Longitude and Latitude Conversion Table

Use this table to approximate conversion factors $\mathbf{F_{lon}}$ and $\mathbf{F_{lat}}$ for a given geographic latitude and height over ellipsoid. This table was computed using the following derived formula:

$$F_{lon} = \frac{\pi}{180^\circ}\left(\frac{a^2}{\sqrt{a^2\cos^2\varphi + b^2\sin^2\varphi}} + h\right)\cos\varphi$$

$$F_{lat} = \frac{\pi}{180^\circ}\left(\frac{a^2 b^2}{\left(a^2\cos^2\varphi + b^2\sin^2\varphi\right)^{\frac{3}{2}}} + h\right)$$

where a = 6378137 m - semi-major axis of WGS-84 ellipsoid
b = 6356752.3142 m - semi-minor axis of WGS-84 ellipsoid
φ - geographical latitude (°)
h - height over the WGS-84 ellipsoid (m)

Geographical	h = 0 m		h = 200 m	
Latitude, °	F_{lon}, m/°	F_{lat}, m/°	F_{lon}, m/°	F_{lat}, m/°
0.0	111319	110574	111323	110578
1.0	111303	110575	111306	110578
2.0	111252	110576	111256	110579
3.0	111168	110577	111171	110581
4.0	111050	110580	111054	110583
5.0	110899	110583	110902	110586
6.0	110714	110586	110717	110590
7.0	110495	110591	110499	110594
8.0	110243	110596	110247	110599
9.0	109958	110601	109961	110605
10.0	109639	110608	109643	110611
11.0	109288	110615	109291	110618
12.0	108903	110622	108906	110626
13.0	108485	110630	108488	110634
14.0	108034	110639	108037	110643
15.0	107550	110649	107554	110652
16.0	107034	110659	107038	110662
17.0	106486	110669	106489	110673
18.0	105905	110680	105908	110684
19.0	105292	110692	105295	110696
20.0	104647	110704	104650	110708
21.0	103970	110717	103974	110721
22.0	103262	110730	103265	110734
23.0	102523	110744	102526	110747
24.0	101752	110758	101755	110762
25.0	100950	110773	100953	110776
26.0	100118	110788	100121	110791

27.0	99255	110804	99258	110807
28.0	98362	110819	98365	110823
29.0	97439	110836	97442	110839
30.0	96486	110852	96489	110856
31.0	95504	110869	95507	110873
32.0	94493	110887	94496	110890
33.0	93453	110904	93456	110908
34.0	92385	110922	92388	110926
35.0	91288	110941	91291	110944
36.0	90164	110959	90167	110962
37.0	89012	110978	89014	110981
38.0	87832	110996	87835	111000
38.1	87713	110998	87716	111002
38.2	87593	111000	87596	111004
38.3	87473	111002	87476	111006
38.4	87353	111004	87356	111008
38.5	87233	111006	87235	111009
38.6	87112	111008	87115	111011
38.7	86991	111010	86994	111013
38.8	86870	111012	86872	111015
38.9	86748	111014	86751	111017
39.0	86626	111015	86629	111019
39.1	86504	111017	86507	111021
39.2	86382	111019	86385	111023
39.3	86259	111021	86262	111025
39.4	86137	111023	86139	111027
39.5	86013	111025	86016	111029
39.6	85890	111027	85893	111030
39.7	85766	111029	85769	111032
39.8	85642	111031	85645	111034
39.9	85518	111033	85521	111036
40.0	85394	111035	85397	111038
40.1	85269	111037	85272	111040
40.2	85144	111038	85147	111042
40.3	85019	111040	85022	111044
40.4	84894	111042	84896	111046
40.5	84768	111044	84770	111048
40.6	84642	111046	84644	111050
40.7	84516	111048	84518	111052
40.8	84389	111050	84392	111054
40.9	84262	111052	84265	111055
41.0	84135	111054	84138	111057
41.1	84008	111056	84011	111059
41.2	83880	111058	83883	111061
41.3	83753	111060	83755	111063
41.4	83624	111062	83627	111065
41.5	83496	111064	83499	111067
41.6	83368	111066	83370	111069
41.7	83239	111067	83241	111071
41.8	83110	111069	83112	111073
41.9	82980	111071	82983	111075
42.0	82851	111073	82853	111077
42.1	82721	111075	82724	111079
42.2	82591	111077	82593	111081

42.3	82460	111079	82463	111083
42.4	82330	111081	82332	111085
42.5	82199	111083	82202	111086
42.6	82068	111085	82070	111088
42.7	81937	111087	81939	111090
42.8	81805	111089	81807	111092
42.9	81673	111091	81676	111094
43.0	81541	111093	81544	111096
44.0	80206	111112	80209	111116
45.0	78847	111132	78849	111135
46.0	77463	111151	77466	111155
47.0	76056	111171	76058	111174
48.0	74625	111190	74628	111194
49.0	73172	111210	73174	111213
50.0	71696	111229	71698	111233
51.0	70198	111248	70200	111252
52.0	68678	111267	68680	111271
53.0	67137	111286	67139	111290
54.0	65576	111305	65578	111308
55.0	63994	111324	63996	111327
56.0	62393	111342	62395	111345
57.0	60772	111360	60774	111363
58.0	59133	111378	59135	111381
59.0	57475	111395	57477	111399
60.0	55800	111412	55802	111416
61.0	54107	111429	54109	111433
62.0	52398	111446	52400	111449
63.0	50673	111462	50674	111465
64.0	48932	111477	48933	111481
65.0	47176	111493	47177	111496
66.0	45405	111507	45406	111511
67.0	43620	111522	43621	111525
68.0	41822	111536	41823	111539
69.0	40010	111549	40011	111553
70.0	38187	111562	38188	111566
71.0	36351	111574	36352	111578
72.0	34504	111586	34505	111590
73.0	32647	111598	32648	111601
74.0	30779	111608	30780	111612
75.0	28902	111618	28903	111622
76.0	27016	111628	27017	111631
77.0	25121	111637	25122	111640
78.0	23219	111645	23220	111649
79.0	21310	111653	21310	111656
80.0	19393	111660	19394	111663
81.0	17471	111666	17472	111670
82.0	15544	111672	15544	111676
83.0	13611	111677	13612	111681
84.0	11675	111682	11675	111685
85.0	9735	111685	9735	111689
86.0	7791	111688	7791	111692
87.0	5846	111691	5846	111694
88.0	3898	111693	3898	111696
89.0	1949	111694	1949	111697

90.0	0	111694	0	111697

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