.98	125.98	143.98	161.97	1079.8	2159.7	3239.5	4319.3	5399.1
31	7.99	.98	.97	.96	.95	.94	.93	.92	.91	9.4	8.8	8.2	7.6	6.9
32	.98	.96	.95	.93	.91	.89	.88	.86	.84	8.9	7.9	6.8	5.8	4.7
33	.98	.95	.92	.90	.88	.85	.83	.80	.78	8.5	7.0	5.5	4.0	2.5
34	.97	.94	.90	.87	.84	.81	.78	.74	.71	8.1	6.2	4.2	2.3	90.3
54 35	17.96	35.92	53.88	71.84	89.80	107.76	125.72	143.68	161.65	1077.6	2155.3	3232.9	4310.5	5388.1
36	.95	.91	.86	.81	.77	.72	.67	.63	.58	7.2	4.4	1.6	08.8	5.9
37	.95	.89	.84	.78	.73	.67	.62	.57	.51	6.7	3.5	30.2	7.0	3.7
38	.94	.88	.81	.75	.69	.63	.57	.51	.45	6.3	2.6	28.9	5.2	81.5
39	.93	.86	.79	.73	.66	.59	.52	.45	.38	5.9	1.8	7.6	3.5	79.4
54 40	17.92	35.85	53.77	71.70	89.62	107.54	125.47	143.39	161.32	1075.4	2150.9	3226.3	4301.7	5377.2
41	.92	.83	.75	.67	.58	.50	.42	.33	.25	5.0	50.0	5.0	300.0	4.9
42	.91	.82	.73	.64	.54	.45	.36	.27	.18	4.5	49.1	3.6	298.2	2.7
43	.90	.80	.70	.61	.51	.41	.31	.21	.12	4.1	8.2	2.3	6.4	70.5
44	.89	.79	.68	.58	.47	.37	.26	.16	1.05	3.7	7.4	21.0	4.7	68.3
54 45	17.89	35.77	53.66	71.55	89.43	107.32	125.21	143.10	160.99	1073.2	2146.5	3219.7	4292.9	5366.1
46	.88	.76	.64	.52	.40	.28	.16	3.04	.92	2.8	5.6	8.4	91.1	3.9
47	.87	.74	.62	.49	.36	.23	.11	2.98	.85	2.3	4.7	7.0	89.4	61.7
48	.86	.73	.59	.46	.32	.19	.05	.92	.78	1.9	3.8	5.7	7.6	59.5
49	.86	.72	.57	.43	.29	.15	5.00	.86	.72	1.5	2.9	4.4	5.9	7.3
54 50	17.85	35.70	53.55	71.40	89.25	107.10	124.95	142.80	160.65	1071.0	2142.0	3213.1	4284.1	5355.1
51	.84	.69	.53	.37	.21	.06	.90	.74	.58	0.6	1.1	1.7	2.3	2.9
52	.84	.67	.51	.34	.18	7.01	.85	.69	.52	70.1	40.3	10.4	80.6	50.7
53	.83	.66	.48	.31	.14	6.97	.80	.63	.45	69.7	39.4	09.1	78.8	48.5
54	.82	.64	.46	.28	.10	.93	.75	.57	.39	9.3	8.5	7.8	7.0	6.3
54 55	17.81	35.63	53.44	71.25	89.07	106.88	124.69	142.51	160.32	1068.8	2137.6	3206.4	4275.3	5344.1
56	.81	.61	.42	.22	9.03	.84	.64	.45	.25	8.4	6.7	5.1	3.5	41.9
57	.80	.60	.40	.19	8.99	.79	.59	.39	.19	7.9	5.8	3.8	1.7	39.7
58	.79	.58	.37	.17	.95	.75	.54	.33	.12	7.5	5.0	2.5	70.0	7.4
59	.78	.57	.35	.14	.92	.70	.49	.27	60.06	7.0	4.1	201.1	68.2	5.2
54 60	17.78	35.55	53.33	71.11	88.88	106.66	124.44	142.21	159.99	1066.6	2133.2	3199.8	4266.4	5333.0

Lat.	Latitude 54° to 55°—Meridional arcs.						Latitude 54°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
54 00	30.918			1855.10					
1	8	1	30.92	.11	1	1 855.1	0 1	1 093.0	0.1
2	9	2	61.84	.11	2	3 710.2	2	2 185.9	0.5
3	9	3	92.76	.12	3	5 565.3	3	3 278.9	1.2
4	9	4	123.68	.12	4	7 420.4	4	4 371.9	2.1
54 05	30.919	5	154.60	1855.13	5	9 275.6	0 5	5 464.8	3.2
6	9	6	185.53	.13	6	11 130.7	6	6 557.8	4.6
7	9	7	216.45	.14	7	12 985.8	7	7 650.8	6.3
8	9	8	247.37	.14	8	14 841.0	8	8 743.7	8.2
9	9	9	278.29	.15	9	16 696.1	9	9 836.7	10.4
54 10	30.919	10	309.21	1855.15	10	18 551.2	0 10	10 929.7	12.9
11	9	1	340.13	.16	1	20 406.4	15	16 394.5	28.9
12	9	2	371.05	.16	2	22 261.6	20	21 859.3	51.4
13	19	3	401.97	.17	3	24 116.7	25	27 324.0	80.4
14	20	4	432.89	.17	4	25 971.9	30	32 788.8	115.7
54 15	30.920	15	463.81	1855.18	15	27 827.1	0 35	38 253.4	157.5
16	0	6	494.74	.18	6	29 682.3	40	43 718.0	205.8
17	0	7	525.66	.19	7	31 537.4	45	49 182.6	260.4
18	0	8	556.58	.19	8	33 392.6	50	54 647.1	321.5
19	0	9	587.50	.20	9	35 247.8	55	60 111.5	389.0
54 20	30.920	20	618.42	1855.21	20	37 103.0	1 00	65 575.9	463.0
21	0	1	649.34	.21	1	38 958.2	05	71 040.1	543.4
22	0	2	680.26	.22	2	40 813.5	10	76 504.3	630.2
23	0	3	711.18	.22	3	42 668.7	15	81 968.3	723.4
24	0	4	742.10	.23	4	44 523.9	20	87 432.3	823.1
54 25	30.921	25	773.02	1855.23	25	46 379.1	1 25	92 896.1	929.1
26	1	6	803.94	.24	6	48 234.4	30	98 359.8	1 041.7
27	1	7	834.87	.24	7	50 089.6	35	103 823.3	1 160.6
28	1	8	865.79	.25	8	51 944.8	40	109 286.7	1 286.0
29	1	9	896.71	.25	9	53 800.1	45	114 750.0	1 417.8
54 30	30.921	30	927.63	1855.26	30	55 655.3	1 50	120 213.1	1 556.0
31	1	1	958.55	.26	1	57 510.6	55	125 676.0	1 700.7
32	1	2	989.47	.27	2	59 365.9	2 00	131 139	1 852
33	1	3	1 020.39	.27	3	61 221.2	3 00	196 675	4 166
34	1	4	1 051.31	.28	4	63 076.4	4 00	262 173	7 406
54 35	30.921	35	1 082.23	1855.28	35	64 931.7	5 00	327 618	11 570
36	1	6	1 113.15	.29	6	66 787.0	6 00	392 998	16 657
37	2	7	1 144.08	.29	7	68 642.3	7 00	458 300	22 668
38	2	8	1 175.00	.30	8	70 497.6	8 00	523 510	29 599
39	2	9	1 205.92	.30	9	72 352.9	9 00	588 616	37 451
54 40	30.922	40	1 236.84	1855.31	40	74 208.2	10 00	653 604	46 221
41	2	1	1 267.76	.31	1	76 063.5	11 00	718 462	55 908
42	2	2	1 298.68	.32	2	77 918.8	12 00	783 177	66 510
43	2	3	1 329.60	.32	3	79 774.1	13 00	847 736	78 024
44	2	4	1 360.52	.33	4	81 629.5	14 00	912 125	90 449
54 45	30.922	45	1 391.44	1855.34	45	83 484.8	15 00	976 333	103 782
46	2	6	1 422.36	.34	6	85 340.1	16 00	1 040 347	118 020
47	2	7	1 453.28	.35	7	87 195.5	17 00	1 104 152	133 161
48	3	8	1 484.21	.35	8	89 050.8	18 00	1 167 738	149 200
49	3	9	1 515.13	.36	9	90 906.2	19 00	1 231 091	166 136
54 50	30.923	50	1 546.05	1855.36	50	92 761.5	20 00	1 294 198	183 965
51	3	1	1 576.97	.37	1	94 616.9	21 00	1 357 048	202 683
52	3	2	1 607.89	.37	2	96 472.3	22 00	1 419 627	222 287
53	3	3	1 638.81	.38	3	98 327.6	23 00	1 481 922	242 772
54	3	4	1 669.73	.38	4	100 183.0	24 00	1 543 923	264 135
54 55	30.923	55	1 700.65	1855.39	55	102 038.4	25 00	1 605 615	286 371
56	3	6	1 731.57	.39	6	103 893.8	26 00	1 666 988	309 476
57	3	7	1 762.49	.40	7	105 749.2	27 00	1 728 028	333 445
58	3	8	1 793.42	.40	8	107 604.6	28 00	1 788 723	358 274
59	3	9	1 824.34	.41	9	109 460.0	29 00	1 849 062	383 957
54 60	30.924	60	1 855.26	1855.41	60	111 315.4	30 00	1 909 033	410 490

Latitude 55° to 56°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
55 00	17.78	35.55	53.33	71.11	88.88	106.66	124.44	142.21	159.99	1066.6	2133.2	3199.8	4266.4	5333.0
1	.77	.54	.31	.08	.84	.62	.39	.16	.92	6.2	2.3	8.5	4.7	30.8
2	.76	.52	.29	.05	.81	.57	.34	.10	.86	5.7	1.4	7.2	2.9	28.6
3	.75	.51	.26	1.02	.77	.53	.28	2.04	.79	5.3	30.6	5.8	61.1	6.4
4	.75	.49	.24	0.99	.74	.48	.23	1.98	.73	4.8	29.7	4.5	59.3	4.2
55 05	17.74	35.48	53.22	70.96	88.70	106.44	124.18	141.92	159.66	1064.4	2128.8	3193.2	4257.6	5322.0
6	.73	.47	.20	.93	.66	.40	.13	.86	.59	4.0	7.9	1.9	5.8	19.8
7	.72	.45	.18	.90	.63	.35	.08	.80	.53	3.5	7.0	90.5	4.0	7.5
8	.72	.44	.15	.87	.59	.31	4.02	.74	.46	3.1	6.2	89.2	2.3	5.3
9	.71	.42	.13	.84	.56	.26	3.97	.68	.40	2.6	5.3	7.9	50.5	3.1
55 10	17.70	35.41	53.11	70.81	88.52	106.22	123.92	141.62	159.33	1062.2	2124.4	3186.5	4248.7	5310.9
11	.70	.39	.09	.78	.48	.17	.87	.56	.26	1.7	3.5	5.2	6.9	08.7
12	.69	.38	.07	.75	.45	.13	.82	.51	.20	1.3	2.6	3.9	5.2	6.5
13	.68	.36	.04	.72	.41	.08	.76	.45	.13	0.8	1.7	2.5	3.4	4.2
14	.67	.35	.02	.69	.37	.04	.71	.39	.06	0.4	20.8	81.2	1.6	302.0
55 15	17.67	35.33	53.00	70.66	88.33	106.00	123.66	141.33	159.00	1060.0	2119.9	3179.9	4239.8	5299.8
16	.66	.32	2.98	.63	.30	5.95	.61	.27	8.93	59.5	9.0	8.6	8.1	7.6
17	.65	.30	.95	.60	.26	.91	.56	.21	.86	9.1	8.1	7.2	6.3	5.4
18	.64	.29	.93	.58	.22	.86	.50	.15	.79	8.6	7.3	5.9	4.5	3.2
19	.64	.27	.91	.55	.19	.82	.45	.09	.73	8.2	6.4	4.6	2.8	90.9
55 20	17.63	35.26	52.89	70.52	88.15	105.77	123.40	141.03	158.66	1057.7	2115.5	3173.2	4231.0	5288.7
21	.62	.24	.87	.49	.11	.73	.35	0.97	.59	7.3	4.6	1.9	29.2	6.5
22	.61	.23	.84	.46	.08	.69	.30	.91	.53	6.9	3.7	70.6	7.4	4.3
23	.61	.21	.82	.43	.04	.64	.25	.85	.46	6.4	2.8	69.2	5.6	82.1
24	.60	.20	.80	.40	8.00	.60	.20	.80	.40	6.0	1.9	7.9	3.9	79.8
55 25	17.59	35.18	52.78	70.37	87.97	105.55	123.14	140.74	158.33	1055.5	2111.0	3166.6	4222.1	5277.6
26	.58	.17	.75	.34	.93	.51	.09	.68	.26	5.1	10.1	5.2	20.3	5.4
27	.58	.15	.73	.31	.89	.46	3.04	.62	.20	4.6	09.2	3.9	18.5	3.2
28	.57	.14	.71	.28	.85	.42	2.99	.56	.13	4.2	8.4	2.6	6.8	70.9
29	.56	.12	.69	.25	.82	.37	.94	.50	.06	3.7	7.5	61.2	5.0	68.7
55 30	17.56	35.11	52.67	70.22	87.78	105.33	122.89	140.44	158.00	1053.3	2106.6	3159.9	4213.2	5266.5
31	.55	.10	.64	.19	.74	.29	.84	.38	7.93	2.9	5.7	8.6	11.4	4.3
32	.54	.08	.62	.16	.70	.24	.79	.32	.86	2.4	4.8	7.2	09.6	62.1
33	.54	.07	.60	.13	.67	.20	.73	.26	.80	2.0	3.9	5.9	7.9	59.8
34	.53	.05	.58	.10	.63	.15	.68	.20	.73	1.5	3.0	4.6	6.1	7.6
55 35	17.52	35.04	52.55	70.07	87.59	105.11	122.63	140.14	157.66	1051.1	2102.1	3153.2	4204.3	5255.4
36	.51	.02	.53	.04	.55	.06	.58	.08	.60	0.6	1.2	1.9	2.5	3.1
37	.50	5.01	.51	70.01	.51	5.02	.53	40.02	.53	50.2	100.3	50.6	200.7	50.9
38	.50	4.99	.49	69.98	.48	4.97	.47	39.97	.46	49.7	099.5	49.2	199.0	48.7
39	.49	.98	.46	.95	.44	.93	.42	.91	.40	9.3	8.6	7.9	7.2	6.5
55 40	17.48	34.96	52.44	69.92	87.40	104.89	122.37	139.85	157.33	1048.9	2097.7	3146.6	4195.4	5244.3
41	.47	.95	.42	.89	.36	.84	.32	.79	.26	8.4	6.8	5.2	3.6	42.0
42	.47	.93	.40	.86	.33	.80	.27	.73	.20	8.0	5.9	3.9	1.8	39.8
43	.46	.92	.38	.83	.29	.75	.21	.67	.13	7.5	5.0	2.5	90.0	7.6
44	.45	.90	.35	.80	.25	.71	.16	.61	.06	7.1	4.1	41.2	88.3	5.3
55 45	17.44	34.89	52.33	69.77	87.21	104.66	122.11	139.55	157.00	1046.6	2093.2	3139.9	4186.5	5233.1
46	.44	.87	.31	.74	.18	.62	.06	.49	6.93	6.2	2.3	8.5	4.7	30.9
47	.43	.86	.29	.71	.14	.57	2.01	.43	.86	5.7	1.4	7.2	2.9	28.6
48	.42	.84	.26	.69	.10	.53	1.95	.37	.79	5.3	90.6	5.8	81.1	6.4
49	.41	.83	.24	.66	.07	.48	.90	.31	.73	4.8	89.7	4.5	79.3	4.2
55 50	17.41	34.81	52.22	69.63	87.03	104.44	121.85	139.25	156.66	1044.4	2088.8	3133.2	4177.6	5221.9
51	.40	.80	.20	.60	6.99	.39	.80	.19	.59	3.9	7.9	1.8	5.8	19.7
52	.39	.78	.18	.57	.96	.35	.74	.13	.53	3.5	7.0	30.5	4.0	7.5
53	.38	.77	.15	.54	.92	.30	.69	.07	.46	3.0	6.1	29.1	2.2	5.2
54	.38	.75	.13	.51	.88	.26	.64	9.01	.39	2.6	5.2	7.8	70.4	3.0
55 55	17.37	34.74	52.11	69.48	86.85	104.22	121.58	138.95	156.33	1042.2	2084.3	3126.5	4168.6	5210.8
56	.36	.72	.09	.45	.81	.17	.53	.89	.26	1.7	3.4	5.1	6.8	08.5
57	.35	.71	.06	.42	.77	.13	.48	.83	.19	1.3	2.5	3.8	5.0	6.3
58	.35	.69	.04	.39	.73	.08	.43	.77	.12	0.8	1.6	2.4	3.2	4.1
59	.34	.68	.02	.36	.70	4.04	.37	.72	6.06	40.4	80.7	21.1	61.5	201.8
55 60	17.33	34.66	52.00	69.33	86.66	103.99	121.32	138.66	155.99	1039.9	2079.8	3119.8	4159.7	5199.6

Lat.		Latitude 55° to 56°—Meridional arcs.						Latitude 55°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
55	00	30.924			1855.41					
	1	4	1	30.93	.42	1	1 855.4	0 1	1 066.6	0.1
	2	4	2	61.85	.42	2	3 710.8	2	2 133.2	0.5
	3	4	3	92.78	.43	3	5 566.3	3	3 199.8	1.1
	4	4	4	123.70	.43	4	7 421.7	4	4 266.4	2.0
55	05	30.924	5	154.63	1855.44	5	9 277.1	0 5	5 333.0	3.2
	6	4	6	185.56	.44	6	11 132.6	6	6 399.6	4.6
	7	4	7	216.48	.45	7	12 988.0	7	7 466.2	6.2
	8	4	8	247.41	.45	8	14 843.5	8	8 532.8	8.1
	9	4	9	278.34	.46	9	16 698.9	9	9 599.4	10.3
55	10	30.924	10	309.26	1855.46	10	18 554.4	0 10	10 666.1	12.7
	11	4	1	340.19	.47	1	20 409.9	15	15 999.1	28.6
	12	5	2	371.11	.47	2	22 265.3	20	21 332.1	50.8
	13	5	3	402.04	.48	3	24 120.8	25	26 665.0	79.4
	14	5	4	432.97	.49	4	25 976.3	30	31 997.9	114.4
55	15	30.925	15	463.89	1855.49	15	27 831.8	0 35	37 330.8	155.7
	16	5	6	494.82	.50	6	29 687.3	40	42 663.6	203.3
	17	5	7	525.74	.50	7	31 542.8	45	47 996.4	257.3
	18	5	8	556.67	.51	8	33 398.3	50	53 329.1	317.7
	19	5	9	587.60	.51	9	35 253.8	55	58 661.7	384.4
55	20	30.925	20	618.52	1855.52	20	37 109.3	1 00	63 994.2	457.5
	21	5	1	649.45	.52	1	38 964.8	05	69 326.7	536.9
	22	5	2	680.37	.53	2	40 820.4	10	74 659.0	622.7
	23	6	3	711.30	.53	3	42 675.9	15	79 991.3	714.8
	24	6	4	742.23	.54	4	44 531.4	20	85 323.4	813.3
55	25	30.926	25	773.15	1855.54	25	46 387.0	1 25	90 655.4	918.1
	26	6	6	804.08	.55	6	48 242.5	30	95 987.3	1 029.3
	27	6	7	835.01	.55	7	50 098.1	35	101 319.0	1 146.8
	28	6	8	865.93	.56	8	51 953.6	40	106 650.6	1 270.7
	29	6	9	896.86	.56	9	53 809.2	45	111 982.1	1 400.9
55	30	30.926	30	927.78	1855.57	30	55 664.7	1 50	117 313.3	1 537.5
	31	6	1	958.71	.57	1	57 520.3	55	122 644.5	1 680.5
	32	6	2	989.64	.58	2	59 375.9	2 00	127 975	1 830
	33	6	3	1 020.56	.58	3	61 231.4	3 00	191 930	4 117
	34	6	4	1 051.49	.59	4	63 087.0	4 00	255 846	7 318
55	35	30.927	35	1 082.41	1855.59	35	64 942.6	5 00	319 710	11 432
	36	7	6	1 113.34	.60	6	66 798.2	6 00	383 508	16 459
	37	7	7	1 144.27	.60	7	68 653.8	7 00	447 228	22 398
	38	7	8	1 175.19	.61	8	70 509.4	8 00	510 856	29 246
	39	7	9	1 206.12	.61	9	72 365.0	9 00	574 380	37 004
55	40	30.927	40	1 237.04	1855.62	40	74 220.7	10 00	637 786	45 670
	41	7	1	1 267.97	.62	1	76 076.3	11 00	701 062	55 240
	42	7	2	1 298.90	.63	2	77 931.9	12 00	764 195	65 715
	43	7	3	1 329.82	.63	3	79 787.6	13 00	827 172	77 091
	44	7	4	1 360.75	.64	4	81 643.2	14 00	889 980	89 366
55	45	30.927	45	1 391.68	1855.64	45	83 498.8	15 00	952 605	102 538
	46	7	6	1 422.60	.65	6	85 354.5	16 00	1 015 036	116 604
	47	8	7	1 453.53	.65	7	87 210.1	17 00	1 077 260	131 561
	48	8	8	1 484.45	.66	8	89 065.8	18 00	1 139 263	147 406
	49	8	9	1 515.38	.66	9	90 921.5	19 00	1 201 033	164 135
55	50	30.928	50	1 546.31	1855.67	50	92 777.1	20 00	1 262 558	181 747
	51	8	1	1 577.23	.68	1	94 632.8	21 00	1 323 825	200 236
	52	8	2	1 608.16	.68	2	96 488.4	22 00	1 384 821	219 599
	53	8	3	1 639.08	.69	3	98 344.1	23 00	1 445 535	239 832
	54	8	4	1 670.01	.69	4	100 199.8	24 00	1 505 952	260 931
55	55	30.928	55	1 700.94	1855.70	55	102 055.5	25 00	1 566 063	282 891
	56	8	6	1 731.86	.70	6	103 911.2	26 00	1 625 853	305 709
	57	8	7	1 762.79	.71	7	105 766.9	27 00	1 685 310	329 379
	58	9	8	1 793.72	.71	8	107 622.6	28 00	1 744 423	353 896
	59	9	9	1 824.64	.72	9	109 478.3	29 00	1 803 179	379 257
55	60	30.929	60	1 855.57	1855.72	60	111 334.0	30 00	1 861 567	405 454

Latitude 56° to 57°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
56 00	17.33	34.66	52.00	69.33	86.66	103.99	121.32	138.66	155.99	1039.9	2079.8	3119.8	4159.7	5199.6
1	.32	.65	1.97	.30	.62	.95	.27	.60	.92	9.5	8.9	8.4	7.9	7.3
2	.32	.63	.95	.27	.59	.90	.22	.54	.86	9.0	8.0	7.1	6.1	5.1
3	.31	.62	.93	.24	.55	.86	.16	.48	.79	8.6	7.2	5.7	4.3	2.9
4	.30	.60	.91	.21	.51	.81	.11	.42	.72	8.1	6.3	4.4	2.5	90.6
56 05	17.29	34.59	51.88	69.18	86.48	103.77	121.06	138.36	155.65	1037.7	2075.4	3113.0	4150.7	5188.4
6	.29	.57	.86	.15	.44	.72	1.01	.30	.59	7.2	4.5	1.7	48.9	6.1
7	.28	.56	.84	.12	.40	.68	0.96	.24	.52	6.8	3.6	10.3	7.1	3.9
8	.27	.54	.82	.09	.36	.63	.90	.18	.45	6.3	2.7	09.0	5.3	81.7
9	.26	.53	.79	.06	.33	.59	.85	.12	.38	5.9	1.8	7.7	3.5	79.4
56 10	17.26	34.51	51.77	69.03	86.29	103.54	120.80	138.06	155.32	1035.4	2070.9	3106.3	4141.7	5177.2
11	.25	.50	.75	9.00	.25	.50	.75	8.00	.25	5.0	70.0	5.0	40.0	4.9
12	.24	.48	.73	8.97	.21	.45	.70	7.94	.18	4.5	69.1	3.6	38.2	2.7
13	.23	.47	.70	.94	.18	.41	.64	.88	.11	4.1	8.2	2.3	6.4	70.4
14	.23	.45	.68	.91	.14	.36	.59	.82	5.05	3.6	7.3	100.9	4.6	68.2
56 15	17.22	34.44	51.66	68.88	86.10	103.32	120.54	137.76	154.98	1033.2	2066.4	3099.6	4132.8	5166.0
16	.21	.43	.64	.85	.06	.27	.49	.70	.91	2.7	5.5	8.2	31.0	3.7
17	.20	.41	.62	.82	6.02	.23	.44	.64	.84	2.3	4.6	6.9	29.2	61.5
18	.20	.40	.59	.79	5.99	.18	.38	.58	.78	1.8	3.7	5.5	7.4	59.2
19	.19	.38	.57	.76	.95	.14	.33	.52	.71	1.4	2.8	4.2	5.6	7.0
56 20	17.18	34.37	51.55	68.73	85.91	103.09	120.28	137.46	154.64	1030.9	2061.9	3092.8	4123.8	5154.7
21	.17	.35	.53	.70	.87	.05	.23	.40	.57	0.5	1.0	1.5	2.0	2.5
22	.17	.34	.50	.67	.84	3.00	.17	.34	.51	30.0	60.1	90.1	20.2	50.2
23	.16	.32	.48	.64	.80	2.96	.12	.28	.44	29.6	59.2	88.8	18.4	48.0
24	.15	.31	.46	.61	.76	.91	.07	.22	.37	9.1	8.3	7.4	6.6	5.7
56 25	17.14	34.29	51.43	68.58	85.73	102.87	120.01	137.16	154.31	1028.7	2057.4	3086.1	4114.8	5143.5
26	.14	.28	.41	.55	.69	.82	19.96	.10	.24	8.2	6.5	4.7	3.0	41.2
27	.13	.26	.39	.52	.65	.78	.91	7.04	.17	7.8	5.6	3.4	11.2	39.0
28	.12	.25	.37	.49	.61	.74	.86	6.98	.10	7.4	4.7	2.1	09.4	6.8
29	.12	.23	.34	.46	.58	.69	.80	.92	4.04	6.9	3.8	80.7	7.6	4.5
56 30	17.11	34.22	51.32	68.43	85.54	102.65	119.75	136.86	153.97	1026.5	2052.9	3079.4	4105.8	5132.3
31	.10	.20	.30	.40	.50	.60	.70	.80	.90	6.0	2.0	8.0	4.0	30.0
32	.09	.19	.28	.37	.46	.55	.65	.74	.83	5.5	1.1	6.6	2.2	27.7
33	.09	.17	.25	.34	.43	.51	.59	.68	.77	5.1	50.2	5.3	100.4	5.5
34	.08	.16	.23	.31	.39	.46	.54	.62	.70	4.6	49.3	3.9	098.6	3.2
56 35	17.07	34.14	51.21	68.28	85.35	102.42	119.49	136.56	153.63	1024.2	2048.4	3072.6	4096.8	5121.0
36	.06	.12	.19	.25	.31	.37	.44	.50	.56	3.7	7.5	71.2	5.0	18.7
37	.05	.11	.17	.22	.27	.33	.39	.44	.49	3.3	6.6	69.9	3.2	6.5
38	.05	.09	.14	.19	.24	.28	.33	.38	.43	2.8	5.7	8.5	91.4	4.2
39	.04	.08	.12	.16	.20	.24	.28	.32	.36	2.4	4.8	7.2	89.6	12.0
56 40	17.03	34.06	51.10	68.13	85.16	102.19	119.23	136.26	153.29	1021.9	2043.9	3065.8	4087.8	5109.7
41	.02	.05	.08	.10	.12	.15	.18	.20	.22	1.5	3.0	4.5	6.0	7.5
42	.02	.03	.05	.07	.09	.10	.12	.14	.15	1.0	2.1	3.1	4.2	5.2
43	.01	.02	.03	.04	.05	.06	.07	.08	.09	0.6	1.2	1.8	2.4	2.9
44	.00	4.00	1.01	8.01	5.01	2.01	9.02	6.02	3.02	20.1	40.3	60.4	80.6	100.7
56 45	17.00	33.99	50.98	67.98	84.98	101.97	118.96	135.96	152.95	1019.7	2039.4	3059.1	4078.7	5098.4
46	6.99	.97	.96	.95	.94	.92	.91	.90	.88	9.2	8.5	7.7	6.9	6.2
47	.98	.96	.94	.92	.90	.88	.86	.84	.82	8.8	7.6	6.4	5.1	3.9
48	.97	.94	.92	.89	.86	.83	.81	.78	.75	8.3	6.7	5.0	3.3	91.7
49	.96	.93	.89	.86	.83	.79	.75	.72	.68	7.9	5.8	3.6	71.5	89.4
56 50	16.96	33.91	50.87	67.83	84.79	101.74	118.70	135.66	152.61	1017.4	2034.9	3052.3	4069.7	5087.2
51	.95	.90	.85	.80	.75	.70	.65	.60	.54	7.0	4.0	50.9	7.9	4.9
52	.94	.88	.83	.77	.71	.65	.59	.54	.48	6.5	3.1	49.6	6.1	2.6
53	.93	.87	.80	.74	.68	.61	.54	.48	.41	6.1	2.1	8.2	4.3	80.4
54	.93	.85	.78	.71	.64	.56	.49	.42	.34	5.6	1.2	6.9	2.5	78.1
56 55	16.92	33.84	50.76	67.68	84.60	101.52	118.43	135.36	152.27	1015.2	2030.3	3045.5	4060.7	5075.8
56	.91	.82	.74	.65	.56	.47	.38	.30	.21	4.7	29.4	4.1	58.9	3.6
57	.90	.81	.71	.62	.52	.43	.33	.24	.14	4.3	8.5	2.8	7.1	71.3
58	.90	.79	.69	.59	.49	.38	.28	.17	.07	3.8	7.6	1.4	5.2	69.1
59	.89	.78	.67	.56	.45	.34	.22	.11	2.01	3.4	6.7	40.1	3.4	6.8
56 60	16.88	33.76	50.65	67.53	84.41	101.29	118.17	135.05	151.94	1012.9	2025.8	3038.7	4051.6	5064.5

Lat.		Latitude 56° to 57°—Meridional arcs.						Latitude 56°—Co-ordinates of curvature.		
		Value of 1′	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
56	00	30.929			1855.72					
	1	9	1	30.93	.73	1	1 855.7	0 1	1 039.9	0.1
	2	9	2	61.86	.73	2	3 711.5	2	2 079.8	0.5
	3	9	3	92.79	.74	3	5 567.2	3	3 119.8	1.1
	4	9	4	123.72	.74	4	7 422.9	4	4 159.7	2.0
56	05	30.929	5	154.66	1855.75	5	9 278.7	0 5	5 199.6	3.1
	6	9	6	185.59	.75	6	11 134.4	6	6 239.5	4.5
	7	9	7	216.52	.76	7	12 990.2	7	7 279.4	6.1
	8	9	8	247.45	.76	8	14 845.9	8	8 319.3	8.0
	09	29	9	278.38	.77	9	16 701.7	9	9 359.2	10.2
56	10	30.930	10	309.31	1855.77	10	18 557.5	0 10	10 399.2	12.5
	11	0	1	340.24	.78	1	20 413.2	15	15 598.7	28.2
	12	0	2	371.17	.78	2	22 269.0	20	20 798.3	50.2
	13	0	3	402.11	.79	3	24 124.8	25	25 997.8	78.4
	14	0	4	433.04	.79	4	25 980.6	30	31 197.3	112.9
56	15	30.930	15	463.97	1855.80	15	27 836.4	0 35	36 396.7	153.6
	16	0	6	494.90	.80	6	29 692.2	40	41 596.0	200.6
	17	0	7	525.83	.81	7	31 548.0	45	46 795.4	253.9
	18	0	8	556.76	.81	8	33 403.8	50	51 994.6	313.5
	19	0	9	587.69	.82	9	35 259.6	55	57 193.8	379.3
56	20	30.930	20	618.62	1855.82	20	37 115.4	1 00	62 392.9	451.4
	21	0	1	649.56	.83	1	38 971.3	05	67 591.9	529.8
	22	1	2	680.49	.83	2	40 827.1	10	72 790.8	614.4
	23	1	3	711.42	.84	3	42 682.9	15	77 989.6	705.3
	24	1	4	742.35	.84	4	44 538.8	20	83 188.2	802.5
56	25	30.931	25	773.28	1855.85	25	46 394.6	1 25	88 386.8	905.9
	26	1	6	804.21	.85	6	48 250.5	30	93 585.2	1 015.6
	27	1	7	835.14	.86	7	50 106.3	35	98 783.5	1 131.6
	28	1	8	866.07	.86	8	51 962.2	40	103 981.7	1 253.8
	29	1	9	897.01	.87	9	53 818.0	45	109 179.7	1 382.4
56	30	30.931	30	927.94	1855.87	30	55 673.9	1 50	114 377.5	1 517.1
	31	1	1	958.87	.88	1	57 529.8	55	119 575.2	1 658.2
	32	1	2	989.80	.88	2	59 385.7	2 00	124 773	1 806
	33	1	3	1 020.73	.89	3	61 241.6	3 00	187 126	4 062
	34	2	4	1 051.66	.89	4	63 097.5	4 00	249 441	7 221
56	35	30.932	35	1 082.59	1855.90	35	64 953.4	5 00	311 703	11 280
	36	2	6	1 113.52	.90	6	66 809.3	6 00	373 900	16 241
	37	2	7	1 144.46	.91	7	68 665.2	7 00	436 019	22 100
	38	2	8	1 175.39	.91	8	70 521.1	8 00	498 047	28 858
	39	2	9	1 206.32	.92	9	72 377.0	9 00	559 970	36 512
56	40	30.932	40	1 237.25	1855.92	40	74 232.9	10 00	621 776	45 062
	41	2	1	1 268.18	.93	1	76 088.8	11 00	683 451	54 506
	42	2	2	1 299.11	.93	2	77 944.8	12 00	744 984	64 840
	43	2	3	1 330.04	.94	3	79 800.7	13 00	806 361	76 064
	44	2	4	1 360.97	.94	4	81 656.7	14 00	867 569	88 174
56	45	30.932	45	1 391.91	1855.95	45	83 512.6	15 00	928 595	101 169
	46	3	6	1 422.84	.95	6	85 368.6	16 00	989 427	115 046
	47	3	7	1 453.77	.96	7	87 224.5	17 00	1 050 051	129 801
	48	3	8	1 484.70	.96	8	89 080.5	18 00	1 110 456	145 432
	49	3	9	1 515.63	.97	9	90 936.4	19 00	1 170 629	161 935
56	50	30.933	50	1 546.56	1855.97	50	92 792.4	20 00	1 230 556	179 308
	51	3	1	1 577.49	.98	1	94 648.4	21 00	1 290 226	197 545
	52	3	2	1 608.42	.98	2	96 504.4	22 00	1 349 625	216 644
	53	3	3	1 639.36	5.99	3	98 360.4	23 00	1 408 742	236 600
	54	3	4	1 670.29	6.00	4	100 216.3	24 00	1 467 564	257 410
56	55	30.933	55	1 701.22	1856.00	55	102 072.3	25 00	1 526 079	279 069
	56	3	6	1 732.15	.01	6	103 928.3	26 00	1 584 275	301 572
	57	4	7	1 763.08	.01	7	105 784.4	27 00	1 642 138	324 914
	58	4	8	1 794.01	.02	8	107 640.4	28 00	1 699 658	349 092
	59	4	9	1 824.94	.02	9	109 496.4	29 00	1 756 822	374 099
56	60	30.934	60	1 855.87	1856.03	60	111 352.4	30 00	1 813 618	399 930

Latitude 57° to 58°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
57 00	16.88	33.76	50.65	67.53	84.41	101.29	118.17	135.05	151.94	1012.9	2025.8	3038.7	4051.6	5064.5
1	.87	.75	.62	50	.37	.25	.12	4.99	.87	2.5	4.9	7.4	49.8	2.3
2	.87	.73	.60	.47	.33	.20	.06	.93	.80	2.0	4.0	6.0	8.0	60.0
3	.86	.72	.58	.44	.30	.15	8.01	.87	.73	1.5	3.1	4.6	6.2	57.7
4	.85	.70	.56	.41	.26	.11	7.96	.81	.67	1.1	2.2	3.3	4.4	5.5
57 05	16.84	33.69	50.53	67.38	84.22	101.06	117.90	134.75	151.60	1010.6	2021.3	3031.9	4042.6	5053.2
6	.84	.67	.51	.35	.18	1.02	.85	.69	.53	10.2	20.4	30.6	40.7	50.9
7	.83	.66	.49	.32	.14	0.97	.80	.63	.46	09.7	19.5	29.2	38.9	48.7
8	.82	.64	.46	.29	.11	.93	.75	.57	.39	9.3	8.6	7.8	7.1	6.4
9	.81	.63	.44	.26	.07	.88	.69	.51	.32	8.8	7.7	6.5	5.3	4.1
57 10	16.81	33.61	50.42	67.23	84.03	100.84	117.64	134.45	151.26	1008.4	2016.8	3025.1	4033.5	5041.9
11	.80	.60	.40	.20	3.99	.79	.59	.39	.19	7.9	5.9	3.8	31.7	39.6
12	.79	.58	.37	.17	.95	.75	.53	.33	.12	7.5	5.0	2.4	29.9	7.3
13	.78	.57	.35	.13	.92	.70	.48	.27	1.05	7.0	4.0	21.0	8.0	5.1
14	.78	.55	.33	.10	.88	.66	.43	.21	0.99	6.6	3.1	19.7	6.2	2.8
57 15	16.77	33.54	50.30	67.07	83.84	100.61	117.37	134.15	150.92	1006.1	2012.2	3018.3	4024.4	5030.5
16	.76	.52	.28	.04	.80	.56	.32	.09	.85	5.6	1.3	6.9	2.6	28.2
17	.75	.51	.26	7.01	.76	.52	.27	4.03	.78	5.2	10.4	5.6	20.8	6.0
18	.75	.49	.24	6.98	.73	.47	.22	3.97	.71	4.7	09.5	4.2	19.0	3.7
19	.74	.48	.21	.95	.69	.43	.16	.90	.65	4.3	8.6	2.9	7.1	21.4
57 20	16.73	33.46	50.19	66.92	83.65	100.38	117.11	133.84	150.58	1003.8	2007.7	3011.5	4015.3	5019.2
21	.72	.45	.17	.89	.61	.34	.06	.78	.51	3.4	6.8	10.1	3.5	6.9
22	.72	.43	.15	.86	.57	.29	7.00	.72	.44	2.9	5.9	08.8	11.7	4.6
23	.71	.42	.12	.83	.54	.25	6.95	.66	.37	2.5	4.9	7.4	09.9	2.3
24	.70	.40	.10	.80	.50	.20	.90	.60	.30	2.0	4.0	6.0	8.1	10.1
57 25	16.69	33.39	50.08	66.77	83.46	100.16	116.84	133.54	150.24	1001.6	2003.1	3004.7	4006.2	5007.8
26	.68	.37	.05	.74	.42	.11	.79	.48	.17	1.1	2.2	3.3	4.4	5.5
27	.68	.35	.03	.71	.38	.06	.74	.42	.10	0.6	1.3	1.9	2.6	3.2
28	.67	.34	50.01	.68	.35	100.02	.69	.36	50.03	1000.2	2000.4	3000.6	4000.8	5001.0
29	.66	.32	49.99	.65	.31	99.97	.63	.30	49.96	999.7	1999.5	2999.2	3999.0	4998.7
57 30	16.65	33.31	49.96	66.62	83.27	99.93	116.58	133.24	149.89	999.3	1998.6	2997.9	3997.1	4996.4
31	.65	.29	.94	.59	.23	.88	.53	.18	.82	8.8	7.7	6.5	5.3	4.1
32	.64	.28	.92	.56	.19	.84	.47	.12	.75	8.4	6.8	5.1	3.5	91.9
33	.63	.26	.90	.53	.16	.79	.42	.06	.69	7.9	5.8	3.7	91.7	89.6
34	.62	.25	.87	.50	.12	.75	.37	3.00	.62	7.5	4.9	2.4	89.8	7.3
57 35	16.62	33.23	49.85	66.47	83.08	99.70	116.31	132.93	149.55	997.0	1994.0	2991.0	3988.0	4985.0
36	.61	.22	.83	.44	.04	.65	.26	.87	.48	6.5	3.1	89.6	6.2	2.7
37	.60	.20	.81	.41	3.00	.61	.21	.81	.41	6.1	2.2	8.3	4.4	80.5
38	.59	.19	.78	.38	2.97	.56	.16	.75	.35	5.6	1.3	6.9	2.5	78.2
39	.59	.17	.76	.35	.93	.52	.10	.69	.28	5.2	90.4	5.5	80.7	5.9
57 40	16.58	33.16	49.74	66.32	82.89	99.47	116.05	132.63	149.21	994.7	1989.5	2984.2	3978.9	4973.6
41	.57	.14	.71	.29	.85	.43	6.00	.57	.14	4.3	8.6	2.8	7.1	71.3
42	.56	.13	.69	.25	.81	.38	5.94	.51	.07	3.8	7.6	1.4	5.3	69.1
43	.56	.11	.67	.22	.78	.34	.89	.45	9.01	3.4	6.7	80.1	3.4	6.8
44	.55	.10	.65	.19	.74	.29	.84	.39	8.94	2.9	5.8	78.7	71.6	4.5
57 45	16.54	33.08	49.62	66.16	82.70	99.24	115.78	132.33	148.87	992.4	1984.9	2977.3	3969.8	4962.2
46	.53	.07	.60	.13	.66	.20	.73	.26	.80	2.0	4.0	6.0	7.9	59.9
47	.53	.05	.58	.10	.62	.15	.68	.20	.73	1.5	3.1	4.6	6.1	7.6
48	.52	.04	.55	.07	.59	.11	.63	.14	.66	1.1	2.1	3.2	4.3	5.4
49	.51	.02	.53	.04	.55	.06	.57	.08	.59	0.6	1.2	1.8	2.5	3.1
57 50	16.50	33.01	49.51	66.01	82.51	99.02	115.52	132.02	148.53	990.2	1980.3	2970.5	3960.6	4950.8
51	.49	2.99	.49	5.98	.47	8.97	.47	1.96	.46	89.7	79.4	69.1	58.8	48.5
52	.49	.97	.46	.95	.43	.92	.41	.90	.39	9.2	8.5	7.7	7.0	6.2
53	.48	.96	.44	.92	.40	.88	.36	.84	.32	8.8	7.5	6.4	5.1	3.9
54	.47	.94	.42	.89	.36	.83	.30	.78	.25	8.3	6.6	5.0	3.3	41.6
57 55	16.46	32.93	49.39	65.86	82.32	98.79	115.25	131.72	148.18	987.9	1975.7	2963.6	3951.5	4939.4
56	.46	.91	.37	.83	.28	.74	.20	.66	.11	7.4	4.8	2.2	49.7	7.1
57	.45	.90	.35	.80	.24	.70	.14	.59	8.04	7.0	3.9	60.9	7.8	4.8
58	.44	.88	.33	.77	.21	.65	.09	.53	7.97	6.5	3.0	59.5	6.0	2.5
59	.43	.87	.30	.74	.17	.60	5.03	.47	.90	6.0	2.1	8.1	4.2	30.2
57 60	16.43	32.85	49.28	65.71	82.13	98.56	114.98	131.41	147.84	985.6	1971.2	2956.8	3942.3	4927.9

Lat.		Latitude 57° to 58°—Meridional arcs.						Latitude 57°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
57	00	30.934			1856.03					
	1	4	1	30.94	.03	1	1 856.0	0 1	1 012.9	0.1
	2	4	2	61.87	.04	2	3 712.1	2	2 025.8	0.5
	3	4	3	92.81	.04	3	5 568.1	3	3 038.7	1.1
	4	4	4	123.75	.05	4	7 424.1	4	4 051.6	2.0
57	05	30.934	5	154.68	1856.05	5	9 280.2	0 5	5 064.5	3.1
	6	4	6	185.62	.06	6	11 136.2	6	6 077.4	4.4
	7	4	7	216.55	.06	7	12 992.3	7	7 090.3	6.0
	8	4	8	247.49	.07	8	14 848.4	8	8 103.3	7.9
	9	5	9	278.43	.07	9	16 704.4	9	9 116.2	10.0
57	10	30.935	10	309.36	1856.08	10	18 560.5	0 10	10 129.1	12.4
	11	5	1	340.30	.08	1	20 416.6	15	15 193.6	27.8
	12	5	2	371.24	.09	2	22 272.7	20	20 258.1	49.4
	13	5	3	402.17	.09	3	24 128.7	25	25 322.5	77.2
	14	5	4	433.11	.10	4	25 984.8	30	30 387.0	111.2
57	15	30.935	15	464.04	1856.10	15	27 840.9	0 35	35 451.3	151.3
	16	5	6	494.98	.11	6	29 697.0	40	40 515.6	197.7
	17	5	7	525.92	.11	7	31 553.1	45	45 579.9	250.2
	18	5	8	556.85	.12	8	33 409.3	50	50 644.1	308.9
	19	5	9	587.79	.12	9	35 265.4	55	55 708.2	373.7
57	20	30.935	20	618.73	1856.13	20	37 121.5	1 00	60 772.3	444.8
	21	6	1	649.66	.13	1	38 977.6	05	65 836.2	522.0
	22	6	2	680.60	.14	2	40 833.7	10	70 900.1	605.4
	23	6	3	711.53	.14	3	42 689.9	15	75 963.8	695.0
	24	6	4	742.47	.15	4	44 546.0	20	81 027.5	790.7
57	25	30.936	25	773.41	1856.15	25	46 402.2	1 25	86 091.0	892.6
	26	6	6	804.34	.16	6	48 258.3	30	91 154.3	1 000.7
	27	6	7	835.28	.16	7	50 114.5	35	96 217.6	1 115.0
	28	6	8	866.22	.17	8	51 970.7	40	101 280.7	1 235.5
	29	6	9	897.15	.17	9	53 826.8	45	106 343.6	1 362.1
57	30	30.936	30	928.09	1856.18	30	55 683.0	1 50	111 406.4	1 494.9
	31	6	1	959.02	.18	1	57 539.2	55	116 469.1	1 633.9
	32	6	2	989.96	.19	2	59 395.4	2 00	121 532	1 779
	33	7	3	1 020.90	.19	3	61 251.6	3 00	182 265	4 003
	34	7	4	1 051.83	.20	4	63 107.8	4 00	242 959	7 115
57	35	30.937	35	1 082.77	1856.20	35	64 964.0	5 00	303 601	11 115
	36	7	6	1 113.71	.21	6	66 820.2	6 00	364 178	16 002
	37	7	7	1 144.64	.21	7	68 676.4	7 00	424 677	21 776
	38	7	8	1 175.58	.22	8	70 532.6	8 00	485 085	28 434
	39	7	9	1 206.51	.22	9	72 388.8	9 00	545 389	35 976
57	40	30.937	40	1 237.45	1856.23	40	74 245.0	10 00	605 577	44 400
	41	7	1	1 268.39	.23	1	76 101.3	11 00	665 634	53 704
	42	7	2	1 299.32	.24	2	77 957.5	12 00	725 549	63 886
	43	7	3	1 330.26	.24	3	79 813.7	13 00	785 308	74 944
	44	7	4	1 361.20	.25	4	81 669.9	14 00	844 900	86 875
57	45	30.938	45	1 392.13	1856.25	45	83 526.2	15 00	904 310	99 677
	46	8	6	1 423.07	.26	6	85 382.5	16 00	963 526	113 348
	47	8	7	1 454.00	.26	7	87 238.7	17 00	1 022 536	127 884
	48	8	8	1 484.94	.27	8	89 095.0	18 00	1 081 327	143 282
	49	8	9	1 515.88	.27	9	90 951.2	19 00	1 139 886	159 539
57	50	30.938	50	1 546.81	1856.28	50	92 807.5	20 00	1 198 201	176 651
	51	8	1	1 577.75	.28	1	94 663.8	21 00	1 256 260	194 615
	52	8	2	1 608.69	.29	2	96 520.1	22 00	1 314 048	213 427
	53	8	3	1 639.62	.29	3	98 376.4	23 00	1 371 556	233 082
	54	8	4	1 670.56	.30	4	100 232.7	24 00	1 428 770	253 578
57	55	30.938	55	1 701.49	1856.30	55	102 089.0	25 00	1 485 678	274 908
	56	8	6	1 732.43	.31	6	103 945.3	26 00	1 542 267	297 070
	57	9	7	1 763.37	.31	7	105 801.6	27 00	1 598 525	320 057
	58	9	8	1 794.30	.31	8	107 657.9	28 00	1 654 442	343 865
	59	9	9	1 825.24	.32	9	109 514.2	29 00	1 710 004	368 489
57	60	30.939	60	1 856.18	1856.32	60	111 370.5	30 00	1 765 199	393 924

Latitude 58° to 59°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
58 00	16.43	32.85	49.28	65.71	82.13	98.56	114.98	131.41	147.84	985.6	1971.2	2956.8	3942.3	4927.9
1	.42	.84	.26	.68	.09	.51	.93	.35	.77	5.1	70.3	5.4	40.5	5.6
2	.41	.82	.23	.65	.06	.47	.87	.29	.70	4.7	69.4	4.0	38.7	3.3
3	.40	.81	.21	.61	2.02	.42	.82	.23	.63	4.2	8.4	2.6	6.8	21.0
4	.40	.79	.19	.58	1.98	.38	.77	.17	.56	3.8	7.5	51.3	5.0	18.8
58 05	16.39	32.78	49.16	65.55	81.94	98.33	114.71	131.11	147.49	983.3	1966.6	2949.9	3933.2	4916.5
6	.38	.76	.14	.52	.90	.28	.66	1.04	.42	2.8	5.7	8.5	31.3	4.2
7	.37	.75	.12	.49	.86	.24	.61	0.98	.35	2.4	4.8	7.1	29.5	11.9
8	.37	.73	.10	.46	.83	.19	.56	.92	.29	1.9	3.8	5.8	7.7	09.6
9	.36	.72	.07	.43	.79	.15	.50	.86	.22	1.5	2.9	4.4	5.8	7.3
58 10	16.35	32.70	49.05	65.40	81.75	98.10	114.45	130.80	147.15	981.0	1962.0	2943.0	3924.0	4905.0
11	.34	.68	.03	.37	.71	.05	.40	.74	.08	0.5	1.1	1.6	2.2	2.7
12	.33	.67	9.00	.34	.67	8.01	.34	.68	7.01	80.1	60.2	40.2	20.3	900.4
13	.33	.65	8.98	.31	.64	7.96	.29	.62	6.94	79.6	59.2	38.9	18.5	898.1
14	.32	.64	.96	.28	.60	.92	.23	.56	.87	9.2	8.3	7.5	6.7	5.8
58 15	16.31	32.62	48.93	65.25	81.56	97.87	114.18	130.49	146.81	978.7	1957.4	2936.1	3914.8	4893.5
16	.30	.61	.91	.22	.52	.82	.13	.43	.74	8.2	6.5	4.7	3.0	91.2
17	.30	.59	.89	.19	.48	.78	.07	.37	.67	7.8	5.6	3.4	11.1	88.9
18	.29	.58	.87	.15	.45	.73	4.02	.31	.60	7.3	4.6	2.0	09.3	6.6
19	.28	.56	.84	.12	.41	.69	3.96	.25	.53	6.9	3.7	30.6	7.5	4.3
58 20	16.27	32.55	48.82	65.09	81.37	97.64	113.91	130.19	146.46	976.4	1952.8	2929.2	3905.6	4882.0
21	.26	.53	.80	.06	.33	.59	.86	.13	.39	5.9	1.9	7.8	3.8	79.7
22	.26	.52	.77	.03	.29	.55	.80	.07	.32	5.5	1.0	6.5	2.0	7.4
23	.25	.50	.75	5.00	.25	.50	.75	30.00	.25	5.0	50.0	5.1	900.1	5.1
24	.24	.49	.73	4.97	.21	.46	.70	29.94	.18	4.6	49.1	3.7	898.3	2.8
58 25	16.24	32.47	48.70	64.94	81.18	97.41	113.64	129.88	146.12	974.1	1948.2	2922.3	3896.4	4870.5
26	.23	.45	.68	.91	.14	.36	.59	.82	6.05	3.6	7.3	20.9	4.6	68.2
27	.22	.44	.66	.88	.10	.32	.54	.76	5.98	3.2	6.4	19.6	2.8	5.9
28	.21	.42	.64	.85	.06	.27	.49	.70	.91	2.7	5.4	8.2	90.9	3.6
29	.20	.41	.61	.82	1.02	.23	.43	.64	.84	2.3	4.5	6.8	89.1	61.3
58 30	16.20	32.39	48.59	64.79	80.98	97.18	113.38	129.57	145.77	971.8	1943.6	2915.4	3887.2	4859.0
31	.19	.38	.57	.76	.94	.13	.33	.51	.70	1.3	2.7	4.0	5.4	6.7
32	.18	.36	.54	.73	.90	.09	.27	.45	.63	0.9	1.8	2.7	3.5	4.4
33	.17	.35	.52	.69	.87	.04	.22	.39	.56	0.4	40.8	11.3	81.7	52.1
34	.17	.33	.50	.66	.83	7.00	.16	.33	.49	70.0	39.9	09.9	79.9	49.8
58 35	16.16	32.32	48.47	64.63	80.79	96.95	113.11	129.27	145.43	969.5	1939.0	2908.5	3878.0	4847.5
36	.15	.30	.45	.60	.75	.90	.06	.21	.36	9.0	8.1	7.1	6.2	5.2
37	.14	.29	.43	.57	.71	.86	3.00	.14	.29	8.6	7.2	5.7	4.3	2.9
38	.14	.27	.41	.54	.68	.81	2.95	.08	.22	8.1	6.2	4.4	2.5	40.6
39	.13	.26	.38	.51	.64	.77	.89	9.02	.15	7.7	5.3	3.0	70.6	38.3
58 40	16.12	32.24	48.36	64.48	80.60	96.72	112.84	128.96	145.08	967.2	1934.4	2901.6	3868.8	4836.0
41	.11	.22	.34	.45	.56	.67	.79	.90	5.01	6.7	3.5	900.2	6.9	3.7
42	.10	.21	.31	.42	.52	.63	.73	.84	4.94	6.3	2.6	898.8	5.1	31.4
43	.10	.19	.29	.39	.49	.58	.68	.78	.87	5.8	1.6	7.4	3.3	29.1
44	.09	.18	.27	.36	.45	.54	.62	.71	.80	5.4	30.7	6.1	61.4	6.8
58 45	16.08	32.16	48.24	64.33	80.41	96.49	112.57	128.65	144.73	964.9	1929.8	2894.7	3859.6	4824.4
46	.07	.15	.22	.30	.37	.44	.52	.59	.67	4.4	8.9	3.3	7.7	22.1
47	.06	.13	.20	.27	.33	.40	.46	.53	.60	4.0	8.0	1.9	5.9	19.8
48	.06	.12	.18	.23	.30	.35	.41	.47	.53	3.5	7.0	90.5	4.0	7.5
49	.05	.10	.15	.20	.26	.30	.35	.41	.46	3.0	6.1	89.1	2.2	5.2
58 50	16.04	32.09	48.13	64.17	80.22	96.26	112.30	128.34	144.39	962.6	1925.2	2887.7	3850.3	4812.9
51	.04	.07	.11	.14	.18	.21	.25	.28	.32	2.1	4.3	6.4	48.5	10.6
52	.03	.06	.08	.11	.14	.17	.19	.22	.25	1.7	3.3	5.0	6.6	08.3
53	.02	.04	.06	.08	.10	.12	.14	.16	.18	1.2	2.4	3.6	4.8	6.0
54	.01	.02	.04	.05	.06	.07	.08	.10	.11	0.7	1.4	2.2	2.9	3.7
58 55	16.00	32.01	48.01	64.02	80.02	96.03	112.03	128.04	144.04	960.3	1920.5	2880.8	3841.1	4801.3
56	6.00	1.99	7.99	3.99	79.99	5.98	1.98	7.97	3.97	59.8	19.6	79.4	39.2	799.0
57	5.99	.98	.97	.96	.95	.93	.92	.91	.90	9.3	8.7	8.0	7.4	6.7
58	.98	.96	.94	.92	.91	.89	.87	.85	.83	8.9	7.7	6.6	5.5	4.4
59	.97	.95	.92	.89	.87	.84	.81	.79	.76	8.4	6.8	5.3	3.7	92.1
58 60	15.97	31.93	47.90	63.86	79.83	95.80	111.76	127.73	143.69	958.0	1915.9	2873.9	3831.8	4789.8

Lat.		Latitude 58° to 59°—Meridional arcs.						Latitude 58°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
58	00	30.939			1856.32					
	1	9	1	30.94	.33	1	1 856.3	0 1	985.6	0.1
	2	9	2	61.88	.33	2	3 712.7	2	1 971.2	0.5
	3	9	3	92.82	.34	3	5 569.0	3	2 956.8	1.1
	4	9	4	123.76	.34	4	7 425.3	4	3 942.3	1.9
58	05	30.939	5	154.71	1856.35	5	9 281.7	0 5	4 927.9	3.0
	6	9	6	185.65	.35	6	11 138.0	6	5 913.5	4.4
	7	9	7	216.59	.36	7	12 994.4	7	6 899.1	6.0
	8	9	8	247.53	.36	8	14 850.7	8	7 884.7	7.8
	9	39	9	278.47	.37	9	16 707.1	9	8 870.3	9.8
58	10	30.940	10	309.41	1856.37	10	18 563.5	0 10	9 855.8	12.2
	11	0	1	340.35	.38	11	20 419.9	15	14 783.7	27.4
	12	0	2	371.29	.38	12	22 276.2	20	19 711.6	48.6
	13	0	3	402.24	.39	13	24 132.6	25	24 639.5	76.0
	14	0	4	433.18	.39	14	25 989.0	30	29 567.3	109.4
58	15	30.940	15	464.12	1856.40	15	27 845.4	0 35	34 495.0	148.9
	16	0	6	495.06	.40	16	29 701.8	40	39 422.8	194.5
	17	0	7	526.00	.41	17	31 558.2	45	44 350.4	246.2
	18	0	8	556.94	.41	18	33 414.6	50	49 278.0	303.9
	19	0	9	587.88	.42	19	35 271.0	55	54 205.5	367.7
58	20	30.940	20	618.82	1856.42	20	37 127.5	1 00	59 132.9	437.6
	21	0	1	649.77	.43	21	38 983.9	05	64 060.2	513.6
	22	1	2	680.71	.43	22	40 840.3	10	68 987.5	595.6
	23	1	3	711.65	.44	23	42 696.8	15	73 914.7	683.8
	24	1	4	742.59	.44	24	44 553.2	20	78 841.7	778.0
58	25	30.941	25	773.53	1856.45	25	46 409.6	1 25	83 768.6	878.3
	26	1	6	804.47	.45	26	48 266.1	30	88 695.4	984.6
	27	1	7	835.41	.46	27	50 122.6	35	93 622.0	1 097.1
	28	1	8	866.35	.46	28	51 979.0	40	98 548.5	1 215.6
	29	1	9	897.30	.47	29	53 835.5	45	103 474.8	1 340.2
58	30	30.941	30	928.24	1856.47	30	55 692.0	1 00	108 401.0	1 470.8
	31	1	1	959.18	.48	31	57 548.4	55	113 327.1	1 607.6
	32	1	2	990.12	.48	32	59 404.9	2 00	118 253	1 750
	33	1	3	1 021.06	.49	33	61 261.4	3 00	177 347	3 938
	34	2	4	1 052.00	.49	34	63 117.9	4 00	236 402	7 000
58	35	30.942	35	1 082.94	1856.50	35	64 974.4	5 00	295 406	10 936
	36	2	6	1 113.88	.50	36	66 830.9	6 00	354 344	15 744
	37	2	7	1 144.83	.51	37	68 687.4	7 00	413 205	21 425
	38	2	8	1 175.77	.51	38	70 543.9	8 00	471 976	27 976
	39	2	9	1 206.71	.52	39	72 400.4	9 00	530 643	35 396
58	40	30.942	40	1 237.65	1856.52	40	74 256.9	10 00	589 194	43 684
	41	2	1	1 268.59	.53	41	76 113.5	11 00	647 616	52 837
	42	2	2	1 299.53	.53	42	77 970.0	12 00	705 896	62 854
	43	2	3	1 330.47	.54	43	79 826.5	13 00	764 021	73 733
	44	2	4	1 361.41	.54	44	81 683.1	14 00	821 979	85 470
58	45	30.942	45	1 392.35	1856.55	45	83 539.6	15 00	879 757	98 064
	46	3	6	1 423.30	.55	46	85 396.2	16 00	937 342	111 512
	47	3	7	1 454.24	.56	47	87 252.7	17 00	994 722	125 811
	48	3	8	1 485.18	.56	48	89 109.3	18 00	1 051 884	140 957
	49	3	9	1 516.12	.57	49	90 965.8	19 00	1 108 815	156 948
58	50	30.943	50	1 547.06	1856.57	50	92 822.4	20 00	1 165 504	173 780
	51	3	1	1 578.00	.58	51	94 679.0	21 00	1 221 937	191 449
	52	3	2	1 608.94	.58	52	96 535.6	22 00	1 278 103	209 951
	53	3	3	1 639.88	.59	53	98 392.1	23 00	1 333 988	229 282
	54	3	4	1 670.83	.59	54	100 248.7	24 00	1 389 581	249 439
58	55	30.943	55	1 701.77	1856.59	55	102 105.3	25 00	1 444 870	270 416
	56	3	6	1 732.71	.60	56	103 961.9	26 00	1 499 843	292 209
	57	3	7	1 763.65	.60	57	105 818.5	27 00	1 554 486	314 813
	58	3	8	1 794.59	.61	58	107 675.1	28 00	1 608 789	338 224
	59	4	9	1 825.53	.61	59	109 531.8	29 00	1 662 740	362 436
58	60	30.944	60	1 856.47	1856.62	60	111 388.4	30 00	1 716 327	387 443

Latitude 59° to 60°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
59 00	15.97	31.93	47.90	63.86	79.83	95.80	111.76	127.73	143.69	958.0	1915.9	2873.9	3831.8	4789.8
1	.96	.92	.88	.83	.79	.75	.71	.67	.62	7.5	5.0	2.5	30.0	7.5
2	.95	.90	.85	.80	.75	.70	.65	.61	.55	7.0	4.1	71.1	28.1	5.2
3	.94	.89	.83	.77	.71	.66	.60	.55	.48	6.6	3.1	69.7	6.3	2.8
4	.94	.87	.81	.74	.67	.61	.54	.48	.41	6.1	2.2	8.3	4.4	80.5
59 05	15.93	31.85	47.78	63.71	79.63	95.56	111.49	127.42	143.34	955.6	1911.3	2866.9	3822.6	4778.2
6	.92	.84	.76	.67	.60	.52	.44	.36	.28	5.2	10.4	5.5	20.7	5.9
7	.91	.82	.74	.65	.56	.47	.38	.30	.21	4.7	09.5	4.1	18.9	3.6
8	.90	.81	.71	.62	.52	.43	.33	.23	.14	4.3	8.5	2.8	7.0	71.3
9	.90	.79	.69	.58	.48	.38	.27	.17	.07	3.8	7.6	1.4	5.1	68.9
59 10	15.89	31.78	47.67	63.55	79.44	95.33	111.22	127.11	143.00	953.3	1906.7	2860.0	3813.3	4766.6
11	.88	.76	.64	.52	.40	.29	.17	7.05	2.93	2.9	5.8	58.6	11.4	4.3
12	.87	.75	.62	.49	.36	.24	.11	6.99	.86	2.4	4.8	7.2	09.6	62.0
13	.87	.73	.60	.46	.33	.19	.06	.92	.79	1.9	3.9	5.8	7.7	59.7
14	.86	.72	.57	.43	.29	.15	1.00	.86	.72	1.5	2.9	4.4	5.9	7.3
59 15	15.85	31.70	47.55	63.40	79.25	95.10	110.95	126.80	142.65	951.0	1902.0	2853.0	3804.0	4755.0
16	.84	.68	.53	.37	.21	.05	.90	.74	.58	0.5	1.1	1.6	2.2	2.7
17	.83	.67	.50	.34	.17	5.00	.84	.68	.51	50.1	900.2	50.2	800.3	50.4
18	.83	.65	.48	.31	.14	4.95	.79	.61	.44	49.6	899.2	48.8	798.4	48.1
19	.82	.64	.46	.28	.10	.91	.73	.55	.37	9.1	8.3	7.4	6.6	5.7
59 20	15.81	31.62	47.43	63.25	79.06	94.87	110.68	126.49	142.30	948.7	1897.4	2846.0	3794.7	4743.4
21	.80	.61	.41	.22	9.02	.82	.63	.43	.25	8.2	6.5	4.6	2.9	41.1
22	.80	.59	.39	.19	8.98	.78	.57	.37	.16	7.8	5.5	3.3	91.0	38.8
23	.79	.58	.36	.15	.94	.73	.52	.30	.09	7.3	4.6	1.9	89.2	6.4
24	.78	.56	.34	.12	.90	.68	.46	.24	2.02	6.8	3.6	40.5	7.3	4.1
59 25	15.77	31.55	47.32	63.09	78.87	94.64	110.41	126.18	141.96	946.4	1892.7	2839.1	3785.4	4731.8
26	.76	.53	.29	.06	.83	.59	.36	.12	.89	5.9	1.8	7.7	3.6	29.5
27	.76	.52	.27	.03	.79	.54	.30	6.06	.82	5.4	90.9	6.3	81.7	7.1
28	.75	.50	.25	3.00	.75	.50	.25	5.99	.75	5.0	89.9	4.9	79.8	4.8
29	.74	.49	.22	2.97	.71	.45	.19	.93	.68	4.5	9.0	3.5	8.0	2.5
59 30	15.73	31.47	47.20	62.94	78.67	94.40	110.14	125.87	141.61	944.0	1888.1	2832.1	3776.1	4720.2
31	.72	.45	.18	.91	.63	.36	.09	.81	.54	3.6	7.2	30.7	4.3	17.8
32	.72	.44	.15	.87	.59	.31	.03	.75	.47	3.1	6.2	29.3	2.4	5.5
33	.71	.42	.13	.84	.55	.26	10.98	.68	.40	2.6	5.3	7.9	70.5	3.2
34	.70	.41	.11	.81	.51	.22	09.92	.62	.33	2.2	4.3	6.5	68.7	10.8
59 35	15.70	31.39	47.08	62.78	78.48	94.17	109.87	125.56	141.26	941.7	1883.4	2825.1	3766.8	4708.5
36	.69	.38	.06	.75	.44	.12	.81	.50	.19	1.2	2.5	3.7	4.9	6.2
37	.68	.36	.04	.72	.40	.08	.76	.44	.12	0.8	1.6	2.3	3.1	3.9
38	.67	.34	7.02	.68	.36	4.03	.70	.37	1.05	40.3	80.6	20.9	61.2	701.5
39	.66	.33	6.99	.65	.32	3.98	.64	.31	0.97	39.8	79.7	19.5	59.4	699.2
59 40	15.66	31.31	46.97	62.62	78.28	93.94	109.59	125.25	140.91	939.4	1878.8	2818.1	3757.5	4696.9
41	.65	.30	.95	.59	.24	.89	.54	.19	.84	8.9	7.8	6.7	5.6	4.5
42	.64	.28	.92	.56	.20	.84	.48	.13	.77	8.4	6.9	5.3	3.8	92.2
43	.63	.27	.90	.53	.17	.80	.43	.06	.70	8.0	6.0	3.9	1.9	89.9
44	.63	.25	.88	.50	.12	.75	.37	5.00	.63	7.5	5.0	2.5	50.0	7.5
59 45	15.62	31.23	46.85	62.47	78.09	93.70	109.32	124.94	140.56	937.0	1874.1	2811.1	3748.2	4685.2
46	.61	.22	.83	.44	.05	.66	.27	.88	.49	6.6	3.2	09.7	6.3	2.9
47	.60	.20	.81	.40	8.01	.61	.21	.81	.42	6.1	2.2	8.3	4.4	80.5
48	.59	.19	.78	.38	7.97	.56	.16	.75	.35	5.6	1.3	6.9	2.6	78.2
49	.59	.17	.76	.34	.93	.52	.10	.69	.28	5.2	70.3	5.5	40.7	5.9
59 50	15.58	31.16	46.74	62.31	77.89	93.47	109.05	124.63	140.21	934.7	1869.4	2804.1	3738.8	4673.6
51	.57	.14	.71	.28	.85	.42	9.00	.57	.14	4.2	8.5	02.7	7.0	71.2
52	.56	.13	.69	.25	.81	.38	8.94	.50	.07	3.8	7.5	801.3	5.1	68.9
53	.56	.11	.67	.22	.77	.33	.89	.44	40.00	3.3	6.6	799.9	3.2	6.5
54	.55	.09	.64	.18	.73	.28	.83	.37	39.92	2.8	5.7	8.5	31.4	4.2
59 55	15.54	31.08	46.62	62.15	77.70	93.24	108.78	124.31	139.86	932.4	1864.7	2797.1	3729.5	4661.9
56	.53	.06	.60	.12	.66	.19	.72	.25	.79	1.9	3.8	5.7	7.6	59.5
57	.52	.05	.57	.09	.62	.14	.67	.19	.72	1.4	2.9	4.3	5.8	7.2
58	.52	.03	.55	.06	.58	.10	.61	.13	.65	1.0	1.9	2.9	3.9	4.9
59	.51	.02	.52	.03	.54	.05	.56	.07	.58	0.5	1.0	1.5	2.0	2.5
59 60	15.50	31.00	46.50	62.00	77.50	93.00	108.50	124.00	139.51	930.0	1860.1	2790.1	3720.1	4650.2

Lat.	Latitude 59° to 60° -Meridional arcs.						Latitude 59°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
59 00	30.944			1856.62					
1	4	1	30.95	.62	1	1 856.6	0 1	958.0	0.1
2	4	2	61.89	.63	2	3 713.2	2	1 915.9	0.5
3	4	3	92.84	.63	3	5 569.9	3	2 873.9	1.1
4	4	4	123.78	.64	4	7 426.5	4	3 831.9	1.9
59 05	30.944	5	154.73	1856.64	5	9 283.2	0 5	4 789.8	3.0
6	4	6	185.68	.65	6	11 139.8	6	5 747.7	4.3
7	4	7	216.62	.65	7	12 996.4	7	6 705.7	5.9
8	4	8	247.57	.66	8	14 853.1	8	7 663.7	7.6
9	4	9	278.51	.66	9	16 709.8	9	8 621.6	9.7
59 10	30.944	10	309.46	1856.67	10	18 566.4	0 10	9 579.6	11.9
11	5	1	340.41	.67	1	20 423.1	15	14 369.3	26.9
12	5	2	371.35	.68	2	22 279.8	20	19 159.1	47.8
13	5	3	402.30	.68	3	24 136.5	25	23 948.8	74.6
14	5	4	433.25	.69	4	25 993.1	30	28 738.5	107.5
59 15	30.945	15	464.19	1856.69	15	27 849.8	0 35	33 528.1	146.3
16	5	6	495.14	.70	6	29 706.5	40	38 317.7	191.1
17	5	7	526.08	.70	7	31 563.2	45	43 107.2	241.8
18	5	8	557.03	.71	8	33 419.9	50	47 896.7	298.6
19	5	9	587.98	.71	9	35 276.6	55	52 686.1	361.2
59 20	30.945	20	618.92	1856.72	20	37 133.4	1 00	57 475.4	429.9
21	5	1	649.87	.72	1	38 990.1	05	62 264.6	504.5
22	5	2	680.81	.73	2	40 846.8	10	67 053.7	585.2
23	6	3	711.76	.73	3	42 703.5	15	71 842.7	671.7
24	6	4	742.71	.74	4	44 560.3	20	76 631.6	764.3
59 25	30.946	25	773.65	1856.74	25	46 417.0	1 25	81 420.4	862.8
26	6	6	804.60	.75	6	48 273.7	30	86 209.0	967.3
27	6	7	835.54	.75	7	50 130.5	35	90 997.5	1 077.8
28	6	8	866.49	.75	8	51 987.2	40	95 785.9	1 194.2
29	6	9	897.44	.76	9	53 844.0	45	100 574.1	1 316.6
59 30	30.946	30	928.38	1856.76	30	55 700.8	1 50	105 362.2	1 445.0
31	6	1	959.33	.77	1	57 557.5	55	110 150.1	1 579.3
32	6	2	990.27	.77	2	59 414.3	2 00	114 938	1 720
33	6	3	1 021.22	.78	3	61 271.1	3 00	172 375	3 869
34	6	4	1 052.17	.78	4	63 127.9	4 00	229 773	6 877
59 35	30.946	35	1 083.11	1856.79	35	64 984.6	5 00	287 120	10 744
36	7	6	1 114.06	.79	6	66 841.4	6 00	344 402	15 468
37	7	7	1 145.00	.80	7	68 698.2	7 00	401 608	21 048
38	7	8	1 175.95	.80	8	70 555.0	8 00	458 723	27 484
39	7	9	1 206.90	.81	9	72 411.8	9 00	515 736	34 773
59 40	30.947	40	1 237.84	1856.81	40	74 268.7	10 00	572 633	42 914
41	7	1	1 268.79	.82	1	76 125.5	11 00	629 403	51 906
42	7	2	1 299.74	.82	2	77 982.3	12 00	686 031	61 746
43	7	3	1 330.68	.83	3	79 839.1	13 00	742 506	72 432
44	7	4	1 361.63	.83	4	81 695.9	14 00	798 815	83 961
59 45	30.947	45	1 392.57	1856.84	45	83 552.8	15 00	854 945	96 332
46	7	6	1 423.52	.84	6	85 409.6	16 00	910 883	109 541
47	7	7	1 454.47	.85	7	87 266.5	17 00	966 618	123 585
48	8	8	1 485.41	.85	8	89 123.3	18 00	1 022 136	138 462
49	8	9	1 516.36	.86	9	90 980.2	19 00	1 077 426	154 167
59 50	30.948	50	1 547.30	1856.86	50	92 837.0	20 00	1 132 474	170 698
51	8	1	1 578.25	.87	1	94 693.9	21 00	1 187 269	188 050
52	8	2	1 609.20	.87	2	96 550.8	22 00	1 241 799	206 221
53	8	3	1 640.14	.88	3	98 407.6	23 00	1 296 050	225 205
54	8	4	1 671.09	.88	4	100 264.5	24 00	1 350 011	244 998
59 55	30.948	55	1 702.03	1856.88	55	102 121.4	25 00	1 403 671	265 597
56	8	6	1 732.98	.89	6	103 978.3	26 00	1 457 015	286 995
57	8	7	1 763.93	.89	7	105 835.2	27 00	1 510 034	309 190
58	8	8	1 794.87	.90	8	107 692.1	28 00	1 562 715	332 175
59	8	9	1 825.82	.90	9	109 549.0	29 00	1 615 047	355 946
59 60	30.948	60	1 856.76	1856.91	60	111 405.9	30 00	1 667 016	380 497

Latitude 60° to 61°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
60 00	15.50	31.00	46.50	62.00	77.50	93.00	108.50	124.00	139.51	930.0	1860.1	2790.1	3720.1	4650.2
1	.49	0.99	.48	1.97	.46	92.96	.45	123.94	.44	29.6	59.2	88.7	18.3	47.8
2	.48	.97	.45	.94	.42	.91	.39	.88	.37	9.1	8.2	7.3	6.4	5.5
3	.48	.96	.43	.91	.38	.86	.34	.81	.30	8.6	7.3	5.9	4.5	3.2
4	.47	.94	.41	.88	.34	.82	.28	.75	.23	8.2	6.3	4.5	2.6	40.8
60 05	15.46	30.92	46.38	61.84	77.31	92.77	108.23	123.69	139.15	927.7	1855.4	2783.1	3710.8	4638.5
6	.45	.91	.36	.81	.27	.72	.18	.63	.08	7.2	4.5	1.7	08.9	6.1
7	.44	.89	.34	.78	.23	.68	.12	.57	9.01	6.8	3.5	80.3	7.0	3.8
8	.44	.88	.31	.75	.19	.63	.07	.50	8.94	6.3	2.6	78.9	5.2	1.4
9	.43	.86	.29	.72	.15	.58	8.01	.44	.87	5.8	1.6	7.5	3.3	29.1
60 10	15.42	30.85	46.27	61.69	77.11	92.54	107.96	123.38	138.80	925.4	1850.7	2776.1	3701.4	4626.8
11	.41	.83	.24	.66	.07	.49	.91	.32	.73	4.9	49.8	4.7	699.5	4.4
12	.40	.81	.22	.63	7.03	.44	.85	.26	.66	4.4	8.8	3.2	7.7	22.1
13	.40	.80	.20	.60	6.99	.39	.80	.19	.59	3.9	7.9	1.8	5.8	19.7
14	.39	.79	.17	.57	.95	.35	.74	.13	.52	3.5	6.9	70.4	3.9	7.4
60 15	15.38	30.77	46.15	61.53	76.92	92.30	107.69	123.07	138.45	923.0	1846.0	2769.0	3692.0	4615.0
16	.37	.75	.13	.50	.88	.25	.63	3.01	.38	2.5	5.1	7.6	90.2	2.7
17	.37	.74	.10	.47	.84	.21	.58	2.94	.31	2.1	4.1	6.2	88.3	10.4
18	.36	.72	.08	.44	.80	.16	.52	.88	.24	1.6	3.2	4.8	6.4	08.0
19	.35	.70	.06	.41	.76	.11	.47	.82	.17	1.1	2.2	3.4	4.5	5.7
60 20	15.34	30.69	46.03	61.38	76.72	92.07	107.41	122.76	138.10	920.7	1841.3	2762.0	3682.7	4603.3
21	.33	.67	6.01	.35	.68	2.02	.36	.70	8.03	0.2	40.4	60.6	80.8	601.0
22	.33	.66	5.99	.32	.64	1.97	.30	.63	7.96	19.7	39.4	59.2	78.9	598.6
23	.32	.64	.96	.28	.60	.93	.25	.57	.89	9.3	8.5	7.8	7.0	6.3
24	.31	.63	.94	.25	.56	.88	.19	.51	.82	8.8	7.5	6.4	5.1	3.9
60 25	15.30	30.61	45.92	61.22	76.53	91.83	107.14	122.44	137.75	918.3	1836.6	2754.9	3673.3	4591.6
26	.30	.59	.89	.19	.49	.78	.08	.38	.67	7.8	5.7	3.5	71.4	89.2
27	.29	.58	.87	.16	.45	.74	7.03	.32	.60	7.4	4.7	2.1	69.5	6.9
28	.28	.56	.85	.12	.41	.69	6.97	.25	.53	6.9	3.8	50.7	7.6	4.5
29	.28	.55	.82	.09	.37	.64	.92	.19	.46	6.4	2.8	49.3	5.7	82.2
60 30	15.27	30.53	45.80	61.06	76.33	91.60	106.86	122.13	137.39	916.0	1831.9	2747.9	3663.9	4579.8
31	.26	.51	.78	.03	.29	.55	.81	.07	.32	5.5	1.0	6.5	2.0	7.5
32	.25	.50	.75	1.00	.25	.50	.75	2.00	.25	5.0	30.0	5.1	60.1	5.1
33	.24	.48	.73	0.97	.21	.46	.70	1.94	.18	4.6	29.1	3.7	58.2	2.8
34	.23	.47	.70	.94	.17	.41	.64	.88	.11	4.1	8.1	2.3	6.3	70.4
60 35	15.23	30.45	45.68	60.91	76.14	91.36	106.59	121.82	137.04	913.6	1827.2	2740.8	3654.5	4568.1
36	.22	.44	.66	.87	.10	.31	.53	.75	6.97	3.1	6.3	39.4	2.6	5.7
37	.21	.42	.63	.84	.06	.27	.48	.69	.90	2.7	5.4	8.0	50.7	3.4
38	.21	.41	.61	.81	6.02	.22	.42	.63	.83	2.2	4.4	6.6	48.8	61.0
39	.20	.39	.59	.78	5.98	.17	.37	.56	.76	1.7	3.4	5.2	6.9	58.7
60 40	15.19	30.38	45.56	60.75	75.94	91.13	106.31	121.50	136.69	911.3	1822.5	2733.8	3645.0	4556.3
41	.18	.36	.54	.72	.90	.08	.26	.44	.62	0.8	1.6	2.4	3.2	4.0
42	.17	.35	.52	.69	.86	1.03	.20	.37	.55	10.3	20.6	31.0	41.3	51.6
43	.17	.33	.49	.66	.82	0.98	.15	.31	.48	09.8	19.7	29.5	39.4	49.2
44	.16	.32	.47	.63	.78	.94	.09	.25	.41	9.4	8.8	8.1	7.5	6.9
60 45	15.15	30.30	45.44	60.59	75.75	90.89	106.04	121.18	136.33	908.9	1817.8	2726.7	3635.6	4544.5
46	.14	.28	.42	.56	.71	.84	5.98	.12	.26	8.4	6.9	5.3	3.8	42.2
47	.13	.27	.40	.53	.67	.80	.93	.06	.19	8.0	5.9	3.9	1.8	39.8
48	.13	.25	.38	.50	.63	.75	.87	1.00	.12	7.5	5.0	2.5	30.0	7.5
49	.12	.24	.35	.47	.59	.70	.82	0.93	6.05	7.0	4.0	21.1	28.1	5.1
60 50	15.11	30.22	45.33	60.44	75.55	90.65	105.76	120.87	135.98	906.5	1813.1	2719.6	3626.2	4532.7
51	.10	.20	.30	.41	.51	.61	.71	.81	.91	6.1	2.2	8.2	4.3	30.4
52	.09	.19	.28	.37	.47	.56	.65	.75	.84	5.6	1.2	6.8	2.4	28.0
53	.09	.17	.26	.34	.43	.51	.60	.68	.77	5.1	10.3	5.4	20.6	5.7
54	.08	.16	.23	.31	.39	.47	.54	.62	.70	4.7	09.3	4.0	18.6	3.3
60 55	15.07	30.14	45.21	60.28	75.35	90.42	105.49	120.55	135.62	904.2	1808.4	2712.5	3616.7	4520.9
56	.06	.12	.19	.25	.31	.37	.43	.49	.56	3.7	7.4	11.2	4.9	18.6
57	.05	.11	.16	.22	.27	.32	.38	.43	.48	3.2	6.5	09.7	3.0	6.2
58	.05	.09	.14	.18	.23	.28	.32	.37	.41	2.8	5.6	8.3	11.1	3.9
59	.04	.08	.11	.15	.19	.23	.27	.30	.34	2.3	4.6	6.9	09.2	11.5
60 60	15.03	30.06	45.09	60.12	75.15	90.18	105.21	120.24	135.27	901.8	1803.7	2705.5	3607.3	4509.1

Lat.	Latitude 60° to 61°—Meridional arcs.						Latitude 60°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
60 00	30.948			1856.91					
01	9	1	30.95	.91	1	1 856.9	0 1	930.0	0.1
02	9	2	61.90	.92	2	3 713.8	2	1 860.1	0.5
03	9	3	92.85	.92	3	5 570.7	3	2 790.1	1.1
04	9	4	123.80	.93	4	7 427.7	4	3 720.2	1.9
60 05	30.949	5	154.75	1856.93	5	9 284.6	0 5	4 650.2	2.9
06	9	6	185.71	.94	6	11 141.5	6	5 580.2	4.2
07	9	7	216.66	.94	7	12 998.5	7	6 510.3	5.7
08	9	8	247.61	.95	8	14 855.4	8	7 440.3	7.5
09	9	9	278.56	.95	9	16 712.4	9	8 370.4	9.5
60 10	30.949	10	309.51	1856.96	10	18 569.3	0 10	9 300.4	11.7
11	9	1	340.46	.96	1	20 426.3	15	13 950.5	26.4
12	49	2	371.41	.97	2	22 283.2	20	18 600.6	46.9
13	50	3	402.36	.97	3	24 140.2	25	23 250.7	73.2
14	0	4	433.31	.98	4	25 997.2	30	27 900.8	105.4
60 15	30.950	15	464.26	1856.98	15	27 854.2	0 35	32 550.8	143.5
16	0	6	495.21	.98	6	29 711.1	40	37 200.8	187.4
17	0	7	526.16	.99	7	31 568.1	45	41 850.7	237.2
18	0	8	557.12	6.99	8	33 425.1	50	46 500.6	292.8
19	0	9	588.07	7.00	9	35 282.1	55	51 150.3	354.3
60 20	30.950	20	619.02	1857.00	20	37 139.1	1 00	55 800.0	421.7
21	0	1	649.97	.01	1	38 996.1	05	60 449.6	494.9
22	0	2	680.92	.01	2	40 853.1	10	65 099.2	574.0
23	0	3	711.87	.02	3	42 710.1	15	69 738.6	658.9
24	0	4	742.82	.02	4	44 567.2	20	74 397.9	749.7
60 25	30.950	25	773.77	1857.03	25	46 424.2	1 25	79 047.0	846.4
26	1	6	804.72	.03	6	48 281.2	30	83 696.1	948.8
27	1	7	835.67	.04	7	50 138.2	35	88 345.0	1 057.1
28	1	8	866.62	.04	8	51 995.3	40	92 993.8	1 171.3
29	1	9	897.57	.05	9	53 852.3	45	97 642.4	1 291.3
60 30	30.951	30	928.53	1857.05	30	55 709.4	1 50	102 290.9	1 417.2
31	1	1	959.48	.06	1	57 566.4	55	106 939.2	1 549.0
32	1	2	990.43	.06	2	59 423.5	2 00	111 587	1 687
33	1	3	1 021.38	.07	3	61 280.6	3 00	167 349	3 795
34	1	4	1 052.33	.07	4	63 137.6	4 00	223 073	6 745
60 35	30.951	35	1 083.28	1857.07	35	64 994.7	5 00	278 745	10 538
36	1	6	1 114.23	.08	6	66 851.8	6 00	334 354	15 172
37	1	7	1 145.18	.08	7	68 708.9	7 00	389 887	20 645
38	1	8	1 176.13	.09	8	70 566.0	8 00	445 330	26 957
39	2	9	1 207.08	.09	9	72 423.1	9 00	500 672	34 107
60 40	30.952	40	1 238.03	1857.10	40	74 280.1	10 00	555 899	42 092
41	2	1	1 268.98	.10	1	76 137.2	11 00	611 000	50 911
42	2	2	1 299.94	.11	2	77 994.4	12 00	665 961	60 562
43	2	3	1 330.89	.11	3	79 851.5	13 00	720 769	71 043
44	2	4	1 361.84	.12	4	81 708.6	14 00	775 413	82 350
60 45	30.952	45	1 392.79	1857.12	45	83 565.7	15 00	829 880	94 482
46	2	6	1 423.74	.13	6	85 422.8	16 00	884 157	107 436
47	2	7	1 454.69	.13	7	87 280.0	17 00	938 232	121 209
48	2	8	1 485.64	.14	8	89 137.1	18 00	992 093	135 798
49	2	9	1 516.59	.14	9	90 994.2	19 00	1 045 727	151 199
60 50	30.952	50	1 547.54	1857.15	50	92 851.4	20 00	1 099 123	167 409
51	3	1	1 578.49	.15	1	94 708.5	21 00	1 152 267	184 424
52	3	2	1 609.44	.15	2	96 565.7	22 00	1 205 148	202 241
53	3	3	1 640.40	.16	3	98 422.8	23 00	1 257 753	220 854
54	3	4	1 671.35	.16	4	100 280.0	24 00	1 310 072	240 261
60 55	30.953	55	1 702.30	1857.17	55	102 137.2	25 00	1 362 091	260 456
56	3	6	1 733.25	.17	6	103 994.3	26 00	1 413 798	281 436
57	3	7	1 764.20	.18	7	105 851.5	27 00	1 465 183	303 194
58	3	8	1 795.15	.18	8	107 708.7	28 00	1 516 233	325 726
59	3	9	1 826.10	.19	9	109 565.9	29 00	1 566 937	349 028
60 60	30.953	60	1 857.05	1857.19	60	111 423.1	30 00	1 617 283	373 093

Latitude 61° to 62°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
61 00	15.03	30.06	45.09	60.12	75.15	90.18	105.21	120.24	135.27	901.8	1803.7	2705.5	3607.3	4509.1
01	.02	.05	.07	.09	.11	.14	.16	.18	.20	1.4	2.7	4.1	5.4	6.8
02	.01	.03	.04	.06	.07	.09	.10	.12	.13	0.9	1.8	2.6	3.5	4.4
03	.01	.01	.02	.03	5.03	90.04	5.05	20.05	5.06	900.4	800.8	701.2	601.6	502.0
04	5.00	30.00	5.00	60.00	4.99	89.99	4.99	19.99	4.99	899.9	799.9	699.8	599.7	499.7
61 05	14.99	29.98	44.97	59.96	74.96	89.95	104.94	119.93	134.91	899.5	1798.9	2698.4	3597.9	4497.3
06	.98	.97	.95	.93	.92	.90	.88	.87	.85	9.0	8.0	7.0	6.0	5.0
07	.97	.95	.93	.90	.88	.85	.83	.80	.78	8.5	7.0	5.6	4.1	2.6
08	.97	.93	.90	.87	.84	.80	.77	.74	.70	8.0	6.1	4.1	2.2	90.2
09	.96	.92	.88	.84	.80	.76	.72	.67	.63	7.6	5.1	2.7	90.3	87.9
61 10	14.95	29.90	44.85	59.81	74.76	89.71	104.66	119.61	134.56	897.1	1794.2	2691.3	3588.4	4485.5
11	.94	.89	.83	.78	.72	.66	.61	.55	.49	6.6	3.3	89.9	6.5	3.1
12	.94	.87	.81	.74	.68	.62	.55	.49	.42	6.2	2.3	8.5	4.6	80.8
13	.93	.86	.78	.71	.64	.57	.50	.42	.35	5.7	1.4	7.0	2.7	78.4
14	.92	.84	.76	.68	.60	.52	.44	.36	.28	5.2	90.4	5.6	80.8	6.0
61 15	14.91	29.82	44.74	59.65	74.56	89.47	104.39	119.30	134.21	894.7	1789.5	2684.2	3578.9	4473.6
16	.90	.81	.71	.62	.52	.43	.33	.23	.14	4.3	8.5	2.8	7.0	71.3
17	.90	.79	.69	.59	.48	.38	.28	.17	4.06	3.8	7.6	81.3	5.1	68.9
18	.89	.78	.67	.55	.44	.33	.22	.11	3.99	3.3	6.6	79.9	3.2	6.5
19	.88	.76	.64	.52	.40	.28	.17	9.04	.92	2.8	5.7	8.5	71.3	4.2
61 20	14.87	29.75	44.62	59.49	74.36	89.24	104.11	118.98	133.85	892.4	1784.7	2677.1	3569.4	4461.8
21	.86	.73	.59	.46	.32	.19	.06	.92	.78	1.9	3.8	5.7	7.5	59.4
22	.86	.71	.57	.43	.28	.14	4.00	.85	.71	1.4	2.8	4.2	5.6	7.1
23	.85	.70	.55	.40	.24	.09	3.95	.79	.64	0.9	1.9	2.8	3.7	4.7
24	.84	.68	.52	.36	.20	.05	.89	.73	.57	0.5	0.9	1.4	1.9	52.3
61 25	14.83	29.67	44.50	59.33	74.17	89.00	103.84	118.67	133.50	890.0	1780.0	2670.0	3560.0	4449.9
26	.83	.65	.48	.30	.13	8.95	.78	.60	.43	89.5	79.0	68.6	58.1	7.6
27	.82	.63	.45	.27	.09	.90	.72	.54	.35	9.0	8.1	7.1	6.2	5.2
28	.81	.62	.43	.24	.05	.86	.67	.48	.28	8.6	7.1	5.7	4.3	2.8
29	.80	.60	.40	.21	4.01	.81	.62	.41	.21	8.1	6.2	4.3	2.4	40.5
61 30	14.79	29.59	44.38	59.17	73.97	88.76	103.56	118.35	133.14	887.6	1775.2	2662.9	3550.5	4438.1
31	.79	.57	.36	.14	.93	.71	.50	.29	.07	7.1	4.3	1.4	48.6	5.7
32	.78	.56	.33	.11	.89	.67	.45	.22	3.00	6.7	3.3	60.0	6.7	3.3
33	.77	.54	.31	.08	.85	.62	.39	.16	2.93	6.2	2.4	58.6	4.8	31.0
34	.76	.52	.29	.05	.81	.57	.34	.10	.86	5.7	1.4	7.1	2.9	28.6
61 35	14.75	29.51	44.26	59.02	73.77	88.52	103.28	118.03	132.78	885.2	1770.5	2655.7	3541.0	4426.2
36	.75	.49	.24	8.98	.73	.48	.22	7.97	.71	4.8	69.5	4.3	39.1	3.8
37	.74	.48	.21	.95	.69	.43	.17	.91	.64	4.3	8.6	2.9	7.2	21.5
38	.73	.46	.19	.92	.65	.38	.11	.84	.57	3.8	7.6	1.4	5.3	19.1
39	.72	.44	.17	.89	.61	.33	.06	.78	.50	3.3	6.7	50.9	3.4	6.7
61 40	14.71	29.43	44.14	58.86	73.57	88.29	103.00	117.72	132.43	882.9	1765.7	2648.6	3531.5	4414.3
41	.71	.41	.12	.83	.53	.24	2.95	.65	.36	2.4	4.8	7.2	29.6	11.9
42	.70	.40	.10	.79	.49	.19	.89	.59	.29	1.9	3.8	5.7	7.7	09.6
43	.69	.38	.07	.76	.45	.14	.84	.53	.22	1.4	2.9	4.3	5.8	7.2
44	.68	.37	.05	.73	.41	.10	.78	.46	.15	1.0	1.9	2.9	3.8	4.8
61 45	14.67	29.35	44.02	58.70	73.38	88.05	102.73	117.40	132.07	880.5	1761.0	2641.5	3521.9	4402.4
46	.67	.33	4.00	.67	.34	8.00	.67	.33	2.00	80.0	60.0	40.0	20.0	400.0
47	.66	.32	3.98	.64	.30	7.95	.61	.27	1.93	79.5	59.1	38.6	18.1	397.7
48	.65	.30	.95	.60	.26	.91	.56	.21	.86	9.1	8.1	7.2	6.2	5.3
49	.64	.29	.93	.57	.22	.86	.51	.14	.79	8.6	7.2	5.7	4.3	2.9
61 50	14.64	29.27	43.91	58.54	73.18	87.81	102.45	117.08	131.72	878.1	1756.2	2634.3	3512.4	4390.5
51	.63	.25	.88	.51	.14	.76	.39	7.02	.65	7.6	5.2	2.9	10.5	88.1
52	.62	.24	.86	.48	.10	.72	.34	6.95	.58	7.2	4.3	1.5	08.6	5.8
53	.61	.22	.83	.44	.06	.67	.28	.89	.50	6.7	3.3	30.0	6.7	3.4
54	.60	.21	.81	.41	3.02	.62	.23	.83	.43	6.2	2.4	28.6	4.8	81.0
61 55	14.60	29.19	43.79	58.38	72.98	87.57	102.17	116.76	131.36	875.7	1751.4	2627.2	3502.9	4378.6
56	.59	.17	.76	.35	.94	.52	.11	.70	.29	5.2	50.5	5.7	501.0	6.2
57	.58	.16	.74	.32	.90	.48	.06	.64	.22	4.8	49.5	4.3	499.1	3.8
58	.57	.14	.72	.29	.86	.43	2.00	.57	.14	4.3	8.6	2.9	7.2	71.5
59	.56	.13	.69	.25	.82	.38	1.95	.51	.07	3.8	7.6	1.4	5.3	69.1
61 60	14.56	29.11	43.67	58.22	72.78	87.33	101.89	116.44	131.00	873.3	1746.7	2620.0	3493.4	4366.7

Lat.		Latitude 61° to 62°—Meridional arcs.						Latitude 61°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
61	00	30.953			1857.19					
	1	3	1	30.96	.20	1	1 857.2	0 1	901.8	0.1
	2	3	2	61.91	.20	2	3 714.4	2	1 803.7	0.5
	3	3	3	92.87	.21	3	5 571.6	3	2 705.5	1.0
	4	4	4	123.82	.21	4	7 428.8	4	3 607.3	1.8
61	05	30.954	5	154.78	1857.22	5	9 286.0	0 5	4 509.1	2.9
	6	4	6	185.73	.22	6	11 143.2	6	5 411.0	4.1
	7	4	7	216.69	.22	7	13 000.5	7	6 312.8	5.6
	8	4	8	247.64	.23	8	14 857.7	8	7 214.6	7.3
	9	4	9	278.60	.23	9	16 714.9	9	8 116.4	9.3
61	10	30.954	10	309.56	1857.24	10	18 572.2	0 10	9 018.3	11.5
	11	4	1	340.51	.24	1	20 429.4	15	13 527.4	25.8
	12	4	2	371.47	.25	2	22 286.6	20	18 036.5	45.9
	13	4	3	402.42	.25	3	24 143.9	25	22 545.5	71.7
	14	4	4	433.38	.26	4	26 001.1	30	27 054.5	103.2
61	15	30.954	15	464.33	1857.26	15	27 858.4	0 35	31 563.5	140.5
	16	4	6	495.29	.27	6	29 715.7	40	36 072.5	183.5
	17	5	7	526.24	.27	7	31 572.9	45	40 581.3	232.3
	18	5	8	557.20	.28	8	33 430.2	50	45 090.1	286.8
	19	5	9	588.15	.28	9	35 287.5	55	49 598.9	347.0
61	20	30.955	20	619.11	1857.29	20	37 144.8	1 00	54 107.5	413.0
	21	5	1	650.07	.29	1	39 002.1	05	58 616.1	484.7
	22	5	2	681.02	.29	2	40 859.3	10	63 124.5	562.1
	23	5	3	711.98	.30	3	42 716.6	15	67 632.9	645.3
	24	5	4	742.93	.30	4	44 573.9	20	72 141.2	734.2
61	25	30.955	25	773.89	1857.31	25	46 431.2	1 25	76 649.3	828.8
	26	5	6	804.84	.31	6	48 288.6	30	81 157.3	929.2
	27	5	7	835.80	.32	7	50 145.9	35	85 665.2	1 035.3
	28	5	8	866.75	.32	8	52 003.2	40	90 172.9	1 147.1
	29	5	9	897.71	.33	9	53 860.5	45	94 680.5	1 264.6
61	30	30.956	30	928.67	1857.33	30	55 717.8	1 50	99 188.0	1 388.0
	31	6	1	959.62	.34	1	57 575.2	55	103 695.3	1 517.1
	32	6	2	990.58	.34	2	59 432.5	2 00	108 202	1 652
	33	6	3	1 021.53	.35	3	61 289.9	3 00	162 271	3 716
	34	6	4	1 052.49	.35	4	63 147.2	4 00	216 304	6 606
61	35	30.956	35	1 083.44	1857.35	35	65 004.6	5 00	270 285	10 320
	36	6	6	1 114.40	.36	6	66 861.9	6 00	324 204	14 857
	37	6	7	1 145.35	.36	7	68 719.3	7 00	378 047	20 217
	38	6	8	1 176.31	.37	8	70 576.7	8 00	431 802	26 399
	39	6	9	1 207.27	.37	9	72 434.0	9 00	485 456	33 400
61	40	30.956	40	1 238.22	1857.38	40	74 291.4	10 00	538 997	41 219
	41	6	1	1 269.18	.38	1	76 148.8	11 00	592 413	49 855
	42	6	2	1 300.13	.39	2	78 006.2	12 00	645 690	59 305
	43	7	3	1 331.09	.39	3	79 863.6	13 00	698 817	69 567
	44	7	4	1 362.04	.40	4	81 721.0	14 00	751 781	80 639
61	45	30.957	45	1 393.00	1857.40	45	83 578.4	15 00	804 570	92 518
	46	7	6	1 423.95	.41	6	85 435.8	16 00	857 172	105 201
	47	7	7	1 454.91	.41	7	87 293.2	17 00	909 574	118 686
	48	7	8	1 485.87	.41	8	89 150.6	18 00	961 764	132 969
	49	7	9	1 516.82	.42	9	91 008.0	19 00	1 013 729	148 048
61	50	30.957	50	1 547.78	1857.42	50	92 865.4	20 00	1 065 459	163 917
	51	7	1	1 578.73	.43	1	94 722.8	21 00	1 116 940	180 575
	52	7	2	1 609.69	.43	2	96 580.3	22 00	1 168 161	198 016
	53	7	3	1 640.64	.44	3	98 437.7	23 00	1 219 110	216 237
	54	7	4	1 671.60	.44	4	100 295.2	24 00	1 269 775	235 234
61	55	30.957	55	1 702.55	1857.45	55	102 152.6	25 00	1 320 144	255 002
	56	8	6	1 733.51	.45	6	104 010.0	26 00	1 370 205	275 537
	57	8	7	1 764.46	.46	7	105 867.5	27 00	1 419 947	296 833
	58	8	8	1 795.42	.46	8	107 725.0	28 00	1 469 358	318 886
	59	8	9	1 826.38	.46	9	109 582.4	29 00	1 518 426	341 691
61	60	30.958	60	1 857.33	1857.47	60	111 439.9	30 00	1 567 141	365 242

Latitude 62° to 63°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
62 00	14.56	29.11	43.67	58.22	72.78	87.33	101.89	116.45	131.00	873.3	1746.7	2620.0	3493.4	4366.7
01	.55	.10	.64	.19	.74	.29	.83	.38	0.93	2.9	5.7	18.6	91.4	4.3
02	.54	.08	.62	.16	.70	.24	.78	.32	.86	2.4	4.8	7.2	89.5	61.9
03	.53	.06	.60	.13	.66	.19	.72	.25	.79	1.9	3.8	5.7	7.6	59.5
04	.53	.05	.57	.10	.62	.14	.67	.19	.72	1.4	2.9	4.3	5.7	7.1
62 05	14.52	29.03	43.55	58.06	72.58	87.10	101.61	116.13	130.65	871.0	1741.9	2612.9	3483.8	4354.8
06	.51	.02	.52	.03	.54	.05	.55	.06	.57	0.5	0.9	1.4	1.9	2.4
07	.50	9.00	.50	8.00	.50	7.00	.50	6.00	.50	70.0	40.0	10.0	80.0	50.0
08	.49	8.98	.48	7.97	.46	6.95	.44	5.94	.43	69.5	39.0	08.6	78.1	47.6
09	.48	.97	.45	.94	.42	.90	.89	.87	.35	9.0	8.1	7.1	6.2	5.2
62 10	14.48	28.95	43.43	57.90	72.38	86.86	101.33	115.81	130.28	868.6	1737.1	2605.7	3474.3	4342.8
11	.47	.94	.40	.87	.34	.81	.28	.74	.21	8.1	6.1	4.3	2.3	40.4
12	.46	.92	.38	.84	.30	.76	.22	.68	.14	7.6	5.2	2.8	70.4	38.0
13	.45	.90	.36	.81	.26	.71	.17	.62	.07	7.1	4.2	1.4	68.5	5.6
14	.44	.89	.33	.78	.22	.67	.11	.55	30.00	6.7	3.3	600.0	6.6	3.3
62 15	14.44	28.87	43.31	57.74	72.18	86.62	101.05	115.49	129.93	866.2	1732.3	2598.5	3464.7	4330.9
16	.43	.86	.29	.71	.14	.57	1.00	.43	.85	5.7	1.4	7.1	2.8	28.5
17	.42	.84	.26	.68	.10	.52	0.94	.36	.78	5.2	30.4	5.6	60.9	6.1
18	.41	.82	.24	.65	.06	.47	.89	.30	.71	4.7	29.5	4.2	59.0	3.7
19	.40	.81	.21	.62	2.02	.43	.83	.23	.64	4.3	8.5	2.8	7.0	21.3
62 20	14.40	28.79	43.19	57.59	71.98	86.38	100.78	115.17	129.57	863.8	1727.6	2591.3	3455.1	4318.9
21	.39	.78	.17	.55	.94	.33	.72	.11	.50	3.3	6.6	89.9	3.2	6.5
22	.38	.76	.14	.52	.90	.28	.67	5.04	.43	2.8	5.7	8.5	51.3	4.1
23	.37	.74	.12	.49	.86	.23	.61	4.98	.35	2.3	4.7	7.0	49.4	11.7
24	.36	.73	.09	.46	.82	.19	.56	.92	.28	1.9	3.8	5.6	7.5	09.3
62 25	14.36	28.71	43.07	57.43	71.78	86.14	100.50	114.85	129.21	861.4	1722.8	2584.2	3445.6	4306.9
26	.35	.70	.05	.39	.74	.09	.44	.79	.14	0.9	1.8	2.7	3.6	4.5
27	.34	.68	.02	.36	.70	.04	.39	.72	9.07	0.4	20.9	81.3	41.7	302.1
28	.34	.67	3.00	.33	.66	6.00	.33	.66	8.99	60.0	19.9	79.9	39.8	299.8
29	.33	.65	2.97	.30	.62	5.95	.28	.60	.92	59.5	9.0	8.4	7.9	7.4
62 30	14.32	28.63	42.95	57.27	71.58	85.90	100.22	114.53	128.85	859.0	1718.0	2577.0	3436.0	4295.0
31	.31	.62	.93	.23	.54	.85	.16	.47	.78	8.5	7.0	5.5	4.1	2.6
32	.30	.60	.90	.20	.50	.80	.11	.40	.71	8.0	6.1	4.1	2.1	90.2
33	.29	.59	.88	.17	.46	.76	.05	.34	.63	7.6	5.1	2.7	30.2	87.8
34	.28	.57	.85	.14	.42	.71	100.00	.28	.56	7.1	4.2	71.2	28.3	5.4
62 35	14.28	28.55	42.83	57.11	71.38	85.66	99.94	114.21	128.49	856.6	1713.2	2569.8	3426.4	4283.0
36	.27	.54	.81	.07	.34	.61	.88	.15	.42	6.1	2.2	8.3	4.5	80.6
37	.26	.52	.78	.04	.30	.56	.83	.08	.35	5.6	1.3	6.9	2.5	78.2
38	.25	.51	.76	7.01	.26	.52	.77	4.02	.27	5.2	10.3	5.5	20.6	5.8
39	.24	.49	.73	6.98	.22	.47	.72	3.96	.20	4.7	09.4	4.0	18.7	3.4
62 40	14.24	28.47	42.71	56.95	71.18	85.42	99.66	113.89	128.13	854.2	1708.4	2562.6	3416.8	4271.0
41	.23	.45	.69	.91	.14	.36	.60	.83	8.06	3.6	7.4	61.1	4.9	68.6
42	.22	.44	.66	.88	.10	.32	.55	.76	7.99	3.2	6.5	59.7	2.9	6.2
43	.21	.43	.64	.85	.06	.28	.49	.70	.91	2.8	5.5	8.3	11.0	3.8
44	.20	.41	.61	.82	1.02	.23	.44	.64	.84	2.3	4.6	6.8	09.1	61.4
62 45	14.20	28.39	42.59	56.79	70.98	85.18	99.38	113.57	127.77	851.8	1703.6	2555.4	3407.2	4259.0
46	.19	.38	.57	.75	.94	.13	.32	.51	.70	1.3	2.6	3.9	5.3	6.6
47	.18	.36	.54	.72	.90	.08	.27	.44	.63	0.8	1.7	2.5	3.3	4.2
48	.17	.35	.52	.69	.86	5.04	.21	.38	.55	50.4	700.7	51.1	401.4	51.8
49	.16	.33	.49	.66	.82	4.99	.16	.32	.48	49.9	699.8	49.6	399.5	49.4
62 50	14.16	28.31	42.47	56.63	70.78	84.94	99.10	113.25	127.41	849.4	1698.8	2548.2	3397.6	4247.0
51	.15	.30	.45	.59	.74	.89	9.04	.19	.34	8.9	7.8	6.7	5.6	4.6
52	.14	.28	.42	.56	.70	.84	8.99	.12	.27	8.4	6.9	5.3	3.7	42.1
53	.13	.26	.40	.53	.66	.79	.93	.06	.19	7.9	5.9	3.8	91.8	39.7
54	.12	.25	.37	.50	.62	.75	.87	3.00	.12	7.5	5.0	2.4	89.9	7.3
62 55	14.12	28.23	42.35	56.47	70.58	84.70	98.82	112.93	127.05	847.0	1694.0	2541.0	3387.9	4234.9
56	.11	.22	.33	.43	.54	.65	.76	.87	6.98	6.5	3.0	39.5	6.0	2.5
57	.10	.20	.30	.40	.50	.60	.70	.80	.91	6.0	2.1	8.1	4.1	30.1
58	.09	.18	.28	.37	.46	.55	.64	.74	.83	5.5	1.1	6.6	2.2	27.7
59	.08	.17	.25	.34	.42	.51	.59	.67	.76	5.1	90.2	5.2	80.2	5.3
62 60	14.08	28.15	42.23	56.31	70.38	84.46	98.53	112.61	126.69	844.6	1689.2	2533.7	3378.3	4222.9

Lat.	Latitude 62° to 63°—Meridional arcs.						Latitude 62°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
62 00	30.958			1857.47					
1	8	1	30.96	.47	1	1 857.5	0 1	873.3	0.1
2	8	2	61.92	.48	2	3 714.9	2	1 746.7	0.4
3	8	3	92.88	.48	3	5 572.4	3	2 620.0	1.0
4	8	4	123.84	.49	4	7 429.9	4	3 493.4	1.8
62 05	30.958	5	154.80	1857.49	5	9 287.4	0 5	4 366.7	2.8
6	8	6	185.76	.50	6	11 144.9	6	5 240.0	4.0
7	8	7	216.72	.50	7	13 002.4	7	6 113.4	5.5
8	8	8	247.68	.51	8	14 859.9	8	6 986.7	7.2
9	9	9	278.64	.51	9	16 717.4	9	7 860.0	9.1
62 10	30.959	10	309.60	1857.52	10	18 574.9	0 10	8 733.4	11.2
11	9	1	340.56	.52	1	20 432.5	15	13 100.1	25.2
12	9	2	371.52	.52	2	22 290.0	20	17 466.7	44.9
13	9	3	402.48	.53	3	24 147.5	25	21 833.3	70.1
14	9	4	433.44	.53	4	26 005.0	30	26 199.9	100.9
62 15	30.959	15	464.40	1857.54	15	27 862.6	0 35	30 566.4	137.4
16	9	6	495.36	.54	6	29 720.1	40	34 932.9	179.5
17	9	7	526.32	.55	7	31 577.7	45	39 299.4	227.1
18	9	8	557.28	.55	8	33 435.2	50	43 665.7	280.4
19	9	9	588.24	.56	9	35 292.8	55	48 032.0	339.3
62 20	30.959	20	619.20	1857.56	20	37 150.3	1 00	52 398.3	403.8
21	9	1	650.16	.57	1	39 007.9	05	56 764.3	473.8
22	59	2	681.12	.57	2	40 865.5	10	61 130.4	549.5
23	60	3	712.08	.57	3	42 723.0	15	65 496.4	630.8
24	0	4	743.04	.58	4	44 580.6	20	69 862.2	717.7
62 25	30.960	25	774.00	1857.58	25	46 438.2	1 25	74 227.9	810.3
26	0	6	804.96	.59	6	48 295.8	30	78 593.5	908.4
27	0	7	835.92	.59	7	50 153.4	35	82 959.0	1 012.1
28	0	8	866.88	.60	8	52 011.0	40	87 324.3	1 121.5
29	0	9	897.84	.60	9	53 868.6	45	91 689.5	1 236.4
62 30	30.960	30	928.80	1857.61	30	55 726.2	1 50	96 054.5	1 357.0
31	0	1	959.76	.61	1	57 583.8	55	100 419.4	1 483.1
32	0	2	990.72	.61	2	59 441.4	2 00	104 784	1 615
33	0	3	1 021.68	.62	3	61 299.0	3 00	157 145	3 633
34	0	4	1 052.64	.62	4	63 156.6	4 00	209 469	6 458
62 35	30.960	35	1 083.60	1857.63	35	65 014.2	5 00	261 742	10 089
36	1	6	1 114.56	.63	6	66 871.9	6 00	313 954	14 525
37	1	7	1 145.52	.64	7	68 729.5	7 00	366 091	19 765
38	1	8	1 176.48	.64	8	70 587.1	8 00	418 142	25 807
39	1	9	1 207.44	.65	9	72 444.8	9 00	470 093	32 652
62 40	30.961	40	1 238.40	1857.65	40	74 302.4	10 00	521 932	40 296
41	1	1	1 269.36	.66	1	76 160.1	11 00	573 647	48 737
42	1	2	1 300.32	.66	2	78 017.7	12 00	625 226	57 975
43	1	3	1 331.28	.66	3	79 875.4	13 00	676 657	68 006
44	1	4	1 362.24	.67	4	81 733.1	14 00	727 927	78 829
62 45	30.961	45	1 393.20	1857.67	45	83 590.7	15 00	779 024	90 441
46	1	6	1 424.16	.68	6	85 448.4	16 00	829 936	102 838
47	1	7	1 455.12	.68	7	87 306.1	17 00	880 651	116 019
48	1	8	1 486.08	.69	8	89 163.8	18 00	931 157	129 980
49	2	9	1 517.04	.69	9	91 021.5	19 00	981 442	144 717
62 50	30.962	50	1 548.00	1857.70	50	92 879.2	20 00	1 031 494	160 227
51	2	1	1 578.96	.70	1	94 736.9	21 00	1 081 300	176 507
52	2	2	1 609.93	.70	2	96 594.6	22 00	1 130 850	193 552
53	2	3	1 640.89	.71	3	98 452.3	23 00	1 180 132	211 359
54	2	4	1 671.85	.71	4	100 310.1	24 00	1 229 133	229 923
62 55	30.962	55	1 702.81	1857.72	55	102 167.8	25 00	1 277 842	249 240
56	2	6	1 733.77	.72	6	104 025.5	26 00	1 326 248	269 306
57	2	7	1 764.73	.73	7	105 883.2	27 00	1 374 339	290 114
58	2	8	1 795.69	.73	8	107 741.0	28 00	1 422 103	311 662
59	2	9	1 826.65	.74	9	109 598.7	29 00	1 469 530	333 943
62 60	30.962	60	1 857.61	1857.74	60	111 456.4	30 00	1 516 608	356 952

Latitude 63° to 64°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
63 00	14.08	28.15	42.23	56.31	70.38	84.46	98.53	112.61	126.69	844.6	1689.2	2533.7	3378.3	4222.9
1	.07	.14	.21	.28	.34	.41	.47	.55	.62	4.1	8.2	2.3	6.4	20.5
2	.06	.12	.18	.24	.30	.36	.42	.48	.54	3.6	7.2	30.9	4.5	18.1
3	.05	.10	.16	.21	.26	.31	.36	.42	.47	3.1	6.3	29.4	2.6	5.7
4	.04	.09	.13	.18	.22	.27	.31	.35	.40	2.7	5.3	8.0	70.6	3.3
63 05	14.04	28.07	42.11	56.14	70.18	84.22	98.25	112.29	126.32	842.2	1684.4	2526.5	3368.7	4210.9
6	.03	.05	.08	.11	.14	.17	.19	.23	.25	1.7	3.4	5.0	6.8	08.4
7	.02	.04	.06	.08	.10	.12	.14	.16	.18	1.2	2.4	3.6	4.8	6.0
8	.01	.02	.04	.05	.06	.07	.08	.10	.11	0.7	1.4	2.2	2.9	3.6
9	.00	8.01	2.01	6.02	70.02	4.02	8.03	2.03	6.04	40.2	80.5	20.7	61.0	201.2
63 10	14.00	27.99	41.99	55.98	69.98	83.98	97.97	111.97	125.96	839.8	1679.5	2519.3	3359.0	4198.8
11	3.99	.97	.96	.95	.94	.93	.91	.91	.89	9.3	8.6	7.8	7.1	6.4
12	.98	.96	.94	.92	.90	.88	.86	.84	.82	8.8	7.6	6.4	5.2	4.0
13	.97	.94	.92	.89	.86	.83	.80	.78	.75	8.3	6.6	5.0	3.3	91.6
14	.96	.93	.89	.86	.82	.78	.75	.71	.68	7.8	5.7	3.5	51.3	89.2
63 15	13.96	27.91	41.87	55.82	69.78	83.73	97.69	111.65	125.60	837.3	1674.7	2512.0	3349.4	4186.7
16	.95	.89	.84	.79	.74	.69	.63	.58	.53	6.9	3.7	10.6	7.5	4.3
17	.94	.88	.82	.76	.70	.64	.58	.52	.46	6.4	2.8	09.1	5.5	81.9
18	.93	.86	.80	.73	.66	.59	.52	.45	.38	5.9	1.8	7.7	3.6	79.5
19	.92	.85	.77	.69	.62	.54	.47	.39	.31	5.4	70.8	6.3	41.7	7.1
63 20	13.92	27.83	41.75	55.66	69.58	83.49	97.41	111.32	125.24	834.9	1669.9	2504.8	3339.8	4174.7
21	.91	.81	.72	.63	.54	.45	.35	.26	.17	4.5	8.9	3.4	7.8	72.3
22	.90	.80	.70	.60	.50	.40	.30	.19	.10	4.0	8.0	1.9	5.9	69.9
23	.89	.78	.67	.57	.46	.35	.24	.13	5.02	3.5	7.0	500.4	3.9	7.4
24	.88	.77	.65	.53	.42	.30	.18	.07	4.95	3.0	6.0	499.0	2.0	5.0
63 25	13.88	27.75	41.63	55.50	69.38	83.25	97.13	111.00	124.88	832.5	1665.0	2497.6	3330.1	4162.6
26	.87	.73	.60	.47	.34	.20	.07	0.94	.81	2.0	4.0	6.1	28.2	60.2
27	.86	.72	.58	.44	.30	.16	7.02	.87	.74	1.6	3.1	4.7	6.2	57.8
28	.85	.70	.55	.40	.26	.11	6.96	.81	.66	1.1	2.2	3.2	4.3	5.4
29	.84	.69	.53	.37	.22	.06	.91	.74	.59	0.6	1.2	1.7	2.3	2.9
63 30	13.84	27.67	41.51	55.34	69.18	83.01	96.85	110.68	124.52	830.1	1660.2	2490.3	3320.4	4150.5
31	.83	.65	.48	.31	.14	2.96	.79	.62	.45	29.6	59.2	88.9	18.5	48.1
32	.82	.64	.46	.28	.10	.91	.74	.55	.37	9.1	8.3	7.4	6.6	5.7
33	.81	.62	.43	.24	.06	.87	.68	.49	.30	8.7	7.3	6.0	4.6	3.3
34	.80	.61	.41	.21	9.02	.82	.62	.42	.23	8.2	6.3	4.5	2.7	40.8
63 35	13.79	27.59	41.38	55.18	68.97	82.77	96.56	110.35	124.15	827.7	1655.4	2483.0	3310.7	4138.4
36	.79	.57	.36	.15	.93	.72	.51	.30	.08	7.2	4.4	1.6	08.8	6.0
37	.78	.56	.34	.12	.89	.67	.45	.23	4.01	6.7	3.4	80.2	6.9	3.6
38	.77	.54	.31	.08	.85	.62	.39	.17	3.94	6.2	2.5	78.7	5.0	31.2
39	.76	.53	.29	.05	.81	.57	.34	.10	.86	5.7	1.5	7.2	3.0	28.7
63 40	13.75	27.51	41.26	55.02	68.77	82.53	96.28	110.04	123.79	825.3	1650.5	2475.8	3301.0	4126.3
41	.75	.49	.24	4.99	.73	.48	.22	09.97	.71	4.8	49.6	4.3	299.1	3.9
42	.74	.48	.21	.95	.69	.43	.17	.91	.64	4.3	8.6	2.9	7.2	21.5
43	.73	.46	.19	.92	.65	.38	.11	.84	.57	3.8	7.6	1.4	5.2	19.0
44	.72	.45	.17	.89	.61	.33	.06	.78	.50	3.3	6.6	70.0	3.3	6.6
63 45	13.71	27.43	41.14	54.86	68.57	82.28	96.00	109.71	123.43	822.8	1645.7	2468.5	3291.4	4114.2
46	.70	.41	.12	.82	.53	.24	5.94	.65	.35	2.4	4.7	7.1	89.4	11.8
47	.70	.40	.09	.79	.49	.19	.89	.58	.28	1.9	3.8	5.6	7.5	09.4
48	.69	.38	.07	.76	.45	.14	.83	.52	.21	1.4	2.8	4.1	5.5	6.9
49	.68	.36	.04	.73	.41	.09	.77	.45	.13	0.9	1.8	2.7	3.6	4.5
63 50	13.67	27.35	41.02	54.69	68.37	82.04	95.72	109.39	123.06	820.4	1640.8	2461.3	3281.7	4102.1
51	.67	.33	1.00	.66	.33	1.99	.66	.33	2.99	19.9	39.9	59.8	79.8	099.7
52	.66	.31	0.97	.63	.29	.94	.60	.26	.92	9.4	8.9	8.3	7.8	7.2
53	.65	.30	.95	.60	.25	.90	.55	.20	.84	9.0	7.9	6.9	5.8	4.8
54	.64	.28	.92	.56	.21	.85	.49	.13	.77	8.5	7.0	5.4	3.9	92.4
63 55	13.63	27.27	40.90	54.53	68.16	81.80	95.43	109.06	122.70	818.0	1636.0	2453.9	3271.9	4089.9
56	.62	.25	.88	.50	.12	.75	.38	9.00	.62	7.5	5.0	2.5	70.0	7.5
57	.62	.23	.85	.47	.08	.70	.32	8.94	.55	7.0	4.0	51.1	68.1	5.1
58	.61	.22	.83	.44	.04	.66	.25	.87	.48	6.5	3.1	49.6	6.2	2.7
59	.60	.20	.80	.40	8.00	.61	.20	.81	.41	6.1	2.1	8.1	4.2	80.2
63 60	13.59	27.19	40.78	54.37	67.96	81.56	95.15	108.74	122.33	815.6	1631.1	2446.7	3262.2	4077.8

Lat.		Latitude 63° to 64°—Meridional arcs.						Latitude 63°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
63	00	30.962			1857.74					
	1	2	1	30.96	.74	1	1 857.7	0 1	844.6	0.1
	2	2	2	61.93	.75	2	3 715.5	2	1 689.2	0.4
	3	3	3	92.89	.75	3	5 573.2	3	2 533.7	1.0
	4	3	4	123.86	.76	4	7 431.0	4	3 378.3	1.7
63	05	30.963	5	154.82	1857.76	5	9 288.8	0 5	4 222.9	2.7
	6	3	6	185.79	.77	6	11 146.5	6	5 067.5	3.9
	7	3	7	216.75	.77	7	13 004.3	7	5 912.1	5.4
	8	3	8	247.72	.78	8	14 862.1	8	6 756.6	7.0
	9	3	9	278.68	.78	9	16 719.8	9	7 601.2	8.9
63	10	30.963	10	309.65	1857.78	10	18 577.6	0 10	8 445.8	11.0
	11	3	1	340.61	.79	1	20 435.4	15	12 668.7	24.6
	12	3	2	371.57	.79	2	22 293.2	20	16 891.6	43.8
	13	3	3	402.54	.80	3	24 151.0	25	21 114.4	68.4
	14	3	4	433.50	.80	4	26 008.8	30	25 337.2	98.5
63	15	30.963	15	464.47	1857.81	15	27 866.6	0 35	29 559.9	134.1
	16	4	6	495.43	.81	6	29 724.4	40	33 782.6	175.1
	17	4	7	526.40	.82	7	31 582.2	45	38 005.3	221.6
	18	4	8	557.36	.82	8	33 440.0	50	42 227.9	273.6
	19	4	9	588.33	.82	9	35 297.9	55	46 450.4	331.1
63	20	30.964	20	619.29	1857.83	20	37 155.7	1 00	50 672.8	394.0
	21	4	1	650.26	.83	1	39 013.5	05	54 895.2	462.4
	22	4	2	681.22	.84	2	40 871.4	10	59 117.4	536.3
	23	4	3	712.18	.84	3	42 729.2	15	63 339.6	615.6
	24	4	4	743.15	.85	4	44 587.0	20	67 561.6	700.4
63	25	30.964	25	774.11	1857.85	25	46 444.9	1 25	71 783.6	790.7
	26	4	6	805.08	.86	6	48 302.7	30	76 005.4	886.5
	27	4	7	836.04	.86	7	50 160.6	35	80 227.1	987.7
	28	4	8	867.01	.86	8	52 018.5	40	84 448.6	1 094.4
	29	4	9	897.98	.87	9	53 876.3	45	88 670.1	1 206.6
63	30	30.965	30	928.94	1857.87	30	55 734.2	1 50	92 891.3	1 324.2
	31	5	1	959.90	.88	1	57 592.1	55	97 112.5	1 447.4
	32	5	2	990.87	.88	2	59 450.0	2 00	101 333	1 576
	33	5	3	1 021.83	.89	3	61 307.9	3 00	151 970	3 546
	34	5	4	1 052.80	.89	4	63 165.7	4 00	202 569	6 302
63	35	30.965	35	1 083.76	1857.90	35	65 023.6	5 00	253 119	9 846
	36	5	6	1 114.72	.90	6	66 881.5	6 00	303 608	14 175
	37	5	7	1 145.69	.90	7	68 739.4	7 00	354 024	19 288
	38	5	8	1 176.65	.91	8	70 597.3	8 00	404 354	25 185
	39	5	9	1 207.62	.91	9	72 455.2	9 00	454 586	31 864
63	40	30.965	40	1 238.58	1857.92	40	74 313.2	10 00	504 709	39 323
	41	5	1	1 269.55	.92	1	76 171.1	11 00	554 709	47 561
	42	5	2	1 300.51	.93	2	78 029.0	12 00	604 575	56 575
	43	6	3	1 331.48	.93	3	79 886.9	13 00	654 295	66 363
	44	6	4	1 362.44	.94	4	81 744.9	14 00	703 857	76 924
63	45	30.966	45	1 393.41	1857.94	45	83 602.8	15 00	753 249	88 251
	46	6	6	1 424.37	.94	6	85 460.7	16 00	802 458	100 350
	47	6	7	1 455.33	.95	7	87 318.7	17 00	851 473	113 211
	48	6	8	1 486.30	.95	8	89 176.6	18 00	900 283	126 832
	49	6	9	1 517.26	.96	9	91 034.6	19 00	948 874	141 210
63	50	30.966	50	1 548.23	1857.96	50	92 892.6	20 00	997 237	156 343
	51	6	1	1 579.19	.97	1	94 750.5	21 00	1 045 358	172 225
	52	6	2	1 610.16	.97	2	96 608.5	22 00	1 093 226	188 854
	53	6	3	1 641.12	.97	3	98 466.5	23 00	1 140 830	206 225
	54	6	4	1 672.09	.98	4	100 324.4	24 00	1 188 158	224 335
63	55	30.966	55	1 703.05	1857.98	55	102 182.4	25 00	1 235 199	243 178
	56	6	6	1 734.02	.99	6	104 040.4	26 00	1 281 941	262 750
	57	7	7	1 764.98	7.99	7	105 898.4	27 00	1 328 373	283 047
	58	7	8	1 795.94	8.00	8	107 756.4	28 00	1 374 483	304 064
	59	7	9	1 826.91	.00	9	109 614.4	29 00	1 420 262	325 795
63	60	30.967	60	1 857.87	1858.00	60	111 472.4	30 00	1 465 696	348 235

Latitude 64° to 65°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
64 00	13.59	27.19	40.78	54.37	67.96	81.56	95.15	108.74	122.33	815.6	1631.1	2446.7	3262.2	4077.8
1	.58	.17	.75	.34	.92	.51	.09	.68	.26	5.1	30.1	5.2	60.3	5.4
2	.58	.15	.73	.31	.88	.46	5.03	.61	.19	4.6	29.2	3.8	58.4	2.9
3	.57	.14	.71	.27	.84	.41	4.98	.55	.11	4.1	8.2	2.3	6.4	70.5
4	.56	.12	.68	.24	.80	.36	.92	.48	2.04	3.6	7.3	40.9	4.5	68.1
64 05	13.55	27.10	40.66	54.21	67.76	81.31	94.87	108.42	121.97	813.1	1626.3	2439.4	3252.5	4065.7
6	.54	.09	.63	.18	.72	.26	.81	.35	.90	2.6	5.3	7.9	50.6	3.2
7	.54	.07	.61	.14	.68	.21	.75	.29	.82	2.1	4.3	6.5	48.6	60.8
8	.53	.06	.58	.11	.64	.17	.70	.22	.75	1.7	3.4	5.0	6.7	58.4
9	.52	.04	.56	.08	.60	.12	.64	.16	.68	1.2	2.4	3.6	4.7	5.9
64 10	13.51	27.02	40.54	54.05	67.56	81.07	94.58	108.09	121.60	810.7	1621.4	2432.1	3242.8	4053.5
11	.50	7.01	.51	4.01	.52	1.02	.53	8.03	.54	10.2	20.4	30.6	40.9	51.1
12	.49	6.99	.49	3.98	.48	0.97	.47	7.96	.46	09.7	19.4	29.2	38.9	48.6
13	.49	.97	.46	.95	.44	.92	.41	.90	.39	9.2	8.5	7.7	7.0	6.2
14	.48	.96	.44	.92	.40	.88	.35	.83	.31	8.8	7.5	6.3	5.0	3.8
64 15	13.47	26.94	40.41	53.88	67.35	80.83	94.30	107.77	121.24	808.3	1616.5	2424.8	3233.1	4041.3
16	.46	.93	.39	.85	.31	.78	.24	.70	.17	7.8	5.5	3.3	31.1	38.9
17	.45	.91	.37	.82	.27	.73	.18	.64	.09	7.3	4.6	1.9	29.2	6.5
18	.45	.89	.34	.79	.23	.68	.12	.57	1.02	6.8	3.6	20.4	7.2	4.0
19	.44	.88	.32	.75	.19	.63	.07	.51	0.95	6.3	2.7	19.0	5.3	31.6
64 20	13.43	26.86	40.29	53.72	67.15	80.58	94.01	107.45	120.88	805.8	1611.7	2417.5	3223.3	4029.2
21	.42	.84	.27	.69	.11	.53	3.96	.38	.80	5.3	10.7	6.0	21.4	6.7
22	.41	.83	.24	.66	.07	.49	.90	.31	.73	4.9	09.7	4.6	19.4	4.3
23	.41	.81	.22	.62	7.03	.44	.84	.25	.65	4.4	8.8	3.1	7.5	21.8
24	.40	.80	.19	.59	6.99	.39	.79	.18	.58	3.9	7.8	1.6	5.5	19.4
64 25	13.39	26.78	40.17	53.56	66.95	80.34	93.73	107.12	120.51	803.4	1606.8	2410.2	3213.6	4017.0
26	.38	.76	.15	.53	.91	.29	.67	7.05	.43	2.9	5.8	08.7	11.6	4.5
27	.37	.75	.12	.49	.87	.24	.62	6.99	.36	2.4	4.8	7.3	09.7	12.1
28	.37	.73	.10	.46	.83	.19	.56	.93	.29	1.9	3.9	5.8	7.7	09.7
29	.36	.71	.07	.43	.79	.14	.50	.86	.22	1.4	2.9	4.3	5.8	7.2
64 30	13.35	26.70	40.05	53.40	66.75	80.10	93.45	106.79	120.14	801.0	1601.9	2402.9	3203.8	4004.8
31	.34	.68	.02	.36	.71	.05	.39	.73	20.07	0.5	600.9	401.4	201.9	4002.3
32	.33	.67	40.00	.33	.67	80.00	.33	.66	19.99	800.0	599.9	399.9	199.9	3999.9
33	.33	.65	39.98	.30	.63	79.95	.28	.60	.92	799.5	9.0	8.5	8.0	7.5
34	.32	.63	.95	.27	.58	.90	.21	.53	.85	9.0	8.0	7.0	6.0	5.0
64 35	13.31	26.62	39.93	53.23	66.54	79.85	93.16	106.47	119.78	798.5	1597.0	2395.5	3194.1	3992.6
36	.30	.60	.90	.20	.50	.80	.10	.40	.70	8.0	6.0	4.1	2.1	90.1
37	.29	.58	.88	.17	.46	.75	3.05	.34	.63	7.5	5.1	2.6	90.2	87.7
38	.28	.57	.85	.14	.42	.71	2.99	.27	.56	7.1	4.1	91.2	88.2	5.3
39	.28	.55	.83	.10	.38	.66	.93	.21	.48	6.6	3.1	89.7	6.2	2.8
64 40	13.27	26.54	39.80	53.07	66.34	79.61	92.88	106.14	119.41	796.1	1592.2	2388.2	3184.3	3980.4
41	.26	.52	.78	.04	.30	.56	.82	.08	.34	5.6	1.2	6.8	2.3	77.9
42	.25	.50	.75	3.01	.26	.51	.76	6.01	.26	5.1	90.2	5.3	80.4	5.5
43	.24	.49	.73	2.97	.22	.46	.70	5.95	.19	4.6	89.3	3.8	78.4	3.0
44	.24	.47	.71	.94	.18	.41	.65	.88	.12	4.1	8.3	2.4	6.5	70.6
64 45	13.23	26.45	39.68	52.91	66.14	79.36	92.59	105.82	119.04	793.6	1587.3	2380.9	3174.5	3968.2
46	.22	.44	.66	.88	.09	.31	.53	.75	8.97	3.1	6.3	79.4	2.6	5.7
47	.21	.42	.63	.84	.05	.27	.48	.69	.90	2.7	5.3	8.0	70.6	3.3
48	.20	.41	.61	.81	6.01	.22	.42	.62	.82	2.2	4.4	6.5	68.7	60.8
49	.19	.39	.58	.78	5.97	.17	.36	.56	.75	1.7	3.4	5.0	6.7	58.4
64 50	13.19	26.37	39.56	52.75	65.93	79.12	92.30	105.49	118.68	791.2	1582.4	2373.6	3164.7	3955.9
51	.18	.36	.54	.71	.89	.07	.25	.43	.61	0.7	1.4	2.1	2.8	3.5
52	.17	.34	.51	.68	.85	9.02	.19	.36	.53	90.2	80.4	70.6	60.8	51.0
53	.16	.32	.49	.65	.81	8.97	.13	.30	.46	89.7	79.5	69.2	58.9	48.6
54	.15	.31	.46	.62	.77	.92	.08	.23	.38	9.2	8.5	7.7	6.9	6.1
64 55	13.15	26.29	39.44	52.58	65.73	78.87	92.02	105.17	118.31	788.7	1577.5	2366.2	3155.0	3943.7
56	.14	.27	.41	.55	.69	.82	1.96	.10	.24	8.2	6.5	4.7	3.0	41.2
57	.13	.26	.39	.52	.65	.78	.91	5.03	.16	7.8	5.5	3.3	51.0	38.8
58	.12	.24	.36	.48	.60	.73	.85	4.97	.09	7.3	4.6	1.8	49.1	6.3
59	.11	.23	.34	.45	.56	.68	.79	.90	8.02	6.8	3.6	60.8	7.1	3.9
64 60	13.10	26.21	39.31	52.42	65.52	78.63	91.73	104.84	117.94	786.3	1572.6	2358.9	3145.2	3931.5

Lat.		Latitude 64° to 65°—Meridional arcs.						Latitude 64°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
64	00	30.967			1858.00					
	1	7	1	30.97	.01	1	1 858.0	0 1	815.6	0.1
	2	7	2	61.94	.01	2	3 716.0	2	1 631.1	0.4
	3	7	3	92.91	.02	3	5 574.0	3	2 446.7	1.0
	4	7	4	123.88	.02	4	7 432.1	4	3 262.2	1.7
64	05	30.967	5	154.84	1858.03	5	9 290.1	0 5	4 077.8	2.7
	6	7	6	185.81	.03	6	11 148.1	6	4 893.4	3.8
	7	7	7	216.78	.04	7	13 006.1	7	5 708.9	5.2
	8	7	8	247.75	.04	8	14 864.2	8	6 524.5	6.8
	9	7	9	278.72	.04	9	16 722.2	9	7 340.1	8.6
64	10	30.967	10	309.69	1858.05	10	18 580.3	0 10	8 155.6	10.7
	11	8	1	340.66	.05	1	20 438.3	15	12 233.4	24.0
	12	8	2	371.63	.06	2	22 296.4	20	16 311.2	42.6
	13	8	3	402.60	.06	3	24 154.4	25	20 388.9	66.6
	14	8	4	433.56	.07	4	26 012.5	30	24 466.6	95.9
64	15	30.968	15	464.53	1858.07	15	27 870.6	0 35	28 544.3	130.6
	16	8	6	495.50	.07	6	29 728.6	40	32 621.9	170.6
	17	8	7	526.47	.08	7	31 586.7	45	36 699.5	215.9
	18	8	8	557.44	.08	8	33 444.8	50	40 777.0	266.5
	19	8	9	588.41	.09	9	35 302.9	55	44 854.4	322.5
64	20	30.968	20	619.38	1858.09	20	37 161.0	1 00	48 931.7	383.8
	21	8	1	650.35	.10	1	39 019.1	05	53 009.0	450.4
	22	8	2	681.32	.10	2	40 877.2	10	57 086.2	522.4
	23	8	3	712.28	.10	3	42 735.3	15	61 163.3	599.7
	24	8	4	743.25	.11	4	44 593.4	20	65 240.2	682.3
64	25	30.969	25	774.22	1858.11	25	46 451.5	1 25	69 317.1	770.2
	26	9	6	805.19	.12	6	48 309.6	30	73 393.9	863.5
	27	9	7	836.16	.12	7	50 167.7	35	77 470.5	962.1
	28	9	8	867.13	.13	8	52 025.8	40	81 546.9	1 066.1
	29	9	9	898.10	.13	9	53 884.0	45	85 623.3	1 175.3
64	30	30.969	30	929.07	1858.13	30	55 742.1	1 50	89 699.5	1 289.9
	31	9	1	960.04	.14	1	57 600.2	55	93 775.5	1 409.8
	32	9	2	991.01	.14	2	59 458.4	2 00	97 851	1 535
	33	9	3	1 021.97	.15	3	61 316.5	3 00	146 747	3 454
	34	9	4	1 052.94	.15	4	63 174.7	4 00	195 607	6 139
64	35	30.969	35	1 083.91	1858.16	35	65 032.8	5 00	244 418	9 590
	36	9	6	1 114.88	.16	6	66 891.0	6 00	293 169	13 807
	37	9	7	1 145.85	.16	7	68 749.1	7 00	341 848	18 788
	38	69	8	1 176.82	.17	8	70 607.3	8 00	390 443	24 532
	39	70	9	1 207.79	.17	9	72 465.5	9 00	438 942	31 037
64	40	30.970	40	1 238.76	1858.18	40	74 323.6	10 00	487 333	38 302
	41	0	1	1 269.73	.18	1	76 181.8	11 00	535 604	46 326
	42	0	2	1 300.69	.19	2	78 040.0	12 00	583 743	55 106
	43	0	3	1 331.66	.19	3	79 898.2	13 00	631 739	64 639
	44	0	4	1 362.63	.19	4	81 756.4	14 00	679 579	74 925
64	45	30.970	45	1 393.60	1858.20	45	83 614.6	15 00	727 252	85 959
	46	0	6	1 424.57	.20	6	85 472.8	16 00	774 745	97 741
	47	0	7	1 455.54	.21	7	87 331.0	17 00	822 049	110 265
	48	0	8	1 486.51	.21	8	89 189.2	18 00	869 150	123 530
	49	0	9	1 517.48	.22	9	91 047.4	19 00	916 037	137 533
64	50	30.979	50	1 548.45	1858.22	50	92 905.6	20 00	962 698	152 269
	51	0	1	1 579.41	.22	1	94 763.9	21 00	1 009 123	167 735
	52	0	2	1 610.38	.23	2	96 622.1	22 00	1 055 300	183 927
	53	1	3	1 641.35	.23	3	98 480.3	23 00	1 101 216	200 842
	54	1	4	1 672.32	.24	4	100 338.6	24 00	1 146 862	218 475
64	55	30.971	55	1 703.29	1858.24	55	102 196.8	25 00	1 192 226	236 822
	56	1	6	1 734.26	.25	6	104 055.0	26 00	1 237 296	255 879
	57	1	7	1 765.23	.25	7	105 913.3	27 00	1 282 062	275 639
	58	1	8	1 796.20	.25	8	107 771.5	28 00	1 326 512	296 100
	59	1	9	1 827.17	.26	9	109 629.8	29 00	1 370 635	317 256
64	60	30.971	60	1 858.13	1858.26	60	111 488.1	30 00	1 414 422	339 100

Latitude 65° to 66°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
65 00	13.10	26.21	39.31	52.42	65.52	78.63	91.73	104.84	117.94	786.3	1572.6	2358.9	3145.2	3931.5
1	.10	.19	.29	.39	.48	.58	.68	.77	.87	5.8	1.6	7.4	3.2	29.0
2	.09	.18	.27	.35	.44	.53	.62	.71	.80	5.3	70.6	5.9	41.2	6.6
3	.08	.16	.24	.32	.40	.48	.56	.64	.72	4.8	69.7	4.5	39.3	4.1
4	.07	.14	.22	.29	.36	.43	.50	.58	.65	4.3	8.7	3.0	7.3	21.6
65 05	13.06	26.13	39.19	52.26	65.32	78.39	91.45	104.51	117.57	783.8	1567.7	2351.5	3135.4	3919.2
6	.06	.11	.17	.22	.28	.33	.39	.45	.50	3.3	6.7	50.0	3.4	6.7
7	.05	.10	.14	.19	.24	.29	.33	.38	.43	2.9	5.7	48.6	31.4	4.3
8	.04	.08	.12	.16	.20	.24	.28	.31	.35	2.4	4.8	7.1	29.5	11.8
9	.03	.06	.09	.13	.16	.19	.22	.25	.28	1.9	3.8	5.6	7.5	09.4
65 10	13.02	26.05	39.07	52.09	65.12	78.14	91.16	104.18	117.21	781.4	1562.8	2344.2	3125.6	3906.9
11	.01	.03	.05	.06	.07	.09	.10	.12	.13	0.9	1.8	2.7	3.6	4.5
12	.01	.01	.02	2.03	5.03	8.04	1.05	4.05	7.06	80.4	60.8	41.2	21.6	902.0
13	3.00	6.00	9.00	1.99	4.99	7.99	0.99	3.99	6.99	79.9	59.9	39.7	19.7	899.6
14	2.99	5.98	8.97	.96	.95	.94	.93	.92	.91	9.4	8.9	8.3	7.7	7.1
65 15	12.98	25.96	38.95	51.93	64.91	77.89	90.88	103.86	116.84	778.9	1557.9	2336.8	3115.7	3894.7
16	.97	.95	.92	.90	.87	.84	.82	.79	.77	8.4	6.9	5.3	3.8	92.2
17	.97	.93	.90	.86	.83	.80	.76	.73	.69	8.0	5.9	3.9	11.8	89.8
18	.96	.92	.87	.83	.79	.75	.70	.66	.62	7.5	5.0	2.4	09.8	7.3
19	.95	.90	.85	.80	.75	.70	.65	.60	.55	7.0	4.0	30.9	7.9	4.9
65 20	12.94	25.88	38.82	51.77	64.71	77.65	90.59	103.53	116.47	776.5	1553.0	2329.4	3105.9	3882.4
21	.93	.87	.80	.73	.67	.60	.53	.46	.40	6.0	2.0	8.0	4.0	79.9
22	.92	.85	.77	.70	.63	.55	.48	.40	.32	5.5	1.0	6.5	2.0	7.5
23	.92	.83	.75	.67	.58	.50	.42	.33	.25	5.0	50.0	5.0	100.0	5.0
24	.91	.82	.73	.63	.54	.45	.36	.27	.18	4.5	49.0	3.5	098.1	2.6
65 25	12.90	25.80	38.70	51.60	64.50	77.40	90.30	103.21	116.10	774.0	1548.0	2322.1	3096.1	3870.1
26	.89	.78	.68	.57	.46	.35	.24	.14	6.03	3.5	7.0	20.6	4.1	67.6
27	.88	.77	.65	.54	.42	.30	.19	.07	5.96	3.0	6.0	19.1	2.2	5.2
28	.88	.75	.63	.50	.38	.25	.13	3.01	.88	2.5	5.1	7.6	90.2	2.7
29	.87	.74	.60	.47	.34	.21	.07	2.94	.81	2.1	4.1	6.2	88.2	60.3
65 30	12.86	25.72	38.58	51.44	64.30	77.16	90.02	102.88	115.73	771.6	1543.1	2314.7	3086.3	3857.8
31	.85	.70	.55	.41	.26	.11	89.96	.81	.66	1.1	2.1	3.2	4.3	5.4
32	.84	.69	.53	.37	.22	.06	.90	.75	.58	0.6	1.1	1.7	2.3	2.9
33	.83	.67	.50	.34	.17	7.01	.84	.68	.51	70.1	40.2	10.3	80.3	50.4
34	.83	.65	.48	.31	.13	6.96	.79	.61	.44	69.6	39.2	08.8	78.4	48.0
65 35	12.82	25.64	38.46	51.27	64.09	76.91	89.73	102.55	115.36	769.1	1538.2	2307.3	3076.4	3845.5
36	.81	.62	.43	.24	.05	.86	.67	.48	.29	8.6	7.2	5.8	4.4	3.1
37	.80	.60	.41	.21	4.01	.81	.61	.42	.22	8.1	6.2	4.4	2.5	40.6
38	.79	.59	.38	.17	3.97	.76	.56	.35	.14	7.6	5.3	2.9	70.5	38.1
39	.79	.57	.36	.14	.93	.71	.50	.29	.07	7.1	4.3	301.4	68.5	5.7
65 40	12.78	25.55	38.33	51.11	63.89	76.66	89.44	102.22	115.00	766.6	1533.3	2299.9	3066.6	3833.2
41	.77	.54	.31	.08	.85	.61	.38	.15	4.92	6.1	2.3	8.4	4.6	30.7
42	.76	.52	.28	.04	.81	.57	.33	.09	.85	5.7	1.3	7.0	2.6	28.3
43	.75	.51	.26	1.01	.76	.52	.27	2.02	.77	5.2	30.4	5.5	60.7	5.8
44	.74	.49	.23	0.98	.72	.47	.21	1.95	.70	4.7	29.4	4.0	58.7	3.3
65 45	12.74	25.47	38.21	50.95	63.68	76.42	89.15	101.89	114.63	764.2	1528.4	2292.5	3056.7	3820.9
46	.73	.46	.18	.91	.64	.37	.10	.82	.55	3.7	7.4	91.0	4.7	18.4
47	.72	.44	.16	.88	.60	.32	9.04	.76	.48	3.2	6.4	89.6	2.8	6.0
48	.71	.42	.14	.85	.56	.27	8.98	.69	.41	2.7	5.4	8.1	50.8	3.5
49	.70	.41	.11	.81	.52	.22	.92	.63	.33	2.2	4.4	6.6	48.8	11.0
65 50	12.70	25.39	38.09	50.78	63.48	76.17	88.87	101.56	114.26	761.7	1523.4	2285.1	3046.9	3808.6
51	.69	.37	.06	.75	.44	.12	.81	.50	.18	1.2	2.4	3.7	4.9	6.1
52	.68	.36	.04	.71	.39	.07	.75	.43	.11	0.7	1.4	2.2	2.9	3.6
53	.67	.34	8.01	.68	.35	6.02	.69	.37	4.04	60.2	20.5	80.7	40.9	801.2
54	.66	.32	7.99	.65	.31	5.97	.64	.30	3.96	59.7	19.5	79.2	39.0	798.7
65 55	12.65	25.31	37.96	50.62	63.27	75.92	88.58	101.23	113.89	759.2	1518.5	2277.7	3037.0	3796.2
56	.65	.29	.94	.58	.23	.88	.52	.17	.81	8.8	7.5	6.3	5.0	3.8
57	.64	.28	.91	.55	.19	.83	.46	.10	.74	8.3	6.5	4.8	3.0	91.3
58	.63	.26	.89	.52	.15	.78	.41	1.03	.66	7.8	5.6	3.3	31.1	88.8
59	.62	.24	.86	.48	.10	.73	.35	0.97	.59	7.3	4.6	1.8	29.1	6.3
65 60	12.61	25.23	37.84	50.45	63.06	75.68	88.29	100.90	113.52	756.8	1513.6	2270.3	3027.1	3783.9

Lat.		Latitude 65° to 66°—Meridional arcs.						Latitude 65°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
65	00	30.971			1858.26					
	1	1	1	30.97	.27	1	1 858.3	0 1	786.3	0.1
	2	1	2	61.95	.27	2	3 716.5	2	1 572.6	0.4
	3	1	3	92.92	.27	3	5 574.8	3	2 358.9	0.9
	4	1	4	123.89	.28	4	7 433.1	4	3 145.2	1.7
65	05	30.971	5	154.87	1858.28	5	9 291.4	0 5	3 931.5	2.6
	6	1	6	185.84	.29	6	11 149.7	6	4 717.8	3.7
	7	2	7	216.81	.29	7	13 007.9	7	5 504.0	5.1
	8	2	8	247.79	.30	8	14 866.2	8	6 290.3	6.6
	9	2	9	278.76	.30	9	16 724.5	9	7 076.5	8.4
65	10	30.972	10	309.73	1858.30	10	18 582.8	0 10	7 862.9	10.4
	11	2	1	340.70	.31	1	20 441.1	15	11 794.3	23.3
	12	2	2	371.68	.31	2	22 299.5	20	15 725.8	41.5
	13	2	3	402.65	.32	3	24 157.8	25	19 657.1	64.8
	14	2	4	433.62	.32	4	26 016.1	30	23 588.5	93.3
65	15	30.972	15	464.60	1858.33	15	27 874.4	0 35	27 519.8	127.0
	16	2	6	495.57	.33	6	29 732.7	40	31 451.1	165.8
	17	2	7	526.54	.33	7	31 591.1	45	35 382.3	209.9
	18	2	8	557.52	.34	8	33 449.4	50	39 313.4	259.1
	19	2	9	588.49	.34	9	35 307.7	55	43 244.5	313.5
65	20	30.972	20	619.46	1858.35	20	37 166.1	1 00	47 175.5	373.1
	21	2	1	650.44	.35	1	39 024.4	05	51 106.5	437.9
	22	3	2	681.41	.35	2	40 882.8	10	55 037.3	507.8
	23	3	3	712.38	.36	3	42 741.2	15	58 968.0	583.0
	24	3	4	743.36	.36	4	44 599.5	20	62 898.7	663.3
65	25	30.973	25	774.33	1858.37	25	46 457.9	1 25	66 829.2	748.8
	26	3	6	805.30	.37	6	48 316.2	30	70 759.6	839.5
	27	3	7	836.27	.38	7	50 174.6	35	74 689.9	935.4
	28	3	8	867.25	.38	8	52 033.0	40	78 620.1	1 036.4
	29	3	9	898.22	.38	9	53 891.4	45	82 550.1	1 142.6
65	30	30.973	30	929.19	1858.39	30	55 749.8	1 50	86 479.9	1 254.0
	31	3	1	960.17	.39	1	57 608.2	55	90 409.7	1 370.6
	32	3	2	991.14	.40	2	59 466.5	2 00	94 339	1 492
	33	3	3	1 022.11	.40	3	61 324.9	3 00	141 479	3 358
	34	3	4	1 053.09	.40	4	63 183.3	4 00	188 584	5 968
65	35	30.973	35	1 084.06	1858.41	35	65 041.8	5 00	235 642	9 323
	36	4	6	1 115.03	.41	6	66 900.2	6 00	282 640	13 422
	37	4	7	1 146.01	.42	7	68 758.6	7 00	329 568	18 265
	38	4	8	1 176.98	.42	8	70 617.0	8 00	376 413	23 848
	39	4	9	1 207.95	.43	9	72 475.4	9 00	423 165	30 172
65	40	30.974	40	1 238.93	1858.43	40	74 333.9	10 00	469 810	37 235
	41	4	1	1 269.90	.43	1	76 192.3	11 00	516 338	45 035
	42	4	2	1 300.87	.44	2	78 050.7	12 00	562 736	53 569
	43	4	3	1 331.84	.44	3	79 909.2	13 00	608 994	62 837
	44	4	4	1 362.82	.45	4	81 767.6	14 00	655 100	72 835
65	45	30.974	45	1 393.79	1858.45	45	83 626.1	15 00	701 041	83 561
	46	4	6	1 424.76	.45	6	85 484.5	16 00	746 807	95 012
	47	4	7	1 455.74	.46	7	87 343.0	17 00	792 387	107 186
	48	4	8	1 486.71	.46	8	89 201.4	18 00	837 768	120 079
	49	4	9	1 517.68	.47	9	91 059.9	19 00	882 939	133 688
65	50	30.975	50	1 548.66	1858.47	50	92 918.4	20 00	927 889	148 011
	51	5	1	1 579.63	.47	1	94 776.8	21 00	972 608	163 042
	52	5	2	1 610.60	.48	2	96 635.3	22 00	1 017 082	178 779
	53	5	3	1 641.58	.48	3	98 493.8	23 00	1 061 303	195 217
	54	5	4	1 672.55	.49	4	100 352.3	24 00	1 105 258	212 353
65	55	30.975	55	1 703.52	1858.49	55	102 210.8	25 00	1 148 936	230 182
	56	5	6	1 734.50	.50	6	104 069.3	26 00	1 192 327	248 699
	57	5	7	1 765.47	.50	7	105 927.8	27 00	1 235 420	267 901
	58	5	8	1 796.44	.50	8	107 786.3	28 00	1 278 203	287 782
	59	5	9	1 827.41	.51	9	109 644.8	29 00	1 320 667	308 337
65	60	30.975	60	1 858.39	1858.51	60	111 503.3	30 00	1 362 800	329 560

Latitude 66° to 67°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
66 00	12.61	25.23	37.84	50.45	63.06	75.68	88.29	100.90	113.52	756.8	1513.6	2270.3	3027.1	3783.9
1	.60	.21	.81	.42	3.02	.63	.23	.84	.44	6.3	2.6	68.8	5.1	81.4
2	.60	.19	.79	.39	2.98	.58	.17	.77	.37	5.8	1.6	7.4	3.2	78.9
3	.59	.18	.77	.35	.94	.53	.12	.71	.29	5.3	10.6	5.9	21.2	6.5
4	.58	.16	.74	.32	.90	.48	.06	.64	.22	4.8	09.6	4.4	19.2	4.0
66 05	12.57	25.14	37.72	50.29	62.86	75.43	88.00	100.57	113.15	754.3	1508.6	2262.9	3017.2	3771.5
6	.56	.13	.69	.25	.82	.38	7.95	.51	.07	3.8	7.6	1.4	5.2	69.1
7	.56	.11	.67	.22	.78	.33	.89	.44	3.00	3.3	6.6	60.0	3.3	6.6
8	.55	.09	.64	.19	.73	.28	.83	.38	2.92	2.8	5.7	58.5	11.3	4.1
9	.54	.08	.62	.15	.69	.23	.77	.31	.85	2.3	4.7	7.0	09.3	61.6
66 10	12.53	25.06	37.59	50.12	62.65	75.18	87.71	100.25	112.78	751.8	1503.7	2255.5	3007.3	3759.2
11	.52	.04	.57	.09	.61	.13	.66	.18	.70	1.3	2.7	4.0	5.4	6.7
12	.51	.03	.54	.06	.57	.08	.60	.11	.63	0.8	1.7	2.5	3.4	4.2
13	.51	.01	.52	50.02	.53	5.04	.54	100.05	.55	50.4	500.7	51.1	3001.4	51.8
14	.50	5.00	.49	49.99	.49	4.99	.48	99.98	.48	49.9	499.7	49.6	2999.4	49.3
66 15	12.49	24.98	37.47	49.96	62.45	74.94	87.43	99.91	112.40	749.4	1498.7	2248.1	2997.4	3746.8
16	.48	.96	.44	.92	.40	.89	.37	.85	.33	8.9	7.7	6.6	5.5	4.3
17	.47	.95	.42	.89	.36	.84	.31	.78	.26	8.4	6.7	5.1	3.5	41.9
18	.46	.93	.39	.86	.32	.79	.25	.72	.18	7.9	5.8	3.6	91.5	39.4
19	.46	.91	.37	.83	.28	.74	.19	.65	.11	7.4	4.8	2.1	89.5	6.9
66 20	12.45	24.90	37.34	49.79	62.24	74.69	87.14	99.58	112.03	746.9	1493.8	2240.7	2987.5	3734.4
21	.44	.88	.32	.76	.20	.64	.08	.52	1.96	6.4	2.8	39.2	5.6	32.0
22	.43	.86	.29	.73	.16	.59	7.02	.45	.89	5.9	1.8	7.7	3.6	29.5
23	.42	.85	.27	.69	.12	.54	6.96	.39	.81	5.4	90.8	6.2	81.6	7.0
24	.42	.83	.24	.66	.08	.49	.91	.32	.73	4.9	89.8	4.7	79.6	4.5
66 25	12.41	24.81	37.22	49.63	62.03	74.44	86.85	99.25	111.66	744.4	1488.8	2233.2	2977.6	3722.0
26	.40	.80	.20	.59	1.99	.39	.79	.18	.59	3.9	87.8	1.7	5.7	19.6
27	.39	.78	.17	.56	.95	.34	.73	.12	.51	3.4	6.8	30.3	3.7	7.1
28	.38	.76	.15	.53	.91	.29	.67	9.05	.44	2.9	5.9	28.8	71.7	4.6
29	.37	.75	.12	.49	.87	.24	.62	8.99	.36	2.4	4.9	7.3	69.7	12.1
66 30	12.37	24.73	37.10	49.46	61.83	74.19	86.56	98.93	111.29	741.9	1483.9	2225.8	2967.7	3709.7
31	.36	.71	.07	.43	.79	.14	.50	.86	.22	1.4	2.9	4.3	5.7	7.2
32	.35	.70	.05	.40	.75	.09	.44	.79	.14	0.9	1.9	2.8	3.8	4.7
33	.34	.68	.02	.36	.70	4.04	.38	.73	1.07	40.4	80.9	21.3	61.8	702.2
34	.33	.66	7.00	.33	.66	3.99	.33	.66	0.99	39.9	79.9	19.8	59.8	699.7
66 35	12.32	24.65	36.97	49.30	61.62	73.95	86.27	98.59	110.91	739.5	1478.9	2218.4	2957.8	3697.3
36	.32	.63	.95	.26	.58	.90	.21	.53	.84	9.0	7.9	6.9	5.8	4.8
37	.31	.62	.92	.23	.54	.85	.15	.46	.77	8.5	6.9	5.4	3.8	92.3
38	.30	.60	.90	.20	.50	.80	.10	.39	.69	8.0	5.9	3.9	51.9	89.8
39	.29	.58	.87	.16	.45	.75	6.04	.33	.62	7.5	4.9	2.4	49.9	7.3
66 40	12.28	24.57	36.85	49.13	61.41	73.70	85.98	98.26	110.55	737.0	1473.9	2210.9	2947.9	3684.9
41	.27	.55	.82	.10	.37	.65	.92	.20	.47	6.5	2.9	09.4	5.9	82.4
42	.27	.53	.80	.07	.33	.60	.86	.13	.40	6.0	1.9	7.9	3.9	79.9
43	.26	.52	.77	.03	.29	.55	.81	.06	.32	5.5	1.0	6.4	41.9	7.4
44	.25	.50	.75	9.00	.25	.50	.75	8.00	.25	5.0	70.0	4.9	39.9	4.9
66 45	12.24	24.48	36.72	48.97	61.21	73.45	85.69	97.93	110.17	734.5	1469.0	2203.5	2937.9	3672.4
46	.23	.47	.70	.93	.17	.40	.63	.87	.10	4.0	8.0	2.0	6.0	70.0
47	.22	.45	.68	.90	.12	.35	.57	.80	10.03	3.5	7.0	200.5	4.0	67.5
48	.22	.44	.65	.87	.09	.30	.52	.74	09.96	3.0	6.0	199.0	2.0	5.0
49	.21	.42	.63	.83	.04	.25	.46	.67	.88	2.5	5.0	7.5	30.0	2.5
66 50	12.20	24.40	36.60	48.80	61.00	73.20	85.40	97.60	109.80	732.0	1464.0	2196.0	2928.0	3660.0
51	.19	.38	.58	.77	0.96	.15	.34	.53	.73	1.5	3.0	4.5	6.0	57.5
52	.18	.37	.55	.73	.92	.10	.28	.47	.65	1.0	2.0	3.0	4.0	5.0
53	.18	.35	.53	.70	.88	.05	.23	.40	.58	0.5	1.0	1.5	2.0	2.6
54	.17	.33	.50	.67	.84	3.00	.17	.34	.50	30.0	60.0	90.0	20.1	50.1
66 55	12.16	24.32	36.48	48.63	60.79	72.95	85.11	97.27	109.44	729.5	1459.0	2188.5	2918.1	3647.6
56	.15	.30	.45	.60	.75	.90	5.05	.20	.35	9.0	8.0	7.1	6.1	5.1
57	.14	.28	.43	.57	.71	.85	4.99	.14	.28	8.5	7.0	5.6	4.1	2.6
58	.13	.27	.40	.53	.67	.80	.94	.07	.20	8.0	6.1	4.1	2.1	40.1
59	.13	.25	.38	.50	.63	.75	.88	7.00	.13	7.5	5.1	2.6	10.1	37.6
66 60	12.12	24.23	36.35	48.47	60.59	72.70	84.82	96.94	109.05	727.0	1454.1	2181.1	2908.1	3635.1

Lat.		Latitude 66° to 67°—Meridional arcs.						Latitude 66°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
66	00	30.975			1858.51					
	1	5	1	30.98	.52	1	1 858.5	0 1	756.8	0.1
	2	5	2	61.95	.52	2	3 717.0	2	1 513.6	0.4
	3	5	3	92.93	.52	3	5 575.6	3	2 270.3	0.9
	4	5	4	123.91	.53	4	7 434.1	4	3 027.1	1.6
66	05	30.976	5	154.89	1858.53	5	9 292.6	0 5	3 783.9	2.5
	6	6	6	185.86	.54	6	11 151.1	6	4 540.7	3.6
	7	6	7	216.84	.54	7	13 009.7	7	5 297.5	4.9
	8	6	8	247.82	.54	8	14 868.2	8	6 054.2	6.4
	9	6	9	278.80	.55	9	16 726.8	9	6 811.0	8.1
66	10	30.976	10	309.77	1858.55	10	18 585.3	0 10	7 567.8	10.1
	11	6	1	340.75	.56	1	20 443.9	15	11 351.7	22.6
	12	6	2	371.73	.56	2	22 302.4	20	15 135.5	40.2
	13	6	3	402.70	.56	3	24 161.0	25	18 919.3	62.8
	14	6	4	433.68	.57	4	26 019.6	30	22 703.1	90.5
66	15	30.976	15	464.66	1858.57	15	27 878.2	0 35	26 486.8	123.2
	16	6	6	495.64	.58	6	29 736.7	40	30 270.5	160.9
	17	6	7	526.61	.58	7	31 595.3	45	34 054.2	203.6
	18	6	8	557.59	.59	8	33 453.9	50	37 837.8	251.4
	19	6	9	588.57	.59	9	35 312.5	55	41 621.3	304.2
66	20	30.977	20	619.54	1858.59	20	37 171.1	1 00	45 404.8	362.0
	21	7	1	650.52	.60	1	39 029.7	05	49 188.1	424.8
	22	7	2	681.50	.60	2	40 888.3	10	52 971.4	492.7
	23	7	3	712.48	.61	3	42 746.9	15	56 754.5	565.6
	24	7	4	743.45	.61	4	44 605.5	20	60 537.6	643.5
66	25	30.977	25	774.43	1858.61	25	46 464.1	1 25	64 320.6	726.5
	26	7	6	805.41	.62	6	48 322.7	30	68 103.5	814.4
	27	7	7	836.39	.62	7	50 181.3	35	71 886.2	907.4
	28	7	8	867.36	.63	8	52 040.0	40	75 668.8	1 005.4
	29	7	9	898.34	.63	9	53 898.6	45	79 451.3	1 108.5
66	30	30.977	30	929.32	1858.63	30	55 757.2	1 50	83 233.7	1 216.6
	31	7	1	960.29	.64	1	57 615.8	55	87 015.8	1 329.7
	32	7	2	991.27	.64	2	59 474.5	2 00	90 798	1 448
	33	7	3	1 022.25	.65	3	61 333.1	3 00	136 168	3 257
	34	8	4	1 053.23	.65	4	63 191.8	4 00	181 504	5 790
66	35	30.978	35	1 084.20	1858.65	35	65 050.4	5 00	226 793	9 045
	36	8	6	1 115.18	.66	6	66 909.1	6 00	272 024	13 022
	37	8	7	1 146.16	.66	7	68 767.7	7 00	317 187	17 719
	38	8	8	1 177.13	.67	8	70 626.4	8 00	362 269	23 136
	39	8	9	1 208.11	.67	9	72 485.1	9 00	407 259	29 271
66	40	30.978	40	1 239.09	1858.67	40	74 343.8	10 00	452 145	36 122
	41	8	1	1 270.07	.68	1	76 202.4	11 00	496 916	43 689
	42	8	2	1 301.04	.68	2	78 061.1	12 00	541 561	51 968
	43	8	3	1 332.02	.69	3	79 919.8	13 00	586 069	60 958
	44	8	4	1 363.00	.69	4	81 778.5	14 00	630 427	70 656
66	45	30.978	45	1 393.98	1858.69	45	83 637.2	15 00	674 625	81 060
	46	8	6	1 424.95	.70	6	85 495.9	16 00	718 652	92 168
	47	8	7	1 455.93	.70	7	87 354.6	17 00	762 495	103 976
	48	8	8	1 486.91	.71	8	89 213.3	18 00	806 145	116 482
	49	9	9	1 517.88	.71	9	91 072.0	19 00	849 590	129 682
66	50	30.979	50	1 548.86	1858.71	50	92 930.7	20 00	892 820	143 573
	51	9	1	1 579.84	.72	1	94 789.4	21 00	935 822	158 152
	52	9	2	1 610.82	.72	2	96 648.1	22 00	978 586	173 414
	53	9	3	1 641.79	.73	3	98 506.9	23 00	1 021 101	189 356
	54	9	4	1 672.77	.73	4	100 365.6	24 00	1 063 357	205 974
66	55	30.979	55	1 703.75	1858.73	55	102 224.3	25 00	1 105 343	223 264
	56	9	6	1 734.73	.74	6	104 083.0	26 00	1 147 048	241 221
	57	9	7	1 765.70	.74	7	105 941.8	27 00	1 188 461	259 840
	58	9	8	1 796.68	.75	8	107 800.5	28 00	1 229 571	279 118
	59	9	9	1 827.66	.75	9	109 659.3	29 00	1 270 370	299 049
66	60	30.979	60	1 858.63	1858.75	60	111 518.0	30 00	1 310 845	319 627

Latitude 67° to 68°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
67 00	12.12	24.23	36.35	48.47	60.59	72.70	84.82	96.94	109.05	727.0	1454.0	2181.1	2908.1	3635.1
1	.11	.22	.33	.44	.55	.65	.76	.87	8.98	6.5	3.1	79.6	6.1	2.7
2	.10	.20	.30	.40	.50	.60	.70	.81	.91	6.0	2.1	8.1	4.1	30.2
3	.09	.18	.28	.37	.46	.55	.65	.74	.83	5.5	1.1	6.6	2.1	27.7
4	.08	.17	.25	.34	.42	.50	.59	.67	.76	5.0	50.1	5.1	900.1	5.2
67 05	12.08	24.15	36.23	48.30	60.38	72.45	84.53	96.61	108.68	724.5	1449.1	2173.6	2898.2	3622.7
6	.07	.13	.20	.27	.34	.40	.47	.54	.61	4.0	8.1	2.1	6.2	20.2
7	.06	.12	.18	.24	.30	.35	.41	.47	.53	3.5	7.1	70.6	4.2	17.7
8	.05	.10	.15	.20	.25	.30	.35	.41	.46	3.0	6.1	69.1	2.2	5.2
9	.04	.08	.13	.17	.21	.25	.30	.34	.38	2.5	5.1	7.6	90.2	2.7
67 10	12.03	24.07	36.10	48.14	60.17	72.20	84.24	96.27	108.31	722.0	1444.1	2166.1	2888.2	3610.2
11	.03	.05	.08	.10	.13	.15	.18	.21	.23	1.5	3.1	4.6	6.2	07.7
12	.02	.04	.05	.07	.09	.11	.12	.14	.16	1.1	2.1	3.2	4.2	5.3
13	.01	.02	.03	.04	.05	.06	.07	.07	.08	0.6	1.1	1.7	2.2	2.8
14	2.00	4.00	6.00	8.00	60.01	2.01	4.01	6.01	8.01	20.1	40.1	60.2	80.2	3600.3
67 15	11.99	23.99	35.98	47.97	59.96	71.96	83.95	95.94	107.93	719.6	1439.1	2158.7	2878.2	3597.8
16	.98	.97	.95	.94	.92	.91	.89	.87	.86	9.1	8.1	7.2	6.2	5.3
17	.98	.95	.93	.90	.88	.86	.83	.81	.78	8.6	7.1	5.7	4.2	2.8
18	.97	.94	.90	.87	.84	.81	.77	.74	.71	8.1	6.1	4.2	2.2	90.3
19	.96	.92	.88	.84	.80	.76	.72	.68	.64	7.6	5.1	2.7	70.2	87.8
67 20	11.95	23.90	35.85	47.80	59.76	71.71	83.66	95.61	107.56	717.1	1434.1	2151.2	2868.3	3585.3
21	.94	.89	.83	.77	.72	.66	.60	.54	.48	6.6	3.1	49.7	6.3	2.8
22	.93	.87	.80	.74	.67	.61	.54	.48	.41	6.1	2.1	8.2	4.3	80.3
23	.93	.85	.78	.70	.63	.56	.49	.41	.33	5.6	1.1	6.7	2.3	77.8
24	.92	.84	.75	.67	.59	.51	.42	.34	.26	5.1	30.1	5.2	60.3	5.3
67 25	11.91	23.82	35.73	47.64	59.55	71.46	83.37	95.28	107.18	714.6	1429.1	2143.7	2858.3	3572.8
26	.90	.80	.70	.60	.51	.41	.31	.21	.11	4.1	8.1	2.2	6.3	70.3
27	.89	.79	.68	.57	.46	.36	.25	.14	7.03	3.6	7.1	40.7	4.3	67.8
28	.88	.77	.65	.54	.42	.31	.19	.07	6.96	3.1	6.1	39.2	2.3	5.3
29	.88	.75	.63	.50	.38	.26	.13	5.01	.88	2.6	5.1	7.7	50.3	2.8
67 30	11.87	23.74	35.60	47.47	59.34	71.21	83.07	94.94	106.81	712.1	1424.1	2136.2	2848.3	3560.3
31	.86	.72	.58	.44	.30	.16	3.02	.88	.73	1.6	3.1	4.7	6.3	57.8
32	.85	.70	.55	.40	.26	.11	2.96	.81	.66	1.1	2.1	3.2	4.3	5.3
33	.84	.69	.53	.37	.21	.06	.90	.74	.58	0.6	1.1	1.7	2.3	2.8
34	.83	.67	.50	.34	.17	1.01	.84	.68	.51	10.1	20.1	30.2	40.3	50.3
67 35	11.83	23.65	35.48	47.30	59.13	70.96	82.78	94.61	106.43	709.6	1419.1	2128.7	2838.3	3547.8
36	.82	.64	.45	.27	.09	.91	.72	.54	.36	9.1	8.1	7.2	6.3	5.3
37	.81	.62	.43	.24	.05	.86	.66	.48	.28	8.6	7.1	5.7	4.3	2.8
38	.80	.60	.40	.20	9.00	.81	.61	.41	.21	8.1	6.1	4.2	2.3	40.3
39	.79	.59	.38	.17	8.96	.76	.55	.34	.13	7.6	5.1	2.7	30.3	37.8
67 40	11.78	23.57	35.35	47.14	58.92	70.71	82.49	94.28	106.06	707.1	1414.1	2121.2	2828.3	3535.3
41	.78	.55	.33	.10	.88	.66	.43	.21	5.98	6.6	3.1	19.7	6.3	2.8
42	.77	.54	.30	.07	.84	.61	.37	.14	.91	6.1	2.1	8.2	4.3	30.3
43	.76	.52	.28	.04	.80	.56	.32	.08	.83	5.6	1.1	6.7	2.3	27.8
44	.75	.50	.25	47.00	.76	.51	.26	4.01	.76	5.1	10.1	5.2	20.3	5.3
67 45	11.74	23.49	35.23	46.97	58.71	70.46	82.20	93.94	105.68	704.6	1409.1	2113.7	2818.3	3522.8
46	.73	.47	.20	.94	.67	.41	.14	.88	.61	4.1	8.1	2.2	6.3	20.3
47	.73	.45	.18	.90	.63	.36	.08	.81	.53	3.6	7.1	10.7	4.3	17.8
48	.72	.44	.15	.87	.59	.31	2.02	.74	.46	3.1	6.1	09.2	2.3	5.3
49	.71	.42	.13	.84	.55	.26	1.97	.68	.38	2.6	5.1	7.7	10.3	2.8
67 50	11.70	23.40	35.10	46.80	58.51	70.21	81.91	93.61	105.31	702.1	1404.1	2106.2	2808.3	3510.3
51	.69	.39	.08	.77	.46	.16	.85	.54	.23	1.6	3.1	4.7	6.3	07.8
52	.68	.37	.05	.74	.42	.11	.79	.47	.16	1.1	2.1	3.2	4.3	5.3
53	.68	.35	.03	.70	.38	.06	.73	.41	.08	0.6	1.1	1.7	2.2	2.8
54	.67	.34	5.00	.67	.34	70.01	.67	.34	5.01	700.1	400.1	100.2	800.2	500.3
67 55	11.66	23.32	34.98	46.64	58.30	69.96	81.62	93.28	104.93	699.6	1399.1	2098.7	2798.2	3497.8
56	.65	.30	.95	.60	.26	.91	.56	.21	.86	9.1	8.1	7.2	6.2	5.3
57	.64	.29	.93	.57	.21	.86	.50	.14	.78	8.6	7.1	5.7	4.2	2.8
58	.63	.27	.90	.54	.17	.81	.44	.07	.71	8.1	6.1	4.2	2.2	90.3
59	.63	.26	.88	.50	.13	.76	.38	3.01	.64	7.6	5.1	2.7	90.2	87.8
67 60	11.62	23.24	34.85	46.47	58.09	69.71	81.32	92.94	104.56	697.1	1394.1	2091.2	2788.2	3485.3

Lat.		Latitude 67° to 68°—Meridional arcs.						Latitude 67°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
67	00	30.979			1858.75					
	1	9	1	30.98	.76	1	1 858.8	0 1	727.1	0.1
	2	9	2	61.96	.76	2	3 717.5	2	1 454.1	0.4
	3	79	3	92.94	.77	3	5 576.3	3	2 181.1	0.9
	4	80	4	123.92	.77	4	7 435.0	4	2 908.1	1.6
67	05	30.980	5	154.91	1858.77	5	9 293.8	0 5	3 635.1	2.4
	6	0	6	185.89	.78	6	11 152.6	6	4 362.2	3.5
	7	0	7	216.87	.78	7	13 011.4	7	5 089.2	4.8
	8	0	8	247.85	.79	8	14 870.2	8	5 816.2	6.2
	9	0	9	278.83	.79	9	16 728.9	9	6 543.3	7.9
67	10	30.980	10	309.81	1858.79	10	18 587.7	0 10	7 270.3	9.7
	11	0	1	340.79	.80	1	20 446.5	15	10 905.4	21.9
	12	0	2	371.77	.80	2	22 305.3	20	14 540.5	38.9
	13	0	3	402.76	.81	3	24 164.1	25	18 175.6	60.8
	14	0	4	433.74	.81	4	26 022.9	30	21 810.6	87.6
67	15	30.980	15	464.72	1858.81	15	27 881.8	0 35	25 445.6	119.2
	16	0	6	495.70	.82	6	29 740.6	40	29 080.6	155.7
	17	0	7	526.68	.82	7	31 599.4	45	32 715.5	197.1
	18	0	8	557.66	.83	8	33 458.2	50	36 350.4	243.3
	19	0	9	588.64	.83	9	35 317.0	55	39 985.2	294.4
67	20	30.981	20	619.62	1858.83	20	37 175.9	1 00	43 619.9	350.4
	21	1	1	650.61	.84	1	39 034.7	05	47 254.5	411.2
	22	1	2	681.59	.84	2	40 893.6	10	50 889.1	476.9
	23	1	3	712.57	.84	3	42 752.4	15	54 523.5	547.5
	24	1	4	743.55	.85	4	44 611.2	20	58 157.9	622.9
67	25	30.981	25	774.53	1858.85	25	46 470.1	1 25	61 792.1	703.2
	26	1	6	805.51	.86	6	48 329.0	30	65 426.3	788.4
	27	1	7	836.49	.86	7	50 187.8	35	69 060.3	878.4
	28	1	8	867.47	.86	8	52 046.7	40	72 694.2	973.3
	29	1	9	898.46	.87	9	53 905.5	45	76 328.0	1 073.0
67	30	30.981	30	929.44	1858.87	30	55 764.4	1 50	79 961.6	1 177.4
	31	1	1	960.42	.88	1	57 623.3	55	83 595.1	1 287.1
	32	1	2	991.40	.88	2	59 482.2	2 00	87 228	1 401
	33	1	3	1 022.38	.88	3	61 341.0	3 00	130 815	3 153
	34	1	4	1 053.36	.89	4	63 199.9	4 00	174 367	5 605
67	35	30.982	35	1 084.34	1858.89	35	65 058.8	5 00	217 874	8 756
	36	2	6	1 115.32	.90	6	66 917.7	6 00	261 325	12 605
	37	2	7	1 146.30	.90	7	68 776.6	7 00	304 709	17 152
	38	2	8	1 177.29	.90	8	70 635.5	8 00	348 014	22 395
	39	2	9	1 208.27	.91	9	72 494.4	9 00	391 229	28 334
67	40	30.982	40	1 239.25	1858.91	40	74 353.3	10 00	434 343	34 966
	41	2	1	1 270.23	.92	1	76 212.2	11 00	477 345	42 289
	42	2	2	1 301.21	.92	2	78 071.2	12 00	520 224	50 303
	43	2	3	1 332.19	.92	3	79 930.1	13 00	562 969	59 004
	44	2	4	1 363.17	.93	4	81 789.0	14 00	605 568	68 391
67	45	30.982	45	1 394.15	1858.93	45	83 647.9	15 00	648 011	78 461
	46	2	6	1 425.14	.93	6	85 506.9	16 00	690 287	89 212
	47	2	7	1 456.12	.94	7	87 365.8	17 00	732 384	100 640
	48	2	8	1 487.10	.94	8	89 224.7	18 00	774 293	112 744
	49	2	9	1 518.08	.95	9	91 083.7	19 00	816 002	125 519
67	50	30.982	50	1 549.06	1858.95	50	92 942.6	20 00	857 500	138 962
	51	3	1	1 580.04	.95	1	94 801.6	21 00	898 776	153 070
	52	3	2	1 611.02	.96	2	96 660.5	22 00	939 821	167 840
	53	3	3	1 642.00	.96	3	98 519.5	23 00	980 623	183 267
	54	3	4	1 672.99	.97	4	100 378.4	24 00	1 021 173	199 348
67	55	30.983	55	1 703.97	1858.97	55	102 237.4	25 00	1 061 458	216 078
	56	3	6	1 734.95	.97	6	104 096.4	26 00	1 101 470	233 453
	57	3	7	1 765.93	.98	7	105 955.4	27 00	1 141 197	251 468
	58	3	8	1 796.91	.98	8	107 814.3	28 00	1 180 629	270 120
	59	3	9	1 827.89	.98	9	109 673.3	29 00	1 219 757	289 402
67	60	30.983	60	1 858.87	1858.99	60	111 532.3	30 00	1 258 571	309 311

Latitude 68° to 69°—arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
68 00	11.62	23.24	34.85	46.47	58.09	69.71	81.32	92.94	104.56	697.1	1394.1	2091.2	2788.2	3485.3
1	.61	.22	.83	.44	.05	.66	.26	.87	.48	6.6	3.1	89.7	6.2	2.8
2	.60	.20	.80	.40	8.01	.61	.21	.81	.41	6.1	2.1	8.2	4.2	80.3
3	.59	.18	.78	.37	7.96	.55	.15	.74	.33	5.5	1.1	6.6	2.2	77.7
4	.58	.17	.75	.34	.92	.50	.09	.67	.26	5.0	90.1	5.1	80.2	5.2
68 05	11.58	23.15	34.73	46.30	57.88	69.45	81.03	92.61	104.18	694.5	1389.1	2083.6	2778.2	3472.7
6	.57	.13	.70	.27	.84	.40	0.97	.54	.11	4.0	8.1	2.1	6.2	70.2
7	.56	.12	.68	.24	.80	.35	.91	.47	4.03	3.5	7.1	80.6	4.2	67.7
8	.55	.10	.65	.20	.75	.30	.85	.41	3.96	3.0	6.1	79.1	2.2	5.2
9	.54	.08	.63	.17	.71	.25	.80	.34	.88	2.5	5.1	7.6	70.2	2.7
68 10	11.53	23.07	34.60	46.14	57.67	69.20	80.74	92.27	103.81	692.0	1384.1	2076.1	2768.2	3460.2
11	.53	.05	.58	.10	.63	.15	.68	.21	.73	1.5	3.1	4.6	6.1	57.7
12	.52	.03	.55	.07	.59	.10	.62	.14	.66	1.0	2.1	3.1	4.1	5.2
13	.51	.02	.53	.04	.54	.05	.56	.07	.58	0.5	1.1	1.6	2.1	2.7
14	.50	3.00	.50	6.00	.50	9.00	.50	2.00	.50	90.0	80.1	70.1	60.1	50.1
68 15	11.49	22.98	34.48	45.97	57.46	68.95	80.44	91.94	103.43	689.5	1379.1	2068.6	2758.1	3447.6
16	.48	.97	.45	.93	.42	.90	.39	.87	.35	9.0	8.1	7.1	6.1	5.1
17	.48	.95	.43	.90	.38	.85	.33	.80	.28	8.5	7.1	5.6	4.1	2.6
18	.47	.93	.40	.87	.33	.80	.27	.74	.20	8.0	6.0	4.1	2.1	40.1
19	.46	.92	.38	.83	.29	.75	.21	.67	.13	7.5	5.0	2.6	50.1	37.6
68 20	11.45	22.90	34.35	45.80	57.25	68.70	80.15	91.60	103.05	687.0	1374.0	2061.0	2748.1	3435.1
21	.44	.88	.33	.77	.21	.65	.09	.54	2.98	6.5	3.0	59.5	6.0	2.6
22	.43	.87	.30	.73	.17	.60	80.03	.47	.90	6.0	2.0	8.0	4.0	30.0
23	.43	.85	.28	.70	.12	.55	79.97	.40	.83	5.5	1.0	6.5	2.0	27.5
24	.42	.83	.25	.67	.08	.50	.92	.33	.75	5.0	70.0	5.0	40.0	5.0
68 25	11.41	22.82	34.23	45.63	57.04	68.45	79.86	91.27	102.68	684.5	1369.0	2053.5	2738.0	3422.5
26	.40	.80	.20	.60	7.00	.40	.80	.20	.60	4.0	8.0	2.0	6.0	20.0
27	.39	.78	.18	.57	6.96	.35	.74	.13	.53	3.5	7.0	50.5	4.0	17.5
28	.38	.77	.15	.53	.92	.30	.69	.07	.45	3.0	6.0	49.0	2.0	5.0
29	.37	.75	.12	.50	.87	.25	.62	1.00	.37	2.5	5.0	7.5	30.0	12.4
68 30	11.37	22.73	34.10	45.47	56.83	68.20	79.56	90.93	102.30	682.0	1364.0	2046.0	2727.9	3409.9
31	.36	.72	.07	.44	.79	.15	.51	.86	.22	1.5	3.0	4.4	5.9	7.4
32	.35	.70	.05	.40	.75	.10	.45	.80	.15	1.0	2.0	2.9	3.9	4.9
33	.34	.68	.02	.37	.71	.05	.39	.73	.07	0.5	60.9	41.4	21.9	402.4
34	.33	.67	4.00	.33	.66	8.00	.33	.66	2.00	80.0	59.9	39.9	19.9	399.9
68 35	11.32	22.65	33.97	45.30	56.62	67.95	79.27	90.59	101.92	679.5	1358.9	2038.4	2717.9	3397.3
36	.32	.63	.95	.26	.58	.90	.21	.53	.84	9.0	7.9	6.9	5.9	4.8
37	.31	.62	.92	.23	.54	.85	.15	.46	.77	8.5	6.9	5.4	3.8	92.3
38	.30	.60	.90	.20	.50	.80	.10	.39	.69	8.0	5.9	3.9	11.8	89.8
39	.29	.58	.87	.16	.45	.75	9.04	.33	.62	7.5	4.9	2.4	09.8	7.3
68 40	11.28	22.57	33.85	45.13	56.41	67.70	78.98	90.26	101.54	677.0	1353.9	2030.9	2707.8	3384.8
41	.27	.55	.82	.10	.37	.64	.92	.19	.47	6.4	2.9	29.3	5.8	82.2
42	.27	.53	.80	.06	.33	.59	.86	.13	.39	5.9	1.9	7.8	3.8	79.7
43	.26	.51	.77	.03	.29	.54	.80	90.06	.32	5.4	50.9	6.3	01.8	7.2
44	.25	.50	.75	5.00	.24	.49	.74	89.99	.24	4.9	49.9	4.8	699.7	4.7
68 45	11.24	22.48	33.72	44.96	56.20	67.44	78.68	89.93	101.17	674.4	1348.9	2023.3	2697.7	3372.2
46	.23	.46	.70	.93	.16	.39	.62	.86	.09	3.9	7.9	1.8	5.7	69.6
47	.22	.45	.67	.89	.12	.34	.57	.79	1.02	3.4	6.9	20.3	3.7	7.1
48	.22	.43	.65	.86	.07	.29	.51	.72	0.94	2.9	5.8	18.8	91.7	4.6
49	.21	.42	.62	.82	6.03	.24	.45	.66	.87	2.4	4.8	7.2	89.7	62.1
68 50	11.20	22.40	33.60	44.79	55.99	67.19	78.39	89.59	100.79	671.9	1343.8	2015.7	2687.6	3359.6
51	.19	.38	.57	.76	.95	.14	.33	.52	.71	1.4	2.8	4.2	5.6	7.0
52	.18	.36	.55	.73	.91	.09	.27	.45	.64	0.9	1.8	2.7	3.6	4.5
53	.17	.35	.52	.69	.87	7.04	.21	.39	.56	70.4	40.8	11.2	81.6	52.0
54	.16	.33	.50	.66	.82	6.99	.15	.32	.49	69.9	39.8	09.7	79.6	49.5
68 55	11.16	22.31	33.47	44.63	55.78	66.94	78.09	89.25	100.41	669.4	1338.8	2008.2	2677.6	3346.9
56	.15	.30	.44	.59	.74	.89	8.04	.18	.33	8.9	7.8	6.7	5.5	4.4
57	.14	.28	.42	.56	.70	.84	7.98	.12	.26	8.4	6.8	5.1	3.5	41.9
58	.13	.26	.39	.53	.66	.79	.92	9.05	.18	7.9	5.7	3.6	71.5	39.4
59	.12	.25	.37	.49	.61	.74	.86	8.98	.11	7.4	4.7	2.1	69.5	6.9
68 60	11.11	22.23	33.34	44.46	55.57	66.69	77.80	88.92	100.03	666.9	1333.7	2000.6	2667.5	3334.3

Lat.	Latitude 68° to 69°—Meridional arcs.						Latitude 68°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
68 00	30.983			1858.99					
1	3	1	30.99	.99	1	1 859.0	0 1	697.1	0.1
2	3	2	61.97	9.00	2	3 718.0	2	1 394.1	0.4
3	3	3	92.96	.00	3	5 577.0	3	2 091.1	0.8
4	3	4	123.94	.00	4	7 436.0	4	2 788.2	1.5
68 05	30.983	5	154.93	1859.01	5	9 295.0	0 5	3 485.2	2.3
6	4	6	185.91	.01	6	11 154.0	6	4 182.3	3.4
7	4	7	216.90	.02	7	13 013.0	7	4 879.4	4.6
8	4	8	247.88	.02	8	14 872.0	8	5 576.4	6.0
9	4	9	278.87	.02	9	16 731.1	9	6 273.5	7.6
68 10	30.984	10	309.85	1859.03	10	18 590.1	0 10	6 970.5	9.4
11	4	1	340.84	.03	1	20 449.1	15	10 455.8	21.1
12	4	2	371.82	.03	2	22 308.1	20	13 941.0	37.6
13	4	3	402.81	.04	3	24 167.2	25	17 426.3	58.7
14	4	4	433.79	.04	4	26 026.2	30	20 911.4	84.6
68 15	30.984	15	464.78	1859.05	15	27 885.3	0 35	24 396.6	115.1
16	4	6	495.76	.05	6	29 744.3	40	27 881.7	150.4
17	4	7	526.75	.05	7	31 603.4	45	31 366.7	190.3
18	4	8	557.73	.06	8	33 462.4	50	34 851.7	235.0
19	4	9	588.72	.06	9	35 321.5	55	38 336.6	284.3
68 20	30.984	20	619.70	1859.06	20	37 180.5	1 00	41 821.5	338.4
21	4	1	650.69	.07	1	39 039.6	05	45 306.3	397.1
22	5	2	681.67	.07	2	40 898.7	10	48 791.0	460.6
23	5	3	712.66	.08	3	42 757.8	15	52 275.6	528.7
24	5	4	743.64	.08	4	44 616.8	20	55 760.1	601.6
68 25	30.985	25	774.63	1859.08	25	46 475.9	1 25	59 244.5	679.1
26	5	6	805.61	.09	6	48 335.0	30	62 728.8	761.4
27	5	7	836.60	.09	7	50 194.1	35	66 213.0	848.3
28	5	8	867.58	.10	8	52 053.2	40	69 697.1	940.0
29	5	9	898.57	.10	9	53 912.3	45	73 181.0	1 036.3
68 30	30.985	30	929.55	1859.10	30	55 771.4	1 50	76 664.9	1 137.3
31	5	1	960.54	.11	1	57 630.5	55	80 148.5	1 243.1
32	5	2	991.52	.11	2	59 489.6	2 00	83 632	1 353
33	5	3	1 022.51	.11	3	61 348.7	3 00	125 421	3 045
34	5	4	1 053.49	.12	4	63 207.8	4 00	167 177	5 413
68 35	30.985	35	1 084.48	1859.12	35	65 066.9	5 00	208 889	8 455
36	5	6	1 115.46	.13	6	66 926.0	6 00	250 546	12 173
37	5	7	1 146.45	.13	7	68 785.2	7 00	292 138	16 563
38	6	8	1 177.43	.13	8	70 644.3	8 00	333 653	21 627
39	6	9	1 208.42	.14	9	72 503.5	9 00	375 081	27 362
68 40	30.986	40	1 239.40	1859.14	40	74 362.6	10 00	416 410	33 766
41	6	1	1 270.39	.14	1	76 221.7	11 00	457 631	40 838
42	6	2	1 301.37	.15	2	78 080.9	12 00	498 732	48 577
43	6	3	1 332.36	.15	3	79 940.0	13 00	539 702	56 979
44	6	4	1 363.34	.16	4	81 799.2	14 00	580 531	66 043
68 45	30.986	45	1 394.33	1859.16	45	83 658.3	15 00	621 207	75 767
46	6	6	1 425.31	.16	6	85 517.5	16 00	661 722	86 148
47	6	7	1 456.30	.17	7	87 376.7	17 00	702 062	97 183
48	6	8	1 487.28	.17	8	89 235.8	18 00	742 219	108 869
49	6	9	1 518.27	.17	9	91 095.0	19 00	782 182	121 204
68 50	30.986	50	1 549.25	1859.18	50	92 954.2	20 00	821 940	134 183
51	6	1	1 580.24	.18	1	94 813.4	21 00	861 482	147 804
52	6	2	1 611.22	.18	2	96 672.6	22 00	900 799	162 064
53	6	3	1 642.21	.19	3	98 531.7	23 00	939 880	176 957
54	7	4	1 673.19	.19	4	100 390.9	24 00	978 715	192 481
68 55	30.987	55	1 704.18	1859.20	55	102 250.1	25 00	1 017 294	208 632
56	7	6	1 735.16	.20	6	104 109.3	26 00	1 055 606	225 404
57	7	7	1 766.15	.20	7	105 968.5	27 00	1 093 642	242 795
58	7	8	1 797.13	.21	8	107 827.7	28 00	1 131 392	260 798
59	7	9	1 828.12	.21	9	109 686.9	29 00	1 168 845	279 411
68 60	30.987	60	1 859.10	1859.21	60	111 546.2	30 00	1 205 992	298 626

Latitude 69° to 70°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
69 00	11.11	22.23	33.34	44.46	55.57	66.69	77.80	88.92	100.03	666.9	1333.7	2000.6	2667.5	3334.3
1	.11	.21	.32	.42	.53	.64	.74	.85	99.95	6.4	2.7	1999.1	5.4	31.8
2	.10	.20	.29	.39	.49	.59	.68	.78	.88	5.9	1.7	7.6	3.4	29.3
3	.09	.18	.27	.36	.45	.54	.63	.72	.80	5.4	30.7	6.1	1.4	6.8
4	.08	.16	.24	.32	.40	.48	.56	.65	.73	4.8	29.7	4.5	59.4	4.2
69 05	11.07	22.14	33.22	44.29	55.36	66.43	77.51	88.58	99.65	664.3	1328.7	1993.0	2657.4	3321.7
6	.06	.13	.19	.26	.32	.38	.45	.51	.58	3.8	7.7	1.5	5.3	19.2
7	.06	.11	.17	.22	.28	.33	.39	.44	.50	3.3	6.7	90.0	3.3	6.6
8	.05	.09	.14	.19	.23	.28	.33	.38	.42	2.8	5.6	88.5	1.3	4.1
9	.04	.08	.12	.15	.19	.23	.27	.31	.35	2.3	4.6	7.0	49.3	11.6
69 10	11.03	22.06	33.09	44.12	55.15	66.18	77.21	88.24	99.27	661.8	1323.6	1985.4	2647.3	3309.1
11	.02	.04	.07	.09	.11	.13	.15	.17	.20	1.3	2.6	3.9	5.2	6.5
12	.01	.03	.04	.05	.07	.08	.09	.11	.12	0.8	1.6	2.4	3.2	4.0
13	.01	2.01	3.02	4.02	5.02	6.03	7.03	8.04	9.04	60.3	20.6	80.9	41.2	301.5
14	1.00	1.99	2.99	3.99	4.98	5.98	6.98	7.97	8.97	59.8	19.6	79.4	39.2	299.0
69 15	10.99	21.98	32.97	43.95	54.94	65.93	76.92	87.90	98.89	659.3	1318.6	1977.9	2637.1	3296.4
16	.98	.96	.94	.92	.90	.88	.86	.84	.82	8.8	7.6	6.3	5.1	3.9
17	.97	.94	.91	.89	.86	.83	.80	.77	.74	8.3	6.6	4.8	3.1	91.4
18	.96	.93	.89	.85	.81	.78	.74	.70	.66	7.8	5.5	3.3	31.1	88.8
19	.96	.91	.86	.82	.77	.73	.68	.63	.59	7.3	4.5	1.8	29.0	6.3
69 20	10.95	21.89	32.84	43.78	54.73	65.68	76.62	87.57	98.51	656.8	1313.5	1970.3	2627.0	3283.8
21	.94	.88	.81	.75	.69	.63	.56	.50	.44	6.3	2.5	68.8	5.0	81.3
22	.93	.86	.79	.72	.65	.57	.50	.43	.36	5.7	1.5	7.2	3.0	78.7
23	.92	.84	.76	.68	.60	.53	.44	.37	.29	5.2	10.4	5.7	20.9	6.2
24	.91	.82	.74	.65	.56	.47	.39	.30	.21	4.7	09.4	4.2	18.9	3.7
69 25	10.90	21.81	32.71	43.61	54.52	65.42	76.33	87.23	98.13	654.2	1308.4	1962.7	2616.9	3271.1
26	.90	.79	.69	.58	.48	.37	.27	.16	8.06	3.7	7.4	61.2	4.9	68.6
27	.89	.77	.66	.55	.44	.32	.21	.10	7.98	3.2	6.4	59.6	2.8	6.1
28	.88	.75	.63	.51	.39	.27	.15	7.03	.90	2.7	5.4	8.1	10.8	3.5
29	.87	.74	.61	.48	.35	.22	.09	6.96	.83	2.2	4.4	6.6	08.8	61.0
69 30	10.86	21.72	32.58	43.45	54.31	65.17	76.03	86.89	97.75	651.7	1303.4	1955.1	2606.8	3258.5
31	.85	.71	.56	.41	.27	.12	5.97	.82	.68	1.2	2.4	3.6	4.7	5.9
32	.84	.69	.53	.38	.22	.07	.91	.76	.60	0.7	1.4	2.0	2.7	3.4
33	.84	.67	.51	.35	.18	5.02	.85	.69	.53	50.2	300.3	50.5	600.7	50.9
34	.83	.66	.48	.31	.14	4.97	.79	.62	.45	49.7	299.3	49.0	598.7	48.3
69 35	10.82	21.64	32.46	43.28	54.10	64.92	75.74	86.55	97.37	649.2	1298.3	1947.5	2596.6	3245.8
36	.81	.62	.43	.24	.06	.87	.68	.49	.30	8.7	7.3	6.0	4.6	3.3
37	.80	.60	.41	.21	4.01	.81	.62	.42	.22	8.1	6.3	4.4	2.6	40.7
38	.79	.59	.38	.18	3.97	.76	.56	.35	.15	7.6	5.3	2.9	90.6	38.2
39	.79	.57	.36	.14	.93	.71	.50	.29	7.07	7.1	4.2	41.4	88.5	5.7
69 40	10.78	21.55	32.33	43.11	53.89	64.66	75.44	86.22	96.99	646.6	1293.2	1939.9	2586.5	3233.1
41	.77	.54	.31	.07	.84	.61	.38	.15	.92	6.1	2.2	8.4	4.5	30.6
42	.76	.52	.28	.04	.80	.56	.32	.08	.84	5.6	1.2	6.8	2.4	28.0
43	.75	.50	.26	3.01	.76	.51	.26	6.01	.77	5.1	90.2	5.3	80.4	5.5
44	.74	.49	.23	2.97	.72	.46	.20	5.95	.69	4.6	89.2	3.8	78.4	3.0
69 45	10.73	21.47	32.20	42.94	53.67	64.41	75.15	85.88	96.61	644.1	1288.2	1932.3	2576.3	3220.4
46	.73	.45	.18	.91	.63	.36	.08	.81	.54	3.6	7.2	30.7	4.3	17.9
47	.72	.44	.15	.87	.59	.31	5.03	.74	.46	3.1	6.2	29.2	2.3	5.4
48	.71	.42	.13	.84	.55	.26	4.97	.67	.38	2.6	5.1	7.7	70.3	2.8
49	.70	.40	.10	.80	.50	.21	.91	.61	.31	2.1	4.1	6.2	68.2	10.3
69 50	10.69	21.39	32.08	42.77	53.46	64.16	74.85	85.54	96.23	641.6	1283.1	1924.7	2566.2	3207.8
51	.68	.37	.05	.74	.42	.11	.79	.47	.16	1.0	2.1	3.1	4.2	5.2
52	.68	.35	.03	.70	.38	.05	.73	.41	.08	0.5	1.1	1.6	2.1	2.7
53	.67	.33	2.00	.67	.33	4.00	.67	.34	6.00	40.0	80.0	20.1	60.1	200.1
54	.66	.32	1.98	.63	.29	3.95	.61	.27	5.93	39.5	79.0	18.6	58.1	197.6
69 55	10.65	21.30	31.95	42.60	53.25	63.90	74.55	85.20	95.85	639.0	1278.0	1917.0	2556.0	3195.1
56	.64	.28	.92	.57	.21	.85	.49	.13	.78	8.5	7.0	5.5	4.0	2.5
57	.63	.27	.90	.53	.17	.80	.43	.07	.70	8.0	6.0	4.0	52.0	90.0
58	.62	.25	.87	.50	.12	.75	.37	5.00	.62	7.5	4.9	2.5	49.9	87.4
59	.62	.23	.85	.47	.08	.70	.31	4.93	.55	7.0	3.9	10.9	7.9	4.9
69 60	10.61	21.22	31.82	42.43	53.04	63.65	74.25	84.86	95.47	636.5	1272.9	1909.4	2545.9	3182.4

Lat.		Latitude 69° to 70°—Meridional arcs.						Latitude 69°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
69	00	30.987			1859.21					
	1	7	1	30.99	.22	1	1 859.2	0 1	666.9	0.1
	2	7	2	61.98	.22	2	3 718.4	2	1 333.7	0.4
	3	7	3	92.97	.23	3	5 577.7	3	2 000.6	0.8
	4	7	4	123.95	.23	4	7 436.9	4	2 667.5	1.5
69	05	30.987	5	154.94	1859.23	5	9 296.1	0 5	3 334.3	2.3
	6	7	6	185.93	.24	6	11 155.4	6	4 001.2	3.3
	7	7	7	216.92	.24	7	13 014.6	7	4 668.1	4.4
	8	7	8	247.91	.24	8	14 873.8	8	5 334.9	5.8
	9	7	9	278.90	.25	9	16 733.1	9	6 001.8	7.3
69	10	30.988	10	309.89	1859.25	10	18 592.3	0 10	6 668.7	9.1
	11	8	1	340.88	.26	1	20 451.6	15	10 003.0	20.4
	12	8	2	371.86	.26	2	22 310.9	20	13 337.3	36.2
	13	8	3	402.85	.26	3	24 170.1	25	16 671.5	56.6
	14	8	4	433.84	.27	4	26 029.4	30	20 005.8	81.5
69	15	30.988	15	464.83	1859.27	15	27 888.6	0 35	23 340.0	110.9
	16	8	6	495.82	.27	6	29 747.9	40	26 674.1	144.9
	17	8	7	526.81	.28	7	31 607.2	45	30 008.2	183.3
	18	8	8	557.80	.28	8	33 466.5	50	33 342.3	226.3
	19	8	9	588.79	.28	9	35 325.8	55	36 676.3	273.9
69	20	30.988	20	619.77	1859.29	20	37 185.0	1 00	40 010.2	325.9
	21	8	1	650.76	.29	1	39 044.3	05	43 344.0	382.5
	22	8	2	681.75	.30	2	40 903.6	10	46 677.8	443.6
	23	8	3	712.74	.30	3	42 762.9	15	50 011.5	509.3
	24	8	4	743.73	.30	4	44 622.2	20	53 345.1	579.5
69	25	30.988	25	774.72	1859.31	25	46 481.5	1 25	56 678.6	654.2
	26	8	6	805.71	.31	6	48 340.8	30	60 012.0	733.4
	27	9	7	836.70	.31	7	50 200.1	35	63 345.3	817.2
	28	9	8	867.68	.32	8	52 059.5	40	66 678.4	905.4
	29	9	9	898.67	.32	9	53 918.8	45	70 011.5	998.2
69	30	30.989	30	929.66	1859.32	30	55 778.1	1 50	73 344.4	1 095.6
	31	9	1	960.65	.33	1	57 637.4	55	76 677.1	1 197.4
	32	9	2	991.64	.33	2	59 496.8	2 00	80 010	1 304
	33	9	3	1 022.63	.34	3	61 356.1	3 00	119 988	2 933
	34	9	4	1 053.62	.34	4	63 215.4	4 00	159 935	5 214
69	35	30.989	35	1 084.61	1859.34	35	65 074.8	5 00	199 839	8 145
	36	9	6	1 115.59	.35	6	66 934.1	6 00	239 690	11 726
	37	9	7	1 146.58	.35	7	68 793.5	7 00	279 477	15 956
	38	9	8	1 177.57	.35	8	70 652.8	8 00	319 190	20 833
	39	9	9	1 208.56	.36	9	72 512.2	9 00	358 818	26 357
69	40	30.989	40	1 239.55	1859.36	40	74 371.5	10 00	398 352	32 526
	41	9	1	1 270.54	.36	1	76 230.9	11 00	437 779	39 338
	42	89	2	1 301.52	.37	2	78 090.3	12 00	477 090	46 792
	43	90	3	1 332.51	.37	3	79 949.6	13 00	516 275	54 885
	44	0	4	1 363.50	.37	4	81 809.0	14 00	555 322	63 615
69	45	30.990	45	1 394.49	1859.38	45	83 668.4	15 00	594 222	72 981
	46	0	6	1 425.48	.38	6	85 527.8	16 00	632 964	82 979
	47	0	7	1 456.47	.39	7	87 387.1	17 00	671 538	93 607
	48	0	8	1 487.46	.39	8	89 246.5	18 00	709 934	104 862
	49	0	9	1 518.45	.39	9	91 105.9	19 00	748 142	116 741
69	50	30.990	50	1 549.44	1859.40	50	92 965.3	20 00	786 150	129 242
	51	0	1	1 580.43	.40	1	94 824.7	21 00	823 950	142 359
	52	0	2	1 611.41	.40	2	96 684.1	22 00	861 532	156 091
	53	0	3	1 642.40	.41	3	98 543.5	23 00	898 884	170 434
	54	0	4	1 673.39	.41	4	100 402.9	24 00	935 998	185 383
69	55	30.990	55	1 704.38	1859.41	55	102 262.4	25 00	972 864	200 935
	56	0	6	1 735.37	.42	6	104 121.8	26 00	1 009 471	217 085
	57	0	7	1 766.36	.42	7	105 981.2	27 00	1 045 810	233 830
	58	0	8	1 797.35	.42	8	107 840.6	28 00	1 081 872	251 165
	59	0	9	1 828.34	.43	9	109 700.0	29 00	1 117 646	269 085
69	60	30.991	60	1 859.32	1859.43	60	111 559.5	30 00	1 153 123	287 585

Latitude 70° to 71°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
70 00	10.61	21.22	31.82	42.43	53.04	63.65	74.25	84.86	95.47	636.5	1272.9	1909.4	2545.9	3182.4
1	.60	.20	.80	.40	3.00	.60	.20	.79	.39	6.0	1.9	7.9	3.8	79.8
2	.59	.18	.77	.36	2.96	.55	.14	.73	.32	5.5	70.9	6.4	41.8	7.3
3	.58	.16	.75	.33	.91	.49	.08	.66	.24	4.9	69.9	4.8	39.8	4.7
4	.57	.15	.72	.30	.87	.44	4.02	.59	.17	4.4	8.9	3.3	7.7	72.2
70 05	10.57	21.13	31.70	42.26	52.83	63 39	73.96	84.52	95.09	633.9	1267.9	1901.8	2535.7	3169.6
6	.56	.11	.67	.23	.79	.34	.90	.46	5.01	3.4	6.9	900.3	3.7	7.1
7	.55	.10	.65	.19	.74	.29	.84	.39	4.94	2.9	5.8	898.7	31.6	4.6
8	.54	.08	.62	.16	.70	.24	.78	.32	.86	2.4	4.8	7.2	29.6	62.0
9	.53	.06	.60	.13	.66	.19	.72	.25	.79	1.9	3.8	5.7	7.6	59.5
70 10	10.52	21.05	31.57	42.09	52.62	63.14	73.66	84.18	94.71	631.4	1262.8	1894.2	2525.5	3156.9
11	.51	.03	.54	.06	.57	.09	.60	.12	.63	0.9	1.8	2.6	3.5	4.4
12	.51	.01	.52	2.02	.53	3.04	.54	4.05	.55	30.4	60.8	91.1	21.5	51.8
13	.50	1.00	.49	1.99	.49	2.99	.48	3.98	.48	29.9	59.7	89.6	19.4	49.3
14	.49	0.98	.47	.96	.45	.93	.42	.91	.40	9.3	8.7	8.0	7.4	6.7
70 15	10.48	20.96	31.44	41.92	52.40	62.88	73.36	83.85	94.33	628.8	1257.7	1886.5	2515.4	3144.2
16	.47	.94	.42	.89	.36	.83	.31	.78	.25	8.3	6.7	5.0	3.3	41.7
17	.46	.93	.39	.85	.32	.78	.25	.71	.17	7.8	5.7	3.5	11.3	39.1
18	.46	.91	.37	.82	.28	.73	.19	.64	.10	7.3	4.6	1.9	09.3	6.6
19	.45	.89	.34	.79	.23	.68	.13	.57	4.02	6.8	3.6	80.4	7.2	4.0
70 20	10.44	20.88	31.31	41.75	52.19	62.63	73.07	83.51	93.94	626.3	1252.6	1878.9	2505.2	3131.5
21	.43	.86	.29	.72	.14	.58	3.01	.44	.87	5.8	1.6	7.4	3.1	28.9
22	.42	.84	.26	.68	.11	.53	2.95	.37	.79	5.3	50.6	5.8	501.1	6.4
23	.41	.83	.24	.65	.06	.48	.89	.30	.71	4.8	49.5	4.3	499.1	3.8
24	.40	.81	.21	.61	2.02	.43	.83	.23	.64	4.3	8.5	2.8	7.0	21.3
70 25	10.40	20.79	31.19	41.58	51.98	62.37	72.77	83.17	93.56	623.7	1247.5	1871.2	2495.0	3118.7
26	.39	.77	.16	.55	.94	.32	.71	.10	.49	3.2	6.5	69.7	2.9	6.2
27	.38	.76	.14	.51	.89	.27	.65	3.03	.41	2.7	5.5	8.2	90.9	3.6
28	.37	.74	.11	.48	.85	.22	.59	2.96	.33	2.2	4.4	6.7	88.9	11.1
29	.36	.72	.09	.45	.81	.17	.53	.89	.26	1.7	3.4	5.1	6.8	08.5
70 30	10.35	20.71	31.06	41.41	51.77	62.12	72.47	82.83	93.18	621.2	1242.4	1863.6	2484.8	3106.0
31	.34	.69	.03	.38	.72	.07	.41	.76	.10	0.7	1.4	2.1	2.7	3.4
32	.34	.67	1.01	.35	.68	2.02	.35	.69	3.03	20.2	40.4	60.5	80.7	100.9
33	.33	.66	0.98	.31	.64	1.97	.29	.62	2.95	19.7	39.3	59.0	78.7	098.3
34	.32	.64	.96	.28	.60	.92	.24	.55	.87	9.2	8.3	7.5	6.6	5.8
70 35	10.31	20.62	30.93	41.24	51.55	61.86	72.17	82.48	92.80	618.6	1237.3	1855.9	2474.6	3093.2
36	.30	.60	.91	.21	.51	.81	.12	.42	.72	8.1	6.3	4.4	2.5	90.7
37	.29	.59	.88	.17	.47	.76	.06	.35	.64	7.6	5.3	2.9	70.5	88.1
38	.29	.57	.86	.14	.43	.71	2.00	.28	.57	7.1	4.2	51.3	68.5	5.6
39	.28	.55	.83	.11	.38	.66	1.94	.21	.49	6.6	3.2	49.8	6.4	3.0
70 40	10.27	20.54	30.80	41.07	51.34	61.61	71.88	82.15	92.41	616.1	1232.2	1848.3	2464.4	3080.5
41	.26	.52	.78	.04	30	.56	.82	.08	.34	5.6	1.2	6.8	2.3	77.9
42	.25	.50	.75	1.01	.26	.51	.76	2.01	.26	5.1	30.2	5.2	60.3	5.4
43	.24	.49	.73	0.97	.21	.46	.71	1.94	.18	4.6	29.1	3.7	58.3	2.8
44	.23	.47	.70	.94	.17	.41	.64	.87	.11	4.1	8.1	2.2	6.2	70.3
70 45	10.23	20.45	30.68	40.90	51.13	61.35	71.58	81.81	92.03	613.5	1227.1	1840.6	2454.2	3067.7
46	.22	.43	.65	.87	.09	.30	.52	.74	1.96	3.0	6.1	39.1	2.1	5.2
47	.21	.42	.63	.83	.04	.25	.46	.67	.88	2.5	5.1	7.6	50.1	2.6
48	.20	.40	.60	.80	1.00	.20	.40	.60	.80	2.0	4.0	6.0	48.0	60.0
49	.19	.38	.58	.77	0.96	.15	.34	.53	.73	1.5	3.0	4.5	6.0	57.5
70 50	10.18	20.37	30.55	40.73	50.92	61.10	71.28	81.46	91.65	611.0	1222.0	1833.0	2444.0	3054.9
51	.17	.35	.52	.70	.87	.05	.22	.40	.57	0.5	1.0	31.4	41.9	52.4
52	.17	.33	.50	.66	.83	1.00	.16	.33	.49	10.0	20.0	29.9	39.9	49.8
53	.16	.32	.47	.63	.79	0.95	.10	.26	.42	09.5	18.9	8.4	7.8	7.3
54	.15	.30	.45	.60	.75	.89	1.04	.19	.34	8.9	7.9	6.8	5.8	4.7
70 55	10.14	20.28	30.42	40.56	50.70	60.84	70.98	81.13	91.27	608.4	1216.9	1825.3	2433.7	3042.2
56	.13	.26	.40	.53	.66	.79	.93	1.06	.19	7.9	5.9	3.8	31.7	39.6
57	.12	.25	.37	.49	.62	.74	.87	0.99	.11	7.4	4.9	2.2	29.6	7.1
58	.12	.23	.34	.46	.58	.69	.81	.92	1.03	6.9	3.8	20.7	7.6	4.5
59	.11	.21	.32	.43	.53	.64	.75	.85	0.96	6.4	2.8	19.2	5.6	31.9
70 60	10.10	20.20	30.29	40.39	50.49	60.59	70.69	80.78	90.88	605.9	1211.8	1817.6	2423.5	3029.4

Lat.	Latitude 70° to 71°—Meridional arcs.						Latitude 70°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
70 00	30.991			1859.43					
01	1	1	30.99	.44	1	1 859.4	0 1	636.5	0.1
02	1	2	61.98	.44	2	3 718.9	2	1 272.9	0.3
03	1	3	92.98	.44	3	5 578.3	3	1 909.4	0.8
04	1	4	123.97	.45	4	7 437.8	4	2 545.9	1.4
70 05	30.991	5	154.96	1859.45	5	9 297.2	0 5	3 182.4	2.2
06	1	6	185.95	.45	6	11 156.7	6	3 818.8	3.1
07	1	7	216.95	.46	7	13 016.1	7	4 455.3	4.3
08	1	8	247.94	.46	8	14 875.6	8	5 091.8	5.6
09	1	9	278.93	.46	9	16 735.0	9	5 728.2	7.0
70 10	30.991	10	309.92	1859.47	10	18 594.5	0 10	6 364.7	8.7
11	1	1	340.92	.47	1	20 454.0	15	9 547.0	19.5
12	1	2	371.91	.47	2	22 313.4	20	12 729.3	34.8
13	1	3	402.90	.48	3	24 172.9	25	15 911.6	54.4
14	1	4	433.89	.48	4	26 032.4	30	19 093.9	78.3
70 15	30.991	15	464.88	1859.49	15	27 891.9	0 35	22 276.1	106.6
16	1	6	495.88	.49	6	29 751.4	40	25 458.3	139.2
17	2	7	526.87	.49	7	31 610.9	45	28 640.4	176.2
18	2	8	557.86	.50	8	33 470.3	50	31 822.5	217.5
19	2	9	588.85	.50	9	35 329.8	55	35 004.5	263.1
70 20	30.992	20	619.85	1859.50	20	37 189.3	1 00	38 186.5	313.1
21	2	1	650.84	.51	1	39 048.9	05	41 368.4	367.5
22	2	2	681.83	.51	2	40 908.4	10	44 550.2	426.2
23	2	3	712.82	.51	3	42 767.9	15	47 731.9	489.3
24	2	4	743.81	.52	4	44 627.4	20	50 913.6	556.7
70 25	30.992	25	774.81	1859.52	25	46 486.9	1 25	54 095.1	628.5
26	2	6	805.80	.52	6	48 346.4	30	57 276.5	704.6
27	2	7	836.79	.53	7	50 206.0	35	60 457.9	785.0
28	2	8	867.78	.53	8	52 065.5	40	63 639.1	869.8
29	2	9	898.78	.53	9	53 925.0	45	66 820.2	959.0
70 30	30.992	30	929.78	1859.54	30	55 784.5	1 50	70 001.2	1 052.5
31	2	1	960.76	.54	1	57 644.1	55	73 182.0	1 150.3
32	2	2	991.75	.54	2	59 503.6	2 00	76 363	1 253
33	2	3	1 022.75	.55	3	61 363.2	3 00	114 518	2 818
34	3	4	1 053.74	.55	4	63 222.7	4 00	152 643	5 009
70 35	30.993	35	1 084.73	1859.55	35	65 082.3	5 00	190 727	7 824
36	3	6	1 115.72	.56	6	66 941.8	6 00	228 760	11 265
37	3	7	1 146.71	.56	7	68 801.4	7 00	266 731	15 328
38	3	8	1 177.71	.57	8	70 661.0	8 00	304 630	20 013
39	3	9	1 208.70	.57	9	72 520.5	9 00	342 447	25 320
70 40	30.993	40	1 239.69	1859.57	40	74 380.1	10 00	380 172	31 246
41	3	1	1 270.68	.58	1	76 239.7	11 00	417 796	37 789
42	3	2	1 301.68	.58	2	78 099.2	12 00	455 306	44 949
43	3	3	1 332.67	.58	3	79 958.8	13 00	492 694	52 723
44	3	4	1 363.66	.59	4	81 818.4	14 00	529 950	61 110
70 45	30.993	45	1 394.65	1859.59	45	83 678.0	15 00	567 063	70 106
46	3	6	1 425.65	.59	6	85 537.6	16 00	604 023	79 709
47	3	7	1 456.64	.60	7	87 397.2	17 00	640 821	89 918
48	3	8	1 487.63	.60	8	89 256.8	18 00	677 447	100 728
49	3	9	1 518.62	.60	9	91 116.4	19 00	713 891	112 138
70 50	30.993	50	1 549.61	1859.61	50	92 976.0	20 00	750 142	124 144
51	3	1	1 580.61	.61	1	94 835.6	21 00	786 191	136 743
52	4	2	1 611.60	.61	2	96 695.2	22 00	822 030	149 931
53	4	3	1 642.59	.62	3	98 554.8	23 00	857 647	163 705
54	4	4	1 673.58	.62	4	100 414.5	24 00	893 033	178 062
70 55	30.994	55	1 704.58	1859.62	55	102 274.1	25 00	928 179	192 997
56	4	6	1 735.57	.63	6	104 133.7	26 00	963 076	208 506
57	4	7	1 766.56	.63	7	105 993.3	27 00	997 713	224 585
58	4	8	1 797.55	.63	8	107 853.0	28 00	1 032 082	241 231
59	4	9	1 828.55	.64	9	109 712.6	29 00	1 066 174	258 438
70 60	30.994	60	1 859.54	1859.64	60	111 572.2	30 00	1 099 979	276 201

Latitude 71° to 72°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
71 00	10.10	20.20	30.29	40.39	50.49	60.59	70.69	80.78	90.88	605.9	1211.8	1817.6	2423.5	3029.4
1	.09	.18	.27	.36	.45	.54	.63	.71	.80	5.4	10.7	6.1	21.5	6.8
2	.08	.16	.24	.32	.40	.49	.57	.65	.73	4.9	09.7	4.6	19.4	4.3
3	.07	.14	.22	.29	.36	.43	.51	.58	.65	4.3	8.7	3.0	7.4	21.7
4	.06	.13	.19	.25	.32	.38	.45	.51	.57	3.8	7.7	1.5	5.3	19.1
71 05	10.06	20.11	30.17	40.22	50.28	60.33	70.39	80.44	90.50	603.3	1206.6	1810.0	2413.3	3016.6
6	.05	.09	.14	.19	.23	.28	.33	.37	.42	2.8	5.6	08.4	11.2	4.0
7	.04	.08	.12	.15	.19	.23	.27	.30	.34	2.2	4.6	6.9	09.2	11.5
8	.03	.06	.09	.12	.15	.18	.21	.24	.27	1.7	3.6	5.3	7.1	08.9
9	.02	.04	.06	.09	.11	.13	.15	.17	.19	1.3	2.6	3.8	5.1	6.4
71 10	10.01	20.03	30.04	40.05	50.06	60.08	70.09	80.10	90.11	600.8	1201.5	1802.3	2403.0	3003.8
11	.00	20.01	30.01	40.02	50.02	60.02	70.03	80.03	90.04	600.2	200.5	800.7	401.0	3001.2
12	10.00	19.99	29.99	39.98	49.98	59.97	69.97	79.97	89.96	599.7	199.5	799.2	398.9	2998.7
13	9.99	.97	.96	.95	.93	.92	.91	.90	.88	9.2	8.4	7.7	6.9	6.1
14	.98	.96	.94	.91	.89	.87	.85	.83	.81	8.7	7.4	6.1	4.8	3.6
71 15	9.97	19.94	29.91	39.88	49.85	59.82	69.79	79.76	89.73	598.2	1196.4	1794.6	2392.8	2991.0
16	.96	.92	.88	.85	.81	.77	.73	.69	.65	7.7	5.4	3.1	90.7	88.4
17	.95	.91	.86	.81	.77	.72	.67	.62	.58	7.2	4.3	1.5	88.7	5.9
18	.94	.89	.83	.78	.72	.67	.61	.55	.50	6.7	3.3	90.0	6.6	3.3
19	.94	.87	.81	.74	.68	.61	.55	.49	.42	6.1	2.3	88.4	4.6	80.7
71 20	9.93	19.85	29.78	39.71	49.64	59.56	69.49	79.42	89.35	595.6	1191.3	1786.9	2382.5	2978.2
21	.92	.84	.76	.67	.59	.51	.43	.35	.27	5.1	90.2	5.4	80.5	5.6
22	.91	.82	.73	.64	.55	.46	.37	.28	.19	4.6	89.2	3.8	78.4	3.1
23	.90	.80	.71	.61	.51	.41	.31	.21	.12	4.1	8.2	2.3	6.4	70.5
24	.89	.79	.68	.57	.47	.36	.25	.14	9.04	3.6	7.2	80.8	4.3	67.9
71 25	9.88	19.77	29.65	39.54	49.42	59.31	69.19	79.08	88.96	593.1	1186.1	1779.2	2372.3	2965.4
26	.88	.75	.63	.50	.38	.26	.13	9.01	.88	2.6	5.1	7.7	70.2	2.8
27	.87	.73	.60	.47	.34	.20	.07	8.94	.81	2.0	4.1	6.1	68.2	60.2
28	.86	.72	.58	.44	.30	.15	9.01	.87	.73	1.5	3.1	4.6	6.1	57.7
29	.85	.70	.55	.40	.25	.10	8.95	.80	.65	1.0	2.0	3.1	4.1	5.1
71 30	9.84	19.68	29.53	39.37	49.21	59.05	68.89	78.73	88.58	590.5	1181.0	1771.5	2362.0	2952.5
31	.83	.67	.50	.33	.17	9.00	.83	.67	.50	90.0	80.0	70.0	60.0	50.0
32	.82	.65	.47	.30	.12	8.95	.77	.60	.42	89.5	79.0	68.4	57.9	47.4
33	.82	.63	.45	.26	.08	.90	.71	.53	.35	9.0	7.9	6.9	5.9	4.8
34	.81	.62	.42	.23	9.04	.85	.65	.46	.27	8.5	6.9	5.4	3.8	42.3
71 35	9.80	19.60	29.40	39.20	48.99	58.79	68.59	78.39	88.20	587.9	1175.9	1763.8	2351.8	2939.7
36	.79	.58	.37	.16	.95	.74	.53	.32	.12	7.4	4.9	2.3	49.7	7.1
37	.78	.56	.35	.13	.91	.69	.47	.26	8.04	6.9	3.8	60.7	7.7	4.6
38	.77	.55	.32	.09	.87	.64	.41	.19	7.96	6.4	2.8	59.2	5.6	32.0
39	.77	.53	.30	.06	.82	.59	.35	.12	.89	5.9	1.8	7.7	3.6	29.5
71 40	9.76	19.51	29.27	39.03	48.78	58.54	68.29	78.05	87.81	585.4	1170.8	1756.1	2341.5	2926.9
41	.75	.50	.24	8.99	.74	.49	.23	7.98	.73	4.9	69.7	4.6	39.5	4.3
42	.74	.48	.22	.96	.69	.43	.17	.91	.66	4.3	8.7	3.0	7.4	21.7
43	.73	.46	.19	.92	.65	.38	.11	.85	.58	3.8	7.7	1.5	5.3	19.2
44	.72	.44	.17	.89	.61	.33	8.05	.78	.50	3.3	6.6	50.0	3.3	6.6
71 45	9.71	19.43	29.14	38.85	48.57	58.28	67.99	77.71	87.42	582.8	1165.6	1748.4	2331.2	2914.0
46	.71	.41	.11	.82	.52	.23	.93	.64	.35	2.3	4.6	6.9	29.2	11.5
47	.70	.39	.09	.79	.48	.18	.87	.57	.27	1.8	3.6	5.3	7.1	08.9
48	.69	.38	.06	.75	.44	.13	.81	.50	.19	1.3	2.5	3.8	5.1	6.3
49	.68	.36	.04	.72	.40	.08	.76	.43	.11	0.8	1.5	2.3	3.0	3.8
71 50	9.67	19.34	29.01	38.68	48.35	58.02	67.69	77.37	87.04	580.2	1160.5	1740.7	2321.0	2901.2
51	.66	.32	8.99	.65	.31	7.97	.63	.30	6.96	79.7	59.4	39.2	18.9	898.6
52	.65	.31	.96	.61	.27	.92	.57	.23	.88	9.2	8.4	7.6	6.8	6.0
53	.64	.29	.93	.58	.22	.87	.51	.16	.81	8.7	7.4	6.1	4.8	3.5
54	.64	.27	.91	.55	.18	.82	.45	.09	.73	8.2	6.4	4.5	2.7	90.9
71 55	9.63	19.26	28.88	38.51	48.14	57.77	67.39	77.02	86.65	577.7	1155.3	1733.0	2310.7	2888.3
56	.62	.24	.86	.48	.10	.72	.34	6.95	.57	7.2	4.3	31.5	08.6	5.8
57	.61	.22	.83	.44	.05	.66	.27	.89	.50	6.6	3.3	29.9	6.6	3.2
58	.60	.20	.81	.41	8.01	.61	.21	.82	.42	6.1	2.2	8.4	4.5	80.6
59	.59	.19	.78	.37	7.96	.56	.15	.75	.34	5.6	1.2	6.8	2.4	78.0
71 60	9.58	19.17	28.75	38.34	47.92	57.51	67.09	76.68	86.26	575.1	1150.2	1725.3	2300.4	2875.5

Lat.		Latitude 71° to 72°—Meridional arcs.						Latitude 71°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
71	00	30.994			1859.64					
	1	4	1	31.00	.64	1	1 859.6	0 1	605.9	0.1
	2	4	2	61.99	.65	2	3 719.3	2	1 211.8	0.3
	3	4	3	92.99	.65	3	5 578.9	3	1 817.6	0.7
	4	4	4	123.98	.65	4	7 438.6	4	2 423.5	1.3
71	05	30.994	5	154.98	1859.66	5	9 298.3	0 5	3 029.4	2.1
	6	4	6	185.97	.66	6	11 157.9	6	3 635.3	3.0
	7	4	7	216.97	.66	7	13 017.6	7	4 241.[illegible]	4.1
	8	4	8	247.97	.67	8	14 877.2	8	4 847.0	5.3
	9	5	9	278.96	.67	9	16 736.9	9	5 452.9	6.7
71	10	30.995	10	309.96	1859.67	10	18 596.6	0 10	6 058.8	8.3
	11	5	1	340.95	.68	1	20 456.3	15	9 088.1	18.7
	12	5	2	371.95	.68	2	22 315.9	20	12 117.5	33.3
	13	5	3	402.94	.68	3	24 175.6	25	15 146.8	52.1
	14	5	4	433.94	.69	4	26 035.3	30	18 176.1	75.0
71	15	30.995	15	464.94	1859.69	15	27 895.0	0 35	21 205.4	102.1
	16	5	6	495.93	.69	6	29 754.7	40	24 234.6	133.3
	17	5	7	526.93	.70	7	31 614.4	45	27 263.8	168.7
	18	5	8	557.92	.70	8	33 474.1	50	30 292.9	208.3
	19	5	9	588.92	.70	9	35 333.8	55	33 322.0	252.0
71	20	30.995	20	619.91	1859.71	20	37 193.5	1 00	36 351.0	299.9
	21	5	1	650.91	.71	1	39 053.2	05	39 379.9	352.0
	22	5	2	681.91	.71	2	40 912.9	10	42 408.8	408.3
	23	5	3	712.90	.72	3	42 772.7	15	45 437.5	468.7
	24	5	4	743.90	.72	4	44 632.4	20	48 466.2	533.2
71	25	30.995	25	774.89	1859.72	25	46 492.1	1 25	51 494.9	602.0
	26	5	6	805.89	.73	6	48 351.8	30	54 523.4	674.9
	27	6	7	836.88	.73	7	50 211.6	35	57 551.8	751.9
	28	6	8	867.88	.73	8	52 071.3	40	60 580.1	833.2
	29	6	9	898.88	.74	9	53 931.0	45	63 608.3	918.5
71	30	30.996	30	929.87	1859.74	30	55 790.8	1 50	66 636.3	1 008.1
	31	6	1	960.87	.74	1	57 650.5	55	69 664.3	1 101.8
	32	6	2	991.86	.75	2	59 510.3	2 00	72 692	1 200
	33	6	3	1 022.86	.75	3	61 370.0	3 00	109 013	2 699
	34	6	4	1 053.85	.75	4	63 229.8	4 00	145 305	4 798
71	35	30.996	35	1 084.85	1859.76	35	65 089.5	5 00	181 557	7 495
	36	6	6	1 115.84	.76	6	66 949.3	6 00	217 760	10 789
	37	6	7	1 146.84	.76	7	68 809.1	7 00	253 903	14 681
	38	6	8	1 177.84	.77	8	70 668.8	8 00	289 977	19 169
	39	6	9	1 208.83	.77	9	72 528.6	9 00	325 972	24 252
71	40	30.996	40	1 239.83	1859.77	40	74 388.4	10 00	361 879	29 927
	41	6	1	1 270.82	.78	1	76 248.1	11 00	397 686	36 195
	42	6	2	1 301.82	.78	2	78 107.9	12 00	433 386	43 052
	43	6	3	1 332.81	.78	3	79 967.7	13 00	468 967	50 498
	44	6	4	1 363.81	.79	4	81 827.5	14 00	504 421	58 530
71	45	30.997	45	1 394.81	1859.79	45	83 687.3	15 00	539 738	67 146
	46	7	6	1 425.80	.79	6	85 547.1	16 00	574 907	76 343
	47	7	7	1 456.80	.80	7	87 406.9	17 00	609 920	86 119
	48	7	8	1 487.79	.80	8	89 266.7	18 00	644 767	96 472
	49	7	9	1 518.79	.80	9	91 126.5	19 00	679 438	107 399
71	50	30.997	50	1 549.78	1859.81	50	92 986.3	20 00	713 925	118 896
	51	7	1	1 580.78	.81	1	94 846.1	21 00	748 216	130 961
	52	7	2	1 611.78	.81	2	96 705.9	22 00	782 304	143 590
	53	7	3	1 642.77	.82	3	98 565.7	23 00	816 179	156 779
	54	7	4	1 673.77	.82	4	100 425.5	24 00	849 832	170 526
71	55	30.997	55	1 704.76	1859.82	55	102 285.4	25 00	883 253	184 827
	56	7	6	1 735.76	.83	6	104 145.2	26 00	916 434	199 677
	57	7	7	1 766.75	.83	7	106 005.0	27 00	949 365	215 072
	58	7	8	1 797.75	.83	8	107 864.9	28 00	982 038	231 009
	59	7	9	1 828.75	.84	9	109 724.7	29 00	1 014 443	247 483
71	60	30.997	60	1 859.74	1859.84	60	111 584.5	30 00	1 046 572	264 489

Latitude 72° to 73°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
72 00	9.58	19.17	28.75	38.34	47.92	57.51	67.09	76.68	86.26	575.1	1150.2	1725.3	2300.4	2875.5
1	.57	.15	.73	.31	.88	.46	7.03	.61	.19	4.6	49.2	3.7	298.3	2.9
2	.56	.14	.70	.27	.84	.41	6.97	.54	.11	4.1	8.1	2.2	6.3	70.3
3	.56	.12	.68	.24	.80	.36	.92	.47	6.03	3.6	7.1	20.7	4.2	67.8
4	.55	.10	.65	.20	.75	.30	.85	.41	5.96	3.0	6.1	19.1	2.1	5.2
72 05	9.54	19.08	28.63	38.17	47.71	57.25	66.79	76.34	85.88	572.5	1145.0	1717.6	2290.1	2862.6
6	.53	.07	.60	.13	.67	.20	.73	.27	.80	2.0	4.0	6.0	88.0	60.0
7	.52	.05	.58	.10	.63	.15	.67	.20	.72	1.5	3.0	4.5	6.0	57.5
8	.52	.03	.55	.07	.58	.10	.61	.13	.65	1.0	2.0	2.9	3.9	4.9
9	.51	.02	.52	.03	.54	7.05	.55	6.06	.57	70.5	40.9	11.4	81.8	2.3
72 10	9.50	19.00	28.50	38.00	47.50	56.99	66.49	75.99	85.49	569.9	1139.9	1709.8	2279.8	2849.7
11	.49	8.98	.47	7.96	.45	.94	.43	.93	.42	9.4	8.9	8.3	7.7	7.2
12	.48	.96	.45	.93	.41	.89	.37	.86	.34	8.9	7.8	6.8	5.7	4.6
13	.47	.95	.42	.89	.37	.84	.31	.79	.26	8.4	6.8	5.2	3.6	42.0
14	.46	.93	.39	.86	.32	.79	.25	.72	.18	7.9	5.8	3.7	71.5	39.4
72 15	9.46	18.91	28.37	37.83	47.28	56.74	66.19	75.65	85.11	567.4	1134.7	1702.1	2269.5	2836.9
16	.45	.90	.34	.79	.24	.69	.13	.58	5.03	6.9	3.7	700.6	7.4	4.3
17	.44	.88	.32	.76	.20	.63	.07	.51	4.95	6.3	2.7	699.0	5.4	31.7
18	.43	.86	.29	.72	.15	.58	6.01	.44	.87	5.8	1.7	7.5	3.3	29.1
19	.42	.84	.27	.69	.11	.53	5.95	.38	.80	5.3	30.6	5.9	61.2	6.6
72 20	9.41	18.83	28.24	37.65	47.07	56.48	65.89	75.31	84.72	564.8	1129.6	1694.4	2259.2	2824.0
21	.40	.81	.21	.62	7.02	.43	.83	.24	.64	4.3	8.6	2.8	7.1	21.4
22	.40	.79	.19	.58	6.98	.38	.77	.17	.56	3.8	7.5	91.3	5.1	18.8
23	.39	.77	.16	.55	.94	.32	.71	.10	.49	3.2	6.5	89.7	3.0	6.2
24	.38	.76	.14	.52	.90	.27	.65	5.03	.41	2.7	5.5	8.2	50.9	3.7
72 25	9.37	18.74	28.11	37.48	46.85	56.22	65.59	74.96	84.33	562.2	1124.4	1686.6	2248.9	2811.1
26	.36	.72	.08	.45	.81	.17	.53	.89	.26	1.7	3.4	5.1	6.8	08.5
27	.35	.71	.06	.41	.77	.12	.47	.82	.18	1.2	2.4	3.6	4.7	5.9
28	.34	.69	.03	.38	.72	.07	.41	.75	.10	0.7	1.3	2.0	2.7	3.3
29	.34	.67	8.01	.34	.68	6.02	.35	.69	4.02	60.2	20.3	80.5	40.6	800.8
72 30	9.33	18.65	27.98	37.31	46.64	55.96	65.29	74.62	83.95	559.6	1119.3	1678.9	2238.6	2798.2
31	.32	.64	.96	.27	.59	.91	.23	.55	.87	9.1	8.2	7.4	6.5	5.6
32	.31	.62	.93	.24	.55	.86	.17	.48	.79	8.6	7.2	5.8	4.4	3.0
33	.30	.60	.90	.21	.51	.81	.11	.41	.71	8.1	6.2	4.3	2.4	90.4
34	.29	.59	.88	.17	.47	.76	5.05	.34	.64	7.6	5.1	2.7	30.3	87.9
72 35	9.28	18.57	27.85	37.14	46.42	55.71	64.99	74.27	83.56	557.1	1114.1	1671.2	2228.2	2785.3
36	.28	.55	.83	.10	.38	.65	.93	.21	.48	6.5	3.1	69.6	6.2	2.7
37	.27	.53	.80	.07	.34	.60	.87	.14	.40	6.0	2.0	8.1	4.1	80.1
38	.26	.51	.77	.03	.29	.55	.81	.07	.32	5.5	1.0	6.5	2.0	77.5
39	.25	.50	.75	7.00	.25	.50	.75	4.00	.25	5.0	10.0	5.0	20.0	5.0
72 40	9.24	18.48	27.72	36.97	46.21	55.45	64.69	73.93	83.17	554.5	1109.0	1663.4	2217.9	2772.4
41	.23	.47	.70	.93	.16	.40	.63	.86	.09	4.0	7.9	1.9	5.8	69.8
42	.22	.45	.67	.90	.12	.34	.57	.79	3.02	3.4	6.9	60.3	3.8	7.2
43	.22	.43	.65	.86	.08	.29	.51	.72	2.94	2.9	5.8	58.8	11.7	4.6
44	.21	.41	.62	.83	6.03	.24	.45	.65	.86	2.4	4.8	7.2	09.6	62.0
72 45	9.20	18.40	27.60	36.79	45.99	55.19	64.39	73.59	82.78	551.9	1103.8	1655.7	2207.6	2759.5
46	.19	.38	.57	.76	.95	.14	.33	.52	.71	1.4	2.7	4.1	5.5	6.9
47	.18	.36	.54	.72	.91	.09	.27	.45	.63	0.9	1.7	2.6	3.4	4.3
48	.17	.34	.52	.69	.86	5.03	.21	.38	.55	50.3	100.7	51.0	201.4	51.7
49	.16	.33	.49	.65	.82	4.98	.15	.31	.47	49.8	099.6	49.5	199.3	49.1
72 50	9.16	18.31	27.47	36.62	45.78	54.93	64.09	73.24	82.40	549.3	1098.6	1647.9	2197.2	2746.5
51	.15	.29	.44	.59	.73	.88	4.03	.17	.32	8.8	7.6	6.4	5.2	4.0
52	.14	.28	.41	.55	.69	.83	3.97	.10	.24	8.3	6.5	4.8	3.1	41.4
53	.13	.26	.39	.52	.65	.78	.91	3.03	.16	7.8	5.5	3.3	91.0	38.8
54	.12	.24	.36	.48	.60	.72	.84	2.97	.09	7.2	4.5	1.7	89.0	6.2
72 55	9.11	18.22	27.34	36.45	45.56	54.67	63.78	72.90	82.01	546.7	1093.4	1640.2	2186.9	2733.6
56	.10	.21	.31	.41	.52	.62	.72	.83	1.93	6.2	2.4	38.6	4.8	31.0
57	.09	.19	.28	.38	.47	.57	.66	.76	.85	5.7	1.4	7.1	2.8	28.4
58	.09	.17	.26	.35	.43	.52	.60	.69	.78	5.2	90.4	5.5	80.7	5.9
59	.08	.16	.23	.31	.39	.47	.54	.62	.70	4.7	89.3	4.0	78.6	3.3
72 60	9.07	18.14	27.21	36.28	45.35	54.41	63.48	72.55	81.62	544.1	1088.3	1632.4	2176.5	2720.7

Lat.		Latitude 72° to 73°—Meridional arcs.						Latitude 72°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
72	00	30.997			1859.84					
	1	7	1	31.00	.84	1	1 859.8	0 1	575.1	0.1
	2	7	2	62.00	.85	2	3 719.7	2	1 150.2	0.3
	3	7	3	93.00	.85	3	5 579.5	3	1 725.3	0.7
	4	8	4	124.00	.85	4	7 439.4	4	2 300.4	1.3
72	05	30.998	5	154.99	1859.86	5	9 299.2	0 5	2 875.5	2.0
	6	8	6	185.99	.86	6	11 159.1	6	3 450.6	2.9
	7	8	7	216.99	.86	7	13 019.0	7	4 025.7	3.9
	8	8	8	247.99	.87	8	14 878.8	8	4 600.8	5.1
	9	8	9	278.99	.87	9	16 738.7	9	5 175.9	6.4
72	10	30.998	10	309.99	1859.87	10	18 598.6	0 10	5 751.0	8.0
	11	8	1	340.99	.88	1	20 458.4	15	8 626.4	17.9
	12	8	2	371.99	.88	2	22 318.3	20	11 501.9	31.8
	13	8	3	402.99	.88	3	24 178.2	25	14 377.3	49.7
	14	8	4	433.99	.89	4	26 038.1	30	17 252.7	71.6
72	15	30.998	15	464.98	1859.89	15	27 898.0	0 35	20 128.1	97.5
	16	8	6	495.98	.89	6	29 757.9	40	23 003.4	127.3
	17	8	7	526.98	.89	7	31 617.7	45	25 878.7	161.1
	18	8	8	557.98	.90	8	33 477.6	50	28 753.9	198.9
	19	8	9	588.99	.90	9	35 337.5	55	31 629.1	240.6
72	20	30.998	20	619.98	1859.90	20	37 197.4	1 00	34 504.2	286.4
	21	8	1	650.98	.91	1	39 057.3	05	37 379.2	336.1
	22	9	2	681.98	.91	2	40 917.3	10	40 254.2	389.8
	23	9	3	712.98	.91	3	42 777.2	15	43 129.1	447.5
	24	9	4	743.97	.92	4	44 637.1	20	46 003.9	509.1
72	25	30.999	25	774.97	1859.92	25	46 497.0	1 25	48 878.7	574.7
	26	9	6	805.97	.92	6	48 356.9	30	51 753.3	644.3
	27	9	7	836.97	.93	7	50 216.8	35	54 627.9	717.9
	28	9	8	867.97	.93	8	52 076.8	40	57 502.3	795.5
	29	9	9	898.97	.93	9	53 936.7	45	60 376.6	877.0
72	30	30.999	30	929.97	1859.94	30	55 796.6	1 50	63 250.8	962.5
	31	9	1	960.97	.94	1	57 656.6	55	66 124.9	1 052.0
	32	9	2	991.97	.94	2	59 516.5	2 00	68 999	1 145
	33	9	3	1 022.96	.95	3	61 376.5	3 00	103 475	2 577
	34	9	4	1 053.96	.95	4	63 236.4	4 00	137 922	4 580
72	35	30.999	35	1 084.96	1859.95	35	65 096.4	5 00	172 331	7 155
	36	9	6	1 115.96	.96	6	66 956.3	6 00	206 693	10 301
	37	9	7	1 146.96	.96	7	68 816.3	7 00	240 997	14 017
	38	9	8	1 177.96	.96	8	70 676.2	8 00	275 236	18 302
	39	9	9	1 208.96	.96	9	72 536.2	9 00	309 398	23 154
72	40	30.999	40	1 239.96	1859.97	40	74 396.2	10 00	343 475	28 572
	41	31.000	1	1 270.96	.97	1	76 256.1	11 00	377 458	34 556
	42	0	2	1 301.96	.97	2	78 116.1	12 00	411 337	41 103
	43	0	3	1 332.95	.98	3	79 976.1	13 00	445 102	48 211
	44	0	4	1 363.95	.98	4	81 836.1	14 00	478 745	55 879
72	45	31.000	45	1 394.95	1859.98	45	83 696.1	15 00	512 255	64 104
	46	0	6	1 425.95	.99	6	85 556.1	16 00	545 625	72 884
	47	0	7	1 456.95	.99	7	87 416.0	17 00	578 844	82 217
	48	0	8	1 487.95	59.99	8	89 276.0	18 00	611 904	92 100
	49	0	9	1 518.95	60.00	9	91 136.0	19 00	644 795	102 530
72	50	31.000	50	1 549.95	1860.00	50	92 996.0	20 00	677 509	113 505
	51	0	1	1 580.95	.00	1	94 856.0	21 00	710 036	125 021
	52	0	2	1 611.94	.01	2	96 716.0	22 00	742 367	137 075
	53	0	3	1 642.94	.01	3	98 576.0	23 00	774 494	149 665
	54	0	4	1 673.94	1860.01	4	100 436.0	24 00	806 407	162 786
72	55	31.000	55	1 704.94	.01	55	102 296.1	25 00	838 098	176 435
	56	0	6	1 735.94	.02	6	104 156.1	26 00	869 558	190 608
	57	0	7	1 766.94	.02	7	106 016.1	27 00	900 779	205 301
	58	0	8	1 797.94	.02	8	107 876.1	28 00	931 751	220 511
	59	0	9	1 828.94	.03	9	109 736.1	29 00	962 467	236 232
72	60	31.001	60	1 859.94	1860.03	0	111 596.2	30 00	992 918	252 461

Latitude 73° to 74°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
73 00	9.07	18.14	27.21	36.28	45.35	54.41	63.48	72.55	81.62	544.1	1088.3	1632.4	2176.5	2720.7
01	.06	.12	.18	.24	.30	.36	.42	.48	.54	3.6	7.2	30.9	4.5	18.1
02	.05	.10	.16	.21	.26	.31	.36	.41	.47	3.1	6.2	29.3	2.4	5.5
03	.04	.09	.13	.17	.22	.26	.30	.34	.39	2.6	5.2	7.7	70.3	2.9
04	.03	.07	.10	.14	.17	.21	.24	.27	.31	2.1	4.1	6.2	68.3	10.3
73 05	9.03	18.05	27.08	36.10	45.13	54.15	63.18	72.21	81.23	541.5	1083.1	1624.6	2166.2	2707.7
06	.02	.03	.05	.07	.09	.10	.12	.14	.16	1.0	2.1	3.1	4.1	5.2
07	.01	.02	.03	.04	.04	.05	.06	.07	.08	0.5	1.0	1.5	2.0	2.6
08	9.00	8.00	7.00	6.00	5.00	4.00	3.00	2.00	1.00	40.0	80.0	20.0	60.0	700.0
09	8.99	7.98	6.97	5.97	4.96	3.95	2.94	1.93	0.92	39.5	79.0	18.4	57.9	697.4
73 10	8.98	17.97	26.95	35.93	44.91	53.90	62.88	71.86	80.84	539.0	1077.9	1616.9	2155.8	2694.8
11	.97	.95	.92	.90	.87	.84	.82	.79	.77	8.4	6.9	5.3	3.8	92.2
12	.97	.93	.90	.86	.83	.79	.76	.72	.69	7.9	5.8	3.8	51.7	89.6
13	.96	.91	.87	.83	.78	.74	.70	.65	.61	7.4	4.8	2.2	49.6	7.0
14	.95	.90	.84	.79	.74	.69	.64	.58	.53	6.9	3.8	0.7	7.5	4.4
73 15	8.94	17.88	26.82	35.76	44.70	53.64	62.58	71.52	80.45	536.4	1072.7	1609.1	2145.5	2681.8
16	.93	.86	.79	.72	.65	.59	.52	.45	.38	5.9	1.7	7.6	3.4	79.3
17	.92	.84	.77	.69	.61	.53	.46	.38	.30	5.3	70.7	6.0	41.3	6.7
18	.91	.83	.74	.65	.57	.48	.40	.31	.22	4.8	69.6	4.4	39.3	4.1
19	.91	.81	.72	.62	.52	.43	.33	.24	.15	4.3	8.6	2.9	7.2	71.5
73 20	8.90	17.79	26.69	35.59	44.48	53.38	62.27	71.17	80.07	533.8	1067.6	1601.3	2135.1	2668.9
21	.89	.78	.66	.55	.44	.33	.21	.10	79.99	3.3	6.5	599.8	3.0	6.3
22	.88	.76	.64	.52	.39	.27	.15	1.03	.91	2.7	5.5	8.2	31.0	3.7
23	.87	.74	.61	.48	.35	.22	.09	0.96	.83	2.2	4.4	6.7	28.9	61.1
24	.86	.72	.59	.45	.31	.17	2.03	.89	.76	1.7	3.4	5.1	6.8	58.5
73 25	8.85	17.71	26.56	35.41	44.26	53.12	61.97	70.82	79.68	531.2	1062.4	1593.6	2124.7	2655.9
26	.84	.69	.53	.38	.22	.07	.91	.75	.60	0.7	1.3	2.0	2.7	3.3
27	.84	.67	.51	.34	.18	3.01	.85	.69	.52	30.1	60.3	90.4	20.6	50.7
28	.83	.65	.48	.31	.14	2.96	.79	.62	.45	29.6	59.3	88.9	18.5	48.2
29	.82	.64	.46	.27	.09	.91	.73	.55	.37	9.1	8.2	7.3	6.4	5.6
73 30	8.81	17.62	26.43	35.24	44.05	52.86	61.67	70.48	79.29	528.6	1057.2	1585.8	2114.4	2643.0
31	.80	.60	.40	.21	4.01	.81	.61	.41	.21	8.1	6.2	4.2	2.3	40.4
32	.79	.59	.38	.17	3.96	.76	.55	.34	.13	7.6	5.1	2.7	10.2	37.8
33	.78	.57	.35	.14	.92	.70	.49	.27	9.06	7.0	4.1	81.1	08.1	5.2
34	.78	.55	.33	.10	.88	.65	.43	.20	8.98	6.5	3.0	79.6	6.1	2.6
73 35	8.77	17.53	26.30	35.07	43.83	52.60	61.37	70.13	78.90	526.0	1052.0	1578.0	2104.0	2630.0
36	.76	.52	.27	.03	.79	.55	.31	70.06	.82	5.5	51.0	6.4	101.9	27.4
37	.75	.50	.25	5.00	.75	.50	.25	69.99	.74	5.0	49.9	4.9	099.8	4.8
38	.74	.48	.22	4.96	.70	.44	.18	.93	.67	4.4	8.9	3.3	7.8	22.2
39	.73	.46	.20	.93	.66	.39	.12	.86	.59	3.9	7.8	1.8	5.7	19.6
73 40	8.72	17.45	26.17	34.89	43.62	52.34	61.07	69.79	78.51	523.4	1046.8	1570.2	2093.6	2617.0
41	.71	.43	.14	.86	.57	.29	1.00	.72	.43	2.9	5.8	68.7	91.5	4.4
42	.71	.41	.12	.82	.53	.24	0.94	.65	.35	2.4	4.7	7.1	89.5	11.8
43	.70	.39	.09	.79	.49	.18	.88	.58	.28	1.8	3.7	5.5	7.4	09.2
44	.69	.38	.07	.75	.44	.13	.82	.51	.20	1.3	2.7	4.0	5.3	6.6
73 45	8.68	17.36	26.04	34.72	43.40	52.08	60.76	69.44	78.12	520.8	1041.6	1562.4	2083.2	2604.0
46	.67	.34	6.01	.69	.36	2.03	.70	.37	8.04	20.3	40.6	60.9	81.2	601.4
47	.66	.33	5.99	.65	.31	1.98	.64	.30	7.96	19.8	39.5	59.3	79.1	598.8
48	.65	.31	.96	.62	.27	.92	.58	.23	.89	9.2	8.5	7.7	7.0	6.2
49	.65	.29	.94	.58	.23	.87	.52	.16	.81	8.7	7.5	6.2	4.9	3.6
73 50	8.64	17.27	25.91	34.55	43.18	51.82	60.46	69.09	77.73	518.2	1036.4	1554.6	2072.8	2591.0
51	.63	.26	.88	.51	.14	.77	.40	9.02	.65	7.7	5.4	3.1	70.8	88.4
52	.62	.24	.86	.48	.10	.72	.34	8.95	.57	7.2	4.3	51.5	68.7	5.8
53	.61	.22	.83	.44	.05	.66	.27	.89	.50	6.6	3.3	49.9	6.6	3.2
54	.60	.20	.81	.41	3.01	.61	.22	.82	.42	6.1	2.3	8.4	4.5	80.6
73 55	8.59	17.19	25.78	34.37	42.97	51.56	60.15	68.75	77.34	515.6	1031.2	1546.8	2062.4	2578.0
56	.58	.17	.75	.34	.92	.51	.09	.68	.26	5.1	30.2	5.3	60.4	5.4
57	.58	.15	.73	.30	.88	.46	60.03	.61	.18	4.6	29.1	3.7	58.3	2.8
58	.57	.13	.70	.27	.84	.40	59.97	.54	.11	4.0	8.1	2.1	6.2	70.2
59	.56	.12	.68	.23	.79	.35	.91	.47	7.03	3.5	7.1	40.6	4.1	67.6
73 60	8.55	17.10	25.65	34.20	42.75	51.30	59.85	68.40	76.95	513.0	1026.0	1539.0	2052.0	2565.0

Lat.	Latitude 73° to 74°—Meridional arcs.						Latitude 73°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
73 00	31.001			1860.03					
1	1	1	31.00	.03	1	1 860.0	0 1	544.1	0.1
2	1	2	62.00	.04	2	3 720.1	2	1 088.3	0.3
3	1	3	93.01	.04	3	5 580.1	3	1 632.4	0.7
4	1	4	124.01	.04	4	7 440.2	4	2 176.6	1.2
73 05	31.001	5	155.01	1860.05	5	9 300.2	0 5	2 720.7	1.9
6	1	6	186.01	.05	6	11 160.2	6	3 264.8	2.7
7	1	7	217.01	.05	7	13 020.3	7	3 809.0	3.7
8	1	8	248.02	.05	8	14 880.4	8	4 353.1	4.8
9	1	9	279.02	.06	9	16 740.4	9	4 897.2	6.1
73 10	31.001	10	310.02	1860.06	10	18 600.5	0 10	5 441.4	7.6
11	1	1	341.02	.06	1	20 460.5	15	8 162.0	17.0
12	1	2	372.02	.07	2	22 320.6	20	10 882.7	30.3
13	1	3	403.03	.07	3	24 180.7	25	13 603.3	47.3
14	1	4	434.03	.07	4	26 040.7	30	16 323.9	68.1
73 15	31.001	15	465.03	1860.08	15	27 900.8	0 35	19 044.5	92.7
16	1	6	496.03	.08	6	29 760.9	40	21 765.0	121.1
17	1	7	527.03	.08	7	31 621.0	45	24 485.5	153.3
18	1	8	558.04	.09	8	33 481.1	50	27 206.0	189.2
19	1	9	589.04	.09	9	35 341.1	55	29 926.4	228.9
73 20	31.002	20	620.04	1860.09	20	37 201.2	1 00	32 646.7	272.4
21	2	1	651.04	.09	1	39 061.3	05	35 367.0	319.7
22	2	2	682.04	.10	2	40 921.4	10	38 087.2	370.8
23	2	3	713.05	.10	3	42 781.5	15	40 807.3	425.7
24	2	4	744.05	.10	4	44 641.6	20	43 527.4	484.3
73 25	31.002	25	775.05	1860.11	25	46 501.7	1 25	46 247.3	546.8
26	2	6	806.05	.11	6	48 361.8	30	48 967.2	613.0
27	2	7	837.05	.11	7	50 221.9	35	51 687.0	683.0
28	2	8	868.06	.12	8	52 082.1	40	54 406.7	756.8
29	2	9	899.06	.12	9	53 942.2	45	57 126.3	834.3
73 30	31.002	30	930.06	1860.12	30	55 802.3	1 50	59 845.8	915.7
31	2	1	961.06	.12	1	57 662.4	55	62 565.1	1 000.8
32	2	2	992.06	.13	2	59 522.5	2 00	65 284	1 090
33	2	3	1 023.07	.13	3	61 382.7	3 00	97 904	2 452
34	2	4	1 054.07	.13	4	63 242.8	4 00	130 496	4 358
73 35	31.002	35	1 085.07	1860.14	35	65 102.9	5 00	163 052	6 808
36	2	6	1 116.07	.14	6	66 963.1	6 00	195 562	9 800
37	2	7	1 147.07	.14	7	68 823.2	7 00	228 018	13 335
38	2	8	1 178.08	.15	8	70 683.4	8 00	260 410	17 412
39	2	9	1 209.08	.15	9	72 543.5	9 00	292 730	22 028
73 40	31.003	40	1 240.08	1860.15	40	74 403.7	10 00	324 968	27 183
41	3	1	1 271.08	.15	1	76 263.8	11 00	357 116	32 875
42	3	2	1 302.09	.16	2	78 124.0	12 00	389 165	39 103
43	3	3	1 333.09	.16	3	79 984.1	13 00	421 104	45 865
44	3	4	1 364.09	.16	4	81 844.3	14 00	452 927	53 160
73 45	31.003	45	1 395.09	1860.17	45	83 704.5	15 00	484 623	60 984
46	3	6	1 426.09	.17	6	85 564.6	16 00	516 185	69 336
47	3	7	1 457.10	.17	7	87 424.8	17 00	547 602	78 214
48	3	8	1 488.10	.18	8	89 285.0	18 00	578 868	87 615
49	3	9	1 519.10	.18	9	91 145.2	19 00	609 971	97 537
73 50	31.003	50	1 550.10	1860.18	50	93 005.4	20 00	640 905	107 976
51	3	1	1 581.10	.18	1	94 865.5	21 00	671 661	118 930
52	3	2	1 612.11	.19	2	96 725.7	22 00	702 229	130 396
53	3	3	1 643.11	.19	3	98 585.9	23 00	732 601	142 370
54	3	4	1 674.11	.19	4	100 446.1	24 00	762 770	154 850
73 55	31.003	55	1 705.11	1860.20	55	102 306.3	25 00	792 726	167 831
56	3	6	1 736.11	.20	6	104 166.5	26 00	822 461	181 311
57	3	7	1 767.12	.20	7	106 026.7	27 00	851 967	195 285
58	3	8	1 798.12	.21	8	107 886.9	28 00	881 236	209 749
59	3	9	1 829.12	.21	9	109 747.1	29 00	910 259	224 700
73 60	31.004	60	1 860.12	1860.21	60	111 607.3	30 00	939 029	240 134

Latitude 74° to 75°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
74 00	8.55	17.10	25.65	34.20	42.75	51.30	59.85	68.40	76.95	513.0	1026.0	1539.0	2052.0	2565.0
01	.54	.08	.62	.17	.71	.25	.79	.33	.87	2.5	5.0	7.5	50.0	62.4
02	.53	.07	.60	.13	.66	.20	.73	.26	.80	2.0	3.9	5.9	47.9	59.8
03	.52	.05	.57	.10	.62	.14	.67	.19	.72	1.4	2.9	4.3	5.8	7.2
04	.51	.03	.55	.06	.58	.09	.61	.12	.64	0.9	1.9	2.8	3.7	4.6
74 05	8.51	17.01	25.52	34.03	42.53	51.04	59.55	68.06	76.56	510.4	1020.8	1531.2	2041.6	2552.0
06	.50	7.00	.49	3.99	.49	0.99	.49	7.98	.48	09.9	19.8	29.7	39.5	49.4
07	.49	6.98	.47	.96	.45	.94	.42	.92	.40	9.4	8.7	8.1	7.5	6.8
08	.48	.96	.44	.92	.41	.88	.36	.85	.33	8.8	7.7	6.5	5.4	4.2
09	.47	.94	.42	.89	.36	.83	.30	.78	.25	8.3	6.6	5.0	3.3	41.6
74 10	8.46	16.93	25.39	33.85	42.32	50.78	59.24	67.71	76.17	507.8	1015.6	1523.4	2031.2	2539.0
11	.45	.91	.36	.82	.28	.73	.18	.64	.09	7.3	4.6	1.8	29.1	6.4
12	.45	.89	.34	.78	.23	.68	.12	.57	6.01	6.8	3.5	20.3	7.0	3.8
13	.44	.87	.31	.75	.19	.62	.06	.50	5.94	6.2	2.5	18.7	5.0	31.2
14	.43	.86	.29	.71	.14	.57	9.00	.43	.86	5.7	1.4	7.2	2.9	28.6
74 15	8.42	16.84	25.26	33.68	42.10	50.52	58.94	67.36	75.78	505.2	1010.4	1515.6	2020.8	2526.0
16	.41	.82	.23	.65	.06	.47	.88	.29	.70	4.7	09.4	4.0	18.7	3.4
17	.40	.81	.21	.61	2.01	.42	.82	.22	.62	4.2	8.3	2.5	6.6	20.8
18	.40	.79	.18	.58	1.97	.36	.76	.15	.55	3.6	7.3	10.9	4.5	18.2
19	.39	.77	.16	.54	.92	.31	.70	.08	.47	3.1	6.2	09.3	2.5	5.6
74 20	8.38	16.75	25.13	33.51	41.88	50.26	58.64	67.01	75.39	502.6	1005.2	1507.8	2010.4	2513.0
21	.37	.74	.10	.47	.84	.21	.58	6.94	.31	2.1	4.1	6.2	08.3	10.4
22	.36	.72	.08	.44	.80	.16	.52	.87	.23	1.6	3.1	4.7	6.2	07.8
23	.35	.70	.05	.40	.75	.10	.46	.80	.16	1.0	2.1	3.1	4.1	5.2
24	.34	.68	.03	.37	.71	.05	.39	.73	.08	0.5	1.0	1.5	2.0	2.6
74 25	8.33	16.67	25.00	33.33	41.67	50.00	58.33	66.67	75.00	500.0	1000.0	1500.0	2000.0	2500.0
26	.32	.65	4.97	.30	.62	49.95	.27	.60	4.92	499.5	998.9	498.4	1997.9	497.3
27	.32	.63	.95	.26	.58	.89	.21	.53	.84	8.9	7.9	6.8	5.8	4.7
28	.31	.61	.92	.23	.53	.84	.15	.46	.76	8.4	6.9	5.3	3.7	92.1
29	.30	.60	.90	.19	.49	.79	.09	.39	.69	7.9	5.8	3.7	91.6	89.5
74 30	8.29	16.58	24.87	33.16	41.45	49.74	58.03	66.32	74.61	497.4	994.8	1492.2	1989.5	2486.9
31	.28	.56	.84	.12	.41	.69	7.97	.25	.53	6.9	3.7	90.6	7.5	4.3
32	.27	.54	.82	.09	.36	.63	.91	.18	.45	6.3	2.7	89.0	5.4	81.7
33	.26	.53	.79	.05	.32	.58	.85	.11	.37	5.8	1.6	7.5	3.3	79.1
34	.25	.51	.77	3.02	.27	.53	.79	6.04	.30	5.3	90.6	5.9	81.2	6.5
74 35	8.25	16.49	24.74	32.99	41.23	49.48	57.72	65.97	74.22	494.8	989.6	1484.3	1979.1	2473.9
36	.24	.48	.71	.95	.19	.43	.66	.90	.14	4.3	8.5	2.8	7.0	71.3
37	.23	.46	.69	.92	.14	.37	.60	.83	4.06	3.7	7.5	81.2	4.9	68.7
38	.22	.44	.66	.88	.10	.32	.54	.76	3.98	3.2	6.4	79.6	2.8	6.1
39	.21	.42	.64	.85	.06	.27	.48	.69	.91	2.7	5.4	8.1	70.8	3.5
74 40	8.20	16.41	24.61	32.81	41.01	49.22	57.42	65.62	73.82	492.2	984.3	1476.5	1968.7	2460.8
41	.19	.39	.58	.78	0.97	.16	.36	.55	.75	1.6	3.3	4.9	6.6	58.2
42	.19	.37	.56	.74	.92	.11	.30	.48	.67	1.1	2.2	3.4	4.5	5.6
43	.18	.35	.53	.71	.88	.06	.24	.41	.59	0.6	1.2	1.8	2.4	3.0
44	.17	.34	.50	.67	.84	9.01	.18	.34	.51	90.1	80.2	70.2	60.3	50.4
74 45	8.16	16.32	24.48	32.64	40.80	48.96	57.11	65.27	73.43	489.6	979.1	1468.7	1958.2	2447.8
46	.15	.30	.45	.60	.75	.90	7.05	.21	.36	9.0	8.1	7.1	6.1	5.2
47	.14	.28	.43	.57	.71	.85	6.99	.14	.28	8.5	7.0	5.5	4.1	2.6
48	.13	.27	.40	.53	.67	.80	.93	.07	.20	8.0	6.0	4.0	52.0	40.0
49	.12	.25	.37	.50	.62	.75	.87	5.00	.12	7.5	4.9	2.4	49.9	37.3
74 50	8.12	16.23	24.35	32.46	40.58	48.69	56.81	64.93	73.04	486.9	973.9	1460.8	1947.8	2434.7
51	.11	.21	.32	.43	.54	.64	.75	.86	2.96	6.4	2.8	59.3	5.7	32.1
52	.10	.20	.30	.39	.49	.59	.69	.79	.88	5.9	1.8	7.7	3.6	29.5
53	.09	.18	.27	.36	.45	.54	.63	.72	.81	5.4	70.8	6.1	41.5	6.9
54	.08	.16	.24	.32	.40	.49	.57	.65	.73	4.9	69.7	4.6	39.4	4.3
74 55	8.07	16.14	24.22	32.29	40.36	48.43	56.51	64.58	72.65	484.3	968.7	1453.0	1937.3	2421.7
56	.06	.13	.19	.25	.32	.38	.44	.51	.57	3.8	7.6	51.4	5.2	19.1
57	.05	.11	.16	.22	.27	.33	.38	.44	.49	3.3	6.6	49.9	3.2	6.4
58	.05	.09	.14	.18	.23	.28	.32	.37	.41	2.8	5.5	8.3	31.1	3.8
59	.04	.07	.11	.15	.19	.22	.26	.30	.34	2.2	4.5	6.7	29.0	11.2
74 60	8.03	16.06	24.09	32.11	40.14	48.17	56.20	64.23	72.26	481.7	963.4	1445.2	1926.9	2408.6

Lat.	Latitude 74° to 75°—Meridional arcs.						Latitude 74°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
74 00	31.004			1860.21					
1	4	1	31.00	.21	1	1 860.2	0 1	513.0	0.1
2	4	2	62.01	.22	2	3 720.4	2	1 026.0	0.3
3	4	3	93.01	.22	3	5 580.6	3	1 539.0	0.6
4	4	4	124.02	.22	4	7 440.9	4	2 052.0	1.1
74 05	31.004	5	155.02	1860.23	5	9 301.1	0 5	2 565.1	1.8
6	4	6	186.03	.23	6	11 161.3	6	3 078.1	2.6
7	4	7	217.03	.23	7	13 021.5	7	3 591.1	3.5
8	4	8	248.04	.23	8	14 881.8	8	4 104.1	4.6
9	4	9	279.04	.24	9	16 742.0	9	4 617.1	5.8
74 10	31.004	10	310.05	1860.24	10	18 602.3	0 10	5 130.1	7.2
11	4	1	341.05	.24	1	20 462.5	15	7 695.1	16.1
12	4	2	372.06	.25	2	22 322.7	20	10 260.1	28.7
13	4	3	403.06	.25	3	24 183.0	25	12 825.1	44.8
14	4	4	434.07	.25	4	26 043.2	30	15 390.1	64.5
74 15	31.004	15	465.07	1860.25	15	27 903.5	0 35	17 955.0	87.9
16	4	6	496.08	.26	6	29 763.7	40	20 519.9	114.8
17	4	7	527.08	.26	7	31 624.0	45	23 084.8	145.2
18	4	8	558.09	.26	8	33 484.3	50	25 649.6	179.3
19	4	9	589.09	.27	9	35 344.5	55	28 214.4	217.0
74 20	31.004	20	620.10	1860.27	20	37 204.8	1 00	30 779.1	258.2
21	5	1	651.10	.27	1	39 065.1	05	33 343.8	303.0
22	5	2	682.11	.27	2	40 925.3	10	35 908.4	351.4
23	5	3	713.11	.28	3	42 785.6	15	38 472.9	403.4
24	5	4	744.12	.28	4	44 645.9	20	41 037.3	459.0
74 25	31.005	25	775.12	1860.28	25	46 506.2	1 25	43 601.7	518.2
26	5	6	806.13	.29	6	48 366.5	30	46 166.0	580.9
27	5	7	837.13	.29	7	50 226.8	35	48 730.1	647.3
28	5	8	868.14	.29	8	52 087.0	40	51 294.2	717.2
29	5	9	899.14	.29	9	53 947.3	45	53 858.2	790.7
74 30	31.005	30	930.15	1860.30	30	55 807.6	1 50	56 422.1	867.8
31	5	1	961.15	.30	1	57 667.9	55	58 985.9	948.5
32	5	2	992.16	.30	2	59 528.2	2 00	61 550	1 033
33	5	3	1 023.16	.31	3	61 388.5	3 00	92 303	2 324
34	5	4	1 054.17	.31	4	63 248.8	4 00	123 030	4 130
74 35	31.005	35	1 085.17	1860.31	35	65 109.2	5 00	153 722	6 451
36	5	6	1 116.18	.31	6	66 969.5	6 00	184 372	9 288
37	5	7	1 147.18	.32	7	68 829.8	7 00	214 969	12 638
38	5	8	1 178.19	.32	8	70 690.1	8 00	245 506	16 500
39	5	9	1 209.19	.32	9	72 550.4	9 00	275 973	20 875
74 40	31.005	40	1 240.20	1860.33	40	74 410.8	10 00	306 364	25 760
41	5	1	1 271.20	.33	1	76 271.1	11 00	336 667	31 154
42	6	2	1 302.21	.33	2	78 131.4	12 00	366 876	37 056
43	6	3	1 333.21	.33	3	79 991.7	13 00	396 982	43 464
44	6	4	1 364.22	.34	4	81 852.1	14 00	426 976	50 376
74 45	31.006	45	1 395.22	1860.34	45	83 712.4	15 00	456 850	57 790
46	6	6	1 426.23	.34	6	85 572.8	16 00	486 596	65 705
47	6	7	1 457.23	.35	7	87 433.1	17 00	516 204	74 117
48	6	8	1 488.24	.35	8	89 293.5	18 00	545 667	83 025
49	6	9	1 519.24	.35	9	91 153.8	19 00	574 976	92 426
74 50	31.006	50	1 550.25	1860.35	50	93 014.2	20 00	604 124	102 317
51	6	1	1 581.25	.36	1	94 874.5	21 00	633 102	112 696
52	6	2	1 612.26	.36	2	96 734.9	22 00	661 901	123 559
53	6	3	1 643.26	.36	3	98 595.2	23 00	690 514	134 904
54	6	4	1 674.27	.37	4	100 455.6	24 00	718 933	146 728
74 55	31.006	55	1 705.27	1860.37	55	102 316.0	25 00	747 149	159 027
56	6	6	1 736.28	.37	6	104 176.3	26 00	775 155	171 797
57	6	7	1 767.28	.37	7	106 036.7	27 00	802 943	185 035
58	6	8	1 798.29	.38	8	107 897.1	28 00	830 505	198 738
59	6	9	1 829.29	.38	9	109 757.5	29 00	857 833	212 901
74 60	31.006	60	1 860.30	1860.38	60	111 617.9	30 00	884 920	227 520

Latitude 75° to 76°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
75 00	8.03	16.06	24.09	32.11	40.14	48.17	56.20	64.23	72.26	481.7	963.4	1445.2	1926.9	2408.6
1	.02	.04	.06	.08	.10	.12	.14	.16	.18	1.2	2.4	3.6	4.8	6.0
2	.01	.02	.03	.04	.06	.07	.08	.09	.10	0.7	1.4	2.0	2.7	03.4
3	8.00	6.01	4.01	2.01	40.01	8.02	6.02	4.02	2.02	80.2	60.3	40.5	20.6	400.8
4	7.99	5.99	3.98	1.98	39.97	7.96	5.96	3.95	1.95	79.6	59.3	38.9	18.5	398.2
75 05	7.99	15.97	23.96	31.94	39.92	47.91	55.89	63.88	71.87	479.1	958.2	1437.3	1916.4	2395.5
6	.98	.95	.93	.91	.88	.86	.83	.81	.79	8.6	7.2	5.8	4.3	2.9
7	.97	.94	.90	.87	.84	.81	.77	.74	.71	8.1	6.1	4.2	2.2	90.3
8	.96	.92	.88	.84	.80	.75	.71	.67	.63	7.5	5.1	2.6	10.2	87.7
9	.95	.90	.85	.80	.75	.70	.65	.60	.55	7.0	4.0	31.0	08.1	5.1
75 10	7.94	15.88	23.82	31.77	39.71	47.65	55.59	63.53	71.47	476.5	953.0	1429.5	1906.0	2382.5
11	.93	.87	.80	.73	.66	.60	.53	.46	.39	6.0	1.9	7.9	3.9	79.8
12	.92	.85	.77	.70	.62	.54	.47	.39	.32	5.4	50.9	6.3	901.8	7.2
13	.92	.83	.75	.66	.58	.49	.41	.32	.24	4.9	49.8	4.8	899.7	4.6
14	.91	.81	.72	.63	.53	.44	.35	.25	.16	4.4	8.8	3.2	7.6	2.0
75 15	7.90	15.80	23.69	31.59	39.49	47.39	55.29	63.18	71.08	473.9	947.8	1421.6	1895.5	2369.4
16	.89	.78	.67	.56	.45	.34	.22	.11	1.00	3.4	6.7	20.1	3.4	6.8
17	.88	.76	.64	.52	.40	.28	.16	3.04	0.92	2.8	5.7	18.5	91.3	4.1
18	.87	.74	.61	.49	.36	.23	.10	2.97	.85	2.3	4.6	6.9	89.2	61.5
19	.86	.73	.59	.45	.31	.18	5.04	.90	.77	1.8	3.6	5.3	7.1	58.9
75 20	7.85	15.71	23.56	31.42	39.27	47.13	54.98	62.83	70.69	471.3	942.5	1413.8	1885.0	2356.3
21	.85	.69	.54	.38	.23	.07	.92	.76	.61	0.7	1.5	2.2	2.9	3.7
22	.84	.67	.51	.35	.18	7.02	.86	.69	.53	70.2	40.4	10.6	80.8	51.1
23	.83	.66	.48	.31	.14	6.97	.80	.62	.45	69.7	39.4	09.1	78.8	48.4
24	.82	.64	.46	.28	.10	.92	.74	.55	.37	9.2	8.3	7.5	6.7	5.8
75 25	7.81	15.62	23.43	31.24	39.05	46.86	54.67	62.49	70.30	468.6	937.3	1405.9	1874.6	2343.2
26	.80	.60	.41	.21	9.01	.81	.61	.42	.22	8.1	6.2	4.3	2.5	40.6
27	.79	.59	.38	.17	8.97	.76	.55	.35	.14	7.6	5.2	2.8	70.4	38.0
28	.78	.57	.35	.14	.92	.71	.49	.28	70.06	7.1	4.1	401.2	68.3	5.3
29	.78	.55	.33	.10	.88	.65	.43	.21	69.98	6.5	3.1	399.6	6.2	2.7
75 30	7.77	15.53	23.30	31.07	38.84	46.60	54.37	62.14	69.90	466.0	932.0	1398.1	1864.1	2330.1
31	.76	.52	.27	.03	.79	.55	.31	.07	.82	5.5	31.0	6.5	62.0	27.5
32	.75	.50	.25	1.00	.75	.50	.25	2.00	.74	5.0	29.9	4.9	59.9	4.9
33	.74	.48	.22	0.96	.70	.44	.19	1.93	.67	4.4	8.9	3.3	7.8	22.2
34	.73	.46	.20	.93	.66	.39	.12	.86	.59	3.9	7.8	1.8	5.7	19.6
75 35	7.72	15.45	23.17	30.89	38.62	46.34	54.06	61.79	69.51	463.4	926.8	1390.2	1853.6	2317.0
36	.71	.43	.14	.86	.57	.29	4.00	.72	.43	2.9	5.8	88.6	51.5	4.4
37	.71	.41	.12	.82	.53	.24	3.94	.65	.35	2.4	4.7	7.1	49.4	11.8
38	.70	.39	.09	.79	.49	.18	.88	.58	.28	1.8	3.7	5.5	7.3	09.1
39	.69	.38	.07	.75	.44	.13	.82	.51	.20	1.3	2.6	3.9	5.2	6.5
75 40	7.68	15.36	23.04	30.72	38.40	46.08	53.76	61.44	69.12	460.8	921.6	1382.3	1843.1	2303.9
41	.67	.34	3.01	.68	.36	6.03	.70	.37	9.04	60.3	20.5	80.8	41.0	301.3
42	.66	.32	2.99	.65	.31	5.97	.64	.30	8.96	59.7	19.5	79.2	38.9	298.7
43	.65	.31	.96	.61	.27	.92	.57	.23	.88	9.2	8.4	7.6	6.8	6.0
44	.64	.29	.93	.58	.22	.87	.51	.16	.80	8.7	7.4	6.0	4.7	3.4
75 45	7.64	15.27	22.91	30.54	38.18	45.82	53.45	61.09	68.72	458.2	916.3	1374.5	1832.6	2290.8
46	.63	.25	.88	.51	.14	.76	.39	1.02	.65	7.6	5.3	2.9	30.5	88.2
47	.62	.24	.86	.47	.09	.71	.33	0.95	.57	7.1	4.2	71.3	28.4	5.5
48	.61	.22	.83	.44	.05	.66	.27	.88	.49	6.6	3.2	69.8	6.3	2.9
49	.60	.20	.80	.40	8.00	.61	.21	.81	.41	6.1	2.1	8.2	4.2	80.3
75 50	7.59	15.18	22.78	30.37	37.96	45.55	53.15	60.74	68.33	455.5	911.1	1366.6	1822.1	2277.7
51	.58	.17	.75	.33	.92	.50	.08	.67	.25	5.0	10.0	5.0	20.0	5.0
52	.57	.15	.72	.30	.87	.45	3.02	.60	.17	4.5	09.0	3.5	17.9	72.4
53	.57	.13	.70	.26	.83	.40	2.96	.53	.09	4.0	7.9	1.9	5.8	69.8
54	.56	.11	.67	.23	.79	.34	.90	.46	8.02	3.4	6.9	60.3	3.7	7.2
75 55	7.55	15.10	22.65	30.19	37.74	45.29	52.84	60.39	67.94	452.9	905.8	1358.7	1811.6	2264.5
56	.54	.08	.62	.16	.70	.24	.78	.32	.86	2.4	04.8	7.2	09.5	61.9
57	.53	.06	.59	.12	.65	.19	.72	.25	.78	1.9	03.7	5.6	7.4	59.3
58	.52	.04	.57	.09	.61	.13	.65	.18	.70	1.3	02.7	4.0	5.3	6.7
59	.51	.03	.54	.05	.57	.08	.59	.11	.62	0.8	01.6	2.4	3.2	4.0
75 60	7.50	15.01	22.51	30.02	37.52	45.03	52.53	60.04	67.54	450.3	900.6	1350.9	1801.1	2251.4

Lat.	Latitude 75° to 76°—Meridional arcs.						Latitude 75°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
75 00	31.006			1860.38					
1	6	1	31.01	.38	1	1 860.4	0 1	481.7	0.1
2	6	2	62.02	.39	2	3 720.8	2	963.4	0.3
3	6	3	93.02	.39	3	5 581.2	3	1 445.2	0.6
4	7	4	124.03	.39	4	7 441.5	4	1 926.9	1.1
75 05	31.007	5	155.04	1860.40	5	9 301.9	0 5	2 408.6	1.7
6	7	6	186.05	.40	6	11 162.3	6	2 890.3	2.4
7	7	7	217.05	.40	7	13 022.7	7	3 372.1	3.3
8	7	8	248.06	.40	8	14 883.1	8	3 853.8	4.3
9	7	9	279.07	.41	9	16 743.5	9	4 335.5	5.5
75 10	31.007	10	310.08	1860.41	10	18 604.0	0 10	4 817.2	6.8
11	7	1	341.08	.41	1	20 464.4	15	7 225.8	15.2
12	7	2	372.09	.41	2	22 324.8	20	9 634.4	27.1
13	7	3	403.10	.42	3	24 185.2	25	12 043.0	42.3
14	7	4	434.11	.42	4	26 045.6	30	14 451.5	60.9
75 15	31.007	15	465.12	1860.42	15	27 906.0	0 35	16 860.0	82.9
16	7	6	496.12	.43	6	29 766.5	40	19 268.5	108.3
17	7	7	527.13	.43	7	31 626.9	45	21 676.9	137.0
18	7	8	558.14	.43	8	33 487.3	50	24 085.3	169.2
19	7	9	589.15	.43	9	35 347.8	55	26 493.7	204.7
75 20	31.007	20	620.15	1860.44	20	37 208.2	1 00	28 902.0	243.6
21	7	1	651.16	.44	1	39 068.6	05	31 310.2	285.9
22	7	2	682.17	.44	2	40 929.1	10	33 718.4	331.6
23	7	3	713.18	.44	3	42 789.5	15	36 126.5	380.7
24	7	4	744.19	.45	4	44 650.0	20	38 534.5	433.1
75 25	31.007	25	775.19	1860.45	25	46 510.4	1 25	40 942.5	489.0
26	8	6	806.20	.45	6	48 370.9	30	43 350.4	548.1
27	8	7	837.21	.46	7	50 231.3	35	45 758.2	610.7
28	8	8	868.22	.46	8	52 091.8	40	48 165.9	676.7
29	8	9	899.22	.46	9	53 952.2	45	50 573.5	746.1
75 30	31.008	30	930.23	1860.46	30	55 812.7	1 50	52 981.0	818.8
31	8	1	961.24	.47	1	57 673.2	55	55 388.4	894.9
32	8	2	992.25	.47	2	59 533.6	2 00	57 796	975
33	8	3	1 023.25	.47	3	61 394.1	3 00	86 673	2 192
34	8	4	1 054.26	.47	4	63 254.6	4 00	115 526	3 897
75 35	31.008	35	1 085.27	1860.48	35	65 115.0	5 00	144 346	6 087
36	8	6	1 116.28	.48	6	66 975.5	6 00	173 124	8 763
37	8	7	1 147.29	.48	7	68 836.0	7 00	201 854	11 924
38	8	8	1 178.29	.48	8	70 696.5	8 00	230 526	15 569
39	8	9	1 209.30	.49	9	72 557.0	9 00	259 133	19 697
75 40	31.008	40	1 240.31	1860.49	40	74 417.5	10 00	287 666	24 306
41	8	1	1 271.32	.49	1	76 278.0	11 00	316 117	29 395
42	8	2	1 302.32	.50	2	78 138.4	12 00	344 479	34 964
43	8	3	1 333.33	.50	3	79 998.9	13 00	372 742	41 010
44	8	4	1 364.34	.50	4	81 859.4	14 00	400 900	47 531
75 45	31.008	45	1 395.35	1860.50	45	83 719.9	15 00	428 944	54 526
46	8	6	1 426.36	.51	6	85 580.5	16 00	456 866	61 993
47	8	7	1 457.36	.51	7	87 441.0	17 00	484 658	69 930
48	9	8	1 488.37	.51	8	89 301.5	18 00	512 312	78 334
49	9	9	1 519.38	.51	9	91 162.0	19 00	539 821	87 203
75 50	31.009	50	1 550.39	1860.52	50	93 022.5	20 00	567 176	96 534
51	9	1	1 581.39	.52	1	94 883.0	21 00	594 370	106 325
52	9	2	1 612.40	.52	2	96 743.6	22 00	621 395	116 574
53	9	3	1 643.41	.52	3	98 604.1	23 00	648 243	127 276
54	9	4	1 674.42	.53	4	100 464.6	24 00	674 907	138 430
75 55	31.009	55	1 705.42	1860.53	55	102 325.1	25 00	701 380	150 031
56	9	6	1 736.43	.53	6	104 185.7	26 00	727 653	162 077
57	9	7	1 767.44	.53	7	106 046.2	27 00	753 719	174 564
58	9	8	1 798.45	.54	8	107 906.7	28 00	779 571	187 489
59	9	9	1 829.46	.54	9	109 767.3	29 00	805 203	200 848
75 60	31.009	60	1 860.46	1860.54	60	111 627.8	30 00	830 604	214 637

Latitude 76° to 77°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
76 00	7.50	15.01	22.51	30.02	37.52	45.03	52.53	60.04	67.54	450.3	900.6	1350.9	1801.1	2251.4
1	.50	4.99	.49	29.98	.48	4.98	.47	59.97	.46	49.8	899.5	49.3	799.0	48.8
2	.49	.97	.46	.95	.44	.92	.41	.90	.38	9.2	8.5	7.7	6.9	6.2
3	.48	.96	.43	.91	.39	.87	.35	.83	.30	8.7	7.4	6.1	4.8	3.5
4	.47	.94	.41	.88	.35	.82	.29	.76	.23	8.2	6.4	4.5	2.7	40.9
76 05	7.46	14.92	22.38	29.84	37.30	44.77	52.23	59.69	67.15	447.7	895.3	1343.0	1790.6	2238.3
6	.45	.90	.36	.81	.26	.71	.16	.62	7.07	7.1	4.3	41.4	88.5	5.7
7	.44	.89	.33	.77	.22	.66	.10	.55	6.99	6.6	3.2	39.8	6.4	3.0
8	.43	.87	.30	.74	.17	.61	2.04	.48	.91	6.1	2.2	8.2	4.3	30.4
9	.43	.85	.28	.70	.13	.56	1.98	.41	.83	5.6	1.1	6.7	2.2	27.8
76 10	7.42	14.83	22.25	29.67	37.09	44.50	51.92	59.34	66.75	445.0	890.1	1335.1	1780.1	2225.2
11	.41	.82	.22	.63	.04	.45	.86	.27	.67	4.5	89.0	3.5	78.0	22.5
12	.40	.80	.20	.60	7.00	.40	.80	.20	.60	4.0	8.0	1.9	5.9	19.9
13	.39	.78	.17	.56	6.96	.35	.74	.13	.52	3.5	6.9	30.4	3.8	7.3
14	.38	.76	.15	.53	.91	.29	.67	9.06	.44	2.9	5.9	28.8	71.7	4.6
76 15	7.37	14.75	22.12	29.49	36.87	44.24	51.61	58.99	66.36	442.4	884.8	1327.2	1769.6	2212.0
16	.36	.73	.09	.46	.82	.19	.55	.92	.28	1.9	3.8	5.6	7.5	09.4
17	.36	.71	.07	.42	.78	.14	.49	.85	.20	1.4	2.7	4.1	5.4	6.8
18	.35	.69	.04	.39	.74	.08	.43	.78	.12	0.8	1.6	2.5	3.3	4.1
19	.34	.68	2.02	.35	.69	4.03	.37	.71	6.05	40.3	80.6	20.9	61.2	201.5
76 20	7.33	14.66	21.99	29.32	36.65	43.98	51.31	58.64	65.97	439.8	879.5	1319.3	1759.1	2198.9
21	.32	.64	.96	.28	.60	.92	.24	.57	.89	9.2	8.5	7.7	7.0	6.2
22	.31	.62	.94	.25	.56	.87	.18	.50	.81	8.7	7.4	6.2	4.9	3.6
23	.30	.61	.91	.21	.52	.82	.12	.43	.73	8.2	6.4	4.6	2.8	91.0
24	.29	.59	.88	.18	.47	.77	.06	.36	.65	7.7	5.3	3.0	50.7	88.4
76 25	7.29	14.57	21.86	29.14	36.43	43.71	51.00	58.29	65.57	437.1	874.3	1311.4	1748.6	2185.7
26	.28	.55	.83	.11	.39	.66	0.94	.22	.49	6.6	3.2	09.9	6.5	3.1
27	.27	.54	.81	.07	.34	.61	.88	.15	.42	6.1	2.2	8.3	4.4	80.5
28	.26	.52	.78	.04	.30	.56	.81	.08	.34	5.6	1.1	6.7	2.3	77.8
29	.25	.50	.75	9.00	.25	.50	.75	8.01	.26	5.0	70.1	5.1	40.2	5.2
76 30	7.24	14.48	21.73	28.97	36.21	43.45	50.69	57.94	65.18	434.5	869.0	1303.5	1738.1	2172.6
31	.23	.47	.70	.93	.17	.40	.63	.86	.10	4.0	8.0	2.0	5.9	69.9
32	.22	.45	.67	.90	.12	.35	.57	.79	5.02	3.5	6.9	300.4	3.8	7.3
33	.22	.43	.65	.86	.08	.29	.51	.73	4.94	2.9	5.9	298.8	31.7	4.7
34	.21	.41	.62	.83	6.03	.24	.45	.65	.86	2.4	4.8	7.2	29.6	62.0
76 35	7.20	14.40	21.59	28.79	35.99	43.19	50.39	57.58	64.78	431.9	863.8	1295.6	1727.5	2159.4
36	.19	.38	.57	.76	.95	.14	.32	.51	.70	1.4	2.7	4.1	5.4	6.8
37	.18	.36	.54	.72	.90	.08	.26	.44	.62	0.8	1.7	2.5	3.3	4.1
38	.17	.34	.51	.69	.86	3.03	.20	.37	.55	30.3	60.6	90.9	21.2	51.5
39	.16	.33	.49	.65	.81	2.98	.14	.30	.47	29.8	59.6	89.3	19.1	48.9
76 40	7.15	14.31	21.46	28.62	35.77	42.92	50.08	57.23	64.39	429.2	858.5	1287.7	1717.0	2146.2
41	.15	.29	.44	.58	.73	.87	50.02	.16	.31	8.7	7.4	6.2	4.9	3.6
42	.14	.27	.41	.55	.68	.82	49.96	.09	.23	8.2	6.4	4.6	2.8	41.0
43	.13	.26	.38	.51	.64	.77	.89	7.02	.15	7.7	5.3	3.0	10.7	38.3
44	.12	.24	.36	.48	.59	.71	.83	6.95	4.07	7.1	4.3	81.4	08.6	5.7
76 45	7.11	14.22	21.33	28.44	35.55	42.66	49.77	56.88	63.99	426.6	853.2	1279.8	1706.5	2133.1
46	.10	.20	.30	.41	.51	.61	.71	.81	.91	6.1	2.2	8.3	4.5	30.4
47	.09	.19	.28	.37	.46	.56	.65	.74	.83	5.6	1.1	6.7	2.2	27.8
48	.08	.17	.25	.34	.42	.50	.59	.67	.76	5.0	50.1	5.1	700.1	5.2
49	.08	.15	.23	.30	.37	.45	.52	.60	.68	4.5	49.0	3.5	698.0	22.5
76 50	7.07	14.13	21.20	28.27	35.33	42.40	49.46	56.53	63.60	424.0	848.0	1271.9	1695.9	2119.9
51	.06	.12	.17	.23	.29	.35	.40	.46	.52	3.5	6.9	70.4	3.8	7.3
52	.05	.10	.15	.20	.24	.29	.34	.39	.44	2.9	5.9	68.8	91.7	4.6
53	.04	.08	.12	.16	.20	.24	.28	.32	.36	2.4	4.8	7.2	89.6	12.0
54	.03	.06	.09	.13	.16	.19	.22	.25	.28	1.9	3.7	5.6	7.5	09.4
76 55	7.02	14.04	21.07	28.09	35.11	42.13	49.16	56.18	63.20	421.3	842.7	1264.0	1685.4	2106.7
56	.01	.03	.04	.05	.07	.08	.09	.11	.12	0.8	1.6	2.5	3.3	4.1
57	.01	4.01	1.02	8.02	5.02	2.03	9.03	6.04	3.05	20.3	40.6	60.9	81.2	101.5
58	7.00	3.99	0.99	7.98	4.98	1.98	8.97	5.97	2.97	19.8	39.5	59.3	79.1	098.8
59	6.99	.97	.96	.95	.94	.92	.91	.90	.89	9.2	8.5	7.7	6.9	6.2
76 60	6.98	13.96	20.94	27.91	34.89	41.87	48.85	55.83	62.81	418.7	837.4	1256.1	1674.8	2093.5

Lat.		Latitude 76° to 77°—Meridional arcs.						Latitude 76°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
76	00	31.009			1860.54					
	1	9	1	31.01	.55	1	1 860.5	0 1	450.3	0.1
	2	9	2	62.02	.55	2	3 721.1	2	900.6	0.3
	3	9	3	93.03	.55	3	5 581.6	3	1 350.8	0.6
	4	9	4	124.04	.55	4	7 442.2	4	1 801.1	1.0
76	05	31.009	5	155.05	1860.56	5	9 302.7	0 5	2 251.4	1.6
	6	9	6	186.06	.56	6	11 163.3	6	2 701.7	2.3
	7	9	7	217.07	.56	7	13 023.9	7	3 152.0	3.1
	8	9	8	248.08	.56	8	14 884.4	8	3 602.3	4.1
	9	9	9	279.09	.57	9	16 745.0	9	4 052.6	5.1
76	10	31.009	10	310.10	1860.57	10	18 605.6	0 10	4 502.8	6.4
	11	10	1	341.11	.57	1	20 466.1	15	6 754.3	14.3
	12	10	2	372.12	.57	2	22 326.7	20	9 005.7	25.4
	13	0	3	403.13	.58	3	24 187.3	25	11 257.1	39.7
	14	0	4	434.14	.58	4	26 047.8	30	13 508.4	57.2
76	15	31.010	15	465.15	1860.58	15	27 908.4	0 35	15 759.7	77.8
	16	0	6	496.17	.58	6	29 769.0	40	18 011.0	101.7
	17	0	7	527.18	.59	7	31 629.6	45	20 262.3	128.7
	18	0	8	558.19	.59	8	33 490.2	50	22 513.5	158.9
	19	0	9	589.20	.59	9	35 350.8	55	24 764.7	192.2
76	20	31.010	20	620.21	1860.59	20	37 211.4	1 00	27 015.8	228.8
	21	0	1	651.22	.60	1	39 072.0	05	29 266.9	268.5
	22	0	2	682.23	.60	2	40 932.6	10	31 517.9	311.4
	23	0	3	713.24	.60	3	42 793.2	15	33 768.9	357.4
	24	0	4	744.25	.60	4	44 653.8	20	36 019.8	406.7
76	25	31.010	25	775.26	1860.61	25	46 514.4	1 25	38 270.6	459.1
	26	0	6	806.27	.61	6	48 375.0	30	40 521.3	514.7
	27	0	7	837.28	.61	7	50 235.6	35	42 772.0	573.5
	28	0	8	868.29	.61	8	52 096.2	40	45 022.6	635.4
	29	0	9	899.30	.62	9	53 956.8	45	47 273.1	700.5
76	30	31.010	30	930.31	1860.62	30	55 817.4	1 50	49 523.5	768.8
	31	0	1	961.32	.62	1	57 678.1	55	51 773.8	840.3
	32	0	2	992.33	.62	2	59 538.7	2 00	54 024	915
	33	0	3	1 023.34	.63	3	61 399.3	3 00	81 017	2 058
	34	0	4	1 054.35	.63	4	63 259.9	4 00	107 986	3 659
76	35	31.011	35	1 085.36	1860.63	35	65 120.6	5 00	134 924	5 716
	36	1	6	1 116.37	.63	6	66 981.2	6 00	161 824	8 228
	37	1	7	1 147.38	.64	7	68 841.8	7 00	188 677	11 196
	38	1	8	1 178.39	.64	8	70 702.5	8 00	215 477	14 619
	39	1	9	1 209.40	.64	9	72 563.1	9 00	242 214	18 494
76	40	31.011	40	1 240.41	1860.64	40	74 423.8	10 00	268 882	22 822
	41	1	1	1 271.42	.65	1	76 284.4	11 00	295 473	27 601
	42	1	2	1 302.43	.65	2	78 145.1	12 00	321 979	32 829
	43	1	3	1 333.44	.65	3	80 005.7	13 00	348 393	38 505
	44	1	4	1 364.45	.65	4	81 866.4	14 00	374 706	44 628
76	45	31.011	45	1 395.46	1860.66	45	83 727.0	15 00	400 913	51 196
	46	1	6	1 426.47	.66	6	85 587.7	16 00	427 004	58 207
	47	1	7	1 457.49	.66	7	87 448.3	17 00	452 973	65 658
	48	1	8	1 488.50	.66	8	89 309.0	18 00	478 812	73 547
	49	1	9	1 519.51	.67	9	91 169.7	19 00	504 514	81 874
76	50	31.011	50	1 550.52	1860.67	50	93 030.3	20 00	530 071	90 635
	51	1	1	1 581.53	.67	1	94 891.0	21 00	555 476	99 827
	52	1	2	1 612.54	.67	2	96 751.7	22 00	580 722	109 448
	53	1	3	1 643.55	.68	3	98 612.3	23 00	605 801	119 495
	54	1	4	1 674.56	.68	4	100 473.0	24 00	630 706	129 965
76	55	31.011	55	1 705.57	1860.68	55	102 333.7	25 00	655 431	140 856
	56	1	6	1 736.58	.68	6	104 194.4	26 00	679 967	152 163
	57	1	7	1 767.59	.69	7	106 055.1	27 00	704 309	163 885
	58	1	8	1 798.60	.69	8	107 915.8	28 00	728 449	176 017
	59	2	9	1 829.61	.69	9	109 776.5	29 00	752 379	188 556
76	60	31.012	60	1 860.62	1860.69	60	111 637.1	30 00	776 094	201 498

Latitude 77° to 78°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
77 00	6.98	13.96	20.94	27.91	34.89	41.87	48.85	55.83	62.81	418.7	837.4	1256.1	1674.8	2093.5
1	.97	.94	.91	.88	.85	.82	.79	.76	.73	8.2	6.4	4.5	2.7	90.9
2	.96	.92	.86	.84	.80	.77	.73	.69	.65	7.7	5.3	3.0	70.6	88.3
3	.95	.90	.88	.81	.76	.71	.66	.62	.57	7.1	4.3	51.4	68.5	5.6
4	.94	.89	.83	.77	.72	.66	.60	.55	.49	6.6	3.2	49.8	6.4	3.0
77 05	6.94	13.87	20.80	27.74	34.67	41.61	48.54	55.48	62.41	416.1	832.1	1248.2	1664.3	2080.4
6	.93	.85	.78	.70	.63	.55	.48	.40	.36	5.5	1.1	6.6	2.2	77.7
7	.92	.83	.75	.67	.58	.50	.42	.34	.25	5.0	30.0	5.0	60.1	5.1
8	.91	.82	.72	.63	.54	.45	.36	.26	.17	4.5	29.0	3.5	58.0	72.4
9	.90	.80	.70	.60	.50	.40	.29	.19	.09	4.0	7.9	1.9	5.8	69.8
77 10	6.89	13.78	20.67	27.56	34.45	41.34	48.23	55.12	62.01	413.4	826.9	1240.3	1653.7	2067.2
11	.88	.76	.64	.53	.41	.29	.17	5.05	1.94	2.9	5.8	38.7	51.6	4.5
12	.87	.75	.62	.49	.36	.24	.11	4.98	.86	2.4	4.8	7.1	49.5	61.9
13	.86	.73	.59	.46	.32	.18	8.05	.91	.78	1.8	3.7	5.5	7.4	59.2
14	.85	.71	.57	.42	.28	.13	7.99	.84	.70	1.3	2.6	4.0	5.3	6.6
77 15	6.85	13.69	20.54	27.39	34.23	41.08	47.93	54.77	61.62	410.8	821.6	1232.4	1643.2	2054.0
16	.84	.68	.51	.35	.19	1.03	.86	.70	.54	10.3	20.5	30.8	41.1	51.3
17	.83	.66	.49	.32	.14	0.97	.80	.63	.46	09.7	19.5	29.2	38.9	48.7
18	.82	.64	.46	.28	.10	.92	.74	.56	.38	9.2	8.4	7.6	6.8	6.0
19	.81	.62	.43	.25	.06	.87	.68	.49	.30	8.7	7.4	6.0	4.7	3.4
77 20	6.80	13.61	20.41	27.21	34.01	40.82	47.62	54.42	61.22	408.2	816.3	1224.5	1632.6	2040.8
21	.79	.59	.38	.17	3.97	.76	.56	.35	.14	7.6	5.2	2.9	30.5	38.1
22	.78	.57	.36	.14	.92	.71	.50	.28	1.06	7.1	4.2	21.3	28.4	5.5
23	.77	.55	.33	.10	.88	.66	.43	.21	0.98	6.6	3.1	19.7	6.3	2.8
24	.77	.53	.30	.07	.84	.60	.37	.14	.91	6.0	2.1	8.1	4.2	30.2
77 25	6.76	13.52	20.28	27.03	33.79	40.55	47.31	54.07	60.83	405.5	811.0	1216.5	1622.1	2027.6
26	.75	.50	.25	7.00	.75	.50	.25	4.00	.75	5.0	10.0	5.0	19.9	4.9
27	.74	.48	.22	6.96	.70	.45	.19	3.93	.67	4.5	08.9	3.4	7.8	22.3
28	.73	.46	.20	.95	.66	.39	.12	.86	.59	3.9	7.9	1.8	5.7	19.6
29	.72	.45	.17	.89	.62	.34	.06	.79	.51	3.4	6.8	10.2	3.6	7.0
77 30	6.71	13.43	20.14	26.86	33.57	40.29	47.00	53.72	60.43	402.9	805.7	1208.6	1611.5	2014.4
31	.71	.41	.12	.82	.53	.23	6.94	.65	.35	2.3	4.7	7.0	09.4	11.7
32	.70	.39	.09	.79	.48	.18	.88	.58	.27	1.8	3.6	5.4	7.3	09.1
33	.69	.38	.06	.75	.44	.13	.82	.50	.19	1.3	2.6	3.9	5.1	6.4
34	.68	.36	.04	.72	.40	.08	.75	.43	.11	0.8	1.5	2.3	3.0	3.8
77 35	6.67	13.34	20.01	26.68	33.35	40.02	46.69	53.36	60.03	400.2	800.5	1200.7	1600.9	2001.1
36	.66	.32	19.98	.65	.31	39.97	.63	.29	59.96	399.7	799.4	199.1	598.8	1998.5
37	.65	.31	.96	.61	.26	.92	.57	.22	.88	9.2	8.3	7.5	6.7	5.9
38	.64	.29	.93	.58	.22	.86	.51	.15	.80	8.6	7.3	5.9	4.6	3.2
39	.64	.27	.91	.54	.18	.81	.45	.08	.72	8.1	6.2	4.3	2.5	90.6
77 40	6.63	13.25	19.88	26.51	33.13	39.76	46.38	53.01	59.64	397.6	795.2	1192.8	1590.3	1987.9
41	.62	.24	.85	.47	.09	.71	.32	2.94	.56	7.1	4.1	91.2	88.2	5.3
42	.61	.22	.83	.43	.04	.65	.26	.87	.48	6.5	3.0	89.6	6.1	2.6
43	.60	.20	.80	.40	3.00	.60	.20	.80	.40	6.0	2.0	8.0	4.0	80.0
44	.59	.18	.77	.36	2.95	.55	.14	.73	.32	5.5	90.9	6.4	81.9	77.3
77 45	6.58	13.16	19.75	26.33	32.91	39.49	46.07	52.66	59.24	394.9	789.9	1184.8	1579.8	1974.7
46	.57	.15	.72	.29	.87	.44	6.01	.59	.16	4.4	8.8	3.2	7.6	72.1
47	.56	.13	.69	.26	.82	.39	5.95	.52	.08	3.9	7.8	1.6	5.5	69.4
48	.56	.11	.66	.22	.78	.34	.89	.45	9.00	3.4	6.7	80.1	3.4	6.8
49	.55	.09	.64	.19	.73	.28	.83	.38	8.92	2.8	5.6	78.5	71.3	4.1
77 50	6.54	13.08	19.61	26.15	32.69	39.23	45.77	52.31	58.84	392.3	784.6	1176.9	1569.2	1961.5
51	.53	.06	.59	.12	.65	.18	.71	.24	.76	1.8	3.5	5.3	7.1	58.8
52	.52	.04	.56	.08	.60	.12	.64	.17	.68	1.2	2.5	3.7	4.9	6.2
53	.51	.02	.53	.05	.56	.07	.58	.09	.60	0.7	1.4	2.1	2.8	3.5
54	.50	3.01	.51	6.01	.51	9.02	.52	2.02	.53	90.2	80.4	70.5	60.7	50.9
77 55	6.49	12.99	19.48	25.98	32.47	38.96	45.46	51.95	58.45	389.6	779.3	1168.9	1558.6	1948.2
56	.49	.97	.46	.94	.43	.91	.40	.88	.37	9.1	8.2	7.4	6.5	5.6
57	.48	.95	.43	.91	.38	.86	.34	.81	.29	8.6	7.2	5.8	4.4	3.0
58	.47	.94	.40	.87	.34	.81	.27	.74	.21	8.1	6.1	4.2	2.2	40.3
59	.46	.92	.38	.84	.29	.75	.21	.67	.13	7.5	5.1	2.6	50.1	37.7
77 60	6.45	12.90	19.35	25.80	32.25	38.70	45.15	51.60	58.05	387.0	774.0	1161.0	1548.0	1935.0

Lat.		Latitude 77° to 78°—Meridional arcs.						Latitude 77°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
77	00	31.012			1860.69					
	1	2	1	31.01	.70	1	1 860.7	0 1	418.7	0.1
	2	2	2	62.03	.70	2	3 721.4	2	837.4	0.2
	3	2	3	93.04	.70	3	5 582.1	3	1 256.1	0.5
	4	2	4	124.05	.70	4	7 442.8	4	1 674.8	0.9
77	05	31.012	5	155.06	1860.71	5	9 303.5	0 5	2 093.5	1.5
	6	2	6	186.08	.71	6	11 164.2	6	2 512.3	2.1
	7	2	7	217.09	.71	7	13 024.9	7	2 931.0	2.9
	8	2	8	248.10	.71	8	14 885.6	8	3 349.7	3.8
	9	2	9	279.11	.71	9	16 746.3	9	3 768.4	4.8
77	10	31.012	10	310.13	1860.72	10	18 607.1	0 10	4 187.1	5.9
	11	2	1	341.14	.72	1	20 467.8	15	6 280.6	13.4
	12	2	2	372.15	.72	2	22 328.5	20	8 374.1	23.7
	13	2	3	403.17	.72	3	24 189.2	25	10 467.6	37.1
	14	2	4	434.18	.73	4	26 049.9	30	12 561.1	53.4
77	15	31.012	15	465.19	1860.73	15	27 910.7	0 35	14 654.6	72.7
	16	2	6	496.20	.73	6	29 771.4	40	16 748.0	94.9
	17	2	7	527.22	.73	7	31 632.1	45	18 841.4	120.2
	18	2	8	558.23	.74	8	33 492.9	50	20 934.8	148.3
	19	2	9	589.24	.74	9	35 353.6	55	23 028.1	179.5
77	20	31.012	20	620.25	1860.74	20	37 214.3	1 00	25 121.4	213.6
	21	2	1	651.27	.74	1	39 075.1	05	27 214.6	250.7
	22	2	2	682.28	.75	2	40 935.8	10	29 307.7	290.7
	23	2	3	713.29	.75	3	42 796.6	15	31 400.8	333.8
	24	3	4	744.31	.75	4	44 657.3	20	33 493.9	379.7
77	25	31.013	25	775.32	1860.75	25	46 518.1	1 25	35 586.9	428.7
	26	3	6	806.33	.76	6	48 378.8	30	37 679.8	480.6
	27	3	7	837.34	.76	7	50 239.6	35	39 772.6	535.5
	28	3	8	868.36	.76	8	52 100.3	40	41 865.3	593.3
	29	3	9	899.37	.76	9	53 961.1	45	43 958.0	654.1
77	30	31.013	30	930.38	1860.76	30	55 821.9	1 50	46 050.6	717.9
	31	3	1	961.40	.77	1	57 682.6	55	48 143.0	784.7
	32	3	2	992.41	.77	2	59 543.4	2 00	50 235	854
	33	3	3	1 023.42	.77	3	61 404.2	3 00	75 335	1 922
	34	3	4	1 054.43	.77	4	63 265.0	4 00	100 413	3 417
77	35	31.013	35	1 085.45	1860.78	35	65 125.7	5 00	125 462	5 337
	36	3	6	1 116.46	.78	6	66 986.5	6 00	150 474	7 684
	37	3	7	1 147.47	.78	7	68 847.3	7 00	175 443	10 455
	38	3	8	1 178.48	.78	8	70 708.1	8 00	200 361	13 650
	39	3	9	1 209.50	.79	9	72 568.9	9 00	225 221	17 269
77	40	31.013	40	1 240.51	1860.79	40	74 429.6	10 00	250 016	21 310
	41	3	1	1 271.52	.79	1	76 290.4	11 00	274 739	25 772
	42	3	2	1 302.54	.79	2	78 151.2	12 00	299 383	30 654
	43	3	3	1 333.55	.79	3	80 012.0	13 00	323 939	35 954
	44	3	4	1 364.56	.80	4	81 872.8	14 00	348 403	41 671
77	45	31.013	45	1 395.57	1860.80	45	83 733.6	15 00	372 765	47 804
	46	3	6	1 426.59	.80	6	85 594.4	16 00	397 019	54 349
	47	3	7	1 457.60	.80	7	87 455.2	17 00	421 159	61 306
	48	3	8	1 488.61	.81	8	89 316.0	18 00	445 177	68 673
	49	3	9	1 519.62	.81	9	91 176.8	19 00	469 066	76 447
77	50	31.014	50	1 550.64	1860.81	50	93 037.6	20 00	492 820	84 626
	51	4	1	1 581.65	.81	1	94 898.5	21 00	516 431	93 208
	52	4	2	1 612.66	.82	2	96 759.3	22 00	539 892	102 190
	53	4	3	1 643.68	.82	3	98 620.1	23 00	563 198	111 570
	54	4	4	1 674.69	.82	4	100 480.9	24 00	586 341	121 345
77	55	31.014	55	1 705.70	1860.82	55	102 341.7	25 00	609 314	131 512
	56	4	6	1 736.71	.82	6	104 202.5	26 00	632 111	142 068
	57	4	7	1 767.73	.83	7	106 063.4	27 00	654 725	153 010
	58	4	8	1 798.74	.83	8	107 924.2	28 00	677 149	164 335
	59	4	9	1 829.75	.83	9	109 785.0	29 00	699 378	176 040
77	60	31.014	60	1 860.76	1860.83	60	111 645.9	30 00	721 405	188 121

Latitude 78° to 79°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
78 00	6.45	12.90	19.35	25.80	32.25	38.70	45.15	51.60	58.05	387.0	774.0	1161.0	1548.0	1935.0
1	.44	.88	.32	.77	.21	.65	.09	.53	7.97	6.5	2.9	59.4	5.9	32.4
2	.43	.86	.30	.73	.16	.59	5.03	.46	.89	5.9	1.9	7.8	3.8	29.7
3	.42	.85	.27	.69	.12	.54	4.96	.39	.81	5.4	70.8	6.2	41.7	7.1
4	.41	.83	.24	.66	.07	.49	.90	.32	.73	4.9	69.8	4.7	39.5	4.4
78 05	6.41	12.81	19.22	25.62	32.03	38.44	44.84	51.24	57.65	384.4	768.7	1153.1	1537.4	1921.8
6	.40	.79	.19	.59	1.99	.38	.78	.18	.57	3.8	7.6	51.5	5.3	19.1
7	.39	.78	.17	.55	.94	.33	.72	.11	.50	3.3	6.6	49.9	3.2	6.5
8	.38	.76	.14	.52	.90	.28	.65	1.03	.42	2.8	5.5	8.3	31.1	3.8
9	.37	.74	.11	.48	.85	.22	.59	0.96	.34	2.2	4.5	6.7	28.9	11.2
78 10	6.36	12.72	19.09	25.45	31.81	38.17	44.53	50.89	57.26	381.7	763.4	1145.1	1526.8	1908.5
11	.35	.71	.06	.41	.77	.12	.47	.82	.18	1.2	2.4	3.5	4.7	5.9
12	.34	.69	.03	.38	.72	.06	.41	.75	.10	0.6	1.3	1.9	2.6	3.2
13	.34	.67	9.01	.34	.68	8.01	.34	.68	7.02	80.1	60.2	40.4	20.5	900.6
14	.33	.65	8.98	.31	.63	7.96	.28	.61	6.94	79.6	59.2	38.8	18.3	897.9
78 15	6.32	12.64	18.95	25.27	31.59	37.91	44.22	50.54	56.86	379.1	758.1	1137.2	1516.2	1895.3
16	.31	.62	.93	.23	.54	.85	.16	.47	.78	8.5	7.1	5.6	4.1	2.6
17	.30	.60	.90	.20	.50	.80	.10	.40	.70	8.0	6.0	4.0	12.0	90.0
18	.29	.58	.87	.16	.46	.75	4.04	.33	.62	7.5	4.9	2.4	09.9	87.3
19	.28	.56	.85	.13	.41	.69	3.97	.26	.54	6.9	3.9	30.8	7.7	4.7
78 20	6.27	12.55	18.82	25.09	31.37	37.64	43.91	50.19	56.46	376.4	752.8	1129.2	1505.6	1882.0
21	.26	.53	.79	.06	.32	.59	.85	.12	.38	5.9	1.8	7.6	3.5	79.4
22	.26	.51	.77	5.02	.28	.53	.79	50.05	.30	5.3	50.7	6.0	501.4	6.7
23	.25	.49	.74	4.99	.24	.48	.73	49.98	.22	4.8	49.6	4.4	499.3	4.1
24	.24	.48	.71	.95	.19	.43	.67	.90	.14	4.3	8.6	2.9	7.1	71.4
78 25	6.23	12.46	18.69	24.92	31.15	37.38	43.60	49.83	56.06	373.8	747.5	1121.3	1495.0	1868.8
26	.22	.44	.66	.88	.10	.32	.54	.76	5.98	3.2	6.5	19.7	2.9	6.1
27	.21	.42	.64	.85	.06	.27	.48	.69	.91	2.7	5.4	8.1	90.8	3.5
28	.20	.41	.61	.81	1.01	.22	.42	.62	.83	2.2	4.3	6.5	88.7	60.8
29	.19	.39	.58	.78	0.97	.16	.36	.55	.75	1.6	3.3	4.9	6.5	58.2
78 30	6.19	12.37	18.56	24.74	30.93	37.11	43.30	49.48	55.67	371.1	742.2	1113.3	1484.4	1855.5
31	.18	.35	.53	.71	.88	.06	.23	.41	.59	0.6	1.1	1.7	2.3	2.9
32	.17	.33	.50	.67	.84	7.00	.17	.34	.51	70.0	40.1	10.1	80.2	50.2
33	.16	.32	.48	.63	.79	6.95	.11	.27	.43	69.5	39.0	08.5	78.0	47.6
34	.15	.30	.45	.60	.75	.90	3.05	.20	.35	9.0	8.0	6.9	5.9	4.9
78 35	6.14	12.28	18.42	24.56	30.71	36.85	42.99	49.13	55.27	368.5	736.9	1105.4	1473.8	1842.3
36	.13	.26	.40	.53	.66	.79	.93	9.06	.19	7.9	5.8	3.8	71.7	39.6
37	.12	.25	.37	.49	.62	.74	.86	8.98	.11	7.4	4.8	2.2	69.6	6.9
38	.11	.23	.34	.46	.57	.69	.80	.91	5.03	6.9	3.7	100.6	7.4	4.3
39	.11	.21	.32	.42	.53	.63	.74	.84	4.95	6.3	2.7	099.0	5.3	31.6
78 40	6.10	12.19	18.29	24.39	30.48	36.58	42.68	48.77	54.87	365.8	731.6	1097.4	1463.2	1829.0
41	.09	.17	.26	.35	.44	.53	.62	.70	.79	5.3	30.5	5.8	61.1	6.3
42	.08	.16	.24	.32	.39	.47	.56	.63	.71	4.7	29.5	4.2	58.9	3.7
43	.07	.14	.21	.28	.35	.42	.49	.56	.63	4.2	8.4	2.6	6.8	21.0
44	.06	.12	.18	.25	.31	.37	.43	.49	.55	3.7	7.3	91.0	4.7	18.4
78 45	6.05	12.10	18.16	24.21	30.26	36.31	42.37	48.42	54.47	363.1	726.3	1089.4	1452.6	1815.7
46	.04	.09	.13	.17	.22	.26	.31	.35	.39	2.6	5.2	7.8	50.4	3.1
47	.03	.07	.10	.14	.17	.21	.24	.28	.31	2.1	4.2	6.2	48.3	10.4
48	.03	.05	.08	.10	.13	.16	.18	.21	.23	1.6	3.1	4.7	6.2	07.8
49	.02	.03	.05	.07	.08	.10	.12	.14	.15	1.0	2.0	3.1	4.1	5.1
78 50	6.01	12.02	18.02	24.03	30.04	36.05	42.06	48.06	54.07	360.5	721.0	1081.5	1442.0	1802.4
51	6.00	2.00	8.00	4.00	30.00	6.00	2.00	7.99	3.99	60.0	19.9	79.9	39.8	799.8
52	5.99	1.98	7.97	3.96	29.95	5.94	1.93	.92	.91	59.4	8.9	8.3	7.7	7.1
53	.98	.96	.94	.93	.91	.89	.87	.85	.83	8.9	7.8	6.7	5.6	4.5
54	.97	.95	.92	.89	.86	.84	.81	.78	.75	8.4	6.7	5.1	3.5	91.8
78 55	5.96	11.93	17.89	23.86	29.82	35.78	41.75	47.71	53.68	357.8	715.7	1073.5	1431.3	1789.2
56	.96	.91	.86	.82	.78	.73	.69	.64	.60	7.3	4.6	1.9	29.2	6.5
57	.95	.89	.84	.78	.73	.68	.62	.57	.52	6.8	3.5	70.3	7.1	3.9
58	.94	.87	.81	.75	.69	.62	.56	.50	.44	6.2	2.5	68.7	5.0	81.2
59	.93	.86	.79	.71	.64	.57	.50	.43	.36	5.7	1.4	7.1	2.8	78.5
78 60	5.92	11.84	17.76	23.68	29.60	35.52	41.44	47.36	53.28	355.2	710.4	1065.5	1420.7	1775 9

Lat.		Latitude 78° to 79°—Meridional arcs.						Latitude 78°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
78	00	31.014			1860.83					
	1	4	1	31.01	.84	1	1 860.8	0 1	387.0	0.1
	2	4	2	62.03	.84	2	3 721.7	2	774.0	0.2
	3	4	3	93.04	.84	3	5 582.5	3	1 161.0	0.5
	4	4	4	124.06	.84	4	7 443.4	4	1 548.0	0.9
78	05	31.014	5	155.07	1860.84	5	9 304.2	0 5	1 935.0	1.4
	6	4	6	186.09	.85	6	11 165.0	6	2 322.0	2.0
	7	4	7	217.10	.85	7	13 025.9	7	2 709.0	2.7
	8	4	8	248.12	.85	8	14 886.7	8	3 096.0	3.5
	9	4	9	279.13	.85	9	16 747.6	9	3 483.0	4.5
78	10	31.014	10	310.15	1860.86	10	18 608.4	0 10	3 870.0	5.5
	11	4	1	341.16	.86	1	20 469.3	15	5 805.0	12.4
	12	4	2	372.18	.86	2	22 330.2	20	7 740.0	22.0
	13	4	3	403.19	.86	3	24 191.0	25	9 675.0	34.4
	14	4	4	434.21	.86	4	26 051.9	30	11 610.0	49.6
78	15	31.014	15	465.22	1860.87	15	27 912.8	0 35	13 544.9	67.4
	16	4	6	496.24	.87	6	29 773.6	40	15 479.8	88.1
	17	5	7	527.25	.87	7	31 634.5	45	17 414.7	111.5
	18	5	8	558.27	.87	8	33 495.4	50	19 349.5	137.6
	19	5	9	589.28	.88	9	35 356.2	55	21 284.3	166.5
78	20	31.015	20	620.30	1860.88	20	37 217.1	1 00	23 219.1	198.2
	21	5	1	651.31	.88	1	39 078.0	05	25 153.8	232.6
	22	5	2	682.33	.88	2	40 938.9	10	27 088.4	269.8
	23	5	3	713.34	.88	3	42 799.8	15	29 023.0	309.7
	24	5	4	744.36	.89	4	44 660.6	20	30 957.6	352.4
78	25	31.015	25	775.37	1860.89	25	46 521.5	1 25	32 892.1	397.8
	26	5	6	806.39	.89	6	48 382.4	30	34 826.5	445.9
	27	5	7	837.40	.89	7	50 243.3	35	36 760.8	496.9
	28	5	8	868.42	.90	8	52 104.2	40	38 695.1	550.5
	29	5	9	899.43	.90	9	53 965.1	45	40 629.3	606.9
78	30	31.015	30	930.45	1860.90	30	55 826.0	1 50	42 563.4	666,1
	31	5	1	961.46	.90	1	57 686.9	55	44 497.4	728.1
	32	5	2	992.48	.90	2	59 547.8	2 00	46 431	793
	33	5	3	1 023.49	.91	3	61 408.7	3 00	69 630	1 784
	34	5	4	1 054.51	.91	4	63 269.6	4 00	92 809	3 170
78	35	31.015	35	1 085.52	1860.91	35	65 130.5	5 00	115 960	4 952
	36	5	6	1 116.54	.91	6	66 991.4	6 00	139 078	7 129
	37	5	7	1 147.55	.91	7	68 852.4	7 00	162 155	9 701
	38	5	8	1 178.57	.92	8	70 713.3	8 00	185 185	12 665
	39	5	9	1 209.58	.92	9	72 574.2	9 00	208 160	16 023
78	40	31.015	40	1 240.60	1860.92	40	74 435.1	10 00	231 076	19 773
	41	5	1	1 271.61	.92	1	76 296.0	11 00	253 923	23 913
	42	5	2	1 302.63	.93	2	78 157.0	12 00	276 697	28 442
	43	5	3	1 333.64	.93	3	80 017.9	13 00	299 390	33 360
	44	5	4	1 364.66	.93	4	81 878.8	14 00	321 996	38 664
78	45	31.016	45	1 395.67	1860.93	45	83 739.7	15 00	344 509	44 353
	46	6	6	1 426.69	.93	6	85 600.7	16 00	366 920	50 426
	47	6	7	1 457.70	.94	7	87 461.6	17 00	389 225	56 881
	48	6	8	1 488.72	.94	8	89 322.6	18 00	411 416	63 715
	49	6	9	1 519.73	.94	9	91 183.5	19 00	433 488	70 927
78	50	31.016	50	1 550.75	1860.94	50	93 044.4	20 00	455 433	78 515
	51	6	1	1 581.76	.94	1	94 905.4	21 00	477 245	86 477
	52	6	2	1 612.78	.95	2	96 766.3	22 00	498 918	94 809
	53	6	3	1 643.79	.95	3	98 627.2	23 00	520 446	103 511
	54	6	4	1 674.81	.95	4	100 488.2	24 00	541 822	112 579
78	55	31.016	55	1 705.82	1860.95	55	102 349.1	25 00	563 041	122 010
	56	6	6	1 736.84	.95	6	104 210.1	26 00	584 095	131 802
	57	6	7	1 767.85	.96	7	106 071.1	27 00	604 979	141 952
	58	6	8	1 798.87	.96	8	107 932.0	28 00	625 686	152 457
	59	6	9	1 829.88	.96	9	109 793.0	29 00	646 212	163 314
78	60	31.016	60	1 860.90	1860.96	60	111 653.9	30 00	666 549	174 520

Latitude 79° to 80°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
79 00	5.92	11.84	17.76	23.68	29.60	35.52	41.44	47.36	53.28	355.2	710.4	1065.5	1420.7	1775.9
1	.91	.82	.73	.64	.55	.46	.38	.29	.20	4.6	9.3	3.9	18.6	3.2
2	.90	.80	.71	.61	.51	.41	.31	.22	.12	4.1	8.2	2.3	6.5	70.6
3	.89	.79	.68	.57	.47	.36	.25	.14	3.04	3.6	7.2	60.7	4.3	67.9
4	.88	.77	.65	.54	.42	.31	.19	.07	2.96	3.1	6.1	59.2	2.2	5.3
79 05	5.88	11.75	17.63	23.50	29.38	35.25	41.13	47.00	52.88	352.5	705.0	1057.6	1410.1	1762.6
6	.87	.73	.60	.47	.33	.20	.06	6.93	.80	2.0	4.0	6.0	08.0	59.9
7	.86	.72	.57	.43	.29	.15	1.00	.86	.72	1.5	2.9	4.4	5.8	7.3
8	.85	.70	.55	.39	.24	.09	0.94	.79	.64	0.9	1.8	2.8	3.7	4.6
9	.84	.68	.52	.36	.20	5.04	.88	.72	.56	50.4	700.8	51.2	401.6	52.0
79 10	5.83	11.66	17.49	23.32	29.16	34.99	40.82	46.65	52.48	349.9	699.7	1049.6	1399.4	1749.3
11	.82	.64	.47	.29	.11	.93	.76	.58	.40	9.3	8.7	8.0	7.3	6.7
12	.81	.63	.44	.25	.07	.88	.69	.51	.32	8.8	7.6	6.4	5.2	4.0
13	.80	.61	.41	.22	9.02	.83	.63	.43	.24	8.3	6.5	4.8	3.1	41.3
14	.80	.59	.39	.18	8.98	.77	.57	.36	.16	7.7	5.5	3.2	90.9	38.7
79 15	5.79	11.57	17.36	23.15	28.93	34.72	40.51	46.29	52.08	347.2	694.4	1041.6	1388.8	1736.0
16	.78	.56	.33	.11	.89	.67	.45	.22	2.00	6.7	3.3	40.0	6.7	3.4
17	.77	.54	.31	.08	.85	.61	.38	.15	1.92	6.1	2.3	38.4	4.6	30.7
18	.76	.52	.28	.04	.80	.56	.32	.08	.84	5.6	1.2	6.8	2.4	28.0
19	.75	.50	.25	3.01	.76	.51	.26	6.01	.76	5.1	90.2	5.2	80.3	5.4
79 20	5.74	11.48	17.23	22.97	28.71	34.45	40.20	45.94	51.68	344.5	689.1	1033.6	1378.2	1722.7
21	.73	.47	.20	.93	.67	.40	.14	.87	.60	4.0	8.0	2.0	6.0	20.1
22	.72	.45	.17	.90	.62	.35	.07	.80	.52	3.5	7.0	30.4	3.9	17.4
23	.72	.43	.15	.86	.58	.29	40.01	.73	.44	2.9	5.9	28.8	71.8	4.7
24	.71	.41	.12	.83	.53	.24	39.95	.66	.36	2.4	4.8	7.2	69.7	12.1
79 25	5.70	11.40	17.09	22.79	28.49	34.19	39.89	45.58	51.28	341.9	683.8	1025.6	1367.5	1709.4
26	.69	.38	.07	.76	.45	.14	.83	.51	.20	1.4	2.7	4.1	5.4	6.8
27	.68	.36	.04	.72	.40	.08	.76	.44	.12	0.8	1.6	2.5	3.3	4.1
28	.67	.34	7.01	.69	.36	4.03	.70	.37	1.04	40.3	80.6	20.9	61.1	701.4
29	.66	.33	6.99	.65	.31	3.98	.64	.30	0.96	39.8	79.5	19.3	59.0	698 8
79 30	5.65	11.31	16.96	22.61	28.27	33.92	39.58	45.23	50.88	339.2	678.4	1017.7	1356.9	1696.1
31	.64	.29	.93	.58	.22	.87	.51	.16	.80	8.7	7.4	6.1	4.8	3.4
32	.64	.27	.91	.54	.18	.82	.45	.09	.72	8.2	6.3	4.5	2.6	90.8
33	.63	.25	.88	.51	.14	.76	.39	5.02	.64	7.6	5.2	2.9	50.5	88.1
34	.62	.24	.85	.47	.09	.71	.33	4.94	.56	7.1	4.2	11.3	48.4	5.4
79 35	5.61	11.22	16.83	22.44	28.05	33.66	39.27	44.87	50.48	336.6	673.1	1009.7	1346.2	1682.8
36	.60	.20	.80	.40	8.00	.60	.20	.80	.40	6.0	2.1	8.1	4.1	80.1
37	.59	.18	.78	.37	7.96	.55	.14	.73	.33	5.5	71.0	6.5	42.0	77.5
38	.58	.17	.75	.33	.91	.50	.08	.66	.24	5.0	69.9	4.9	39.9	4.8
39	.57	.15	.72	.30	.87	.44	9.02	.59	.17	4.4	8.9	3.3	7.7	72.2
79 40	5.57	11.13	16.70	22.26	27.83	33.39	38.96	44.52	50.09	333.9	667.8	1001.7	1335.6	1669.5
41	.56	.11	.67	.22	.78	.34	.89	.45	50.00	3.4	6.7	1000.1	3.5	6.8
42	.55	.09	.64	.19	.74	.28	.83	.38	49.93	2.8	5.7	998.5	31.3	4.2
43	.54	.08	.62	.15	.69	.23	.77	.31	.85	2.3	4.6	6.9	29.2	61.5
44	.53	.06	.59	.12	.65	.18	.71	.23	.76	1.8	3.5	5.3	7.1	58.8
79 45	5.52	11.04	16.56	22.08	27.60	33.12	38.64	44.16	49.69	331.2	662.5	993.7	1324.9	1656.2
46	.51	.02	.54	.04	.56	.07	.58	.09	.61	0.7	1.4	2.1	2.8	3.5
47	.50	1.00	.51	2.01	.51	3.02	.52	4.02	.52	30.2	60.3	90.5	20.7	50.8
48	.49	0.99	.48	1.98	.47	2.96	.46	3.95	.45	29.6	59.3	88.9	18.5	48.2
49	.49	.97	.46	.94	.43	.91	.39	.88	.37	9.1	8.2	7.3	6.4	5.5
79 50	5.48	10.95	16.43	21.91	27.38	32.86	38.33	43.81	49.29	328.6	657.2	985.7	1314.3	1642.9
51	.47	.93	.40	.87	.34	.80	.27	.74	.21	8.0	6.1	4.1	2.2	40.2
52	.46	.92	.38	.83	.29	.75	.21	.67	.13	7.5	5.0	2.5	10.0	37.5
53	.45	.90	.35	.80	.25	.70	.14	.60	9.05	7.0	3.9	80.9	07.9	4.9
54	.44	.88	.32	.76	.20	.64	.08	.53	8.97	6.4	2.9	79.3	5.8	32.2
79 55	5.43	10.86	16.30	21.73	27.16	32.59	38.02	43.45	48.89	325.9	651.8	977.4	1303.6	1629.5
56	.42	.85	.27	.69	.12	.54	7.96	.38	.81	5.4	50.7	6.1	301.5	6.9
57	.41	.83	.24	.66	.07	.48	.90	.31	.73	4.8	49.7	4.5	299.4	4.2
58	.41	.81	.21	.62	7.03	.43	.83	.24	.65	4.3	8.6	2.9	7.2	21.5
59	.40	.79	.19	.58	6.98	.38	.77	.17	.56	3.8	7.5	71.3	5.1	18.8
79 60	5.39	10.77	16.16	21.55	26.94	32.32	37.71	43.10	48.49	323.2	646.5	969.7	1293.0	1616.2

Lat.		Latitude 79° to 80°—Meridional arcs.						Latitude 79°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
79	00	31.016			1860.96					
	1	6	1	31.02	.97	1	1 861.0	0 1	355.2	0.1
	2	6	2	62.03	.97	2	3 721.9	2	710.3	0.2
	3	6	3	93.05	.97	3	5 582.9	3	1 065.5	0.5
	4	6	4	124.07	.97	4	7 443.9	4	1 420.7	0.8
79	05	31.016	5	155.09	1860.97	5	9 304.8	0 5	1 775.9	1.3
	6	6	6	186.10	.98	6	11 165.8	6	2 131.1	1.8
	7	6	7	217.12	.98	7	13 026.8	7	2 486.2	2.5
	8	6	8	248.14	.98	8	14 887.8	8	2 841.4	3.2
	9	6	9	279.15	.98	9	16 748.8	9	3 196.6	4.1
79	10	31.016	10	310.17	1860.98	10	18 609.7	0 10	3 551.8	5.1
	11	6	1	341.19	.99	1	20 470.7	15	5 327.6	11.4
	12	6	2	372.20	.99	2	22 331.7	20	7 103.5	20.3
	13	6	3	403.22	.99	3	24 192.7	25	8 879.3	31.7
	14	7	4	434.24	.99	4	26 053.7	30	10 655.2	45.6
79	15	31.017	15	465.26	1860.99	15	27 914.7	0 35	12 431.0	62.1
	16	7	6	496.27	1.00	6	29 775.7	40	14 206.8	81.1
	17	7	7	527.29	.00	7	31 636.7	45	15 982.5	102.7
	18	7	8	558.31	.00	8	33 497.7	50	17 758.2	126.8
	19	7	9	589.32	.00	9	35 358.7	55	19 533.9	153.4
79	20	31.017	20	620.34	1861.00	20	37 219.7	1 00	21 309.6	182.5
	21	7	1	651.36	.01	1	39 080.7	05	23 085.2	214.2
	22	7	2	682.38	.01	2	40 941.7	10	24 860.7	248.5
	23	7	3	713.39	.01	3	42 802.7	15	26 636.2	285.2
	24	7	4	744.41	.01	4	44 663.7	20	28 411.7	324.5
79	25	31.017	25	775.43	1861.01	25	46 524.7	1 25	30 187.1	366.4
	26	7	6	806.44	.02	6	48 385.8	30	31 962.4	410.7
	27	7	7	837.46	.02	7	50 246.8	35	33 737.6	457.6
	28	7	8	868.48	.02	8	52 107.8	40	35 512.8	507.0
	29	7	9	899.49	.02	9	53 968.8	45	37 288.0	559.0
79	30	31.017	30	930.51	1861.02	30	55 829.8	1 50	39 063.0	613.5
	31	7	1	961.53	.03	1	57 690.9	55	40 838.0	670.6
	32	7	2	992.55	.03	2	59 551.9	2 00	42 613	730
	33	7	3	1 023.56	.03	3	61 412.9	3 00	63 904	1 643
	34	7	4	1 054.58	.03	4	63 274.0	4 00	85 176	2 920
79	35	31.017	35	1 085.60	1861.03	35	65 135.0	5 00	106 423	4 561
	36	7	6	1 116.61	.04	6	66 996.0	6 00	127 639	6 566
	37	7	7	1 147.63	.04	7	68 857.1	7 00	148 817	8 934
	38	7	8	1 178.65	.04	8	70 718.1	8 00	169 952	11 665
	39	7	9	1 209.67	.04	9	72 579.2	9 00	191 036	14 758
79	40	31.017	40	1 240.68	1861.04	40	74 440.2	10 00	212 065	18 211
	41	7	1	1 271.70	.05	1	76 301.2	11 00	233 031	22 024
	42	7	2	1 302.72	.05	2	78 162.3	12 00	253 929	26 195
	43	7	3	1 333.73	.05	3	80 023.3	13 00	274 753	30 724
	44	8	4	1 364.75	.05	4	81 884.4	14 00	295 496	35 609
79	45	31.018	45	1 395.77	1861.05	45	83 745.4	15 00	316 152	40 849
	46	8	6	1 426.79	.06	6	85 606.5	16 00	336 715	46 442
	47	8	7	1 457.80	.06	7	87 467.6	17 00	357 180	52 386
	48	8	8	1 488.82	.06	8	89 328.6	18 00	377 540	58 680
	49	8	9	1 519.84	.06	9	91 189.7	19 00	397 788	65 322
79	50	31.018	50	1 550.85	1861.06	50	93 050.7	20 00	417 920	72 310
	51	8	1	1 581.87	.06	1	94 911.8	21 00	437 930	79 641
	52	8	2	1 612.89	.07	2	96 772.9	22 00	457 811	87 315
	53	8	3	1 643.90	.07	3	98 633.9	23 00	477 557	95 328
	54	8	4	1 674.92	.07	4	100 495.0	24 00	497 164	103 678
79	55	31.018	55	1 705.94	1861.07	55	102 356.1	25 00	516 624	112 362
	56	8	6	1 736.96	.07	6	104 217.1	26 00	535 933	121 379
	57	8	7	1 767.97	.08	7	106 078.2	27 00	555 084	130 725
	58	8	8	1 798.99	.08	8	107 939.3	28 00	574 073	140 398
	59	8	9	1 830.01	.08	9	109 800.4	29 00	592 893	150 395
79	60	31.018	60	1 861.02	1861.08	60	111 661.4	30 00	611 539	160 713

Latitude 80° to 81°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
80 00	5.39	10.77	16.16	21.55	26.94	32.32	37.71	43.10	48.49	323.2	646.5	969.7	1293.0	1616.2
1	.38	.76	.13	.51	.89	.27	.65	3.03	.41	2.7	5.4	8.1	90.8	3.5
2	.37	.74	.11	.48	.85	.22	.59	2.96	.33	2.2	4.3	6.5	88.7	10.9
3	.36	.72	.08	.44	.80	.16	.52	.89	.25	1.6	3.3	4.9	6.6	08.2
4	.35	.70	.06	.41	.76	.11	.46	.81	.17	1.1	2.2	3.3	4.4	5.5
80 05	5.34	10.69	16.03	21.37	26.72	32.06	37.40	42.74	48.09	320.6	641.1	961.7	1282.3	1602.9
6	.33	.67	6.00	.34	.67	2.00	.34	.67	8.01	20.0	40.1	60.1	80.2	600.2
7	.33	.65	5.98	.30	.63	1.95	.28	.60	7.93	19.5	39.0	58.5	78.0	597.5
8	.32	.63	.95	.27	.59	.90	.21	.53	.85	9.0	7.9	6.9	5.9	4.9
9	.31	.61	.92	.23	.54	.84	.15	.46	.77	8.4	6.9	5.3	3.8	92.2
80 10	5.30	10.60	15.90	21.19	26.49	31.79	37.09	42.39	47.69	317.9	635.8	953.7	1271.6	1589.5
11	.29	.58	.87	.16	.45	.74	7.03	.32	.61	7.4	4.7	2.1	69.5	6.9
12	.28	.56	.84	.12	.40	.68	6.97	.25	.53	6.8	3.7	50.5	7.4	4.2
13	.27	.54	.82	.09	.36	.63	.90	.17	.45	6.3	2.6	48.9	5.2	81.5
14	.26	.53	.79	.05	.31	.58	.84	.10	.37	5.8	1.6	7.3	3.1	78.9
80 15	5.25	10.51	15.76	21.02	26.27	31.52	36.78	42.03	47.29	315.2	630.5	945.7	1261.0	1576.2
16	.25	.49	.74	0.98	.23	.47	.72	1.96	.21	4.7	29.4	4.1	58.8	3.5
17	.24	.47	.71	.95	.18	.42	.65	.89	.13	4.2	8.3	2.5	6.7	70.9
18	.23	.45	.68	.91	.14	.36	.59	.82	7.05	3.6	7.3	40.9	4.6	68.2
19	.22	.44	.66	.87	.09	.31	.53	.75	6.97	3.1	6.2	39.3	2.4	5.5
80 20	5.21	10.42	15.63	20.84	26.05	31.26	36.47	41.68	46.89	312.6	625.1	937.7	1250.3	1562.9
21	.20	.40	.60	.80	6.00	.20	.40	.61	.81	2.0	4.1	6.1	48.2	60.2
22	.19	.38	.58	.77	5.96	.15	.34	.54	.73	1.5	3.0	4.5	6.0	57.5
23	.18	.37	.55	.73	.92	.10	.28	.46	.65	1.0	1.9	2.9	3.9	4.9
24	.17	.35	.52	.70	.87	1.04	.22	.39	.57	10.4	20.9	31.3	41.7	52.2
80 25	5.17	10.33	15.49	20.66	25.83	30.99	36.15	41.32	46.49	309.9	619.8	929.7	1239.6	1549.5
26	.16	.31	.47	.62	.78	.94	.09	.25	.40	9.4	8.7	8.1	7.5	6.8
27	.15	.29	.44	.59	.74	.88	6.03	.18	.33	8.8	7.7	6.5	5.3	4.2
28	.14	.28	.41	.55	.69	.83	5.97	.11	.25	8.3	6.6	4.9	3.2	41.5
29	.13	.26	.39	.52	.65	.78	.90	1.03	.16	7.8	5.5	3.3	31.1	38.8
80 30	5.12	10.24	15.36	20.48	25.60	30.72	35.85	40.97	46.09	307.2	614.5	921.7	1228.9	1536.2
31	.11	.22	.33	.45	.56	.67	.78	.89	6.01	6.7	3.4	20.1	6.8	3.5
32	.10	.21	.31	.41	.51	.62	.72	.82	5.92	6.2	2.3	18.5	4.7	30.8
33	.09	.19	.28	.38	.47	.56	.66	.75	.85	5.6	1.3	6.9	2.5	28.2
34	.08	.17	.25	.34	.42	.51	.59	.68	.77	5.1	10.2	5.3	20.4	5.5
80 35	5.08	10.15	15.23	20.30	25.38	30.46	35.53	40.61	45.68	304.6	609.1	913.7	1218.3	1522.8
36	.07	.13	.20	.27	.34	.40	.47	.54	.60	4.0	8.1	2.1	6.1	20.1
37	.06	.12	.17	.23	.29	.35	.41	.47	.52	3.5	7.0	10.5	4.0	17.5
38	.05	.10	.15	.20	.25	.30	.35	.39	.44	3.0	5.9	08.9	11.8	4.8
39	.04	.08	.12	.16	.20	.24	.28	.32	.36	2.4	4.9	7.3	09.7	12.1
80 40	5.03	10.06	15.09	20.13	25.16	30.19	35.22	40.25	45.28	301.9	603.8	905.7	1207.6	1509.5
41	.02	.05	.07	.09	.11	.14	.16	.18	.20	1.4	2.7	4.1	5.4	6.8
42	.01	.03	.04	.05	.07	.08	.10	.11	.12	0.8	1.6	2.5	3.3	4.1
43	.00	10.01	5.01	20.02	5.02	30.03	5.03	40.04	5.04	300.3	600.6	900.9	201.2	501.4
44	5.00	9.99	4.99	19.98	4.98	29.98	4.97	39.97	4.96	299.8	599.5	899.3	199.0	498.8
80 45	4.99	9.97	14.96	19.95	24.94	29.92	34.91	39.90	44.88	299.2	598.4	897.7	1196.9	1496.1
46	.98	.96	.93	.91	.89	.87	.85	.82	.80	8.7	7.4	6.1	4.7	3.4
47	.97	.94	.91	.88	.85	.82	.79	.75	.72	8.2	6.3	4.5	2.6	90.8
48	.96	.92	.88	.84	.80	.76	.72	.68	.64	7.6	5.2	2.9	90.5	88.1
49	.95	.90	.85	.81	.76	.71	.66	.61	.56	7.1	4.2	91.3	88.3	5.4
80 50	4.94	9.89	14.83	19.77	24.71	29.66	34.60	39.54	44.48	296.6	593.1	889.7	1186.2	1482.8
51	.93	.87	.80	.73	.67	.60	.54	.47	.40	6.0	2.0	8.0	4.1	80.1
52	.92	.85	.77	.70	.62	.55	.47	.40	.32	5.5	91.0	6.4	81.9	77.4
53	.92	.83	.75	.66	.58	.49	.41	.33	.24	4.9	89.9	4.8	79.8	4.7
54	.91	.81	.72	.63	.53	.44	.35	.26	.16	4.4	8.8	3.2	7.6	72.1
80 55	4.90	9.80	14.69	19.59	24.49	29.39	34.29	39.18	44.08	293.9	587.8	881.6	1175.5	1469.4
56	.89	.78	.67	.56	.45	.33	.22	.11	4.00	3.3	6.7	80.0	3.4	6.7
57	.88	.76	.64	.52	.40	.28	.16	9.04	3.92	2.8	5.6	78.4	71.2	4.0
58	.87	.74	.61	.48	.36	.23	.10	8.97	.84	2.3	4.5	6.8	69.1	61.4
59	.86	.72	.59	.45	.31	.17	4.04	.90	.76	1.7	3.5	5.2	6.9	58.7
80 60	4.85	9.71	14.56	19.41	24.27	29.12	33.97	38.83	43.68	291.2	582.4	873.6	1164.8	1456.0

Lat.		Latitude 80° to 81°—Meridional arcs.						Latitude 80°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
80	00	31.018			1861.08					
	1	8	1	31.02	.08	1	1 861.1	0 1	323.2	0.0
	2	8	2	62.04	.09	2	3 722.2	2	646.5	0.2
	3	8	3	93.06	.09	3	5 583.3	3	969.7	0.4
	4	8	4	124.08	.09	4	7 444.3	4	1 292.9	0.7
80	05	31.018	5	155.09	1861.09	5	9 305.4	0 5	1 616.2	1.2
	6	8	6	186.11	.09	6	11 166.5	6	1 939.4	1.7
	7	8	7	217.13	.10	7	13 027.6	7	2 262.7	2.3
	8	8	8	248.15	.10	8	14 888.7	8	2 585.9	3.0
	9	8	9	279.17	.10	9	16 749.8	9	2 909.1	3.7
80	10	31.018	10	310.19	1861.10	10	18 610.9	0 10	3 232.4	4.6
	11	8	1	341.21	.10	1	20 472.0	15	4 848.6	10.4
	12	8	2	372.23	.10	2	22 333.1	20	6 464.8	18.5
	13	8	3	403.25	.11	3	24 194.2	25	8 080.9	28.9
	14	8	4	434.27	.11	4	26 055.3	30	9 697.1	41.7
80	15	31.019	15	465.28	1861.11	15	27 916.4	0 35	11 313.2	56.7
	16	9	6	496.30	.11	6	29 777.5	40	12 929.3	74.1
	17	9	7	527.32	.11	7	31 638.7	45	14 545.4	93.8
	18	9	8	558.34	.12	8	33 499.8	50	16 161.4	115.7
	19	9	9	589.36	.12	9	35 360.9	55	17 777.5	140.1
80	20	31.019	20	620.38	1861.12	20	37 222.0	1 00	19 393.4	166.7
	21	9	1	651.40	.12	1	39 083.1	05	21 009.4	195.6
	22	9	2	682.42	.12	2	40 944.2	10	22 625.3	226.9
	23	9	3	713.44	.12	3	42 805.4	15	24 241.1	260.4
	24	9	4	744.45	.13	4	44 666.5	20	25 856.9	296.3
80	25	31.019	25	775.47	1861.13	25	46 527.6	1 25	27 472.7	334.5
	26	9	6	806.49	.13	6	48 388.7	30	29 088.4	375.0
	27	9	7	837.51	.13	7	50 249.9	35	30 704.0	417.8
	28	9	8	868.53	.13	8	52 111.0	40	32 319.6	462.9
	29	9	9	899.55	.14	9	53 972.1	45	33 935.1	510.3
80	30	31.019	30	930.57	1861.14	30	55 833.3	1 50	35 550.5	560.1
	31	9	1	961.59	.14	1	57 694.4	55	37 165.9	612.2
	32	9	2	992.61	.14	2	59 555.6	2 00	38 781	667
	33	9	3	1 023.63	.14	3	61 416.7	3 00	58 157	1 500
	34	9	4	1 054.64	.14	4	63 277.8	4 00	77 516	2 666
80	35	31.019	35	1 085.66	1861.15	35	65 139.0	5 00	96 853	4 164
	36	9	6	1 116.68	.15	6	67 000.1	6 00	116 160	5 995
	37	9	7	1 147.70	.15	7	68 861.3	7 00	135 433	8 137
	38	9	8	1 178.72	.15	8	70 722.4	8 00	154 667	10 651
	39	9	9	1 209.74	.15	9	72 583.6	9 00	173 854	13 474
80	40	31.019	40	1 240.76	1861.16	40	74 444.7	10 00	192 990	16 627
	41	9	1	1 271.78	.16	1	76 305.9	11 00	212 070	20 108
	42	9	2	1 302.80	.16	2	78 167.1	12 00	231 086	23 916
	43	9	3	1 333.82	.16	3	80 028.2	13 00	250 034	28 051
	44	9	4	1 364.83	.16	4	81 889.4	14 00	268 909	32 511
80	45	31.019	45	1 395.85	1861.16	45	83 750.5	15 00	287 704	37 295
	46	9	6	1 426.87	.17	6	85 611.7	16 00	306 414	42 401
	47	9	7	1 457.89	.17	7	87 472.9	17 00	325 033	47 828
	48	19	8	1 488.91	.17	8	89 334.0	18 00	343 557	53 574
	49	20	9	1 519.93	.17	9	91 195.2	19 00	361 978	59 637
80	50	31.020	50	1 550.95	1861.17	50	93 056.4	20 00	380 293	66 017
	51	0	1	1 581.97	.17	1	94 917.6	21 00	398 496	72 710
	52	0	2	1 612.99	.18	2	96 778.7	22 00	416 581	79 715
	53	0	3	1 644.00	.18	3	98 639.9	23 00	434 543	87 030
	54	0	4	1 675.02	.18	4	100 501.1	24 00	452 376	94 652
80	55	31.020	55	1 706.04	1861.18	55	102 362.3	25 00	470 076	102 580
	56	0	6	1 737.06	.18	6	104 223.5	26 00	487 637	110 811
	57	0	7	1 768.08	.19	7	106 084.6	27 00	505 054	119 342
	58	0	8	1 799.10	.19	8	107 945.8	28 00	522 322	128 172
	59	0	9	1 830.12	.19	9	109 807.0	29 00	539 435	137 297
80	60	31 020	60	1 861.14	1861.19	60	111 668.2	30 00	556 389	146 715

Latitude 81° to 82°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
81 00	4.85	9.71	14.56	19.41	24.27	29.12	33.97	38.83	43.68	291.2	582.4	873.6	1164.8	1456.0
1	.84	.69	.53	.38	.22	.07	.91	.75	.60	0.7	1.3	2.0	2.7	3.3
2	.84	.67	.51	.34	.18	9.01	.85	.69	.52	90.1	80.3	70.4	60.5	50.7
3	.83	.65	.48	.31	.13	8.96	.79	.61	.44	89.6	79.2	68.8	58.4	48.0
4	.82	.64	.45	.27	.09	.91	.72	.54	.36	9.1	8.1	7.2	6.3	5.3
81 05	4.81	9.62	14.43	19.23	24.04	28.85	33.66	38.47	43.28	288.5	577.1	865.6	1154.1	1442.6
6	.80	.60	.40	.20	4.00	.80	.60	.40	.20	8.0	6.0	4.0	52.0	40.0
7	.79	.58	.37	.16	3.96	.75	.54	.33	.12	7.5	4.9	2.4	49.8	37.3
8	.78	.56	.35	.13	.91	.69	.47	.26	3.04	6.9	3.8	60.8	7.7	4.6
9	.77	.55	.32	.09	.87	.64	.41	.18	2.96	6.4	2.8	59.2	5.6	31.9
81 10	4.76	9.53	14.29	19.06	23.82	28.59	33.35	38.11	42.88	285.9	571.7	957.6	1143.4	1429.3
11	.76	.51	.27	9.02	.78	.53	.29	8.04	.80	5.3	70.6	6.0	41.3	6.6
12	.75	.49	.24	8.99	.73	.48	.22	7.97	.72	4.8	69.6	4.4	39.1	3.9
13	.74	.47	.21	.95	.69	.42	.16	.90	.64	4.2	8.5	2.7	7.0	21.2
14	.73	.46	.19	.91	.64	.37	.10	.83	.56	3.7	7.4	51.1	4.9	18.6
81 15	4.72	9.44	14.16	18.88	23.60	28.32	33.04	37.76	42.48	283.2	566.4	849.5	1132.7	1415.9
16	.71	.42	.13	.84	.55	.26	2.98	.69	.40	2.6	5.3	7.9	30.6	3.2
17	.70	.40	.11	.81	.51	.21	.91	.61	.32	2.1	4.2	6.3	28.4	10.5
18	.69	.39	.08	.77	.47	.16	.85	.54	.23	1.6	3.1	4.7	6.3	07.9
19	.68	.37	.05	.74	.42	.10	.79	.47	.16	1.0	2.1	3.1	4.2	5.2
81 20	4.68	9.35	14.03	18.70	23.38	28.05	32.73	37.40	42.08	280.5	561.0	841.5	1122.0	1402.5
21	.67	.33	4.00	.66	.33	8.00	.66	.33	1.99	80.0	59.9	39.9	19.9	399.8
22	.66	.31	3.97	.63	.29	7.94	.60	.26	.92	79.4	8.9	8.3	7.7	7.2
23	.65	.30	.95	.59	.24	.89	.54	.19	.84	8.9	7.8	6.7	5.6	4.5
24	.64	.28	.92	.56	.20	.84	.48	.11	.75	8.4	6.7	5.1	3.5	91.8
81 25	4.63	9.26	13.89	18.52	23.15	27.78	32.41	37.04	41.67	277.8	555.7	833.5	1111.3	1389.1
26	.62	.24	.87	.48	.11	.73	.35	6.97	.59	7.3	4.6	1.9	09.2	6.5
27	.61	.22	.84	.45	.06	.68	.29	.90	.51	6.8	3.5	30.3	7.0	3.8
28	.60	.21	.81	.41	3.02	.62	.23	.83	.43	6.2	2.4	28.7	4.9	81.1
29	.59	.19	.78	.38	2.97	.57	.16	.76	.35	5.7	1.4	7.1	2.7	78.4
81 30	4.59	9.17	13.76	18.34	22.93	27.51	32.10	36.69	41.27	275.1	550.3	825.4	1100.6	1375.7
31	.58	.15	.73	.31	.89	.46	2.04	.62	.19	4.6	49.2	3.8	098.5	3.1
32	.57	.14	.70	.27	.84	.41	1.98	.54	.11	4.1	8.2	2.2	6.3	70.4
33	.56	.12	.68	.24	.80	.35	.91	.47	1.03	3.5	7.1	20.6	4.2	67.7
34	.55	.10	.65	.20	.75	.30	.85	.40	0.95	3.0	6.0	19.0	92.0	5.0
81 35	4.54	9.08	13.62	18.17	22.71	27.25	31.79	36.33	40.87	272.5	544.9	817.4	1089.9	1362.4
36	.53	.06	.60	.13	.66	.19	.73	.26	.79	1.9	3.9	5.8	7.7	59.7
37	.52	.05	.57	.09	.62	.14	.66	.19	.71	1.4	2.8	4.2	5.6	7.0
38	.51	.03	.54	.06	.57	.09	.60	.11	.63	0.9	1.7	2.6	3.5	4.3
39	.51	9.01	.52	8.02	.53	7.03	.54	6.05	.55	70.3	40.7	11.0	81.3	51.7
81 40	4.50	8.99	13.49	17.99	22.48	26.98	31.48	35.97	40.47	269.8	539.6	809.4	1079.2	1349.0
41	.49	.98	.46	.95	.44	.93	.41	.90	.39	9.3	8.5	7.8	7.0	6.3
42	.48	.96	.44	.91	.39	.87	.35	.83	.31	8.7	7.4	6.2	4.9	3.6
43	.47	.94	.41	.88	.35	.82	.29	.76	.23	8.2	6.4	4.6	2.7	40.9
44	.46	.92	.38	.84	.30	.77	.23	.69	.15	7.7	5.3	3.0	70.6	38.3
81 45	4.45	8.90	13.36	17.81	22.26	26.71	31.16	35.62	40.07	267.1	534.2	801.3	1068.5	1335.6
46	.44	.89	.33	.77	.22	.66	.10	.54	39.99	6.6	3.2	799.7	6.3	2.9
47	.43	.87	.30	.74	.17	.60	1.04	.47	.91	6.0	2.1	8.1	4.2	30.2
48	.43	.85	.27	.70	.13	.55	0.98	.40	.83	5.5	31.0	6.5	62.0	27.5
49	.42	.83	.25	.67	.08	.50	.91	.33	.75	5.0	30.0	4.9	59.9	4.9
81 50	4.41	8.81	13.22	17.63	22.04	26.44	30.85	35.26	39.67	264.4	528.9	793.3	1057.7	1322.2
51	.40	.80	.19	.59	1.99	.39	.79	.19	.59	3.9	7.8	1.7	5.6	19.5
52	.39	.78	.17	.56	.95	.34	.73	.11	.50	3.4	6.7	90.1	3.5	6.8
53	.38	.76	.14	.52	.90	.28	.66	5.04	.42	2.8	5.7	88.5	51.3	4.1
54	.37	.74	.11	.49	.86	.23	.60	4.97	.35	2.3	4.6	6.9	49.2	11.5
81 55	4.36	8.73	13.09	17.45	21.81	26.18	30.54	34.90	39.26	261.8	523.5	785.3	1047.0	1308.8
56	.35	.71	.06	.41	.77	.12	.48	.83	.18	1.2	2.4	3.7	4.9	6.1
57	.34	.69	.03	.38	.72	.07	.41	.76	.10	0.7	1.4	2.0	2.7	3.4
58	.34	.67	3.01	.34	.68	6.02	.35	.69	9.02	60.2	20.3	80.4	40.6	300.7
59	.33	.65	2.98	.31	.64	5.96	.29	.62	8.94	59.6	19.2	78.8	38.4	298.1
81 60	4.32	8.64	12.95	17.27	21.59	25.91	30.23	34.54	38.86	259.1	518.2	777.2	1036.3	1295.4

Lat.	Latitude 81° to 82°—Meridional arcs.						Latitude 81°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
81 00	31.020			1861.19					
1	0	1	31.02	.19	1	1 861.2	0 1	291.2	0.0
2	0	2	62.04	.19	2	3 722.4	2	582.4	0.2
3	0	3	93.06	.20	3	5 583.6	3	873.6	0.4
4	0	4	124.08	.20	4	7 444.8	4	1 164.8	0.7
81 05	31.020	5	155.10	1861.20	5	9 306.0	0 5	1 456.0	1.0
6	0	6	186.12	.20	6	11 167.2	6	1 747.2	1.5
7	0	7	217.14	.20	7	13 028.4	7	2 038.4	2.0
8	0	8	248.17	.20	8	14 889.6	8	2 329.6	2.7
9	0	9	279.19	.21	9	16 750.8	9	2 620.8	3.4
81 10	31.020	10	310.21	1861.21	10	18 612.0	0 10	2 912.0	4.2
11	0	1	341.23	.21	1	20 473.2	15	4 368.0	9.4
12	0	2	372.25	.21	2	22 334.4	20	5 824.0	16.7
13	0	3	403.27	.21	3	24 195.6	25	7 280.0	26.1
14	0	4	434.29	.21	4	26 056.8	30	8 736.0	37.6
81 15	31.020	15	465.31	1861.22	15	27 918.0	0 35	10 191.9	51.2
16	0	6	496.33	.22	6	29 779.3	40	11 647.9	66.9
17	0	7	527.35	.22	7	31 640.5	45	13 103.8	84.7
18	0	8	558.37	.22	8	33 501.7	50	14 559.6	104.6
19	0	9	589.39	.22	9	35 362.9	55	16 015.5	126.5
81 20	31.020	20	620.41	1861.22	20	37 224.1	1 00	17 471.3	150.6
21	0	1	651.43	.23	1	39 085.4	05	18 927.1	176.7
22	0	2	682.45	.23	2	40 946.6	10	20 382.8	205.0
23	0	3	713.48	.23	3	42 807.8	15	21 838.5	235.3
24	1	4	744.50	.23	4	44 669.0	20	23 294.2	267.7
81 25	31.021	25	775.52	1861.23	25	46 530.3	1 25	24 749.8	302.2
26	1	6	806.54	.23	6	48 391.5	30	26 205.3	338.8
27	1	7	837.56	.24	7	50 252.7	35	27 660.8	377.5
28	1	8	868.58	.24	8	52 114.0	40	29 116.3	418.3
29	1	9	899.60	.24	9	53 975.2	45	30 571.7	461.2
81 30	31.021	30	930.62	1861.24	30	55 836.5	1 50	32 027.0	506.1
31	1	1	961.64	.24	1	57 697.7	55	33 482.2	553.2
32	1	2	992.66	.24	2	59 558.9	2 00	34 937	602
33	1	3	1 023.68	.24	3	61 420.2	3 00	52 393	1 355
34	1	4	1 054.70	.25	4	63 281.4	4 00	69 833	2 409
81 35	31.021	35	1 085.72	1861.25	35	65 142.7	5 00	87 253	3 763
36	1	6	1 116.74	.25	6	67 003.9	6 00	104 646	5 417
37	1	7	1 147.76	.25	7	68 865.2	7 00	122 009	7 370
38	1	8	1 178.79	.25	8	70 726.4	8 00	139 335	9 623
39	1	9	1 209.81	.25	9	72 587.7	9 00	156 620	12 174
81 40	31.021	40	1 240.83	1861.26	40	74 448.9	10 00	173 858	15 022
41	1	1	1 271.85	.26	1	76 310.2	11 00	191 044	18 168
42	1	2	1 302.87	.26	2	78 171.5	12 00	208 174	21 609
43	1	3	1 333.89	.26	3	80 032.7	13 00	225 242	25 344
44	1	4	1 364.91	.26	4	81 894.0	14 00	242 243	29 374
81 45	31.021	45	1 395.93	1861.26	45	83 755.2	15 00	259 172	33 696
46	1	6	1 426.95	.27	6	85 616.5	16 00	276 024	38 309
47	1	7	1 457.97	.27	7	87 477.8	17 00	292 794	43 212
48	1	8	1 488.99	.27	8	89 339.0	18 00	309 477	48 403
49	1	9	1 520.01	.27	9	91 200.3	19 00	326 068	53 881
81 50	31.021	50	1 551.03	1861.27	50	93 061.6	20 00	342 562	59 644
51	1	1	1 582.05	.27	1	94 922.9	21 00	358 954	65 691
52	1	2	1 613.07	.27	2	96 784.1	22 00	375 240	72 019
53	1	3	1 644.10	.28	3	98 645.4	23 00	391 414	78 627
54	1	4	1 675.12	.28	4	100 506.7	24 00	407 472	85 513
81 55	31.021	55	1 706.14	1861.28	55	102 368.0	25 00	423 408	92 675
56	1	6	1 737.16	.28	6	104 229.3	26 00	439 219	100 110
57	1	7	1 768.18	.28	7	106 090.5	27 00	454 900	107 817
58	1	8	1 799.20	.28	8	107 951.8	28 00	470 445	115 793
59	1	9	1 830.22	.29	9	109 813.1	29 00	485 850	124 036
81 60	31.021	60	1 861.24	1861.29	60	111 674.4	30 00	501 111	132 543

Latitude 82° to 83°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
82 00	4.32	8.64	12.95	17.27	21.59	25.91	30.23	34.54	38.86	259.1	518.2	777.2	1036.3	1295.4
1	.31	.62	.93	.24	.55	.85	.16	.47	.78	8.5	7.1	5.6	4.2	2.7
2	.30	.60	.90	.20	.50	.80	.10	.40	.70	8.0	6.0	4.0	32.0	90.0
3	.29	.58	.87	.16	.46	.75	30.04	.33	.62	7.5	4.9	2.4	29.9	87.3
4	.28	.56	.85	.13	.41	.69	29.98	.26	.54	6.9	3.9	70.8	7.7	4.6
82 05	4.27	8.55	12.82	17.09	21.37	25.64	29.91	34.18	38.46	256.4	512.8	769.2	1025.6	1282.0
6	.26	.53	.79	.06	.32	.59	.85	.11	.38	5.9	1.7	7.6	3.4	79.3
7	.26	.51	.77	17.02	.28	.53	.79	4.04	.30	5.3	10.6	6.0	21.3	6.6
8	.25	.49	.74	6.99	.23	.48	.72	3.97	.22	4.8	09.6	4.4	19.1	3.9
9	.24	.47	.71	.95	.19	.42	.66	.90	.14	4.2	8.5	2.7	7.0	71.2
82 10	4.23	8.46	12.69	16.91	21.14	25.37	29.60	33.83	38.06	253.7	507.4	761.1	1014.8	1268.6
11	.22	.44	.66	.88	.10	.32	.54	.76	7.98	3.2	6.4	59.5	2.7	5.9
12	.21	.42	.63	.84	.05	.26	.47	.69	.90	2.6	5.3	7.9	10.6	3.2
13	.20	.40	.61	.81	1.01	.21	.41	.61	.82	2.1	4.2	6.3	08.4	60.5
14	.19	.39	.58	.77	0.96	.16	.35	.54	.73	1.6	3.1	4.7	6.3	57.8
82 15	4.18	8.37	12.55	16.74	20.92	25.10	29.29	33.47	37.65	251.0	502.0	753.1	1004.1	1255.1
16	.18	.35	.53	.70	.88	.05	.22	.40	.57	0.5	501.0	51.5	1002.0	52.5
17	.17	.33	.50	.66	.83	5.00	.16	.33	.49	50.0	499.9	49.9	999.8	49.8
18	.16	.31	.47	.63	.79	4.94	.10	.25	.41	49.4	8.8	8.3	7.7	7.1
19	.15	.30	.44	.59	.74	.89	9.04	.18	.33	8.9	7.8	6.6	5.5	4.4
82 20	4.14	8.28	12.42	16.56	20.70	24.83	28.97	33.11	37.25	248.3	496.7	745.0	993.4	1241.7
21	.13	.26	.39	.52	.65	.78	.91	3.04	.17	7.8	5.6	3.4	91.2	39.1
22	.12	.24	.36	.49	.61	.73	.85	2.97	.09	7.3	4.5	1.8	89.1	6.4
23	.11	.22	.34	.45	.56	.67	.78	.90	7.01	6.7	3.5	40.2	6.9	3.7
24	.10	.21	.31	.41	.52	.62	.72	.83	6.93	6.2	2.4	38.6	4.8	31.0
82 25	4.09	8.19	12.28	16.38	20.47	24.57	28.66	32.75	36.85	245.7	491.3	737.0	982.7	1228.3
26	.09	.17	.26	.34	.43	.51	.60	.68	.77	5.1	90.2	5.4	80.5	5.6
27	.08	.15	.23	.31	.38	.46	.53	.61	.69	4.6	89.2	3.8	78.4	2.9
28	.07	.14	.20	.27	.34	.41	.47	.54	.61	4.1	8.1	2.2	6.2	20.3
29	.06	.12	.18	.23	.29	.35	.41	.47	.53	3.5	7.0	30.5	4.1	17.6
82 30	4.05	8.10	12.15	16.20	20.25	24.30	28.35	32.40	36.45	243.0	486.0	728.9	971.9	1214.9
31	.04	.08	.12	.16	.20	.24	.28	.33	.37	2.4	4.9	7.3	69.8	12.2
32	.03	.06	.10	.13	.16	.19	.22	.25	.29	1.9	3.8	5.7	7.6	09.5
33	.02	.05	.07	.09	.12	.14	.16	.18	.21	1.4	2.7	4.1	5.5	6.9
34	.01	.03	.04	.06	.07	.08	.10	.11	.13	0.8	1.7	2.5	3.3	4.2
82 35	4.01	8.01	12.02	16.02	20.03	24.03	28.03	32.04	36.04	240.3	480.6	720.9	961.2	1201.5
36	4.00	7.99	1.99	5.98	19.98	3.98	7.97	1.97	5.96	39.8	79.5	19.3	59.0	198.8
37	3.99	.97	.96	.95	.94	.92	.91	.90	.88	9.2	8.4	7.7	6.9	6.1
38	.98	.96	.93	.91	.89	.87	.85	.82	.80	8.7	7.4	6.1	4.7	3.4
39	.97	.94	.91	.88	.85	.81	.78	.75	.72	8.1	6.3	4.4	2.6	90.7
82 40	3.96	7.92	11.88	15.84	19.80	23.76	27.72	31.68	35.64	237.6	475.2	712.8	950.4	1188.1
41	.95	.90	.85	.81	.76	.71	.66	.61	.56	7.1	4.2	11.2	48.3	5.4
42	.94	.88	.83	.77	.71	.65	.60	.54	.48	6.5	3.1	09.6	6.1	2.7
43	.93	.87	.80	.73	.67	.60	.53	.47	.40	6.0	2.0	8.0	4.0	80.0
44	.92	.85	.77	.70	.62	.55	.47	.39	.32	5.5	70.9	6.4	41.8	77.3
82 45	3.92	7.83	11.75	15.66	19.58	23.49	27.41	31.32	35.24	234.9	469.9	704.8	939.7	1174.6
46	.91	.81	.72	.63	.53	.44	.34	.25	.16	4.4	8.8	3.2	7.6	71.9
47	.90	.80	.69	.59	.49	.39	.28	.18	.08	3.9	7.7	701.6	5.4	69.3
48	.89	.78	.67	.55	.44	.33	.22	.11	5.00	3.3	6.6	699.9	3.3	6.6
49	.88	.76	.64	.52	.40	.28	.16	1.04	4.92	2.8	5.6	8.3	31.1	3.9
82 50	3.87	7.74	11.61	15.48	19.35	23.22	27.09	30.97	34.84	232.2	464.5	696.7	929.0	1161.2
51	.86	.72	.58	.45	.31	.17	7.03	.89	.76	1.7	3.4	5.1	6.8	58.5
52	.85	.71	.56	.41	.26	.12	6.97	.82	.67	1.2	2.3	3.5	4.7	5.8
53	.84	.69	.53	.37	.22	.06	.90	.75	.59	0.6	1.3	1.9	2.5	3.1
54	.83	.67	.50	.34	.17	3.01	.84	.68	.52	30.1	60.2	90.3	20.4	50.5
82 55	3.83	7.65	11.48	15.30	19.13	22.96	26.78	30.61	34.43	229.6	459.1	688.7	918.2	1147.8
56	.82	.63	.45	.27	.09	.90	.72	.54	.35	9.0	8.0	7.0	6.1	5.1
57	.81	.62	.42	.23	.04	.85	.66	.46	.27	8.5	7.0	5.4	3.9	42.4
58	.80	.60	.40	.20	9.00	.79	.59	.39	.19	7.9	5.9	3.8	11.8	39.7
59	.79	.58	.37	.16	8.95	.74	.53	.32	.11	7.4	4.8	2.2	09.6	7.0
82 60	3.78	7.56	11.34	15.12	18.91	22.69	26.47	30.25	34.03	226.9	453.7	680.6	907.5	1134.3

Lat.		Latitude 82° to 83°—Meridional arcs.						Latitude 82°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
82	00	31.021			1861.29					
	1	1	1	31.02	.29	1	1 861.3	0 1	259.1	0.0
	2	2	2	62.04	.29	2	3 722.6	2	518.1	0.2
	3	2	3	93.07	.29	3	5 583.9	3	777.2	0.3
	4	2	4	124.09	.29	4	7 445.2	4	1 036.3	0.6
82	05	31.022	5	155.11	1861.29	5	9 306.5	0 5	1 295.4	0.9
	6	2	6	186.13	.30	6	11 167.7	6	1 554.5	1.3
	7	2	7	217.16	.30	7	13 029.0	7	1 813.5	1.8
	8	2	8	248.18	.30	8	14 890.3	8	2 072.6	2.4
	9	2	9	279.20	.30	9	16 751.6	9	2 331.7	3.0
82	10	31.022	10	310.22	1861.30	10	18 612.9	0 10	2 590.8	3.7
	11	2	1	341.24	.30	1	20 474.2	15	3 886.1	8.4
	12	2	2	372.27	.30	2	22 335.6	20	5 181.5	14.9
	13	2	3	403.29	.31	3	24 196.9	25	6 476.8	23.3
	14	2	4	434.31	.31	4	26 058.2	30	7 772.2	33.6
82	15	31.022	15	465.33	1861.31	15	27 919.5	0 35	9 067.5	45.7
	16	2	6	496.36	.31	6	29 780.8	40	10 362.8	59.7
	17	2	7	527.38	.31	7	31 642.1	45	11 658.1	75.6
	18	2	8	558.40	.31	8	33 503.4	50	12 953.3	93.3
	19	2	9	589.42	.32	9	35 364.7	55	14 248.5	112.9
82	20	31.022	20	620.44	1861.32	20	37 226.0	1 00	15 543.7	134.3
	21	2	1	651.47	.32	1	39 087.4	05	16 838.9	157.6
	22	2	2	682.49	.32	2	40 948.7	10	18 134.0	182.8
	23	2	3	713.51	.32	3	42 810.0	15	19 429.1	209.9
	24	2	4	744.53	.32	4	44 671.3	20	20 724.2	238.8
82	25	31.022	25	775.55	1861.32	25	46 532.6	1 25	22 019.2	269.6
	26	2	6	806.58	.33	6	48 394.0	30	23 314.2	302.2
	27	2	7	837.60	.33	7	50 255.3	35	24 609.1	336.7
	28	2	8	868.62	.33	8	52 116.6	40	25 904.0	373.1
	29	2	9	899.64	.33	9	53 978.0	45	27 198.8	411.4
82	30	31.022	30	930.67	1861.33	30	55 839.3	1 50	28 493.5	451.5
	31	2	1	961.69	.33	1	57 700.6	55	29 788.2	493.5
	32	2	2	992.71	.33	2	59 562.0	2 00	31 083	537
	33	2	3	1 023.73	.34	3	61 423.3	3 00	46 613	1 209
	34	2	4	1 054.75	.34	4	63 284.6	4 00	62 129	2 148
82	35	31.022	35	1 085.78	1861.34	35	65 146.0	5 00	77 626	3 356
	36	2	6	1 116.80	.34	6	67 007.3	6 00	93 100	4 832
	37	2	7	1 147.82	.34	7	68 868.6	7 00	108 546	6 574
	38	2	8	1 178.84	.34	8	70 730.0	8 00	123 960	8 583
	39	2	9	1 209.87	.34	9	72 591.3	9 00	139 337	10 859
82	40	31.022	40	1 240.89	1861.35	40	74 452.7	10 00	154 672	13 400
	41	2	1	1 271.91	.35	1	76 314.0	11 00	169 962	16 205
	42	2	2	1 302.93	.35	2	78 175.4	12 00	185 200	19 274
	43	2	3	1 333.95	.35	3	80 036.7	13 00	200 383	22 607
	44	3	4	1 364.98	.35	4	81 898.1	14 00	215 506	26 201
82	45	31.023	45	1 396.00	1861.35	45	83 759.4	15 00	230 565	30 056
	46	3	6	1 427.02	.35	6	85 620.8	16 00	245 555	34 170
	47	3	7	1 458.04	.36	7	87 482.1	17 00	260 471	38 543
	48	3	8	1 489.07	.36	8	89 343.5	18 00	275 310	43 173
	49	3	9	1 520.09	.36	9	91 204.9	19 00	290 066	48 059
82	50	31.023	50	1 551.11	1861.36	50	93 066.2	20 00	304 736	53 200
	51	3	1	1 582.13	.36	1	94 927.6	21 00	319 315	58 593
	52	3	2	1 613.15	.36	2	96 788.9	22 00	333 798	64 237
	53	3	3	1 644.18	.36	3	98 650.3	23 00	348 182	70 130
	54	3	4	1 675.20	.36	4	100 511.7	24 00	362 462	76 272
82	55	31.023	55	1 706.22	1861.37	55	102 373.0	25 00	376 633	82 659
	56	3	6	1 737.24	.37	6	104 234.4	26 00	390 692	89 290
	57	3	7	1 768.26	.37	7	106 095.8	27 00	404 634	96 163
	58	3	8	1 799.29	.37	8	107 957.1	28 00	418 456	103 276
	59	3	9	1 830.31	.37	9	109 818.5	29 00	432 152	110 627
82	60	31.023	60	1 861.33	1861.37	60	111 679.9	30 00	445 719	118 214

Latitude 83° to 84°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
83 00	3.78	7.56	11.34	15.12	18.91	22.69	26.47	30.25	34.03	226.9	453.7	680.6	907.5	1134.3
1	.77	.55	.32	.09	.86	.63	.41	.18	3.95	6.3	2.7	79.0	5.3	1.7
2	.76	.53	.29	.05	.82	.58	.34	.11	.87	5.8	1.6	7.4	3.2	29.0
3	.75	.51	.26	5.02	.77	.53	.28	30.03	.79	5.3	50.6	5.8	901.0	6.3
4	.75	.49	.24	4.98	.73	.47	.22	29.96	.71	4.7	49.4	4.1	898.9	3.6
83 05	3.74	7.47	11.20	14.95	18.68	22.42	26.16	29.89	33.63	224.2	448.4	672.5	896.7	1120.9
6	.73	.45	.18	.91	.64	.36	.09	.82	.55	3.6	7.3	70.9	4.6	18.2
7	.72	.44	.15	.87	.59	.31	6.03	.75	.46	3.1	6.2	69.3	2.4	5.5
8	.71	.42	.13	.84	.55	.26	5.97	.67	.38	2.6	5.1	7.7	90.3	2.8
9	.70	.40	.10	.80	.50	.20	.90	.60	.30	2.0	4.1	6.1	88.1	10.1
83 10	3.69	7.38	11.07	14.77	18.46	22.15	25.84	29.53	33.22	221.5	443.0	664.5	886.0	1107.5
11	.68	.36	.05	.73	.41	.10	.78	.46	.14	1.0	1.9	2.9	3.8	4.8
12	.67	.35	1.02	.69	.37	2.04	.72	.39	3.06	20.4	40.8	61.2	81.7	102.1
13	.66	.33	0.99	.66	.32	1.99	.65	.32	2.98	19.9	39.8	59.6	79.5	099.4
14	.66	.31	.97	.62	.28	.93	.59	.25	.90	9.3	8.7	8.0	7.4	6.7
83 15	3.65	7.29	10.94	14.59	18.23	21.88	25.53	29.17	32.82	218.8	437.6	656.4	875.2	1094.0
16	.64	.28	.91	.55	.19	.83	.46	.10	.74	8.3	6.5	4.8	3.1	91.3
17	.63	.26	.89	.51	.14	.77	.40	9.03	.66	7.7	5.4	3.2	70.9	88.6
18	.62	.24	.86	.48	.10	.72	.34	8.96	.58	7.2	4.4	1.6	68.8	6.0
19	.61	.22	.83	.44	.06	.67	.27	.89	.50	6.7	3.3	50.0	6.6	3.3
83 20	3.60	7.20	10.81	14.41	18.01	21.61	25.21	28.82	32.42	216.1	432.2	648.3	864.5	1080.6
21	.59	.19	.78	.37	7.97	.56	.15	.74	.34	5.6	1.2	6.7	2.3	77.9
22	.58	.17	.75	.34	.92	.50	.09	.67	.26	5.0	30.1	5.1	60.2	5.2
23	.57	.15	.73	.30	.88	.45	5.02	.60	.18	4.5	29.0	3.5	58.0	72.5
24	.57	.13	.70	.26	.83	.40	4.96	.53	.09	4.0	7.9	1.9	5.9	69.8
83 25	3.56	7.11	10.67	14.23	17.79	21.34	24.90	28.46	32.01	213.4	426.9	640.3	853.7	1067.1
26	.55	.10	.64	.19	.74	.29	.84	.38	1.93	2.9	5.8	38.7	51.6	4.4
27	.54	.08	.62	.16	.70	.24	.78	.31	.85	2.4	4.7	7.1	49.4	61.8
28	.53	.06	.59	.12	.65	.18	.71	.24	.77	1.8	3.6	5.4	7.3	59.1
29	.52	.04	.56	.09	.61	.13	.65	.17	.69	1.3	2.6	3.8	5.1	6.4
83 30	3.51	7.02	10.54	14.05	17.56	21.07	24.59	28.10	31.61	210.7	421.5	632.2	843.0	1053.7
31	.50	7.01	.51	4.01	.52	1.02	.52	8.03	.53	10.2	20.4	30.6	40.8	51.0
32	.49	6.99	.48	3.98	.47	0.97	.46	7.95	.45	09.7	19.3	29.0	38.6	48.3
33	.49	.97	.46	.94	.43	.91	.40	.88	.37	9.1	8.2	7.4	6.5	5.6
34	.48	.95	.43	.91	.38	.86	.33	.81	.29	8.6	7.2	5.8	4.3	2.9
83 35	3.47	6.93	10.40	13.87	17.34	20.80	24.27	27.74	31.21	208.0	416.1	624.1	832.2	1040.2
36	.46	.92	.38	.83	.29	.75	.21	.67	.12	7.5	5.0	2.5	30.0	37.5
37	.45	.90	.35	.80	.25	.70	.15	.60	1.05	7.0	3.9	20.9	27.9	4.9
38	.44	.88	.32	.76	.20	.64	.08	.52	0.97	6.4	2.9	19.3	5.7	32.2
39	.43	.86	.30	.73	.16	.59	4.02	.45	.88	5.9	1.8	7.7	3.6	29.5
83 40	3.42	6.85	10.27	13.69	17.11	20.54	23.96	27.38	30.80	205.4	410.7	616.1	821.4	1026.8
41	.41	.83	.24	.65	.07	.48	.90	.31	.72	4.8	09.6	4.5	19.3	4.1
42	.40	.81	.21	.62	7.02	.43	.83	.24	.64	4.3	8.6	2.8	7.1	21.4
43	.40	.79	.19	.58	6.98	.37	.77	.17	.56	3.7	7.5	11.2	5.0	18.7
44	.39	.77	.16	.55	.93	.32	.71	.09	.48	3.2	6.4	09.6	2.8	6.0
83 45	3.38	6.76	10.13	13.51	16.89	20.27	23.64	27.02	30.40	202.7	405.3	608.0	810.7	1013.3
46	.37	.74	.11	.47	.84	.21	.58	6.95	.32	2.1	4.3	6.4	08.5	10.6
47	.36	.72	.08	.44	.80	.16	.52	.88	.24	1.6	3.2	4.8	6.4	07.9
48	.35	.70	.05	.40	.75	.11	.46	.81	.16	1.1	2.1	3.2	4.2	5.3
49	.34	.68	.03	.37	.71	.05	.39	.74	.08	0.5	1.0	601.5	802.1	1002.6
83 50	3.33	6.67	10.00	13.33	16.67	20.00	23.33	26.66	30.00	200.0	400.0	599.9	799.9	999.9
51	.32	.65	9.97	.30	.62	19.94	.27	.59	29.92	199.4	398.9	8.3	7.7	7.2
52	.31	.63	.95	.26	.58	.89	.20	.52	.84	8.9	7.8	6.7	5.6	4.5
53	.31	.61	.92	.22	.53	.84	.14	.45	.75	8.4	6.7	5.1	3.4	91.8
54	.30	.59	.89	.19	.49	.78	.08	.38	.67	7.8	5.6	3.5	91.3	89.1
83 55	3.29	6.58	9.86	13.15	16.44	19.73	23.01	26.30	29.59	197.3	394.6	591.8	789.1	986.4
56	.28	.56	.84	.11	.40	.67	2.95	.23	.51	6.7	3.5	90.2	7.0	3.7
57	.27	.54	.81	.08	.35	.62	.89	.16	.43	6.2	2.4	88.6	4.8	81.0
58	.26	.52	.78	.04	.31	.57	.83	.09	.35	5.7	1.3	7.0	2.7	78.3
59	.25	.50	.76	3.01	.26	.51	.76	6.02	.27	5.1	90.3	5.4	80.5	5.6
83 60	3.24	6.49	9.73	12.97	16.22	19.46	22.70	25.94	29.19	194.6	389.2	583.8	778.4	972.9

Lat.		Latitude 83° to 84°—Meridional arcs.						Latitude 83°—Co-ordinates of curvature.			
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.		X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	°	′	*Meters.*	*Meters.*
83	00	31.023			1861.37						
	1	3	1	31.02	.38	1	1 861.4	0	1	226.9	0.0
	2	3	2	62.05	.38	2	3 722.7		2	453.7	0.1
	3	3	3	93.07	.38	3	5 584.1		3	680.6	0.3
	4	3	4	124.09	.38	4	7 445.5		4	907.5	0.5
83	05	31.023	5	155.12	1861.38	5	9 306.9	0	5	1 134.3	0.8
	6	3	6	186.14	.38	6	11 168.3		6	1 361.2	1.2
	7	3	7	217.16	.38	7	13 029.6		7	1 588.1	1.6
	8	3	8	248.19	.38	8	14 891.0		8	1 814.9	2.1
	9	3	9	279.21	.39	9	16 752.4		9	2 041.8	2.7
83	10	31.023	10	310.24	1861.39	10	18 613.8	0	10	2 268.7	3.3
	11	3	1	341.26	.39	1	20 475.2		15	3 403.0	7.4
	12	3	2	372.28	.39	2	22 336.6		20	4 537.3	13.1
	13	3	3	403.31	.39	3	24 197.9		25	5 671.6	20.5
	14	3	4	434.33	.39	4	26 059.3		30	6 805.9	29.5
83	15	31.023	15	465.35	1861.39	15	27 920.7	0	35	7 940.2	40.1
	16	3	6	496.38	.39	6	29 782.1		40	9 074.5	52.4
	17	3	7	527.40	.40	7	31 643.5		45	10 208.7	66.3
	18	3	8	558.42	.40	8	33 504.9		50	11 343.0	81.9
	19	3	9	589.45	.40	9	35 366.3		55	12 477.2	99.1
83	20	31.023	20	620.47	1861.40	20	37 227.7	1	00	13 611.4	117.9
	21	3	1	651.49	.40	1	39 089.1		05	14 745.5	138.4
	22	3	2	682.52	.40	2	40 950.5		10	15 879.6	160.5
	23	3	3	713.54	.40	3	42 811.9		15	17 013.7	184.2
	24	3	4	744.56	.40	4	44 673.3		20	18 147.8	209.6
83	25	31.023	25	775.59	1861.41	25	46 534.7	1	25	19 281.8	236.6
	26	3	6	806.61	.41	6	48 396.1		30	20 415.8	265.3
	27	3	7	837.64	.41	7	50 257.5		35	21 549.7	295.6
	28	3	8	868.66	.41	8	52 118.9		40	22 683.6	327.5
	29	4	9	899.68	.41	9	53 980.3		45	23 817.4	361.1
83	30	31.024	30	930.71	1861.41	30	55 841.7	1	50	24 951.2	396.3
	31	4	1	961.73	.41	1	57 703.2		55	26 084.9	433.1
	32	4	2	992.75	.41	2	59 564.6	2	00	27 219	472
	33	4	3	1 023.78	.42	3	61 426.0	3	00	40 818	1 061
	34	4	4	1 054.80	.42	4	63 287.4	4	00	54 405	1 886
83	35	31.024	35	1 085.82	1861.42	35	65 148.8	5	00	67 975	2 946
	36	4	6	1 116.85	.42	6	67 010.2	6	00	81 525	4 241
	37	4	7	1 147.87	.42	7	68 871.7	7	00	95 051	5 770
	38	4	8	1 178.89	.42	8	70 733.1	8	00	108 548	7 534
	39	4	9	1 209.92	.42	9	72 594.5	9	00	122 013	9 531
83	40	31.024	40	1 240.94	1861.42	40	74 455.9	10	00	135 441	11 761
	41	4	1	1 271.96	.43	1	76 317.3	11	00	148 828	14 223
	42	4	2	1 302.99	.43	2	78 178.8	12	00	162 171	16 917
	43	4	3	1 334.01	.43	3	80 040.2	13	00	175 465	19 841
	44	4	4	1 365.04	.43	4	81 901.6	14	00	188 706	22 996
83	45	31.024	45	1 396.06	1861.43	45	83 763.1	15	00	201 891	26 379
	46	4	6	1 427.08	.43	6	85 624.5	16	00	215 015	29 990
	47	4	7	1 458.11	.43	7	87 485.9	17	00	228 074	33 828
	48	4	8	1 489.13	.43	8	89 347.4	18	00	241 065	37 892
	49	4	9	1 520.15	.43	9	91 208.8	19	00	253 984	42 180
83	50	31.024	50	1 551.18	1861.44	50	93 070.2	20	00	266 827	46 691
	51	4	1	1 582.20	.44	1	94 931.7	21	00	279 589	51 424
	52	4	2	1 613.22	.44	2	96 793.1	22	00	292 268	56 377
	53	4	3	1 644.25	.44	3	98 654.5	23	00	304 859	61 549
	54	4	4	1 675.27	.44	4	100 516.0	24	00	317 358	66 939
83	55	31.024	55	1 706.29	1861.44	55	102 377.4	25	00	329 763	72 544
	56	4	6	1 737.32	.44	6	104 238.9	26	00	342 068	78 363
	57	4	7	1 768.34	.44	7	106 100.3	27	00	354 270	84 395
	58	4	8	1 799.36	.45	8	107 961.8	28	00	366 367	90 637
	59	4	9	1 830.39	.45	9	109 823.2	29	00	378 353	97 088
83	60	31.024	60	1 861.41	1861.45	60	111 684.7	30	00	390 226	103 745

Latitude 84° to 85°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
84 00	3.24	6.49	9.73	12.97	16.22	19.46	22.70	25.94	29.19	194.6	389.2	583.8	778.4	972.9
1	.23	.47	.70	.94	.17	.41	.64	.87	.11	4.1	8.1	2.2	6.2	70.3
2	.23	.45	.68	.90	.13	.35	.58	.80	9.03	3.5	7.0	80.5	4.0	67.6
3	.22	.43	.65	.86	.08	.30	.51	.73	8.95	3.0	5.9	78.9	71.9	4.9
4	.21	.41	.62	.83	6.04	.24	.45	.66	.87	2.4	4.9	7.3	69.7	62.2
84 05	3.20	6.40	9.59	12.79	15.99	9.19	22.39	25.59	28.78	191.9	383.8	575.7	767.6	959.5
6	.19	.38	.57	.76	6.95	.14	.33	.51	.70	1.4	2.7	4.1	5.4	6.8
7	.18	.36	.54	.72	.90	.08	.26	.44	.62	0.8	1.6	2.5	3.3	4.1
8	.17	.34	.51	.69	.86	9.03	.20	.37	.54	90.3	80.6	70.8	61.1	51.4
9	.16	.32	.49	.65	.81	8.97	.14	.30	.46	89.7	79.5	69.2	59.0	48.7
84 10	3.15	6.31	9.46	12.61	15.77	18.92	22.07	25.23	28.38	189.2	378.4	567.6	756.8	946.0
11	.14	.29	.43	.58	.72	.87	2.01	.15	.30	8.7	7.3	6.0	4.7	3.3
12	.14	.27	.41	.54	.68	.81	1.95	.08	.22	8.1	6.2	4.4	2.5	40.6
13	.13	.25	.38	.50	.63	.76	.88	5.01	.14	7.6	5.2	2.8	50.3	37.9
14	.12	.23	.35	.47	.59	.70	.82	4.94	8.06	7.0	4.1	61.1	48.2	5.2
84 15	3.11	6.22	9.33	12.43	15.54	18.65	21.76	24.87	27.97	186.5	373.0	559.5	746.0	932.5
16	.10	.20	.30	.40	.50	.60	.70	.79	.89	6.0	1.9	7.9	3.9	29.8
17	.09	.18	.27	.36	.45	.54	.63	.73	.82	5.4	70.9	6.3	41.7	7.2
18	.08	.16	.24	.33	.41	.49	.57	.65	.73	4.9	69.8	4.7	39.6	4.5
19	.07	.14	.22	.29	.36	.44	.51	.58	.65	4.4	8.7	3.1	7.4	21.8
84 20	3.06	6.13	9.19	12.25	15.32	18.38	21.45	24.51	27.57	183.8	367.6	551.4	735.3	919.1
21	.05	.11	.16	.22	.27	.33	.38	.44	.49	3.3	6.5	49.8	3.1	6.4
22	.05	.09	.14	.18	.23	.27	.32	.37	.41	2.7	5.5	8.2	30.9	3.7
23	.04	.07	.11	.14	.18	.22	.26	.29	.33	2.2	4.4	6.6	28.8	11.0
24	.03	.06	.08	.11	.14	.17	.19	.22	.25	1.7	3.3	5.0	6.6	08.3
84 25	3.02	6.04	9.06	12.07	15.09	18.11	21.13	24.15	27.17	181.1	362.2	543.4	724.5	905.6
26	.01	.02	.03	.04	.05	.06	.07	.08	.09	0.6	1.2	1.7	2.3	2.9
27	3.00	6.00	9.00	2.00	5.00	8.00	1.00	4.01	7.01	80.0	60.1	40.1	20.2	900.2
28	2.99	5.99	8.97	1.97	4.96	7.95	0.94	3.93	6.92	79.5	59.0	38.5	18.0	897.5
29	.98	.97	.95	.93	.91	.90	.88	.86	.84	9.0	7.9	6.9	5.9	4.8
84 30	2.97	5.95	8.92	11.89	14.87	17.84	20.82	23.79	26.76	178.4	356.8	535.3	713.7	892.1
31	.96	.93	.89	.86	.82	.79	.75	.72	.68	7.9	5.8	3.7	11.5	89.4
32	.96	.91	.87	.82	.78	.73	.69	.65	.60	7.3	4.7	2.0	09.4	6.7
33	.95	.89	.84	.79	.73	.68	.63	.57	.52	6.8	3.6	30.4	7.2	4.0
34	.94	.88	.81	.75	.69	.63	.56	.50	.44	6.3	2.5	28.8	5.1	81.3
84 35	2.93	5.86	8.79	11.71	14.64	17.57	20.50	23.43	26.36	175.7	351.4	527.2	702.9	878.6
36	.92	.84	.76	.68	.60	.52	.44	.36	.28	5.2	50.4	5.7	700.8	6.0
37	.91	.82	.73	.65	.56	.47	.38	.29	.20	4.7	49.3	4.0	698.6	3.3
38	.90	.81	.71	.61	.51	.41	.32	.22	.12	4.1	8.2	2.3	6.5	70.6
39	.89	.79	.68	.57	.47	.36	.26	.15	6.04	3.6	7.1	20.7	4.3	67.9
84 40	2.88	5.77	8.65	11.54	14.42	17.30	20.19	23.07	25.96	173.0	346.1	519.1	692.1	865.2
41	.87	.75	.62	.50	.38	.25	.13	3.00	.88	2.5	5.0	7.5	90.0	62.5
42	.87	.73	.60	.46	.33	.20	.06	2.93	.79	2.0	3.9	5.9	87.8	59.8
43	.86	.71	.57	.43	.29	.14	20.00	.86	.71	1.4	2.8	4.3	5.7	7.1
44	.85	.70	.54	.39	.24	.09	19.94	.78	.63	0.9	1.8	2.6	3.5	4.4
84 45	2.84	5.68	8.52	11.36	14.20	17.03	19.87	22.71	25.55	170.3	340.7	511.0	681.4	851.7
46	.83	.66	.49	.32	.15	6.98	.81	.64	.47	69.8	39.6	09.4	79.2	49.0
47	.82	.64	.46	.28	.11	.93	.75	.57	.39	9.3	8.5	7.8	7.0	6.3
48	.81	.62	.44	.25	.06	.87	.68	.50	.31	8.7	7.4	6.2	4.9	3.6
49	.80	.61	.41	.21	4.02	.82	.62	.42	.23	8.2	6.4	4.5	2.7	40.9
84 50	2.79	5.59	8.38	11.18	13.97	16.76	19.56	22.35	25.15	167.6	335.3	502.9	670.6	838.2
51	.78	.57	.35	.14	.93	.71	.50	.28	5.07	7.1	4.2	501.3	68.4	5.5
52	.78	.55	.33	.10	.88	.66	.43	.21	4.98	6.6	3.1	499.7	6.3	2.8
53	.77	.53	.30	.07	.84	.60	.37	.14	.90	6.0	2.0	8.1	4.1	30.1
54	.76	.52	.27	.03	.79	.55	.31	2.06	.82	5.5	31.0	6.5	61.9	27.4
84 55	2.75	5.50	8.25	11.00	13.75	16.49	19.24	21.99	24.74	164.9	329.9	494.8	659.8	824.7
56	.74	.48	.22	0.96	.70	.44	.18	.92	.66	4.4	8.8	3.2	7.6	22.0
57	.73	.46	.19	.92	.66	.39	.12	.85	.58	3.9	7.7	1.6	5.5	19.3
58	.72	.44	.17	.89	.61	.33	9.05	.78	.50	3.3	6.7	90.0	3.3	6.6
59	.71	.43	.14	.85	.57	.28	8.99	.70	.42	2.8	5.6	88.4	51.2	3.9
84 60	2.70	5.41	8.11	10.82	13.52	16.22	18.93	21.63	24.34	162.2	324.5	486.7	649.0	811.2

Lat.		Latitude 84° to 85°—Meridional arcs.						Latitude 84°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
84	00	31.024			1861.45					
	1	4	1	31.02	.45	1	1 861.4	0 1	194.6	0.0
	2	4	2	62.05	.45	2	3 722.9	2	389.2	0.1
	3	4	3	93.07	.45	3	5 584.4	3	583.8	0.3
	4	4	4	124.10	.45	4	7 445.8	4	778.3	0.5
84	05	31.024	5	155.12	1861.45	5	9 307.3	0 5	972.9	0.7
	6	4	6	186.15	.45	6	11 168.7	6	1 167.5	1.0
	7	4	7	217.17	.46	7	13 030.2	7	1 362.1	1.4
	8	4	8	248.20	.46	8	14 891.6	8	1 556.7	1.8
	9	4	9	279.22	.46	9	16 753.1	9	1 751.3	2.3
84	10	31.024	10	310.25	1861.46	10	18 614.5	0 10	1 945.9	2.8
	11	4	1	341.27	.46	1	20 476.0	15	2 918.8	6.3
	12	4	2	372.30	.46	2	22 337.5	20	3 891.8	11.3
	13	4	3	403.32	.46	3	24 198.9	25	4 864.7	17.6
	14	4	4	434.35	.46	4	26 060.4	30	5 837.6	25.3
84	15	31.024	15	465.37	1861.46	15	27 921.9	0 35	6 810.5	34.5
	16	4	6	496.39	.47	6	29 783.3	40	7 783.4	45.0
	17	4	7	527.42	.47	7	31 644.8	45	8 756.2	57.0
	18	4	8	558.44	.47	8	33 506.3	50	9 729.1	70.4
	19	4	9	589.47	.47	9	35 367.7	55	10 701.9	85.1
84	20	31.025	20	620.49	1861.47	20	37 229.2	1 00	11 674.7	101.3
	21	5	1	651.52	.47	1	39 090.7	05	12 647.5	118.9
	22	5	2	682.54	.47	2	40 952.1	10	13 620.3	137.9
	23	5	3	713.57	.47	3	42 813.6	15	14 593.0	158.3
	24	5	4	744.59	.47	4	44 675.1	20	15 565.7	180.1
84	25	31.025	25	775.62	1861.48	25	46 536.6	1 25	16 538.4	203.3
	26	5	6	806.64	.48	6	48 398.0	30	17 511.0	228.0
	27	5	7	837.67	.48	7	50 259.5	35	18 483.6	254.0
	28	5	8	868.69	.48	8	52 121.0	40	19 456.2	281.5
	29	5	9	899.72	.48	9	53 982.5	45	20 428.7	310.3
84	30	31.025	30	930.74	1861.48	30	55 844.0	1 50	21 401.2	340.6
	31	5	1	961.77	.48	1	57 705.4	55	22 373.6	372.2
	32	5	2	992.79	.48	2	59 566.9	2 00	23 346	405
	33	5	3	1 023.81	.48	3	61 428.4	3 00	35 010	912
	34	5	4	1 054.84	.49	4	63 289.9	4 00	46 664	1 621
84	35	31.025	35	1 085.86	1861.49	35	65 151.4	5 00	58 303	2 532
	36	5	6	1 116.89	.49	6	67 012.9	6 00	69 925	3 644
	37	5	7	1 147.91	.49	7	68 874.4	7 00	81 526	4 959
	38	5	8	1 178.94	.49	8	70 735.9	8 00	93 103	6 475
	39	5	9	1 209.96	.49	9	72 597.3	9 00	104 651	8 191
84	40	31.025	40	1 240.99	1861.49	40	74 458.8	10 00	116 168	10 107
	41	5	1	1 272.01	.49	1	76 320.3	11 00	127 650	12 223
	42	5	2	1 303.04	.49	2	78 181.8	12 00	139 093	14 539
	43	5	3	1 334.06	.49	3	80 043.3	13 00	150 494	17 052
	44	5	4	1 365.09	.50	4	81 904.8	14 00	161 851	19 763
84	45	31.025	45	1 396.11	1861.50	45	83 766.3	15 00	173 158	22 670
	46	5	6	1 427.14	.50	6	85 627.8	16 00	184 413	25 774
	47	5	7	1 458.16	.50	7	87 489.3	17 00	195 613	29 072
	48	5	8	1 489.18	.50	8	89 350.8	18 00	206 753	32 564
	49	5	9	1 520.21	.50	9	91 212.3	19 00	217 832	36 249
84	50	31.025	50	1 551.23	1861.50	50	93 073.8	20 00	228 845	40 126
	51	5	1	1 582.26	.50	1	94 935.3	21 00	239 788	44 193
	52	5	2	1 613.28	.50	2	96 796.8	22 00	250 660	48 450
	53	5	3	1 644.31	.50	3	98 658.3	23 00	261 456	52 894
	54	5	4	1 675.33	.51	4	100 519.8	24 00	272 173	57 526
84	55	31.025	55	1 706.36	1861.51	55	102 381.3	25 00	282 809	62 343
	56	5	6	1 737.38	.51	6	104 242.8	26 00	293 359	67 343
	57	5	7	1 768.41	.51	7	106 104.3	27 00	303 820	72 526
	58	5	8	1 799.43	.51	8	107 965.9	28 00	314 190	77 890
	59	5	9	1 830.46	.51	9	109 827.4	29 00	324 466	83 433
84	60	31.025	60	1 861.48	1861.51	60	111 688.9	30 00	334 644	89 153

Latitude 85° to 86°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
85 00	2.70	5.41	8.11	10.82	13.52	16.22	18.93	21.63	24.34	162.2	324.5	486.7	649.0	811.2
1	.70	.39	.09	.78	.48	.17	.87	.56	.26	1.7	3.4	5.1	6.8	08.6
2	.69	.37	.06	.75	.43	.12	.80	.49	.18	1.2	2.3	3.5	4.7	5.9
3	.68	.35	.03	.71	.39	.06	.74	.42	.10	0.6	1.3	1.9	2.5	3.2
4	.67	.34	8.00	.67	.34	6.01	.68	.35	4.02	60.1	20.2	80.3	40.4	800.5
85 05	2.66	5.32	7.98	10.64	13.30	15.96	18.62	21.27	23.93	159.6	319.1	478.7	638.2	797.8
6	.65	.30	.95	.60	.25	.90	.55	.20	.85	9.0	8.0	7.0	6.1	5.1
7	.64	.28	.92	.57	.21	.85	.49	.13	.77	8.5	7.0	5.4	3.9	92.4
8	.63	.26	.90	.53	.16	.79	.43	1.06	.69	7.9	5.9	3.8	31.7	89.7
9	.62	.25	.87	.49	.12	.74	.36	0.99	.61	7.4	4.8	2.2	29.6	7.0
85 10	2.61	5.23	7.84	10.46	13.07	15.69	18.30	20.91	23.53	156.9	313.7	470.6	627.4	784.3
11	.61	.21	.82	.42	3.03	.63	.24	.84	.45	6.3	2.6	68.9	5.3	81.6
12	.60	.19	.79	.39	2.98	.58	.17	.77	.37	5.8	1.6	7.3	3.1	78.9
13	.59	.17	.76	.35	.94	.52	.11	.70	.29	5.2	10.5	5.7	20.9	6.2
14	.58	.16	.73	.31	.89	.47	8.05	.63	.21	4.7	09.4	4.1	18.8	3.5
85 15	2.57	5.14	7.71	10.28	12.85	15.42	17.99	20.55	23.12	154.2	308.3	462.5	616.6	770.8
16	.56	.12	.68	.24	.80	.36	.92	.48	3.04	3.6	7.2	60.9	4.5	68.1
17	.55	.10	.65	.21	.76	.31	.86	.41	2.96	3.1	6.2	59.2	2.3	5.4
18	.54	.08	.63	.17	.71	.25	.80	.34	.88	2.5	5.1	7.6	10.2	2.7
19	.53	.07	.60	.13	.67	.20	.73	.27	.80	2.0	4.0	6.0	08.0	60.0
85 20	2.52	5.05	7.57	10.10	12.62	15.15	17.67	20.19	22.72	151.5	302.9	454.4	605.8	757.3
21	.52	.03	.55	.06	.58	.09	.61	.12	.64	0.9	1.8	2.8	3.7	4.6
22	.51	5.01	.52	10.03	.53	5.04	.54	20.05	.56	50.4	300.8	51.1	601.5	51.9
23	.50	4.99	.49	9.99	.49	4.98	.48	19.98	.48	49.8	299.7	49.5	599.4	49.2
24	.49	.98	.46	.95	.44	.93	.42	.91	.40	9.3	8.6	7.9	7.2	6.5
85 25	2.48	4.96	7.44	9.92	12.40	14.88	17.36	19.83	22.31	148.8	297.5	446.3	595.0	743.8
26	.47	.94	.41	.88	.35	.82	.29	.76	.23	8.2	6.4	4.7	2.9	41.1
27	.46	.92	.38	.85	.31	.77	.23	.69	.15	7.7	5.4	3.0	90.7	38.4
28	.45	.90	.36	.81	.26	.71	.17	.62	2.07	7.1	4.3	41.4	88.6	5.7
29	.44	.89	.33	.77	.22	.66	.10	.55	1.99	6.6	3.2	39.8	6.4	3.0
85 30	2.43	4.87	7.30	9.74	12.17	14.61	17.04	19.47	21.91	146.1	292.1	438.2	584.2	730.3
31	.43	.85	.28	.70	.13	.55	6.98	.40	.83	5.5	1.0	6.6	82.1	27.6
32	.42	.83	.25	.67	.08	.50	.91	.33	.75	5.0	90.0	4.9	79.9	4.9
33	.41	.81	.22	.63	2.04	.44	.85	.26	.67	4.4	88.9	3.3	7.8	22.2
34	.40	.80	.19	.59	1.99	.39	.79	.19	.59	3.9	7.8	1.7	5.6	19.5
85 35	2.39	4.78	7.17	9.56	11.95	14.34	16.73	19.11	21.50	143.4	286.7	430.1	573.4	716.8
36	.38	.76	.14	.52	.90	.28	.66	9.04	.42	2.8	5.6	28.5	71.3	4.1
37	.37	.74	.11	.49	.86	.23	.60	8.97	.34	2.3	4.6	6.8	69.1	11.4
38	.36	.72	.09	.45	.81	.17	.54	.90	.26	1.7	3.5	5.2	7.0	08.7
39	.35	.71	.06	.41	.77	.12	.47	.83	.18	1.2	2.4	3.6	4.8	6.0
85 40	2.34	4.69	7.03	9.38	11.72	14.07	16.41	18.75	21.10	140.7	281.3	422.0	562.6	703.3
41	.34	.67	7.01	.34	.68	4.01	.35	.68	1.02	40.1	80.2	20.4	60.5	700.6
42	.33	.65	6.98	.31	.63	3.96	.28	.61	0.94	39.6	79.2	18.7	58.3	697.9
43	.32	.63	.95	.27	.59	.90	.22	.54	.86	9.0	8.1	7.1	6.2	5.2
44	.31	.62	.92	.23	.54	.85	.16	.47	.78	8.5	7.0	5.5	4.0	92.5
85 45	2.30	4.60	6.90	9.20	11.50	13.80	16.10	18.39	20.69	138.0	275.9	413.9	551.8	689.8
46	.29	.58	.87	.16	.45	.74	6.03	.32	.61	7.4	4.8	2.3	49.7	7.1
47	.28	.56	.84	.13	.41	.69	5.97	.25	.53	6.9	3.8	10.6	7.5	4.4
48	.27	.54	.82	.09	.36	.63	.91	.18	.45	6.3	2.7	09.0	5.4	81.7
49	.26	.53	.79	.05	.32	.58	.84	.11	.37	5.8	1.6	7.4	3.2	79.0
85 50	2.25	4.51	6.76	9.02	11.27	13.53	15.78	18.03	20.29	135.3	270.5	405.8	541.0	676.3
51	.25	.49	.74	8.98	.23	.47	.72	7.96	.21	4.7	69.4	4.2	38.9	3.6
52	.24	.47	.71	.95	.18	.42	.65	.89	.13	4.2	8.4	2.5	6.7	70.9
53	.23	.45	.68	.91	.14	.36	.59	.82	20.05	3.6	7.3	400.9	4.6	68.2
54	.22	.44	.65	.87	.09	.31	.53	.75	19.97	3.1	6.2	399.3	2.4	5.5
85 55	2.21	4.42	6.63	8.84	11.05	13.26	15.46	17.67	19.88	132.6	265.1	397.7	530.2	662.8
56	.20	.40	.60	.80	1.00	.20	.40	.60	.80	2.0	4.0	6.1	28.1	60.1
57	.19	.38	.57	.77	0.96	.15	.34	.53	.72	1.5	3.0	4.4	5.9	57.4
58	.18	.36	.55	.73	.91	.09	.28	.46	.64	0.9	1.9	2.8	3.8	4.7
59	.17	.35	.52	.69	.87	3.04	.21	.39	.56	30.4	60.8	91.2	21.6	52.0
85 60	2.16	4.33	6.49	8.66	10.82	12.99	15.15	17.31	19.48	129.9	259.7	389.6	519.4	649.3

Lat.		Latitude 85° to 86°—Meridional arcs.						Latitude 85°—Co-ordinates of curvature.		
		Value of 1′	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
85	00	31.025			1861.51					
	1	5	1	31.03	.51	1	1 861.5	0 1	162.2	0.0
	2	5	2	62.05	.51	2	3 723.0	2	324.5	0.1
	3	5	3	93.08	.51	3	5 584.5	3	486.7	0.2
	4	5	4	124.10	.51	4	7 446.0	4	649.0	0.4
85	05	31.025	5	155.13	1861.52	5	9 307.6	0 5	811.2	0.6
	6	5	6	186.15	.52	6	11 169.1	6	973.5	0.8
	7	5	7	217.18	.52	7	13 030.6	7	1 135.7	1.1
	8	5	8	248.21	.52	8	14 892.1	8	1 298.0	1.5
	9	5	9	279.23	.52	9	16 753.6	9	1 460.2	1.9
85	10	31.025	10	310.26	1861.52	10	18 615.2	0 10	1 622.5	2.3
	11	5	1	341.28	.52	1	20 476.7	15	2 433.7	5.3
	12	5	2	372.31	.52	2	22 338.2	20	3 245.0	9.4
	13	5	3	403.33	.52	3	24 199.7	25	4 056.2	14.7
	14	5	4	434.36	.52	4	26 061.2	30	4 867.4	21.2
85	15	31.025	15	465.38	1861.53	15	27 922.8	0 35	5 678.6	28.8
	16	5	6	496.41	.53	6	29 784.3	40	6 489.8	37.6
	17	5	7	527.44	.53	7	31 645.8	45	7 301.0	47.6
	18	5	8	558.46	.53	8	33 507.3	50	8 112.2	58.8
	19	5	9	589.49	.53	9	35 368.9	55	8 923.3	71.1
85	20	31.025	20	620.51	1861.53	20	37 230.4	1 00	9 734.5	84.6
	21	6	1	651.54	.53	1	39 091.9	05	10 545.6	99.3
	22	6	2	682.56	.53	2	40 953.5	10	11 356.7	115.2
	23	6	3	713.59	.53	3	42 815.0	15	12 167.8	132.2
	24	6	4	744.62	.53	4	44 676.5	20	12 978.8	150.4
85	25	31.026	25	775.64	1861.53	25	46 538.1	1 25	13 789.8	169.8
	26	6	6	806.67	.54	6	48 399.6	30	14 600.8	190.4
	27	6	7	837.69	.54	7	50 261.1	35	15 411.8	212.2
	28	6	8	868.72	.54	8	52 122.7	40	16 222.7	235.1
	29	6	9	899.74	.54	9	53 984.2	45	17 033.6	259.2
85	30	31.026	30	930.77	1861.54	30	55 845.7	1 50	17 844.5	284.4
	31	6	1	961.79	.54	1	57 707.3	55	18 655.3	310.9
	32	6	2	992.82	.54	2	59 568.8	2 00	19 466	338
	33	6	3	1 023.85	.54	3	61 430.4	3 00	29 192	762
	34	6	4	1 054.87	.54	4	63 291.9	4 00	38 909	1 354
85	35	31.026	35	1 085.90	1861.54	35	65 153.4	5 00	48 613	2 114
	36	6	6	1 116.92	.54	6	67 015.0	6 00	58 304	3 044
	37	6	7	1 147.95	.54	7	68 876.5	7 00	67 977	4 142
	38	6	8	1 178.97	.55	8	70 738.1	8 00	77 629	5 408
	39	6	9	1 210.00	.55	9	72 599.6	9 00	87 258	6 841
85	40	31.026	40	1 241.03	1861.55	40	74 461.2	10 00	96 860	8 442
	41	6	1	1 272.05	.55	1	76 322.7	11 00	106 433	10 209
	42	6	2	1 303.08	.55	2	78 184.3	12 00	115 974	12 143
	43	6	3	1 334.10	.55	3	80 045.8	13 00	125 480	14 242
	44	6	4	1 365.13	.55	4	81 907.4	14 00	134 948	16 506
85	45	31.026	45	1 396.15	1861.55	45	83 768.9	15 00	144 375	18 934
	46	6	6	1 427.18	.55	6	85 630.5	16 00	153 759	21 526
	47	6	7	1 458.21	.55	7	87 492.0	17 00	163 096	24 281
	48	6	8	1 489.23	.55	8	89 353.6	18 00	172 383	27 197
	49	6	9	1 520.26	.55	9	91 215.2	19 00	181 619	30 275
85	50	31.026	50	1 551.28	1861.56	50	93 076.7	20 00	190 800	33 512
	51	6	1	1 582.31	.56	1	94 938.3	21 00	199 922	36 909
	52	6	2	1 613.33	.56	2	96 799.8	22 00	208 985	40 464
	53	6	3	1 644.36	.56	3	98 661.4	23 00	217 985	44 176
	54	6	4	1 675.38	.56	4	100 522.9	24 00	226 918	48 044
85	55	31.026	55	1 706.41	1861.56	55	102 384.5	25 00	235 783	52 066
	56	6	6	1 737.44	.56	6	104 246.1	26 00	244 577	56 243
	57	6	7	1 768.46	.56	7	106 107.6	27 00	253 296	60 571
	58	6	8	1 799.49	.56	8	107 969.2	28 00	261 939	65 050
	59	6	9	1 830.51	.56	9	109 830.8	29 00	270 503	69 679
85	60	31.026	60	1 861.54	1861.56	60	111 692.3	30 00	278 986	74 456

Latitude 86° to 87°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
86 00	2.16	4.33	6.49	8.66	10.82	12.99	15.15	17.31	19.48	129.9	259.7	389.6	519.4	649.3
1	.16	.31	.47	.62	.78	.93	.09	.24	.40	9.3	8.6	8.0	7.3	6.6
2	.15	.29	.44	.59	.73	.88	5.02	.17	.32	8.8	7.6	6.3	5.1	3.9
3	.14	.27	.41	.55	.69	.82	4.96	.10	.24	8.2	6.5	4.7	3.0	41.2
4	.13	.26	.38	.51	.64	.77	.90	7.03	.16	7.7	5.4	3.1	10.8	38.5
86 05	2.12	4.24	6.36	8.48	10.60	12.72	14.83	16.95	19.07	127.2	254.3	381.5	508.6	635.8
6	.11	.22	.33	.44	.55	.66	.77	.88	8.99	6.6	3.2	79.9	6.5	3.1
7	.10	.20	.30	.41	.51	.61	.71	.81	.91	6.1	2.2	8.2	4.3	30.4
8	.09	.18	.28	.37	.46	.55	.65	.74	.83	5.5	1.1	6.6	2.2	27.7
9	.08	.17	.25	.33	.42	.50	.58	.67	.75	5.0	50.0	5.0	500.0	5.0
86 10	2.07	4.15	6.22	8.30	10.37	12.45	14.52	16.59	18.67	124.5	248.9	373.4	497.8	622.3
11	.07	.13	.20	.26	.33	.39	.46	.52	.59	3.9	7.8	1.8	5.7	19.6
12	.06	.11	.17	.23	.28	.34	.39	.45	.51	3.4	6.8	70.1	3.5	6.9
13	.05	.09	.14	.19	.24	.28	.33	.38	.43	2.8	5.7	68.5	91.3	4.2
14	.04	.08	.11	.15	.19	.23	.27	.31	.35	2.3	4.6	6.9	89.2	11.5
86 15	2.03	4.06	6.09	8.12	10.15	12.18	14.20	16.23	18.26	121.8	243.5	365.3	487.0	608.8
16	.02	.04	.06	.08	.10	.12	.14	.16	.18	1.2	2.4	3.6	4.9	6.1
17	.01	.02	.03	.05	.06	.07	.08	.09	.10	0.7	1.3	2.0	2.7	3.4
18	2.00	4.00	6.01	8.01	10.01	2.01	4.02	6.02	8.02	20.1	40.3	60.4	80.5	600.7
19	1.99	3.99	5.98	7.97	9.97	1.96	3.95	5.95	7.94	19.6	39.2	58.8	78.4	598.0
86 20	1.98	3.97	5.95	7.94	9.92	11.91	13.89	15.87	17.86	119.1	238.1	357.2	476.2	595.3
21	.98	.95	.93	.90	.88	.85	.83	.8c	.78	8.5	7.0	5.5	4.0	92.6
22	.97	.93	.90	.87	.83	.80	.76	.73	.70	8.0	5.9	3.9	71.9	89.9
23	.96	.91	.87	.83	.79	.74	.70	.66	.62	7.4	4.9	2.3	69.7	7.2
24	.95	.90	.84	.79	.74	.69	.64	.59	.54	6.9	3.8	50.7	7.6	4.5
86 25	1.94	3.88	5.82	7.76	9.70	11.64	13.58	15.51	17.45	116.4	232.7	349.1	465.4	581.8
26	.93	.86	.79	.72	.65	.58	.51	.44	.37	5.8	1.6	7.4	3.2	79.0
27	.92	.84	.76	.68	.61	.53	.45	.37	.29	5.3	30.5	5.8	61.1	6.3
28	.91	.82	.74	.65	.56	.47	.38	.30	.21	4.7	29.5	4.2	58.9	3.6
29	.90	.81	.71	.61	.52	.42	.32	.22	.13	4.2	8.4	2.6	6.8	70.9
86 30	1.89	3.79	5.68	7.58	9.47	11.36	13.26	15.15	17.05	113.6	227.3	340.9	454.6	568.2
31	.88	.77	65	.54	.43	.31	.20	.08	6.97	3.1	6.2	39.3	2.4	5.5
32	.87	.75	.63	.50	.38	.26	.13	5.01	.88	2.6	5.1	7.7	50.3	2.8
33	.86	.73	.60	.47	.34	.20	.07	4.94	.80	2.0	4.1	6.1	48.1	60.1
34	.86	.72	.57	.43	.29	.15	3.01	.86	.72	1.5	3.0	4.5	5.9	57.4
86 35	1.85	3.70	5.55	7.40	9.25	11.09	12.94	14.79	16.64	110.9	221.9	332.8	443.8	554.7
36	.84	.68	.52	.36	.20	1.04	.88	.72	.56	10.4	20.8	31.2	41.6	52.0
37	.83	.66	.49	.32	.16	0.99	.82	.65	.48	09.9	19.7	29.6	39.5	49.3
38	.82	.64	.47	.29	.11	.93	.75	.58	.40	9.3	8.6	8.0	7.3	6.6
39	.81	.63	.44	.25	.07	.88	.69	.50	.32	8.8	7.6	6.3	5.1	3.9
86 40	1.80	3.61	5.41	7.22	9.02	10.82	12.63	14.43	16.24	108.2	216.5	324.7	433.0	541.2
41	.79	.59	.38	.18	8.98	.77	.57	.36	.16	7.7	5.4	3.1	30.8	38.5
42	.79	.57	.36	.14	.93	.72	.50	.29	6.07	7.2	4.3	21.5	28.6	5.8
43	.78	.55	.33	.11	.89	.66	.44	.22	5.99	6.6	3.2	19.9	6.5	3.1
44	.77	.54	.30	.07	.84	.61	.38	.14	.92	6.1	2.2	8.2	4.3	30.4
86 45	1.76	3.52	5.28	7.04	8.80	10.55	12.31	14.07	15.83	105.5	211.1	316.6	422.2	527.7
46	.75	.50	.25	7.00	.75	.50	.25	4.00	.75	5.0	10.0	5.0	20.0	5.0
47	.74	.48	.22	6.96	.71	.45	.19	3.93	.67	4.5	08.9	3.4	17.8	22.3
48	.73	.46	.20	.93	.66	.39	.12	.86	.59	3.9	7.8	1.8	5.7	19.6
49	.72	.45	.17	.89	.62	.34	.06	.78	.51	3.4	6.8	10.1	3.5	6.9
86 50	1.71	3.43	5.14	6.86	8.57	10.28	12.00	13.71	15.43	102.8	205.7	308.5	411.3	514.2
51	.70	.41	.11	.82	.53	.23	1.94	.64	.35	2.3	4.6	6.9	09.2	11.5
52	.70	.39	.09	.78	.48	.18	.87	.57	.26	1.8	3.5	5.3	7.0	08.8
53	.69	.37	.06	.75	.44	.12	.81	.50	.18	1.2	2.4	3.6	4.9	6.1
54	.68	.36	.03	.71	.39	.07	.75	.42	.10	0.7	1.3	2.0	2.7	3.4
86 55	1.67	3.34	5.01	6.68	8.35	10.01	11.68	13.35	15.02	100.1	200.3	300.4	400.5	500.7
56	.66	.32	4.98	.64	.30	9.96	.62	.28	4.94	99.6	199.2	298.8	398.4	498.0
57	.65	.30	.95	.60	.26	.91	.56	.21	.86	9.1	8.1	7.2	6.2	5.3
58	.64	.28	.93	.57	.21	.85	.49	.14	.78	8.5	7.0	5.5	4.0	92.6
59	.63	.27	.90	.53	.17	.80	.43	3.06	.70	8.0	5.9	3.9	1.9	89.9
86 60	1.62	3.25	4.87	6.50	8.12	9.74	11.37	12.99	14.61	97.4	194.9	292.3	389.7	487.2

Lat.		Latitude 86° to 87°—Meridional arcs.						Latitude 86°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
86	00	31.026			1861.56					
	1	6	1	31.03	.56	1	1 861.6	0 1	129.9	0.0
	2	6	2	62.05	.56	2	3 723.1	2	259.7	0.1
	3	6	3	93.08	.57	3	5 584.7	3	389.6	0.2
	4	6	4	124.11	.57	4	7 446.3	4	519.4	0.3
86	05	31.026	5	155.13	1861.57	5	9 307.8	0 5	649.3	0.5
	6	6	6	186.16	.57	6	11 169.4	6	779.2	0.7
	7	6	7	217.18	.57	7	13 031.0	7	909.0	0.9
	8	6	8	248.21	.57	8	14 892.5	8	1 038.9	1.2
	9	6	9	279.24	.57	9	16 754.1	9	1 168.7	1.5
86	10	31.026	10	310.26	1861.57	10	18 615.7	0 10	1 298.6	1.9
	11	6	1	341.29	.57	1	20 477.2	15	1 947.9	4.2
	12	6	2	372.32	.57	2	22 338.8	20	2 597.2	7.5
	13	6	3	403.34	.57	3	24 200.4	25	3 246.5	11.8
	14	6	4	434.37	.57	4	26 062.0	30	3 895.8	17.0
86	15	31.026	15	465.40	1861.57	15	27 923.5	0 35	4 545.0	23.1
	16	6	6	496.42	.58	6	29 785.1	40	5 194.3	30.1
	17	6	7	527.45	.58	7	31 646.7	45	5 843.6	38.1
	18	6	8	558.48	.58	8	33 508.3	50	6 492.8	47.1
	19	6	9	589.50	.58	9	35 369.8	55	7 142.0	57.0
86	20	31.026	20	620.53	1861.58	20	37 231.4	1 00	7 791.2	67.8
	21	6	1	651.55	.58	1	39 093.0	05	8 440.4	79.6
	22	6	2	682.58	.58	2	40 954.6	10	9 089.6	92.3
	23	6	3	713.61	.58	3	42 816.2	15	9 738.8	106.0
	24	6	4	744.63	.58	4	44 677.7	20	10 387.9	120.6
86	25	31.026	25	775.66	1861.58	25	46 539.3	1 25	11 037.0	136.1
	26	6	6	806.69	.58	6	48 400.9	30	11 686.1	152.6
	27	6	7	837.71	.58	7	50 262.5	35	12 335.2	170.0
	28	6	8	868.74	.58	8	52 124.1	40	12 984.2	188.4
	29	6	9	899.77	.58	9	53 985.7	45	13 633.2	207.7
86	30	31.026	30	930.79	1861.58	30	55 847.2	1 50	14 282.2	228.0
	31	6	1	961.82	.59	1	57 708.8	55	14 931.2	249.2
	32	6	2	992.85	.59	2	59 570.4	2 00	15 580	271
	33	6	3	1 023.87	.59	3	61 432.0	3 00	23 364	610
	34	6	4	1 054.90	.59	4	63 293.6	4 00	31 141	1 085
86	35	31.026	35	1 085.92	1861.59	35	65 155.2	5 00	38 909	1 695
	36	6	6	1 116.95	.59	6	67 016.8	6 00	46 665	2 440
	37	6	7	1 147.98	.59	7	68 878.3	7 00	54 406	3 320
	38	6	8	1 179.00	.59	8	70 739.9	8 00	62 132	4 334
	39	6	9	1 210.03	.59	9	72 601.5	9 00	69 838	5 483
86	40	31.027	40	1 241.06	1861.59	40	74 463.1	10 00	77 523	6 766
	41	7	1	1 272.08	.59	1	76 324.7	11 00	85 185	8 182
	42	7	2	1 303.11	.59	2	78 186.3	12 00	92 821	9 732
	43	7	3	1 334.14	.59	3	80 047.9	13 00	100 428	11 414
	44	7	4	1 365.16	.59	4	81 909.5	14 00	108 006	13 229
86	45	31.027	45	1 396.19	1861.59	45	83 771.1	15 00	115 550	15 175
	46	7	6	1 427.21	.60	6	85 632.7	16 00	123 060	17 252
	47	7	7	1 458.24	.60	7	87 494.3	17 00	130 532	19 460
	48	7	8	1 489.27	.60	8	89 355.9	18 00	137 965	21 797
	49	7	9	1 520.29	.60	9	91 217.5	19 00	145 356	24 264
86	50	31.027	50	1 551.32	1861.60	50	93 079.1	20 00	152 702	26 859
	51	7	1	1 582.35	.60	1	94 940.7	21 00	160 003	29 581
	52	7	2	1 613.37	.60	2	96 802.3	22 00	167 255	32 430
	53	7	3	1 644.40	.60	3	98 663.9	23 00	174 456	35 405
	54	7	4	1 675.43	.60	4	100 525.5	24 00	181 604	38 504
86	55	31.027	55	1 706.45	1861.60	55	102 387.1	25 00	188 698	41 728
	56	7	6	1 737.48	.60	6	104 248.7	26 00	195 734	45 075
	57	7	7	1 768.51	.60	7	106 110.3	27 00	202 711	48 543
	58	7	8	1 799.53	.60	8	107 971.9	28 00	209 626	52 133
	59	7	9	1 830.56	.60	9	109 833.5	29 00	216 478	55 843
86	60	31.027	60	1 861.58	1861.60	60	111 695.1	30 00	223 264	59 671

Latitude 87° to 88°—Arcs of the parallel in meters.

Lat.	1″	″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
87 00	1.62	3.25	4.87	6.50	8.12	9.74	11.37	12.99	14.61	97.4	194.9	292.3	389.7	487.2
1	.61	.23	.84	.46	.08	.69	.31	.92	.53	6.9	3.8	90.7	7.6	4.5
2	.61	.21	.82	.42	8.03	.63	.24	.85	.45	6.3	2.7	89.0	5.4	81.7
3	.60	.19	.79	.39	7.98	.58	.18	.77	.37	5.8	1.6	7.4	3.2	79.0
4	.59	.18	.76	.35	.94	.53	.11	.70	.29	5.3	90.5	5.8	81.1	6.3
87 05	1.58	3.16	4.74	6.31	7.89	9.47	11.05	12.63	14.21	94.7	189.5	284.2	378.9	473.6
6	.57	.14	.71	.28	.85	.42	0.99	.56	.13	4.2	8.4	2.6	6.7	70.9
7	.56	.12	.68	.24	.80	.36	.92	.49	4.05	3.6	7.3	80.9	4.6	68.2
8	.55	.10	.65	.21	.76	.31	.86	.41	3.96	3.1	6.2	79.3	2.4	5.5
9	.54	.09	.63	.17	.71	.26	.80	.34	.88	2.6	5.1	7.7	70.3	2.8
87 10	1.53	3.07	4.60	6.13	7.67	9.20	10.74	12.27	13.80	92.0	184.0	276.1	368.1	460.1
11	.52	.05	.57	.10	.62	.15	.67	.20	.72	1.5	3.0	4.4	5.9	57.4
12	.52	.03	.55	.06	.58	.09	.61	.13	.64	0.9	1.9	2.8	3.8	4.7
13	.51	.01	.52	6.03	.53	9.04	.55	2.05	.56	90.4	80.8	71.2	61.6	52.0
14	.50	3.00	.49	5.99	.49	8.99	.48	1.98	.48	89.9	79.7	69.6	59.4	49.3
87 15	1.49	2.98	4.47	5.95	7.44	8.93	10.42	11.91	13.40	89.3	178.6	268.0	357.3	446.6
16	.48	.96	.44	.92	.40	.88	.36	.84	.32	8.8	7.6	6.3	5.1	3.9
17	.47	.94	.41	.88	.35	.82	.29	.77	.24	8.2	6.5	4.7	3.0	41.2
18	.46	.92	.38	.85	.31	.77	.23	.69	.15	7.7	5.4	3.1	50.8	38.5
19	.45	.91	.36	.81	.26	.72	.17	.62	3.07	7.2	4.3	61.5	48.6	5.8
87 20	1.44	2.89	4.33	5.77	7.22	8.66	10.11	11.55	12.99	86.6	173.2	259.8	346.5	433.1
21	.43	.87	.30	.74	.17	.61	10.04	.48	.91	6.1	2.1	8.2	4.3	30.4
22	.43	.85	.28	.70	.13	.55	9.98	.41	.83	5.5	1.1	6.6	2.1	27.7
23	.42	.83	.25	.67	.08	.50	.92	.33	.75	5.0	70.0	5.0	40.0	5.0
24	.41	.82	.22	.63	7.04	.45	.85	.26	.67	4.5	68.9	3.4	37.8	22.3
87 25	1.40	2.80	4.20	5.59	6.99	8.39	9.79	11.19	12.59	83.9	167.8	251.7	335.6	419.6
26	.39	.78	.17	.56	.95	.34	.73	.12	.50	3.4	6.7	50.1	3.5	6.8
27	.38	.76	.14	.52	.90	.28	.66	1.05	.42	2.8	5.7	48.5	31.3	4.1
28	.37	.74	.11	.49	.86	.23	.60	0.97	.34	2.3	4.6	6.9	29.2	11.4
29	.36	.72	.09	.45	.81	.17	.54	.90	.26	1.7	3.5	5.2	7.0	08.7
87 30	1.35	2.71	4.06	5.41	6.77	8.12	9.47	10.83	12.18	81.2	162.4	243.6	324.8	406.0
31	.34	.69	.03	.38	.72	.07	.41	.76	.10	0.7	1.3	2.0	2.7	3.3
32	.34	.67	4.01	.34	.68	8.01	.35	.69	2.02	80.1	60.2	40.4	20.5	400.6
33	.33	.65	3.98	.31	.63	7.96	.28	.61	1.94	79.6	59.2	38.7	18.3	397.9
34	.32	.63	.95	.27	.58	.90	.22	.54	.86	9.0	8.1	7.1	6.2	5.2
87 35	1.31	2.62	3.93	5.23	6.54	7.85	9.16	10.47	11.77	78.5	157.0	235.5	314.0	392.5
36	.30	.60	.90	.20	.50	.80	.10	.40	.69	8.0	5.9	3.9	11.8	89.8
37	.29	.58	.87	.16	.45	.74	9.03	.33	.61	7.4	4.8	2.3	09.7	7.1
38	.28	.56	.84	.13	.41	.69	8.97	.25	.53	6.9	3.8	30.6	7.5	4.4
39	.27	.54	.82	.09	.36	.63	.91	.18	.45	6.3	2.7	29.0	5.3	81.7
87 40	1.26	2.53	3.79	5.05	6.32	7.58	8.84	10.11	11.37	75.8	151.6	227.4	303.2	379.0
41	.25	.51	.76	5.02	.27	.53	.78	10.03	.29	5.3	50.5	5.8	301.0	6.3
42	.25	.49	.74	4.98	.23	.47	.72	9.96	.21	4.7	49.4	4.1	298.8	3.6
43	.24	.47	.71	.95	.18	.42	.65	.89	.13	4.2	8.3	2.5	6.7	70.9
44	.23	.45	.68	.91	.14	.36	.59	.82	1.05	3.6	7.3	20.9	4.5	68.1
87 45	1.22	2.44	3.65	4.87	6.09	7.31	8.53	9.74	10.96	73.1	146.2	219.3	292.4	365.4
46	.21	.42	.63	.84	.05	.26	.46	.67	.88	2.6	5.1	7.6	90.2	2.7
47	.20	.40	.60	.80	6.00	.20	.40	.60	.80	2.0	4.0	6.0	88.0	60.0
48	.19	.38	.57	.76	5.96	.15	.34	.53	.72	1.5	2.9	4.4	5.9	57.3
49	.18	.36	.55	.73	.91	.09	.27	.46	.64	0.9	1.8	2.8	3.7	4.6
87 50	1.17	2.35	3.52	4.69	5.87	7.04	8.21	9.38	10.56	70.4	140.8	211.1	281.5	351.9
51	.16	.33	.49	.66	.82	6.98	.15	.31	.48	69.8	39.7	09.5	79.4	49.2
52	.15	.31	.47	.62	.78	.93	.08	.24	.39	9.3	8.6	7.9	7.2	6.5
53	.15	.29	.44	.58	.73	.88	8.02	.17	.31	8.8	7.5	6.3	5.0	3.8
54	.14	.27	.41	.55	.69	.82	7.96	.10	.23	8.2	6.4	4.7	2.9	41.1
87 55	1.13	2.26	3.38	4.51	5.64	6.77	7.90	9.02	10.15	67.7	135.4	203.0	270.7	338.4
56	.12	.24	.36	.48	.60	.71	.83	8.95	10.07	7.1	4.3	201.4	68.5	5.7
57	.11	.22	.33	.44	.55	.66	.77	.88	9.99	6.6	3.2	199.8	6.4	3.0
58	.10	.20	.30	.40	.50	.61	.71	.81	.91	6.1	2.1	8.2	4.2	30.3
59	.09	.18	.28	.37	.46	.55	.64	.74	.83	5.5	31.0	6.5	62.0	27.6
87 60	1.08	2.17	3.25	4.33	5.41	6.50	7.58	8.66	9.75	65.0	129.9	194.9	259.9	324.9

Lat.		Latitude 87° to 88°—Meridional arcs.						Latitude 87°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
87	00	31.027			1861.60					
	1	7	1	31.03	.60	1	1 861.6	0 1	97.4	0.0
	2	7	2	62.05	.60	2	3 723.2	2	194.9	0.1
	3	7	3	93.08	.61	3	5 584.8	3	292.3	0.1
	4	7	4	124.11	.61	4	7 446.4	4	389.7	0.2
87	05	31.027	5	155.13	1861.61	5	9 308.0	0 5	487.2	0.4
	6	7	6	186.16	.61	6	11 169.6	6	584.6	0.5
	7	7	7	217.19	.61	7	13 031.2	7	682.0	0.7
	8	7	8	248.22	.61	8	14 892.9	8	779.5	0.9
	9	7	9	279.24	.61	9	16 754.5	9	876.9	1.1
87	10	31.027	10	310.27	1861.61	10	18 616.1	0 10	974.3	1.4
	11	7	1	341.30	.61	1	20 477.7	15	1 461.5	3.2
	12	7	2	372.32	.61	2	22 339.3	20	1 948.6	5.7
	13	7	3	403.35	.61	3	24 200.9	25	2 435.7	8.8
	14	7	4	434.38	.61	4	26 062.5	30	2 922.9	12.7
87	15	31.027	15	465.40	1861.61	15	27 924.1	0 35	3 410.0	17.3
	16	7	6	496.43	.61	6	29 785.7	40	3 897.1	22.7
	17	7	7	527.46	.61	7	31 647.4	45	4 384.3	28.7
	18	7	8	558.49	.61	8	33 509.0	50	4 871.4	35.4
	19	7	9	589.51	.61	9	35 370.6	55	5 358.5	42.8
87	20	31.027	20	620.54	1861.61	20	37 232.2	1 00	5 845.5	50.9
	21	7	1	651.57	.62	1	39 093.8	05	6 332.6	59.8
	22	7	2	682.59	.62	2	40 955.4	10	6 819.7	69.3
	23	7	3	713.62	.62	3	42 817.0	15	7 306.7	79.6
	24	7	4	744.65	.62	4	44 678.7	20	7 793.7	90.6
87	25	31.027	25	775.67	1861.62	25	46 540.3	1 25	8 280.8	102.2
	26	7	6	806.70	.62	6	48 401.9	30	8 767.8	114.6
	27	7	7	837.73	.62	7	50 263.5	35	9 254.7	127.7
	28	7	8	868.76	.62	8	52 125.1	40	9 741.7	141.5
	29	7	9	899.78	.62	9	53 986.8	45	10 228.6	156.0
87	30	31.027	30	930.81	1861.62	30	55 848.4	1 50	10 715.5	171.2
	31	7	1	961.84	.62	1	57 710.0	55	11 202.4	187.1
	32	7	2	992.86	.62	2	59 571.6	2 00	11 689	204
	33	7	3	1 023.89	.62	3	61 433.2	3 00	17 529	459
	34	7	4	1 054.92	.62	4	63 294.8	4 00	23 364	815
87	35	31.027	35	1 085.94	1861.62	35	65 156.5	5 00	29 192	1 273
	36	7	6	1 116.97	.62	6	67 018.1	6 00	35 011	1 832
	37	7	7	1 148.00	.62	7	68 879.7	7 00	40 819	2 493
	38	7	8	1 179.03	.62	8	70 741.3	8 00	46 615	3 255
	39	7	9	1 210.05	.62	9	72 603.0	9 00	52 397	4 118
87	40	31.027	40	1 241.08	1861.62	40	74 464.6	10 00	58 163	5 082
	41	7	1	1 272.11	.62	1	76 326.2	11 00	63 911	6 145
	42	7	2	1 303.13	.63	2	78 187.8	12 00	69 640	7 309
	43	7	3	1 334.16	.63	3	80 049.5	13 00	75 347	8 573
	44	7	4	1 365.19	.63	4	81 911.1	14 00	81 032	9 936
87	45	31.027	45	1 396.21	1861.63	45	83 772.7	15 00	86 692	11 397
	46	7	6	1 427.24	.63	6	85 634.3	16 00	92 326	12 958
	47	7	7	1 458.27	.63	7	87 496.0	17 00	97 932	14 616
	48	7	8	1 489.30	.63	8	89 357.6	18 00	103 507	16 371
	49	7	9	1 520.32	.63	9	91 219.2	19 00	109 052	18 223
87	50	31.027	50	1 551.35	1861.63	50	93 080.9	20 00	114 563	20 172
	51	7	1	1 582.38	.63	1	94 942.5	21 00	120 040	22 217
	52	7	2	1 613.40	.63	2	96 804.1	22 00	125 480	24 357
	53	7	3	1 644.43	.63	3	98 665.7	23 00	130 882	26 591
	54	7	4	1 675.46	.63	4	100 527.4	24 00	136 244	28 919
87	55	31.027	55	1 706.48	1861.63	55	102 389.0	25 00	141 565	31 340
	56	7	6	1 737.51	.63	6	104 250.6	26 00	146 843	33 853
	57	7	7	1 768.54	.63	7	106 112.3	27 00	152 076	36 458
	58	7	8	1 799.57	.63	8	107 973.9	28 00	157 263	39 154
	59	7	9	1 830.59	.63	9	109 835.5	29 00	162 402	41 940
87	60	31.027	60	1 861.62	1861.63	60	111 697.2	30 00	167 492	44 815

Latitude 88° to 89°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1″	2″	3″	4″	5″
° ′														
88 00	1.08	2.17	3.25	4.33	5.41	6.50	7.58	8.66	9.75	65.0	129.9	194.9	259.9	324.9
1	.07	.15	.22	.29	.37	.44	.52	.59	.66	4.4	8.9	3.3	7.7	22.1
2	.06	.13	.19	.26	.32	.39	.45	.52	.58	3.9	7.8	1.7	5.5	19.4
3	.06	.11	.17	.22	.28	.33	.39	.45	.50	3.3	6.7	90.0	3.4	6.7
4	.05	.09	.14	.19	.23	.28	.33	.37	.42	2.8	5.6	88.4	51.2	4.0
88 05	1.04	2.08	3.11	4.15	5.19	6.23	7.26	8.30	9.34	62.3	124.5	186.8	249.1	311.3
6	.03	.06	.09	.11	.14	.17	.20	.23	.26	1.7	3.4	5.2	6.9	08.6
7	.02	.04	.06	.08	.10	.12	.14	.16	.18	1.2	2.4	3.5	4.7	5.9
8	.01	.02	.03	.04	.05	.06	.07	.09	.10	0.6	1.3	1.9	2.6	3.2
9	1.00	2.00	3.01	4.01	5.01	6.01	7.01	8.01	9.01	60.1	20.2	80.3	40.4	300.5
88 10	0.99	1.99	2.98	3.97	4.96	5.96	6.95	7.94	8.93	59.6	119.1	178.7	238.2	297.8
11	.98	.97	.95	.93	.92	.90	.89	.87	.85	9.0	8.0	7.0	6.1	5.1
12	.97	.95	.92	.90	.87	.85	.82	.80	.77	8.5	6.9	5.4	3.9	92.4
13	.97	.93	.90	.86	.83	.79	.76	.73	.69	7.9	5.9	3.8	31.7	89.7
14	.96	.91	.87	.83	.78	.74	.70	.65	.61	7.4	4.8	2.2	29.6	7.0
88 15	0.95	1.90	2.84	3.79	4.74	5.69	6.63	7.58	8.53	56.9	113.7	170.6	227.4	284.3
16	.94	.88	.82	.75	.69	.63	.57	.51	.45	6.3	2.6	68.9	5.2	81.5
17	.93	.86	.79	.72	.65	.58	.51	.43	.36	5.8	1.5	7.3	3.1	78.8
18	.92	.84	.76	.68	.60	.52	.44	.36	.28	5.2	10.5	5.7	20.9	6.1
19	.91	.82	.73	.65	.56	.47	.38	.29	.20	4.7	09.4	4.1	18.7	3.4
88 20	0.90	1.80	2.71	3.61	4.51	5.41	6.32	7.22	8.12	54.1	108.3	162.4	216.6	270.7
21	.89	.79	.68	.57	.47	.36	.25	.15	8.04	3.6	7.2	60.8	4.4	68.0
22	.88	.77	.65	.54	.42	.31	.19	.07	7.96	3.1	6.1	59.2	2.2	5.3
23	.88	.75	.63	.50	.38	.25	.13	7.00	.88	2.5	5.0	7.6	10.1	62.6
24	.87	.73	.60	.47	.33	.20	.06	6.93	.80	2.0	4.0	5.9	07.9	59.9
88 25	0.86	1.71	2.57	3.43	4.29	5.14	6.00	6.86	7.72	51.4	102.9	154.3	205.7	257.2
26	.85	.70	.55	.39	.24	.09	5.94	.79	.63	0.9	1.8	2.7	3.6	4.5
27	.84	.68	.52	.36	.20	5.04	.88	.71	.55	50.4	100.7	51.1	201.4	51.8
28	.83	.66	.49	.32	.15	4.98	.81	.64	.47	49.8	99.6	49.4	199.3	49.1
29	.82	.64	.46	.29	.11	.93	.75	.57	.39	9.3	8.5	7.8	7.1	6.4
88 30	0.81	1.62	2.44	3.25	4.06	4.87	5.69	6.50	7.31	48.7	97.5	146.2	194.9	243.7
31	.80	.61	.41	.21	4.02	.82	.62	.42	.23	8.2	6.4	4.6	2.8	40.9
32	.79	.59	.38	.18	3.97	.76	.56	.35	.15	7.6	5.3	2.9	90.6	38.2
33	.78	.57	.36	.14	.93	.71	.50	.28	7.07	7.1	4.2	41.3	88.4	5.5
34	.78	.55	.33	.10	.88	.66	.43	.21	6.98	6.6	3.1	39.7	6.3	2.8
88 35	0.77	1.53	2.30	3.07	3.84	4.60	5.37	6.14	6.90	46.0	92.0	138.1	184.1	230.1
36	.76	.52	.27	.03	.79	.55	.31	.06	.82	5.5	91.0	6.4	81.9	27.4
37	.75	.50	.25	3.00	.75	.49	.24	5.99	.74	4.9	89.9	4.8	79.8	4.7
38	.74	.48	.22	2.96	.70	.44	.18	.92	.66	4.4	8.8	3.2	7.5	22.0
39	.73	.46	.19	.92	.65	.39	.12	.85	.58	3.9	7.7	1.6	5.4	19.3
88 40	0.72	1.44	2.17	2.89	3.61	4.33	5.05	5.78	6.50	43.3	86.6	130.0	173.3	216.6
41	.71	.43	.14	.85	.57	.28	4.99	.70	.42	2.8	5.6	28.3	71.1	3.9
42	.70	.41	.11	.82	.52	.22	.93	.63	.34	2.2	4.5	6.7	68.9	11.2
43	.69	.39	.09	.78	.48	.17	.86	.56	.26	1.7	3.4	5.1	6.8	08.5
44	.69	.37	.06	.74	.43	.12	.80	.49	.17	1.2	2.3	3.5	4.6	5.8
88 45	0.68	1.35	2.03	2.71	3.39	4.06	4.74	5.42	6.09	40.6	81.2	121.8	162.4	203.1
46	.67	.34	2.00	.67	.34	4.01	.67	.34	6.01	40.1	80.1	20.2	60.3	200.3
47	.66	.32	1.98	.63	.29	3.95	.61	.27	5.93	39.5	79.1	18.6	58.1	197.6
48	.65	.30	.95	.60	.25	.90	.55	.20	.85	9.0	8.0	7.0	5.9	4.9
49	.64	.28	.92	.56	.20	.84	.48	.13	.77	8.4	6.9	5.3	3.8	92.2
88 50	0.63	1.26	1.90	2.53	3.16	3.79	4.42	5.05	5.69	37.9	75.8	113.7	151.6	189.5
51	.62	.25	.87	.49	.11	.74	.36	4.98	.60	7.4	4.7	2.1	49.4	6.8
52	.61	.23	.84	.45	.07	.68	.30	.91	.53	6.8	3.6	10.5	7.3	4.1
53	.60	.21	.81	.42	3.02	.63	.23	.84	.44	6.3	2.6	08.8	5.1	81.4
54	.60	.19	.79	.38	2.98	.57	.17	.77	.36	5.7	1.5	7.2	3.0	78.7
88 55	0.59	1.17	1.76	2.35	2.93	3.52	4.11	4.69	5.28	35.2	70.4	105.6	140.8	176.0
56	.58	.16	.73	.31	.89	.47	4.04	.62	.20	4.7	69.3	4.0	38.6	3.3
57	.57	.14	.71	.27	.84	.41	3.98	.55	.12	4.1	8.2	2.3	6.5	70.6
58	.56	.12	.68	.24	.80	.36	.92	.48	5.04	3.6	7.1	100.7	4.3	67.9
59	.55	.10	.65	.20	.75	.30	.85	.41	4.96	3.0	6.1	99.1	2.1	5.2
88 60	0.54	1.08	1.62	2.17	2.71	3.25	3.79	4.33	4.87	32.5	65.0	97.5	130.0	162.5

Lat.		Latitude 88° to 89°—Meridional arcs.						Latitude 88°—Co-ordinates of curvature.		
		Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
°	′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
88	00	31.027			1861.63					
	1	7	1	31.03	.63	1	1 861.6	0 1	65.0	0.0
	2	7	2	62.05	.63	2	3 723.3	2	130.0	0.0
	3	7	3	93.08	.63	3	5 584.9	3	194.9	0.1
	4	7	4	124.11	.63	4	7 446.5	4	259.9	0.2
88	05	31.027	5	155.14	1861.63	5	9 308.2	0 5	324.9	0.2
	6	7	6	186.16	.63	6	11 169.8	6	389.8	0.3
	7	7	7	217.19	.64	7	13 031.4	7	454.8	0.5
	8	7	8	248.22	.64	8	14 893.1	8	519.8	0.6
	9	7	9	279.24	.64	9	16 754.7	9	584.7	0.8
88	10	31.027	10	310.27	1861.64	10	18 616.4	0 10	649.7	0.9
	11	7	1	341.30	.64	1	20 478.0	15	974.6	2.1
	12	7	2	372.33	.64	2	22 339.6	20	1 299.4	3.8
	13	7	3	403.35	.64	3	24 201.3	25	1 624.3	5.9
	14	7	4	434.38	.64	4	26 062.9	30	1 949.1	8.5
88	15	31.027	15	465.41	1861.64	15	27 924.5	0 35	2 273.9	11.6
	16	7	6	496.44	.64	6	29 786.2	40	2 598.8	15.1
	17	7	7	527.46	.64	7	31 647.8	45	2 923.6	19.1
	18	7	8	558.49	.64	8	33 509.5	50	3 248.4	23.6
	19	7	9	589.52	.64	9	35 371.1	55	3 573.2	28.6
88	20	31.027	20	620.55	1861.64	20	37 232.7	1 00	3 898.1	34.0
	21	7	1	651.57	.64	1	39 094.4	05	4 222.9	39.9
	22	7	2	682.60	.64	2	40 956.0	10	4 547.6	46.3
	23	7	3	713.63	.64	3	42 817.7	15	4 872.4	53.1
	24	7	4	744.65	.64	4	44 679.3	20	5 197.2	60.4
88	25	31.027	25	775.68	1861.64	25	46 540.9	1 25	5 521.9	68.2
	26	7	6	806.71	.64	6	48 402.6	30	5 846.7	76.5
	27	7	7	837.74	.64	7	50 264.2	35	6 171.4	85.2
	28	7	8	868.76	.64	8	52 125.9	40	6 496.1	94.4
	29	7	9	899.79	.64	9	53 987.5	45	6 820.8	104.1
88	30	31.027	30	930.82	1861.64	30	55 849.1	1 50	7 145.5	114.3
	31	7	1	961.85	.64	1	57 910.8	55	7 470.2	124.9
	32	7	2	992.87	.64	2	59 572.4	2 00	7 795	136
	33	7	3	1 023.90	.64	3	61 434.1	3 00	11 689	306
	34	7	4	1 054.93	.64	4	63 295.7	4 00	15 580	544
88	35	31.027	35	1 085.95	1861.64	35	65 157.4	5 00	19 466	849
	36	7	6	1 116.98	.64	6	67 019.0	6 00	23 347	1 223
	37	7	7	1 148.01	.64	7	68 880.7	7 00	27 220	1 664
	38	7	8	1 179.04	.64	8	70 742.3	8 00	31 085	2 172
	39	7	9	1 210.06	.65	9	72 603.9	9 00	34 940	2 748
88	40	31.027	40	1 241.09	1861.65	40	74 465.6	10 00	38 785	3 391
	41	7	1	1 272.12	.65	1	76 327.2	11 00	42 618	4 101
	42	7	2	1 303.15	.65	2	78 188.9	12 00	46 438	4 878
	43	7	3	1 334.17	.65	3	80 050.5	13 00	50 244	5 721
	44	7	4	1 365.20	.65	4	81 912.2	14 00	54 035	6 631
88	45	31.027	45	1 396.23	1861.65	45	83 773.8	15 00	57 809	7 606
	46	7	6	1 427.26	.65	6	85 635.5	16 00	61 565	8 647
	47	7	7	1 458.28	.65	7	87 497.1	17 00	65 303	9 754
	48	7	8	1 489.31	.65	8	89 358.8	18 00	69 021	10 925
	49	7	9	1 520.34	.65	9	91 220.4	19 00	72 718	12 161
88	50	31.027	50	1 551.37	1861.65	50	93 082.1	20 00	76 393	13 462
	51	7	1	1 582.39	.65	1	94 943.7	21 00	80 045	14 826
	52	7	2	1 613.42	.65	2	96 805.4	22 00	83 672	16 254
	53	7	3	1 644.45	.65	3	98 667.0	23 00	87 274	17 745
	54	7	4	1 675.48	.65	4	100 528.7	24 00	90 849	19 298
88	55	31.027	55	1 706.50	1861.65	55	102 390.3	25 00	94 397	20 914
	56	7	6	1 737.53	.65	6	104 252.0	26 00	97 915	22 591
	57	7	7	1 768.56	.65	7	106 113.6	27 00	101 405	24 330
	58	7	8	1 799.59	.65	8	107 975.3	28 00	104 863	26 129
	59	7	9	1 830.61	.65	9	109 836.9	29 00	108 289	27 988
88	60	31.027	60	1 861.64	1861.65	60	111 698.6	30 00	111 683	29 906

Latitude 89° to 90°—Arcs of the parallel in meters.

Lat.	1″	2″	3″	4″	5″	6″	7″	8″	9″	1′	2′	3′	4′	5′
° ′														
89 00	0.54	1.08	1.62	2.17	2.71	3.25	3.79	4.33	4.87	32.5	65.0	97.5	130.0	162.4
1	.53	.06	.60	.13	.66	.19	.73	.26	.79	1.9	3.9	5.8	27.8	59.7
2	.52	.05	.57	.09	.62	.14	.66	.19	.71	1.4	2.8	4.2	5.6	7.0
3	.51	.03	.54	.06	.57	.09	.60	.11	.63	0.9	1.7	2.6	3.5	4.3
4	.51	1.01	.52	2.02	.53	3.03	.54	4.04	.55	30.3	60.6	91.0	21.3	51.6
89 05	0.50	0.99	1.49	1.99	2.48	2.98	3.47	3.97	4.47	29.8	59.6	89.3	119.1	148.9
6	.49	.97	.46	.95	.44	.92	.41	.90	.39	9.2	8.5	7.7	7.0	6.2
7	.48	.96	.43	.91	.39	.87	.35	.83	.30	8.7	7.4	6.1	4.8	3.5
8	.47	.94	.41	.88	.35	.82	.29	.75	.22	8.2	6.3	4.5	2.6	40.8
9	.46	.92	.38	.84	.30	.76	.22	.68	.14	7.6	5.2	2.9	10.5	38.1
89 10	0.45	0.90	1.35	1.81	2.26	2.71	3.16	3.61	4.06	27.1	54.2	81.2	108.3	135.4
11	.44	.88	.33	.77	.21	.65	.10	.54	3.98	6.5	3.1	79.6	6.1	2.7
12	.43	.87	.30	.73	.17	.60	3.03	.47	.90	6.0	2.0	8.0	4.0	30.0
13	.42	.85	.27	.70	.12	.55	2.97	.39	.82	5.5	50.9	6.4	101.8	27.3
14	.41	.83	.24	.66	.08	.49	.91	.32	.74	4.9	49.8	4.7	99.6	4.5
89 15	0.41	0.81	1.22	1.62	2.03	2.44	2.84	3.25	3.65	24.4	48.7	73.1	97.5	121.8
16	.40	.79	.19	.59	1.99	.38	.78	.18	.57	3.8	7.7	71.5	5.3	19.1
17	.39	.78	.16	.55	.94	.33	.72	.10	.49	3.3	6.6	69.9	3.1	6.4
18	.38	.76	.14	.52	.90	.27	.65	3.03	.41	2.7	5.5	8.2	91.0	3.7
19	.37	.74	.11	.48	.85	.22	.59	2.96	.33	2.2	4.4	6.6	88.8	11.0
89 20	0.36	0.72	1.08	1.44	1.81	2.17	2.53	2.89	3.25	21.7	43.3	65.0	86.6	108.3
21	.35	.70	.06	.41	.76	.12	.46	.82	.17	1.1	2.2	3.4	4.5	5.6
22	.34	.69	.03	.37	.72	.06	.40	.74	.09	0.6	1.2	1.7	2.3	2.9
23	.33	.67	1.00	.34	.67	2.00	.34	.67	3.01	20.0	40.1	60.1	80.1	100.2
24	.32	.65	0.97	.30	.63	1.95	.28	.60	2.93	19.5	39.0	58.5	78.0	97.5
89 25	0.32	0.63	0.95	1.26	1.58	1.90	2.21	2.53	2.84	19.0	37.9	56.9	75.8	94.8
26	.31	.61	.92	.23	.53	.84	.15	.46	.76	8.4	6.8	5.2	3.6	92.1
27	.30	.60	.89	.19	.49	.79	.09	.38	.68	7.9	5.7	3.6	71.5	89.4
28	.29	.58	.87	.15	.44	.73	2.02	.31	.60	7.3	4.7	2.0	69.3	6.6
29	.28	.56	.84	.12	.40	.68	1.96	.24	.52	6.8	3.6	50.4	7.1	3.9
89 30	0.27	0.54	0.81	1.08	1.35	1.62	1.89	2.17	2.44	16.2	32.5	48.7	65.0	81.2
31	.26	.52	.78	.05	.31	.57	.83	.09	.36	5.7	1.4	7.1	2.8	78.5
32	.25	.50	.76	1.01	.26	.52	.77	2.02	.27	5.2	30.3	5.5	60.7	5.8
33	.24	.49	.73	0.97	.22	.46	.71	1.95	.19	4.6	29.2	3.9	58.5	3.1
34	.23	.47	.70	.94	.17	.41	.64	.88	.11	4.1	8.2	2.2	6.3	70.4
89 35	0.23	0.45	0.68	0.90	1.13	1.35	1.58	1.81	2.03	13.5	27.1	40.6	54.2	67.7
36	.22	.43	.65	.87	.08	.30	.52	.73	1.95	3.0	6.0	39.0	52.0	5.0
37	.21	.41	.62	.83	1.04	.25	.45	.66	.87	2.5	4.9	7.4	49.8	62.3
38	.20	.40	.60	.79	0.99	.19	.39	.59	.79	1.9	3.8	5.7	7.7	59.6
39	.19	.38	.57	.76	.95	.14	.33	.52	.71	1.4	2.7	4.1	5.5	6.9
89 40	0.18	0.36	0.54	0.72	0.90	1.08	1.26	1.45	1.63	10.8	21.7	32.5	43.3	54.2
41	.17	.34	.51	.69	.86	1.03	.20	.37	.54	10.3	20.6	30.9	41.2	51.4
42	.16	.32	.49	.65	.81	0.97	.14	.30	.46	9.7	19.5	29.2	39.0	48.7
43	.15	.31	.46	.61	.77	.92	.07	.23	.38	9.2	8.4	7.6	6.8	6.0
44	.14	.29	.43	.58	.72	.87	1.01	.15	.30	8.7	7.3	6.0	4.7	3.3
89 45	0.14	0.27	0.41	0.54	0.68	0.81	0.95	1.08	1.22	8.1	16.2	24.4	32.5	40.6
46	.13	.25	.38	.51	.63	.76	.88	1.01	.14	7.6	5.2	2.7	30.3	37.9
47	.12	.23	.35	.47	.59	.70	.82	0.94	1.06	7.0	4.1	21.1	28.2	5.2
48	.11	.22	.32	.43	.54	.65	.76	.87	0.98	6.5	3.0	19.5	6.0	32.5
49	.10	.20	.30	.40	.50	.60	.70	.79	.89	6.0	1.9	7.9	3.8	29.8
89 50	0.09	0.18	0.27	0.36	0.45	0.54	0.63	0.72	0.81	5.4	10.8	16.2	21.7	27.1
51	.08	.16	.24	.33	.41	.49	.57	.65	.73	4.9	9.7	4.6	19.5	4.4
52	.07	.14	.22	.29	.36	.43	.51	.58	.65	4.3	8.7	3.0	7.3	21.7
53	.06	.13	.19	.25	.32	.38	.44	.51	.57	3.8	7.6	11.4	5.2	19.0
54	.05	.11	.16	.22	.27	.32	.38	.43	.49	3.2	6.5	9.7	3.0	6.2
89 55	0.05	0.09	0.14	0.18	0.23	0.27	0.31	0.36	0.41	2.7	5.4	8.1	10.8	13.5
56	.04	.07	.11	.14	.18	.22	.25	.29	.32	2.2	4.3	6.5	8.7	10.8
57	.03	.05	.08	.11	.14	.16	.19	.22	.24	1.6	3.2	4.9	6.5	8.1
58	.02	.04	.05	.07	.09	.11	.13	.14	.16	1.1	2.2	3.2	4.3	5.4
59	.01	.02	.03	.04	.05	.05	.06	.07	.08	0.5	1.1	1.6	2.2	2.7
89 60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0	0.0

Lat.	Latitude 89° to 90°—Meridional arcs.						Latitude 89°—Co-ordinates of curvature.		
	Value of 1″	Sums of seconds for middle latitude.		Value of 1′	Sums of minutes for middle latitude.		Longitude.	X	Y
° ′	*Meters.*	″	*Meters.*	*Meters.*	′	*Meters.*	° ′	*Meters.*	*Meters.*
89 00	31.027			1861.65					
1	8	1	31.03	.65	1	1 861.7	0 1	32.5	0.0
2	8	2	62.05	.65	2	3 723.3	2	65.0	0.0
3	8	3	93.08	.65	3	5 585.0	3	97.5	0.0
4	8	4	124.11	.65	4	7 446.6	4	130.0	0.1
89 05	31.028	5	155.14	1861.65	5	9 308.3	0 5	162.4	0.1
6	8	6	186.16	.65	6	11 169.9	6	194.9	0.2
7	8	7	217.19	.65	7	13 031.6	7	227.4	0.2
8	8	8	248.22	.65	8	14 893.2	8	259.9	0.3
9	8	9	279.25	.65	9	16 754.9	9	292.4	0.4
89 10	31.028	10	310.28	1861.65	10	18 616.5	0 10	324.9	0.5
11	8	1	341.30	.65	1	20 478.2	15	487.3	1.1
12	8	2	372.33	.65	2	22 339.8	20	649.8	1.9
13	8	3	403.36	.65	3	24 201.5	25	812.2	3.0
14	8	4	434.39	.65	4	26 063.1	30	974.7	4.3
89 15	31.028	15	465.41	1861.65	15	27 924.8	0 35	1 137.1	5.8
16	8	6	496.44	.65	6	29 786.4	40	1 299.6	7.6
17	8	7	527.47	.65	7	31 648.1	45	1 462.0	9.6
18	8	8	558.49	.65	8	33 509.7	50	1 624.5	11.8
19	8	9	589.52	.65	9	35 371.4	55	1 786.9	14.3
89 20	31.028	20	620.55	1861.65	20	37 233.0	1 00	1 949.3	17.0
21	8	1	651.58	.65	1	39 094.7	05	2 111.7	20.0
22	8	2	682.60	.65	2	40 956.3	10	2 274.2	23.2
23	8	3	713.63	.65	3	42 818.0	15	2 436.6	26.6
24	8	4	744.66	.65	4	44 679.6	20	2 599.0	30.2
89 25	31.028	25	775.69	1861.65	25	46 541.3	1 25	2 761.4	34.1
26	8	6	806.71	.65	6	48 403.0	30	2 923.8	38.3
27	8	7	837.74	.65	7	50 264.6	35	3 086.2	42.6
28	8	8	868.77	.65	8	52 126.3	40	3 248.6	47.3
29	8	9	899.80	.65	9	53 987.9	45	3 411.0	52.1
89 30	31.028	30	930.83	1861.65	30	55 849.6	1 50	3 573.3	57.2
31	8	1	961.85	.65	1	57 711.2	55	3 735.7	62.5
32	8	2	992.88	.65	2	59 572.9	2 00	3 898	68
33	8	3	1 023.91	.65	3	61 434.5	3 00	5 846	153
34	8	4	1 054.94	.65	4	63 296.2	4 00	7 791	272
89 35	31.028	35	1 085.96	1861.65	35	65 157.8	5 00	9 735	425
36	8	6	1 116.99	.65	6	67 019.5	6 00	11 675	612
37	8	7	1 148.02	.65	7	68 881.2	7 00	13 612	832
38	8	8	1 179.05	.65	8	70 742.8	8 00	15 545	1 087
39	8	9	1 210.07	.65	9	72 604.5	9 00	17 473	1 375
89 40	31.028	40	1 241.10	1861.66	40	74 466.1	10 00	19 395	1 697
41	8	1	1 272.13	.66	1	76 327.8	11 00	21 312	2 052
42	8	2	1 303.16	.66	2	78 189.4	12 00	23 222	2 440
43	8	3	1 334.18	.66	3	80 051.1	13 00	25 126	2 862
44	8	4	1 365.21	.66	4	81 912.7	14 00	27 021	3 317
89 45	31.028	45	1 396.24	1861.66	45	83 774.4	15 00	28 908	3 805
46	8	6	1 427.27	.66	6	85 636.1	16 00	30 787	4 326
47	8	7	1 458.29	.66	7	87 497.7	17 00	32 656	4 880
48	8	8	1 489.32	.66	8	89 359.4	18 00	34 515	5 466
49	8	9	1 520.35	.66	9	91 221.0	19 00	36 364	6 084
89 50	31.028	50	1 551.38	1861.66	50	93 082.7	20 00	38 202	6 735
51	8	1	1 582.40	.66	1	94 944.3	21 00	40 028	7 417
52	8	2	1 613.43	.66	2	96 806.0	22 00	41 841	8 132
53	8	3	1 644.46	.66	3	98 667.7	23 00	43 643	8 878
54	8	4	1 675.48	.66	4	100 529.3	24 00	45 430	9 655
89 55	31.028	55	1 706.51	1861.66	55	102 391.0	25 00	47 204	10 463
56	8	6	1 737.54	.66	6	104 252.6	26 00	48 964	11 302
57	8	7	1 768.57	.66	7	106 114.3	27 00	50 708	12 172
58	8	8	1 799.60	.66	8	107 975.9	28 00	52 438	13 072
59	8	9	1 830.62	.66	9	109 837.6	29 00	54 151	14 002
89 60	31.028	60	1 861.65	1861.66	60	111 699.3	30 00	55 848	14 962

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