

LAT 0°

OR SOUTH { L.H.A. greater than 180° Zn=Z OR SOUTH { L.H.A. less than 180° Zn=180°-Z

NORTH { L.H.A. greater than 180° Zn=Z OR SOUTH { L.H.A. less than 180° Zn=180°-Z

DECLINATION (0° - 14°) NORTH { L.H.A. greater than 180° Zn=Z OR SOUTH { L.H.A. less than 180° Zn=360°-Z

DECLINATION (0° - 14°) NORTH { L.H.A. greater than 180° Zn=Z OR SOUTH { L.H.A. less than 180° Zn=360°-Z

Main data table with columns for LHA, LAT 0°, and DECLINATION (0° - 14°) for each degree from 0 to 69. Each degree has sub-columns for hour (Hc), distance (d), and minute (Z).

LAT 0°

OR SOUTH { L.H.A. greater than 180°Zn=180°-Z
{ L.H.A. less than 180°Zn=180°+Z

OR SOUTH { L.H.A. greater than 180°Zn=180°-Z
{ L.H.A. less than 180°Zn=180°+Z

OR SOUTH { L.H.A. greater than 180°Zn=180°-Z
{ L.H.A. less than 180°Zn=180°+Z

OR SOUTH { L.H.A. greater than 180°Zn=180°-Z
{ L.H.A. less than 180°Zn=180°+Z

LHA	15°		16°		17°		18°		19°		20°		21°		22°		23°		24°		25°		26°		27°		28°		29°		LHA						
	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d							
0	75	00	-60	0	74	00	-60	0	73	00	-60	0	71	00	-60	0	68	00	-60	0	66	00	-60	0	63	00	-60	0	62	00	-60	0	61	00	-60	0	360
1	74	58	-60	4	73	58	-60	3	72	58	-60	3	70	58	-60	3	68	59	-60	2	66	59	-60	2	64	59	-60	2	62	59	-60	2	61	59	-60	2	359
2	74	52	-59	7	73	53	-59	7	72	53	-59	7	70	54	-60	6	68	55	-60	5	66	55	-60	5	64	56	-60	4	62	56	-60	4	61	56	-60	4	358
3	74	43	-59	11	73	44	-59	11	72	43	-59	11	70	46	-59	10	68	48	-60	9	66	49	-60	8	64	50	-60	7	62	51	-60	6	61	51	-60	6	357
4	74	29	-58	15	73	31	-58	14	72	33	-58	13	71	35	-59	11	69	37	-59	11	66	40	-59	10	64	42	-59	9	62	44	-60	8	61	44	-59	7	356
5	74	12	-57	18	73	15	-57	17	72	18	-57	16	71	20	-57	15	68	26	-58	14	66	26	-58	12	65	31	-59	11	63	36	-59	11	61	36	-59	9	355
6	73	52	-56	21	72	56	-56	20	72	00	-56	19	71	03	-56	18	69	09	-57	16	68	12	-58	13	66	16	-58	12	65	23	-58	12	63	23	-58	11	354
7	73	29	-55	24	72	34	-55	23	71	39	-55	22	70	44	-56	21	69	48	-57	19	68	51	-56	19	67	55	-56	18	65	01	-58	13	61	12	-58	13	353
8	73	03	-54	27	72	09	-53	26	71	16	-55	24	70	21	-54	23	69	27	-54	22	68	31	-54	21	67	38	-54	20	65	08	-57	15	60	01	-58	14	352
9	72	34	-52	30	71	42	-52	29	70	50	-52	27	69	57	-54	26	68	03	-54	25	67	07	-54	24	66	14	-54	23	64	37	-57	17	60	42	-57	16	351
10	72	02	-50	33	71	12	-51	31	70	21	-52	30	69	29	-52	28	67	44	-54	27	67	14	-54	26	66	20	-54	25	64	07	-56	18	60	24	-56	17	350
11	71	28	-48	35	70	40	-50	34	69	50	-50	32	69	00	-51	30	68	09	-52	29	67	17	-52	28	66	25	-54	25	63	54	-54	25	61	05	-56	19	349
12	70	53	-47	38	70	06	-48	36	69	18	-49	34	68	29	-50	33	67	39	-51	31	66	48	-51	30	65	32	-50	29	63	20	-54	26	60	58	-51	20	348
13	70	15	-45	40	69	30	-47	38	68	43	-46	36	67	55	-46	35	67	07	-48	33	66	18	-51	32	65	27	-48	32	63	05	-48	31	57	07	-50	20	347
14	69	36	-44	42	68	52	-45	40	68	07	-44	38	67	20	-47	37	66	33	-48	35	65	45	-49	34	64	56	-48	32	62	01	-48	34	57	24	-48	30	346
15	68	55	-43	44	68	12	-43	42	67	29	-45	40	66	44	-46	39	65	58	-47	37	65	11	-48	35	64	23	-46	34	61	56	-46	35	58	12	-46	34	345
16	68	12	-41	46	67	31	-42	44	66	49	-43	42	66	06	-44	41	65	26	-43	41	64	36	-44	40	63	59	-43	39	61	59	-46	32	57	57	-43	38	344
17	67	29	-40	47	66	49	-41	46	65	26	-43	44	65	26	-43	44	64	04	-43	42	63	59	-44	41	63	59	-43	39	61	59	-46	32	57	56	-46	31	343
18	66	44	-38	49	66	06	-40	47	65	06	-41	45	64	45	-41	44	64	04	-43	42	63	52	-44	40	62	37	-42	39	60	57	-49	30	57	07	-50	20	342
19	65	58	-37	51	65	21	-38	49	64	43	-39	47	64	04	-41	45	63	23	-42	43	62	41	-43	42	61	58	-45	41	60	57	-49	30	56	36	-49	30	341
20	65	11	-35	52	64	36	-37	50	63	59	-38	48	63	21	-40	46	62	01	-42	43	61	56	-40	43	61	56	-40	43	60	56	-48	32	56	04	-48	32	340
21	64	23	-34	53	63	49	-35	51	63	14	-37	50	62	37	-39	48	61	58	-39	46	61	46	-41	44	61	46	-41	44	60	54	-44	44	54	44	-44	44	339
22	63	35	-32	54	63	02	-33	53	62	17	-35	52	61	52	-37	49	61	30	-39	47	60	53	-40	43	60	53	-40	43	60	53	-46	35	54	27	-46	35	338
23	62	46	-32	56	62	14	-33	54	61	21	-35	52	61	52	-37	49	59	53	-38	47	59	53	-40	43	51	53	-40	43	51	53	-44	37	54	27	-45	35	337
24	61	56	-31	57	61	25	-32	55	60	53	-34	53	60	19	-34	51	59	45	-36	50	59	09	-37	48	58	32	-36	47	52	26	-44	39	53	46	-44	37	336
25	61	05	-29	58	60	36	-31	56	60	05	-33	54	59	32	-34	52	58	58	-34	51	58	24	-36	47	57	57	-36	46	50	30	-43	39	53	09	-43	38	335
26	60	15	-29	59	59	46	-30	57	59	16	-32	55	58	44	-32	54	57	36	-34	52	57	36	-35	46	56	57	-35	45	50	28	-42	41	53	12	-42	41	334
27	59	23	-28	59	58	55	-29	58	58	26	-30	56	57	56	-32	54	56	57	-32	53	56	57	-32	53	56	57	-32	53	56	57	-36	48	51	53	-40	41	333
28	58	31	-26	60	58	05	-29	58	57	36	-29	57	57	07	-31	55	56	36	-32	54	56	04	-33	54	56	04	-33	54	56	04	-36	45	51	53	-40	41	332
29	57	39	-26	61	57	13	-27	59	56	46	-29	58	56	17	-30	56	55	47	-31	55	55	47	-31	55	55	47	-31	55	55	47	-34	42	50	43	-40	41	331
30	56	46	-25	62	56	21	-26	60	55	55	-28	59	55	27	-29	57	54	58	-28	58	54	58	-28	58	54	58	-28	58	54	58	-32	34	49	54	-40	41	330
31	55	53	-24	62	55	29	-26	61	55	03	-22	61	54	36	-29	58	54	37	-29	58	54	37	-29	58	54	37	-29	58	54	37	-36	34	49	54	-38	42	329
32	55	00	-24	63	54	36	-24	62	54	12	-26	60	53	46	-28	58	52	50	-28	58	52	50	-28	58	52	50	-28	58	52	50	-40	31	50	44	-40	41	328
33	54	06	-23	63	53	43	-24	62	53	19	-25	61	52	54	-26	60	53	46	-26	60	53	46	-26	60	53	46	-26	60	53	46	-44	24	51	53	-40	41	327
34	53	12	-22	64	52	50	-23	63	52	27	-24	61	52	03	-26	60	51	37	-27	61	51	37	-27	61	51	37	-27	61	51	37	-48	16	50	44	-40	41	326
35	52	18	-21	65	51	57	-23	63	51	34	-24	62	51	0	-24	60	50	46	-26	59	50	20	-27	58	49	53	-26	58	49	53	-50	8	49	54	-40	41	325
36	51	24	-21	65	51	03	-22	64	50	14	-24	61	49	54	-26	60	49	29	-26	60	49	29	-26	60	49	29	-26	60	49	29	-54	18	48	44	-38	42	324
37	50	29	-20	66	50	09	-21	65	49	48	-23	65	48	48	-23	62	48	02	-24	61	47	46	-24	61	47	46	-24	61	47	46	-58	2	47	46	-36	44	323
38	49	34	-19	66	49	15	-21	65	48	54	-21	64	48	54	-21	64	48	54	-21	64	48	54	-21	64	48	54	-21	64	48	54	-62	14	47	46	-36	44	322
39	48	39	-19	67	48	20	-20	66	48	00	-21	64	47	59	-22	63	47	39	-22	63	47	39	-22	63	47	39	-22	63	47	39	-66	14	47	46	-36	44	321
40	47	44	-19	67	47	25	-19	66	47	06	-20	65	46	46	-21	63	46	25	-22	62	46	25	-22	62	46	25	-22	62	46	25	-70	8	46	46	-36	44	320
41	46	48	-18	68	46	30	-18	66	46	12	-20	65	45	2	-20	64	45	32	-22	62	45	32	-22	62	45	32	-22	62	45	32	-74	18	46	46	-36	44	319
42	45	53	-18	68	45	35	-18	67	45	17	-19	66	44	18	-22	64	44	38	-20	63	44	38	-20	63</													

DECLINATION (15° – 29°) NORTH { L.H.A. greater than 180°Zn=Z OR SOUTH { L.H.A. greater than 180°Zn=180°-Z

LHA	15°		16°		17°		18°		19°		20°		21°		22°		23°		24°		25°		26°		27°		28°		29°		LHA																														
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z																															
70	19.17	-05	74	19.12	-07	73	19.05	-06	72	18.59	-07	71	18.52	-07	70	18.45	-08	69	18.37	-08	68	18.29	-08	67	18.21	-09	66	18.12	-09	65	18.03	-09	64	17.54	-09	63	17.45	-10	62	17.35	-11	61	17.24	-10	59	290															
71	18.20	-06	74	18.14	-06	73	18.08	-06	72	18.02	-06	71	17.56	-07	70	17.49	-07	69	17.42	-08	68	17.34	-08	67	17.26	-08	66	17.18	-08	65	17.10	-09	64	17.01	-09	63	16.52	-10	62	16.42	-09	61	16.33	-10	60	289															
72	17.22	-05	74	17.17	-06	73	17.11	-06	72	17.05	-06	71	16.99	-06	70	16.93	-07	69	16.86	-07	68	16.79	-07	67	16.72	-08	66	16.64	-08	65	16.56	-08	64	16.48	-08	63	16.39	-09	62	16.30	-09	61	16.21	-10	60	288															
73	16.24	-05	74	16.19	-05	73	16.14	-05	72	16.09	-06	71	16.03	-06	70	15.97	-07	69	15.90	-07	68	15.83	-07	67	15.76	-08	66	15.68	-08	65	15.60	-08	64	15.51	-08	63	15.42	-09	62	15.33	-09	61	15.24	-10	60	287															
74	15.26	-04	74	15.22	-05	73	15.17	-05	72	15.12	-05	71	15.06	-05	70	15.00	-06	69	14.93	-06	68	14.86	-06	67	14.79	-07	66	14.71	-07	65	14.62	-07	64	14.53	-07	63	14.44	-08	62	14.35	-08	61	14.26	-09	60	286															
75	14.29	-05	74	14.24	-04	73	14.20	-05	72	14.15	-05	71	14.10	-05	70	14.05	-06	69	13.98	-06	68	13.91	-06	67	13.84	-07	66	13.76	-07	65	13.67	-07	64	13.58	-07	63	13.49	-08	62	13.40	-08	61	13.31	-08	60	285															
76	13.31	-04	74	13.27	-04	74	13.23	-05	73	13.18	-05	72	13.13	-05	71	13.08	-05	70	13.02	-05	69	12.95	-06	68	12.88	-06	67	12.80	-06	66	12.71	-06	65	12.62	-06	64	12.53	-06	63	12.44	-07	62	12.35	-07	61	12.26	-07	60	284												
77	12.33	-04	74	12.29	-04	74	12.25	-04	74	12.21	-04	74	12.17	-05	73	12.12	-05	72	12.07	-05	71	12.01	-05	70	11.94	-05	69	11.87	-05	68	11.80	-05	67	11.72	-05	66	11.64	-05	65	11.55	-05	64	11.46	-06	63	11.37	-06	62	11.28	-06	61	11.19	-06	60	283						
78	11.35	-03	75	11.32	-04	74	11.28	-04	74	11.24	-04	74	11.20	-04	74	11.16	-04	73	11.11	-04	72	11.05	-04	71	11.00	-04	70	10.94	-04	69	10.88	-04	68	10.81	-04	67	10.74	-04	66	10.66	-04	65	10.58	-04	64	10.49	-04	63	10.40	-04	62	10.31	-04	61	10.22	-04	60	282			
79	10.37	-03	75	10.34	-03	74	10.31	-04	74	10.27	-03	74	10.24	-04	74	10.20	-04	73	10.16	-04	72	10.11	-04	71	10.06	-04	70	10.00	-04	69	09.94	-04	68	09.88	-04	67	09.81	-04	66	09.74	-04	65	09.66	-04	64	09.57	-04	63	09.48	-04	62	09.39	-04	61	09.30	-04	60	281			
80	09.39	-02	75	09.37	-03	74	09.34	-04	74	09.30	-03	74	09.27	-04	74	09.23	-03	73	09.20	-04	73	09.16	-04	72	09.12	-04	71	09.08	-04	70	09.03	-04	69	08.98	-04	68	08.92	-04	67	08.85	-04	66	08.78	-04	65	08.70	-04	64	08.61	-04	63	08.52	-04	62	08.43	-04	61	08.34	-04	60	280
81	08.41	-02	75	08.39	-03	74	08.36	-03	73	08.33	-03	73	08.30	-03	73	08.27	-03	73	08.24	-04	72	08.20	-03	72	08.17	-04	71	08.13	-04	70	08.09	-04	69	08.05	-04	68	08.01	-04	67	07.96	-04	66	07.90	-04	65	07.83	-04	64	07.75	-04	63	07.66	-04	62	07.57	-04	61	07.48	-04	60	279
82	07.44	-03	75	07.41	-02	74	07.39	-03	73	07.36	-02	73	07.34	-03	73	07.31	-03	72	07.28	-03	72	07.25	-03	71	07.22	-04	70	07.18	-04	69	07.15	-04	68	07.11	-04	67	07.07	-03	66	07.03	-03	65	06.98	-03	64	06.91	-03	63	06.83	-03	62	06.74	-03	61	06.65	-03	60	278			
83	06.46	-02	75	06.44	-02	74	06.42	-03	73	06.39	-02	73	06.37	-02	72	06.35	-03	71	06.32	-03	70	06.29	-03	69	06.26	-02	68	06.22	-02	67	06.18	-02	66	06.14	-02	65	06.10	-02	64	06.06	-01	63	06.01	-01	62	05.96	-01	61	05.90	-01	60	277									
84	05.48	-02	75	05.46	-02	74	05.44	-02	73	05.42	-02	72	05.40	-02	71	05.38	-02	70	05.36	-02	69	05.34	-03	68	05.31	-02	67	05.29	-03	66	05.26	-03	65	05.23	-02	64	05.20	-02	63	05.17	-02	62	05.14	-02	61	05.10	-01	60	276												
85	04.50	-02	75	04.48	-01	74	04.47	-02	73	04.45	-01	72	04.44	-02	71	04.42	-02	70	04.40	-02	69	04.38	-02	68	04.36	-02	67	04.34	-02	66	04.32	-02	65	04.30	-03	64	04.27	-02	63	04.25	-03	62	04.22	-02	61	04.19	-01	60	275												
86	03.52	-01	75	03.51	-02	74	03.49	-01	73	03.48	-01	72	03.47	-01	71	03.46	-02	70	03.44	-02	69	03.42	-01	68	03.41	-02	67	03.39	-02	66	03.37	-01	65	03.36	-02	64	03.34	-02	63	03.32	-02	62	03.30	-02	61	03.27	-01	60	274												
87	02.54	-01	75	02.53	-02	74	02.52	-01	73	02.51	-01	72	02.50	-01	71	02.49	-01	70	02.48	-01	69	02.47	-01	68	02.46	-02	67	02.44	-01	66	02.42	-01	65	02.42	-02	64	02.40	-01	63	02.39	-02	62	02.37	-01	61	02.34	-01	60	273												
88	01.56	-01	75	01.55	-00	74	01.55	-01	73	01.54	-01	72	01.53	-00	71	01.53	-01	70	01.52	-01	69	01.51	-01	68	01.50	-00	67	01.50	-01	66	01.49	-01	65	01.48	-01	64	01.47	-01	63	01.46	-01	62	01.45	-01	61	01.44	-01	60	272												
89	00.58	-00	75	00.58	-01	74	00.57	-00	73	00.57	-00	72	00.57	-01	71	00.56	-00	70	00.56	-01	69	00.55	-01	68	00.55	-00	67	00.55	-01	66	00.54	-00	65	00.54	-01	64	00.53	-00	63	00.53	-01	62	00.52	-00	61	00.51	-00	60	271												
90	00.00	-00	75	00.00	-00	74	00.00	-00	73	00.00	-00	72	00.00	-00	71	00.00	-00	70	00.00	-00	69	00.00	-00	68	00.00	-00	67	00.00	-00	66	00.00	-00	65	00.00	-00	64	00.00	-00	63	00.00	-00	62	00.00	-00	61	00.00	-00	60	270												
91	-0.58	-00	75	-0.58	-01	74	-0.57	-00	73	-0.57	-01	72	-0.57	-01	71	-0.56	-00	70	-0.56	-00	69	-0.56	-01	68	-0.55	-00	67	-0.55	-01	66	-0.54	-00	65	-0.54	-01	64	-0.53	-00	63	-0.53	-01	62	-0.52	-00	61	-0.51	-00	60	269												
92	-1.56	-01	75	-1.55	-00	74	-1.55	-01	73	-1.54	-01	72	-1.53	-00	71	-1.53	-01	70	-1.52	-01	69	-1.51	-01	68	-1.50	-00	67	-1.50	-01	66	-1.49	-01	65	-1.48	-01	64	-1.47	-01	63	-1.46	-01	62	-1.45	-01	61	-1.44	-01	60	268												
93	-2.54	-01	75	-2.53	-01	74	-2.52	-01	73	-2.51	-01	72	-2.50	-01	71	-2.49	-01	70	-2.48	-01	69	-2.47	-01	68	-2.46	-02	67	-2.44	-01	66	-2.43	-01	65	-2.42	-02	64	-2.40	-01	63	-2.39	-02	62	-2.37	-01	61	-2.36	-01	60	267												
94	-3.52	-01	75	-3.51	-02	74	-3.49	-01	73	-3.48	-01	72	-3.47	-01	71	-3.46	-02	70	-3.44	-02	69	-3.42	-01	68	-3.41	-02	67	-3.39	-02	66	-3.37	-01	65	-3.36	-02	64	-3.34	-02	63	-3.32	-02	62	-3.30	-02	61	-3.28	-02	60	266												
95	-4.50	-02	75	-4.48	-01	74	-4.47	-02	73	-4.45	-01	72	-4.44	-02	71	-4.42	-02	70	-4.40	-02	69	-4.38	-02	68	-4.36	-02	67	-4.34	-02	66	-4.32	-02	65	-4.30	-03	64	-4.27	-02	63	-4.25	-03	62	-4.22	-02	61	-4.20	-03	60	265												
96	-5.48	-02	75	-5.46	-02	74	-5.44	-02	73	-5.42	-02	72	-5.40	-02	71	-5.38	-03	70	-5.36	-02	69	-5.34	-03	68	-5.31	-02	67	-5.29	-03	66	-5.26	-03	65	-5.23	-02	64	-5.21	-03	63	-5.18	-03	62	-5.15	-03	61	-5.12	-03	60	264												
97	-6.46	-02	75	-6.44	-02	74	-6.42	-03	73	-6.39	-02	72	-6.37	-02	71	-6.35	-03	70	-6.32	-03	69	-6.29	-03	68	-6.26	-02	67	-6.24	-04	66	-6.21	-03	65	-6.17	-03	64	-6.14	-03	63	-6.11	-04	62	-6.07	-03	61	-6.04	-03	60	263												

LAT 0°

DECLINATION (15° – 29°) NORTH { L.H.A. greater than 180°Zn=Z OR SOUTH { L.H.A. greater than 180°Zn=180°-Z

LAT 0°

DECLINATION (0° – 14°) CONTRARY NAME TO LATITUDE

LAT 1°

N. Lat. { L.H.A. greater than 180°Zn=Z
L.H.A. less than 180°Zn=360°-Z

LHA	0°		1°		2°		3°		4°		5°		6°		7°		8°		9°		10°		11°		12°		13°		14°		LHA																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
68	21	00	-02	90	20	58	-01	91	20	57	-02	93	20	55	-03	94	20	52	-03	95	20	49	-03	96	20	46	-04	97	20	42	-04	98	20	38	-04	99	20	34	-05	100	20	29	-06	101	20	23	-06	102	20	17	-07	103	20	11	-07	104	20	05	-07	105	20	00	-08	106	20	-04	-08	107	20	-09	-08	108	20	-10	-08	109	20	-11	-08	110	20	-12	-08	111	20	-13	-08	112	20	-14	-08	113	20	-15	-08	114	20	-16	-08	115	20	-17	-08	116	20	-18	-08	117	20	-19	-08	118	20	-20	-08	119	20	-21	-08	120	20	-22	-08	121	20	-23	-08	122	20	-24	-08	123	20	-25	-08	124	20	-26	-08	125	20	-27	-08	126	20	-28	-08	127	20	-29	-08	128	20	-30	-08	129	20	-31	-08	130	20	-32	-08	131	20	-33	-08	132	20	-34	-08	133	20	-35	-08	134	20	-36	-08	135	20	-37	-08	136	20	-38	-08	137	20	-39	-08	138	20	-40	-08	139	20	-41	-08	140	20	-42	-08	141	20	-43	-08	142	20	-44	-08	143	20	-45	-08	144	20	-46	-08	145	20	-47	-08	146	20	-48	-08	147	20	-49	-08	148	20	-50	-08	149	20	-51	-08	150	20	-52	-08	151	20	-53	-08	152	20	-54	-08	153	20	-55	-08	154	20	-56	-08	155	20	-57	-08	156	20	-58	-08	157	20	-59	-08	158	20	-60	-08	159	20	-61	-08	160	20	-62	-08	161	20	-63	-08	162	20	-64	-08	163	20	-65	-08	164	20	-66	-08	165	20	-67	-08	166	20	-68	-08	167	20	-69	-08	168	20	-70	-08	169	20	-71	-08	170	20	-72	-08	171	20	-73	-08	172	20	-74	-08	173	20	-75	-08	174	20	-76	-08	175	20	-77	-08	176	20	-78	-08	177	20	-79	-08	178	20	-80	-08	179	20	-81	-08	180	20	-82	-08	181	20	-83	-08	182	20	-84	-08	183	20	-85	-08	184	20	-86	-08	185	20	-87	-08	186	20	-88	-08	187	20	-89	-08	188	20	-90	-08	189	20	-91	-08	190	20	-92	-08	191	20	-93	-08	192	20	-94	-08	193	20	-95	-08	194	20	-96	-08	195	20	-97	-08	196	20	-98	-08	197	20	-99	-08	198	20	-100	-08	199	20	-101	-08	200	20	-102	-08	201	20	-103	-08	202	20	-104	-08	203	20	-105	-08	204	20	-106	-08	205	20	-107	-08	206	20	-108	-08	207	20	-109	-08	208	20	-110	-08	209	20	-111	-08	210	20	-112	-08	211	20	-113	-08	212	20	-114	-08	213	20	-115	-08	214	20	-116	-08	215	20	-117	-08	216	20	-118	-08	217	20	-119	-08	218	20	-120	-08	219	20	-121	-08	220	20	-122	-08	221	20	-123	-08	222	20	-124	-08	223	20	-125	-08	224	20	-126	-08	225	20	-127	-08	226	20	-128	-08	227	20	-129	-08	228	20	-130	-08	229	20	-131	-08	230	20	-132	-08	231	20	-133	-08	232	20	-134	-08	233	20	-135	-08	234	20	-136	-08	235	20	-137	-08	236	20	-138	-08	237	20	-139	-08	238	20	-140	-08	239	20	-141	-08	240	20	-142	-08	241	20	-143	-08	242	20	-144	-08	243	20	-145	-08	244	20	-146	-08	245	20	-147	-08	246	20	-148	-08	247	20	-149	-08	248	20	-150	-08	249	20	-151	-08	250	20	-152	-08	251	20	-153	-08	252	20	-154	-08	253	20	-155	-08	254	20	-156	-08	255	20	-157	-08	256	20	-158	-08	257	20	-159	-08	258	20	-160	-08	259	20	-161	-08	260	20	-162	-08	261	20	-163	-08	262	20	-164	-08	263	20	-165	-08	264	20	-166	-08	265	20	-167	-08	266	20	-168	-08	267	20	-169	-08	268	20	-170	-08	269	20	-171	-08	270	20	-172	-08	271	20	-173	-08	272	20	-174	-08	273	20	-175	-08	274	20	-176	-08	275	20	-177	-08	276	20	-178	-08	277	20	-179	-08	278	20	-180	-08	279	20	-181	-08	280	20	-182	-08	281	20	-183	-08	282	20	-184	-08	283	20	-185	-08	284	20	-186	-08	285	20	-187	-08	286	20	-188	-08	287	20	-189	-08	288	20	-190	-08	289	20	-191	-08	290	20	-192	-08	291	20	-193	-08	292	20	-194	-08	293	20	-195	-08	294	20	-196	-08	295	20	-197	-08	296	20	-198	-08	297	20	-199	-08	300	20	-200	-08	301	20	-201	-08	302	20	-202	-08	303	20	-203	-08	304	20	-204	-08	305	20	-205	-08	306	20	-206	-08	307	20	-207	-08	308	20	-208	-08	309	20	-209	-08	310	20	-210	-08	311	20	-211	-08	312	20	-212	-08	313	20	-213	-08	314	20	-214	-08	315	20	-215	-08	316	20	-216	-08	317	20	-217	-08	318	20	-218	-08	319	20	-219	-08	320	20	-220	-08	321	20	-221	-08	322	20	-222	-08	323	20	-223	-08	324	20	-224	-08	325	20	-225	-08	326	20	-226	-08	327	20	-227	-08	328	20	-228	-08	329	20	-229	-08	330	20	-230	-08	331	20	-231	-08	332	20	-232	-08	333	20	-233	-08	334	20	-234	-08	335	20	-235	-08	336	20	-236	-08	337	20	-237	-08	338	20	-238	-08	339	20	-239	-08	340	20	-240	-08	341	20	-241	-08	342	20	-242	-08	343	20	-243	-08	344	20	-244	-08	345	20	-245	-08	346	20	-246	-08	347	20	-247	-08	348	20	-248	-08	349	20	-249	-08	350	20	-250	-08	351	20	-251	-08	352	20	-252	-08	353	20	-253	-08	354	20	-254	-08	355	20	-255	-08	356	20	-256	-08	357	20	-257	-08	358	20	-258	-08	359	20	-259	-08	360	20	-260	-08	361	20	-261	-08	362	20	-262	-08	363	20	-263	-08	364	20	-264	-08	365	20	-265	-08	366	20	-266	-08	367	20	-267	-08	368	20	-268	-08	369	20	-269	-08	370	20	-270	-08	371	20	-271	-08	372	20	-272	-08	373	20	-273	-08	374	20	-274	-08	375	20	-275	-08	376	20	-276	-08	377	20	-277	-08	378	20	-278	-08	379	20	-279	-08	380	20	-280	-08	381	20	-281	-08	382	20	-282	-08	383	20	-283	-08	384	20	-284	-08	385	20	-285	-08	386	20	-286	-08	387	20	-287	-08	388	20	-288	-08	389	20	-289	-08	390	20	-290	-08	391	20	-291	-08	392	20	-292	-08	393	20	-293	-08	394	20	-294	-08	395	20	-295	-08	396	20	-296	-08	397	20	-297	-08	398	20	-298	-08	399	20	-299	-08	400	20	-300	-08	401	20	-301	-08	402	20	-302	-08	403	20	-303	-08	404	20	-304	-08	405	20	-305	-08	406	20	-306	-08	407	20	-307	-08	408	20	-308	-08	409	20	-309	-08	410	20	-310	-08	411	20	-311	-08	412	20	-312	-08	413	20	-313	-08	414	20	-314	-08	415	20	-315	-08	416	20	-316	-08	417	20	-317	-08	418	20	-318	-08	419	20	-319	-08	420	20	-320	-08	421	20	-321	-08	422	20	-322	-08	423	20	-323	-08	424	20	-324	-08	425	20	-325	-08	426	20	-326	-08	427	20	-327	-08	428	20	-328	-08	429	20	-329	-08	430	20	-330	-08	431	20	-331	-08	432	20	-332	-08	433	20	-333	-08	434	20	-334	-08	435	20	-335	-08	436	20	-336	-08	437	20	-337	-08	438	20	-338	-08	439	20	-339	-08	440	20	-340	-08	441	20	-341	-08	442	20	-342	-08	443	20	-343	-08	444	20	-344	-08	445	20	-345	-08	446	20	-346	-08	447	20	-347	-08	448	20	-348	-08	449	20	-349	-08	450	20	-350	-08	451	20	-351	-08	452	20	-352	-08	453	20	-353	-08	454	20	-354	-08	455	20	-355	-08	456	20	-356	-08	457	20	-357	-08	458	20	-358	-08	459	20	-359	-08	460	20	-360	-08	461	20	-361	-08	462	20	-362	-08	463	20	-363	-08	464	20	-364	-08	465	20	-365	-08	466	20	-366	-08	467	20	-367	-08	468	20	-368	-08	469	20	-369	-08	470	20	-370	-08	471	20	-371	-08	472	20	-372	-08	473	20	-373	-08	474	20	-374	-08	475	20	-375	-08	476	20	-376	-08	477	20	-377	-08	478	20	-378	-08	479	20	-379	-08	480	20	-380	-08	481	20	-381	-08	482	20	-382	-08	483	20	-383	-08	484	20	-384	-08	485	20	-385	-08	486	20	-386	-08	487	20	-387	-08	

DECLINATION (15° - 29°) SAME NAME AS LATITUDE

N. Lat. { L.H.A. greater than 180°Zn=Z
L.H.A. less than 180°Zn=360°-Z

Table with columns for LHA, 15° to 29° (Hc, d, Z), and 29° to 15° (Hc, d, Z). Each cell contains numerical values representing declination data.

S. Lat. { L.H.A. greater than 180°Zn=180°-Z
L.H.A. less than 180°Zn=180°+Z

DECLINATION (15° - 29°) SAME NAME AS LATITUDE

LAT 1°

DECLINATION (15° - 29°) SAME NAME AS LATITUDE

N. Lat. { L.H.A. greater than 180°Zn=Z
L.H.A. less than 180°Zn=360°-Z

LHA	15°		16°		17°		18°		19°		20°		21°		22°		23°		24°		25°		26°		27°		28°		29°		LHA
	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	
70	19 34	-05 74	19 29	-05 73	19 24	-06 72	19 18	-05 71	19 13	-07 70	19 06	-06 69	19 00	-07 68	18 53	-07 67	18 46	-08 66	18 38	-08 65	18 30	-08 64	18 22	-08 63	18 13	-09 62	18 04	-09 61	17 55	-10 60	280
71	17 36	-04 74	17 30	-05 73	17 23	-06 72	17 16	-06 70	17 10	-06 69	17 03	-06 68	16 56	-07 67	16 48	-07 66	16 41	-07 65	16 33	-07 64	16 25	-07 63	16 17	-08 62	16 09	-08 61	16 01	-09 60	15 53	-09 59	281
72	15 40	-04 74	15 33	-05 73	15 26	-06 72	15 19	-06 70	15 12	-06 69	15 05	-06 68	14 58	-07 67	14 51	-07 66	14 44	-07 65	14 36	-07 64	14 28	-07 63	14 20	-08 62	14 12	-08 61	14 04	-09 60	13 56	-09 59	282
73	13 44	-04 74	13 37	-04 73	13 30	-04 72	13 23	-04 71	13 16	-04 70	13 09	-04 69	13 02	-04 68	12 55	-04 67	12 48	-04 66	12 41	-04 65	12 34	-04 64	12 27	-04 63	12 20	-04 62	12 13	-04 61	12 06	-04 60	283
74	11 48	-04 74	11 41	-04 73	11 34	-04 72	11 27	-04 71	11 20	-04 70	11 13	-04 69	11 06	-04 68	10 59	-04 67	10 52	-04 66	10 45	-04 65	10 38	-04 64	10 31	-04 63	10 24	-04 62	10 17	-04 61	10 10	-04 60	284
75	9 52	-04 74	9 45	-04 73	9 38	-04 72	9 31	-04 71	9 24	-04 70	9 17	-04 69	9 10	-04 68	9 03	-04 67	8 56	-04 66	8 49	-04 65	8 42	-04 64	8 35	-04 63	8 28	-04 62	8 21	-04 61	8 14	-04 60	285
76	7 56	-04 74	7 49	-04 73	7 42	-04 72	7 35	-04 71	7 28	-04 70	7 21	-04 69	7 14	-04 68	7 07	-04 67	7 00	-04 66	6 53	-04 65	6 46	-04 64	6 39	-04 63	6 32	-04 62	6 25	-04 61	6 18	-04 60	286
77	5 60	-04 74	5 53	-04 73	5 46	-04 72	5 39	-04 71	5 32	-04 70	5 25	-04 69	5 18	-04 68	5 11	-04 67	5 04	-04 66	4 57	-04 65	4 50	-04 64	4 43	-04 63	4 36	-04 62	4 29	-04 61	4 22	-04 60	287
78	3 64	-04 74	3 57	-04 73	3 50	-04 72	3 43	-04 71	3 36	-04 70	3 29	-04 69	3 22	-04 68	3 15	-04 67	3 08	-04 66	3 01	-04 65	2 54	-04 64	2 47	-04 63	2 40	-04 62	2 33	-04 61	2 26	-04 60	288
79	1 68	-04 74	1 61	-04 73	1 54	-04 72	1 47	-04 71	1 40	-04 70	1 33	-04 69	1 26	-04 68	1 19	-04 67	1 12	-04 66	1 05	-04 65	9 58	-04 64	9 51	-04 63	9 44	-04 62	9 37	-04 61	9 30	-04 60	289
80	0 12	-04 74	0 05	-04 73	0 00	-04 72	0 00	-04 71	0 00	-04 70	0 00	-04 69	0 00	-04 68	0 00	-04 67	0 00	-04 66	0 00	-04 65	0 00	-04 64	0 00	-04 63	0 00	-04 62	0 00	-04 61	0 00	-04 60	290
81	0 16	-04 74	0 09	-04 73	0 04	-04 72	0 03	-04 71	0 02	-04 70	0 01	-04 69	0 00	-04 68	0 00	-04 67	0 00	-04 66	0 00	-04 65	0 00	-04 64	0 00	-04 63	0 00	-04 62	0 00	-04 61	0 00	-04 60	291
82	0 20	-04 74	0 13	-04 73	0 08	-04 72	0 07	-04 71	0 06	-04 70	0 05	-04 69	0 04	-04 68	0 03	-04 67	0 02	-04 66	0 01	-04 65	0 00	-04 64	0 00	-04 63	0 00	-04 62	0 00	-04 61	0 00	-04 60	292
83	0 24	-04 74	0 17	-04 73	0 11	-04 72	0 10	-04 71	0 09	-04 70	0 08	-04 69	0 07	-04 68	0 06	-04 67	0 05	-04 66	0 04	-04 65	0 03	-04 64	0 02	-04 63	0 01	-04 62	0 00	-04 61	0 00	-04 60	293
84	0 28	-04 74	0 21	-04 73	0 15	-04 72	0 14	-04 71	0 13	-04 70	0 12	-04 69	0 11	-04 68	0 10	-04 67	0 09	-04 66	0 08	-04 65	0 07	-04 64	0 06	-04 63	0 05	-04 62	0 04	-04 61	0 03	-04 60	294
85	0 32	-04 74	0 25	-04 73	0 19	-04 72	0 18	-04 71	0 17	-04 70	0 16	-04 69	0 15	-04 68	0 14	-04 67	0 13	-04 66	0 12	-04 65	0 11	-04 64	0 10	-04 63	0 09	-04 62	0 08	-04 61	0 07	-04 60	295
86	0 36	-04 74	0 29	-04 73	0 23	-04 72	0 22	-04 71	0 21	-04 70	0 20	-04 69	0 19	-04 68	0 18	-04 67	0 17	-04 66	0 16	-04 65	0 15	-04 64	0 14	-04 63	0 13	-04 62	0 12	-04 61	0 11	-04 60	296
87	0 40	-04 74	0 33	-04 73	0 27	-04 72	0 26	-04 71	0 25	-04 70	0 24	-04 69	0 23	-04 68	0 22	-04 67	0 21	-04 66	0 20	-04 65	0 19	-04 64	0 18	-04 63	0 17	-04 62	0 16	-04 61	0 15	-04 60	297
88	0 44	-04 74	0 37	-04 73	0 31	-04 72	0 30	-04 71	0 29	-04 70	0 28	-04 69	0 27	-04 68	0 26	-04 67	0 25	-04 66	0 24	-04 65	0 23	-04 64	0 22	-04 63	0 21	-04 62	0 20	-04 61	0 19	-04 60	298
89	0 48	-04 74	0 41	-04 73	0 35	-04 72	0 34	-04 71	0 33	-04 70	0 32	-04 69	0 31	-04 68	0 30	-04 67	0 29	-04 66	0 28	-04 65	0 27	-04 64	0 26	-04 63	0 25	-04 62	0 24	-04 61	0 23	-04 60	299
90	0 52	-04 74	0 45	-04 73	0 39	-04 72	0 38	-04 71	0 37	-04 70	0 36	-04 69	0 35	-04 68	0 34	-04 67	0 33	-04 66	0 32	-04 65	0 31	-04 64	0 30	-04 63	0 29	-04 62	0 28	-04 61	0 27	-04 60	300
91	0 56	-04 74	0 49	-04 73	0 43	-04 72	0 42	-04 71	0 41	-04 70	0 40	-04 69	0 39	-04 68	0 38	-04 67	0 37	-04 66	0 36	-04 65	0 35	-04 64	0 34	-04 63	0 33	-04 62	0 32	-04 61	0 31	-04 60	301
92	1 00	-04 74	0 53	-04 73	0 47	-04 72	0 46	-04 71	0 45	-04 70	0 44	-04 69	0 43	-04 68	0 42	-04 67	0 41	-04 66	0 40	-04 65	0 39	-04 64	0 38	-04 63	0 37	-04 62	0 36	-04 61	0 35	-04 60	302
93	1 04	-04 74	0 57	-04 73	0 51	-04 72	0 50	-04 71	0 49	-04 70	0 48	-04 69	0 47	-04 68	0 46	-04 67	0 45	-04 66	0 44	-04 65	0 43	-04 64	0 42	-04 63	0 41	-04 62	0 40	-04 61	0 39	-04 60	303
94	1 08	-04 74	0 61	-04 73	0 55	-04 72	0 54	-04 71	0 53	-04 70	0 52	-04 69	0 51	-04 68	0 50	-04 67	0 49	-04 66	0 48	-04 65	0 47	-04 64	0 46	-04 63	0 45	-04 62	0 44	-04 61	0 43	-04 60	304
95	1 12	-04 74	0 65	-04 73	0 59	-04 72	0 58	-04 71	0 57	-04 70	0 56	-04 69	0 55	-04 68	0 54	-04 67	0 53	-04 66	0 52	-04 65	0 51	-04 64	0 50	-04 63	0 49	-04 62	0 48	-04 61	0 47	-04 60	305
96	1 16	-04 74	0 69	-04 73	0 63	-04 72	0 62	-04 71	0 61	-04 70	0 60	-04 69	0 59	-04 68	0 58	-04 67	0 57	-04 66	0 56	-04 65	0 55	-04 64	0 54	-04 63	0 53	-04 62	0 52	-04 61	0 51	-04 60	306
97	1 20	-04 74	0 73	-04 73	0 67	-04 72	0 66	-04 71	0 65	-04 70	0 64	-04 69	0 63	-04 68	0 62	-04 67	0 61	-04 66	0 60	-04 65	0 64	-04 64	0 63	-04 63	0 62	-04 62	0 61	-04 61	0 60	-04 60	307

DECLINATION (15° - 29°) CONTRARY NAME TO LATITUDE

S. Lat. { L.H.A. greater than 180°Zn=180°-Z
L.H.A. less than 180°Zn=180°+Z

LHA	15°		16°		17°		18°		19°		20°		21°		22°		23°		24°		25°		26°		27°		28°		29°		LHA
	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	
96	-6 03	00 105	-6 03	01 106	-6 02	01 107	-6 01	01 108	-6 00	01 109	-5 59	01 110	-5 58	02 111	-5 56	02 112	-5 55	02 113	-5 53	02 114	-5 52	02 115	-5 50	03 116	-5 48	03 117	-5 46	03 118	-5 44	03 119	263
97	-5 05	00 105	-5 05	01 106	-5 04	01 107	-5 04	01 108	-5 03	01 109	-5 02	01 110	-5 02	01 111	-5 01	01 112	-5 00	02 113	-4 58	01 114	-4 57	01 115	-4 56	01 116	-4 55	02 117	-4 53	02 118	-4 51	01 119	264
98	-4 07	00 105	-4 07	01 106	-4 07	01 107	-4 07	01 108	-4 06	01 109	-4 06	01 110	-4 06	01 111	-4 05	01 112	-4 04	01 113	-4 04	01 114	-4 03	01 115	-4 02	01 116	-4 01	01 117	-4 00	01 118	-3 59	01 119	265
99	-3 09	00 105	-3 10	00 106	-3 10	00 107	-3 10	00 108	-3 10	00 109	-3 10	00 110	-3 10	01 111	-3 09	00 112	-3 09	00 113	-3 09	00 114	-3 08	00 115	-3 08	00 116	-3 08	01 117	-3 07	00 118	-3 07	01 119	266
100	-2 11	00 105	-2 12	00 106	-2 12	00 107	-2 13	00 108	-2 13	00 109	-2 13	00 110	-2 14	00 111	-2 14	00 112	-2 14	00 113	-2 14	00 114	-2 14	00 115	-2 14	00 116	-2 14	00 117	-2 14	00 118	-2 14	00 119	267
101	-1 13	00 105	-1 14	00 106	-1 15	00 107	-1 16	00 108	-1 16	00 109	-1 17	00 110	-1 17	00 111	-1 18	00 112	-1 19	00 113	-1 19	00 114	-1 20	00 115	-1 20	00 116	-1 20	00 117	-1 21	00 118	-1 22	00 119	268
102	0 16	00 105	0 17	00 106	0 18	00 107	0 19	00 108	0 19	00 109	0 20	00 110	0 20	00 111	0 20	00 112	0 20	00 113	0 20	00 114	0 20	00 115	0 20	00 116	0 20	00 117	0 20	00 118	0 20	00 119	269
103	0 42	00 105	0 41	00 106	0 40	00 107	0 39	00 108	0 37	00 109	0 36	00 110	0 35	00 111	0 33	00 112	0 32	00 113	0 30	00 114	0 29	00 115	0 28	00							

DECLINATION (15° - 29°) CONTRARY NAME TO LATITUDE

N. Lat. { L.H.A. greater than 180°Zn=Z
L.H.A. less than 180°Zn=360°-Z

Table with columns for LHA, latitude (15° to 19°), and declination (15° to 29°). Each declination column contains three sub-columns: Hc, d, and Z. The table lists 360 rows of data.

S. Lat. { L.H.A. greater than 180°Zn=180°-Z
L.H.A. less than 180°Zn=180°+Z

DECLINATION (15° - 29°) CONTRARY NAME TO LATITUDE

DECLINATION (0° - 14°) SAME NAME AS LATITUDE

N. Lat. { L.H.A. greater than 180°Zn=Z
L.H.A. less than 180°Zn=360°-Z

LHA	0°		1°		2°		3°		4°		5°		6°		7°		8°		9°		10°		11°		12°		13°		14°		LHA															
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z																
70	19.59	02	91	20.01	02	90	20.03	01	89	20.04	01	88	20.05	01	86	20.06	00	85	20.06	-01	84	20.05	00	83	20.05	-01	82	20.04	-02	81	20.02	-01	80	20.01	-03	79	19.58	-02	78	19.56	-03	77	19.53	-03	76	290
71	18.59	02	91	19.01	02	90	19.03	01	89	19.04	01	88	19.05	01	86	19.06	00	85	19.06	00	84	19.06	-01	83	19.05	-01	82	19.05	-02	81	19.03	-01	80	19.02	-02	79	18.99	-02	78	18.98	-03	77	18.95	-03	76	289
72	17.59	02	91	18.01	02	90	18.03	01	89	18.04	01	88	18.05	01	86	18.06	00	85	18.06	00	84	18.06	-01	83	18.05	-01	82	18.05	-02	81	18.04	-01	80	18.03	-02	79	18.01	-02	78	17.99	-02	77	17.97	-03	76	288
73	16.59	02	91	17.01	02	90	17.03	01	89	17.04	01	88	17.05	01	86	17.06	00	85	17.07	00	84	17.07	-01	83	17.07	-01	82	17.07	-02	81	17.06	-01	80	17.04	-02	79	17.02	-01	78	17.01	-02	77	16.99	-02	76	287
74	15.59	02	91	16.01	02	90	16.03	01	89	16.04	01	88	16.05	01	86	16.06	00	85	16.07	00	84	16.07	-01	83	16.07	-01	82	16.07	-02	81	16.06	-01	80	16.05	-01	79	16.04	-02	78	16.02	-02	77	16.00	-02	76	286
75	14.59	02	91	15.01	02	90	15.03	01	89	15.04	01	88	15.05	01	86	15.07	00	85	15.07	00	84	15.08	-01	83	15.08	-01	82	15.08	-02	81	15.07	-01	80	15.06	-01	79	15.05	-01	78	15.04	-02	77	15.02	-02	76	285
76	13.59	03	90	14.02	01	89	14.03	02	88	14.03	02	88	14.04	01	86	14.07	00	85	14.08	00	84	14.08	-01	83	14.08	-01	82	14.08	-02	81	14.08	-01	80	14.07	-01	79	14.06	-01	78	14.05	-01	77	14.04	-02	76	284
77	13.00	02	90	13.02	01	89	13.03	02	88	13.03	02	88	13.04	01	86	13.07	00	85	13.08	00	84	13.09	-01	83	13.09	-01	82	13.09	-02	81	13.09	-01	80	13.08	-01	79	13.08	-01	78	13.07	-01	77	13.06	-02	76	283
78	12.00	02	90	12.02	01	89	12.03	02	88	12.03	02	88	12.04	01	86	12.07	00	85	12.08	00	84	12.09	-01	83	12.09	-01	82	12.10	-01	81	12.10	-01	80	12.10	-01	79	12.09	-01	78	12.08	-02	77	12.08	-02	76	282
79	11.00	02	90	11.02	01	89	11.03	02	88	11.03	02	88	11.04	01	86	11.07	00	85	11.09	01	84	11.10	-01	83	11.10	-01	82	11.10	-02	81	11.10	-01	80	11.10	-01	79	11.10	-01	78	11.09	-01	77	11.09	-01	76	281
80	10.00	02	90	10.02	01	89	10.03	02	88	10.03	02	88	10.04	01	86	10.07	00	85	10.09	01	84	10.10	-01	83	10.10	-01	82	10.11	-01	81	10.12	-01	80	10.12	-01	79	10.12	-01	78	10.12	-01	77	10.11	-01	76	280
81	09.00	02	90	09.02	01	89	09.03	02	88	09.04	01	88	09.05	01	86	09.09	01	85	09.09	01	84	09.10	-01	83	09.11	-01	82	09.12	-01	81	09.13	-01	80	09.13	-01	79	09.13	-01	78	09.13	-01	77	09.13	-01	76	279
82	08.00	02	90	08.02	01	89	08.03	02	88	08.04	01	88	08.05	01	86	08.08	01	85	08.10	01	84	08.11	-01	83	08.12	-01	82	08.13	-01	81	08.14	-01	80	08.14	-01	79	08.14	-01	78	08.15	-01	77	08.15	-01	76	278
83	07.00	02	90	07.02	01	89	07.03	02	88	07.04	01	88	07.05	01	86	07.09	01	85	07.10	01	84	07.11	-01	83	07.12	-01	82	07.13	-01	81	07.14	-01	80	07.15	-01	79	07.16	-01	78	07.16	-01	77	07.16	-01	76	277
84	06.00	02	90	06.02	01	89	06.03	02	88	06.04	01	88	06.05	01	86	06.09	01	85	06.10	01	84	06.12	-01	83	06.13	-01	82	06.14	-01	81	06.15	-01	80	06.16	-01	79	06.17	-01	78	06.18	-01	77	06.18	-01	76	276
85	05.00	02	90	05.02	01	89	05.03	02	88	05.04	01	88	05.05	01	86	05.09	01	85	05.11	01	84	05.12	-01	83	05.13	-01	82	05.14	-01	81	05.15	-01	80	05.17	-01	79	05.18	-01	78	05.19	-01	77	05.20	-01	76	275
86	04.00	02	90	04.02	01	89	04.03	02	88	04.04	01	88	04.05	01	86	04.09	01	85	04.11	01	84	04.13	-01	83	04.14	-01	82	04.16	-01	81	04.17	-01	80	04.18	-01	79	04.21	-01	78	04.21	-01	77	04.22	-01	76	274
87	03.00	02	90	03.02	01	89	03.03	02	88	03.04	01	88	03.05	01	86	03.10	01	85	03.11	01	84	03.13	-01	83	03.14	-01	82	03.16	-01	81	03.17	-01	80	03.20	-01	79	03.21	-01	78	03.22	-01	77	03.24	-01	76	273
88	02.00	02	90	02.02	01	89	02.03	02	88	02.04	01	88	02.05	01	86	02.10	01	85	02.12	01	84	02.14	-01	83	02.15	-01	82	02.17	-01	81	02.19	-01	80	02.21	-01	79	02.22	-01	78	02.24	-01	77	02.25	-01	76	272
89	01.00	02	90	01.02	01	89	01.03	02	88	01.04	01	88	01.05	01	86	01.10	01	85	01.12	01	84	01.14	-01	83	01.16	-01	82	01.18	-01	81	01.20	-01	80	01.22	-01	79	01.24	-01	78	01.25	-01	77	01.27	-01	76	271
90	00.00	02	90	00.02	01	89	00.03	02	88	00.04	01	88	00.05	01	86	00.10	01	85	00.13	01	84	00.15	-01	83	00.17	-01	82	00.19	-01	81	00.21	-01	80	00.23	-01	79	00.25	-01	78	00.27	-01	77	00.29	-01	76	270
91	-1.00	02	90	-0.58	02	89	-0.56	03	88	-0.54	03	88	-0.53	02	86	-0.49	02	85	-0.47	02	84	-0.45	-02	83	-0.43	-02	82	-0.40	-02	81	-0.38	-02	80	-0.36	-02	79	-0.34	-02	78	-0.31	-02	77	-0.29	-02	76	269
92	-2.00	02	90	-1.58	02	89	-1.56	03	88	-1.54	03	88	-1.53	02	86	-1.49	02	85	-1.47	02	84	-1.44	-02	83	-1.42	-02	82	-1.40	-02	81	-1.37	-02	80	-1.35	-02	79	-1.32	-02	78	-1.30	-02	77	-1.27	-02	76	268
93	-3.00	02	90	-2.58	02	89	-2.56	03	88	-2.53	02	88	-2.52	01	86	-2.48	02	85	-2.46	02	84	-2.44	-02	83	-2.41	-02	82	-2.39	-02	81	-2.36	-02	80	-2.34	-02	79	-2.31	-02	78	-2.28	-02	77	-2.25	-02	76	267
94	-4.00	02	90	-3.58	02	89	-3.56	03	88	-3.53	02	88	-3.52	01	86	-3.48	02	85	-3.46	02	84	-3.43	-02	83	-3.41	-02	82	-3.38	-02	81	-3.35	-02	80	-3.32	-02	79	-3.30	-02	78	-3.27	-02	77	-3.24	-02	76	266
95	-5.00	02	90	-4.58	03	89	-4.55	02	88	-4.53	02	88	-4.52	01	86	-4.48	02	85	-4.46	02	84	-4.43	-02	83	-4.40	-02	82	-4.37	-02	81	-4.34	-02	80	-4.31	-02	79	-4.28	-02	78	-4.25	-02	77	-4.22	-02	76	265
96	-6.00	02	90	-5.58	03	89	-5.55	02	88	-5.53	02	88	-5.52	01	86	-5.48	02	85	-5.45	02	84	-5.42	-02	83	-5.39	-02	82	-5.36	-02	81	-5.33	-02	80	-5.30	-02	79	-5.27	-02	78	-5.23	-02	77	-5.20	-02	76	264
97	-6.58	03	89	-6.55	02	88	-6.53	01	88	-6.51	02	88	-6.50	01	86	-6.46	02	85	-6.44	02	84	-6.42	-02	83	-6.39	-02	82	-6.36	-02	81	-6.32	-02	80	-6.29	-02											

N. Lat. { L.H.A. greater than 180°Zn-Z
L.H.A. less than 180°Zn=360°-Z

LAT 2°

DECLINATION (0° - 14°) CONTRARY NAME TO LATITUDE

LHA	0°		1°		2°		3°		4°		5°		6°		7°		8°		9°		10°		11°		12°		13°		14°		LHA																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
68	20 58	-02	91	20 57	-03	92	20 54	-03	93	20 51	-04	94	20 47	-04	95	20 43	-04	96	20 39	-05	97	20 34	-05	98	20 29	-06	99	20 23	-06	100	20 17	-06	101	20 11	-07	102	20 04	-07	104	19 57	-08	105	19 49	-08	106	19 41	-08	107	19 33	-09	108	19 25	-09	109	19 17	-09	110	19 09	-10	111	19 01	-10	112	18 53	-10	113	18 45	-11	114	18 37	-11	115	18 29	-11	116	18 21	-12	117	18 13	-12	118	18 05	-12	119	17 57	-12	120	17 49	-12	121	17 41	-13	122	17 33	-13	123	17 25	-13	124	17 17	-13	125	17 09	-14	126	17 01	-14	127	16 53	-14	128	16 45	-14	129	16 37	-15	130	16 29	-15	131	16 21	-15	132	16 13	-15	133	16 05	-15	134	15 57	-16	135	15 49	-16	136	15 41	-16	137	15 33	-16	138	15 25	-16	139	15 17	-16	140	15 09	-17	141	15 01	-17	142	14 53	-17	143	14 45	-17	144	14 37	-17	145	14 29	-17	146	14 21	-18	147	14 13	-18	148	14 05	-18	149	13 57	-18	150	13 49	-18	151	13 41	-18	152	13 33	-19	153	13 25	-19	154	13 17	-19	155	13 09	-19	156	13 01	-19	157	12 53	-19	158	12 45	-19	159	12 37	-20	160	12 29	-20	161	12 21	-20	162	12 13	-20	163	12 05	-20	164	11 57	-20	165	11 49	-20	166	11 41	-21	167	11 33	-21	168	11 25	-21	169	11 17	-21	170	11 09	-21	171	11 01	-21	172	10 53	-21	173	10 45	-21	174	10 37	-21	175	10 29	-21	176	10 21	-22	177	10 13	-22	178	10 05	-22	179	9 57	-22	180	9 49	-22	181	9 41	-22	182	9 33	-22	183	9 25	-22	184	9 17	-22	185	9 09	-22	186	9 01	-22	187	8 53	-22	188	8 45	-22	189	8 37	-22	190	8 29	-22	191	8 21	-22	192	8 13	-22	193	8 05	-22	194	7 57	-22	195	7 49	-22	196	7 41	-22	197	7 33	-22	198	7 25	-22	199	7 17	-22	200	7 09	-22	201	7 01	-22	202	6 53	-22	203	6 45	-22	204	6 37	-22	205	6 29	-22	206	6 21	-22	207	6 13	-22	208	6 05	-22	209	5 57	-22	210	5 49	-22	211	5 41	-22	212	5 33	-22	213	5 25	-22	214	5 17	-22	215	5 09	-22	216	5 01	-22	217	4 53	-22	218	4 45	-22	219	4 37	-22	220	4 29	-22	221	4 21	-22	222	4 13	-22	223	4 05	-22	224	3 57	-22	225	3 49	-22	226	3 41	-22	227	3 33	-22	228	3 25	-22	229	3 17	-22	230	3 09	-22	231	3 01	-22	232	2 53	-22	233	2 45	-22	234	2 37	-22	235	2 29	-22	236	2 21	-22	237	2 13	-22	238	2 05	-22	239	1 57	-22	240	1 49	-22	241	1 41	-22	242	1 33	-22	243	1 25	-22	244	1 17	-22	245	1 09	-22	246	1 01	-22	247	0 93	-22	248	0 85	-22	249	0 77	-22	250	0 69	-22	251	0 61	-22	252	0 53	-22	253	0 45	-22	254	0 37	-22	255	0 29	-22	256	0 21	-22	257	0 13	-22	258	0 05	-22	259	-0 03	-22	260	-0 11	-22	261	-0 19	-22	262	-0 27	-22	263	-0 35	-22	264	-0 43	-22	265	-0 51	-22	266	-0 59	-22	267	-1 07	-22	268	-1 15	-22	269	-1 23	-22	270	-1 31	-22	271	-1 39	-22	272	-1 47	-22	273	-1 55	-22	274	-2 03	-22	275	-2 11	-22	276	-2 19	-22	277	-2 27	-22	278	-2 35	-22	279	-2 43	-22	280	-2 51	-22	281	-2 59	-22	282	-3 07	-22	283	-3 15	-22	284	-3 23	-22	285	-3 31	-22	286	-3 39	-22	287	-3 47	-22	288	-3 55	-22	289	-4 03	-22	290	-4 11	-22	291	-4 19	-22	292	-4 27	-22	293	-4 35	-22	294	-4 43	-22	295	-4 51	-22	296	-4 59	-22	297	-5 07	-22	298	-5 15	-22	299	-5 23	-22	300	-5 31	-22	301	-5 39	-22	302	-5 47	-22	303	-5 55	-22	304	-6 03	-22	305	-6 11	-22	306	-6 19	-22	307	-6 27	-22	308	-6 35	-22	309	-6 43	-22	310	-6 51	-22	311	-6 59	-22	312	-7 07	-22	313	-7 15	-22	314	-7 23	-22	315	-7 31	-22	316	-7 39	-22	317	-7 47	-22	318	-7 55	-22	319	-8 03	-22	320	-8 11	-22	321	-8 19	-22	322	-8 27	-22	323	-8 35	-22	324	-8 43	-22	325	-8 51	-22	326	-8 59	-22	327	-9 07	-22	328	-9 15	-22	329	-9 23	-22	330	-9 31	-22	331	-9 39	-22	332	-9 47	-22	333	-9 55	-22	334	-10 03	-22	335	-10 11	-22	336	-10 19	-22	337	-10 27	-22	338	-10 35	-22	339	-10 43	-22	340	-10 51	-22	341	-10 59	-22	342	-11 07	-22	343	-11 15	-22	344	-11 23	-22	345	-11 31	-22	346	-11 39	-22	347	-11 47	-22	348	-11 55	-22	349	-12 03	-22	350	-12 11	-22	351	-12 19	-22	352	-12 27	-22	353	-12 35	-22	354	-12 43	-22	355	-12 51	-22	356	-12 59	-22	357	-13 07	-22	358	-13 15	-22	359	-13 23	-22	360	-13 31	-22	361	-13 39	-22	362	-13 47	-22	363	-13 55	-22	364	-14 03	-22	365	-14 11	-22	366	-14 19	-22	367	-14 27	-22	368	-14 35	-22	369	-14 43	-22	370	-14 51	-22	371	-14 59	-22	372	-15 07	-22	373	-15 15	-22	374	-15 23	-22	375	-15 31	-22	376	-15 39	-22	377	-15 47	-22	378	-15 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43	-22	445	-24 51	-22	446	-24 59	-22	447	-25 07	-22	448	-25 15	-22	449	-25 23	-22	450	-25 31	-22	451	-25 39	-22	452	-25 47	-22	453	-25 55	-22	454	-26 03	-22	455	-26 11	-22	456	-26 19	-22	457	-26 27	-22	458	-26 35	-22	459	-26 43	-22	460	-26 51	-22	461	-26 59	-22	462	-27 07	-22	463	-27 15	-22	464	-27 23	-22	465	-27 31	-22	466	-27 39	-22	467	-27 47	-22	468	-27 55	-22	469	-28 03	-22	470	-28 11	-22	471	-28 19	-22	472	-28 27	-22	473	-28 35	-22	474	-28 43	-22	475	-28 51	-22	476	-28 59	-22	477	-29 07	-22	478	-29 15	-22	479	-29 23	-22	480	-29 31	-22	481	-29 39	-22	482	-29 47	-22	483	-29 55	-22	484	-30 03	-22	485	-30 11	-22	486	-30 19	-22	487	-30 27	-22	488	-30 35	-22	489	-30 43	-22	490	-30 51	-22	491	-30 59	-22	492	-31 07	-22	493	-31 15	-22	494	-31 23	-22	495	-31 31	-22	496	-31 39	-22	497	-31 47	-22	498	-31 55	-22	499	-32 03	-22	500	-32 11	-22	501	-32 19	-22	502	-32 27	-22	503	-32 35	-22	504	-32 43	-22	505	-32 51	-22	506	-32 59	-22	507	-33 07	-22	508	-33 15	-22	509	-33 23	-22	510	-33 31	-22	511	-33 39	-22	512	-33 47	-22	513	-33 55	-22	514	-34 03	-22	515	-34 11	-22	516	-34 19	-22	517	-34 27	-22	518	-34 35	-22	519	-34 43	-22	520	-34 51	-22	521	-34 59	-22	522	-35 07	-22	523	-35 15	-22	524	-35 23	-22	525	-35 31	-22	526	-35 39	-22	527	-35 47	-22	528	-35 55	-22	529	-36 03	-22	530	-36 11	-22	531	-36 19	-22	532	-36 27	-22	533	-36 35	-22	534	-36 43	-22	535	-36 51	-22	536	-36 59	-22	537	-37 07	-22	538	-37 15	-22	539	-37 23	-22	540	-37 31	-22	541	-37 39	-22	542	-37 47	-22	543	-37 55	-22	544	-38 03	-22	545	-38 11	-22	546	-38 19	-22	547	-38 27	-22	548	-38 35	-22	549	-38 43	-22	550	-38 51	-22	551	-38 59	-22	552	-39 07	-22	553	-39 15	-22	554	-39 23	-22	555	-39 31	-22	556	-39 39	-22	557	-39 47	-22	558	-39 55	-22	559	-40 03	-22	560	-40 11	-22	561	-40 19	-22	562	-40 27	-22	563	-40 35	-22	564	-40 43	-22	565	-40 51	-22	566	-40 59	-22	567	-41 07	-22	5

DECLINATION (15° - 29°) SAME NAME AS LATITUDE

N. Lat. { L.H.A. greater than 180°Zn=Z
L.H.A. less than 180°Zn=360°-Z

Table with columns for Latitude (15° to 29°) and Longitude (0° to 60°). Each cell contains a numerical value representing declination. The table is organized in a grid with 15 rows and 60 columns.

DECLINATION (15° - 29°) SAME NAME AS LATITUDE

S. Lat. { L.H.A. greater than 180°Zn=180°-Z
L.H.A. less than 180°Zn=180°+Z

DECLINATION (15° - 29°) SAME NAME AS LATITUDE

N. Lat. { L.H.A. greater than 180°Zn=Z
L.H.A. less than 180°Zn=360°-Z

LHA	15°			16°			17°			18°			19°			20°			21°			22°			23°			24°			25°			26°			27°			28°			29°			LHA
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
70	19.50	-04	75	19.46	-04	74	19.42	-04	73	19.38	-05	72	19.33	-05	71	19.28	-06	69	19.22	-06	68	19.16	-06	67	19.10	-07	66	19.03	-07	65	18.96	-07	64	18.89	-08	63	18.81	-08	62	18.74	-08	61	18.66	-08	60	280
71	18.52	-04	75	18.48	-03	74	18.45	-04	73	18.41	-05	72	18.36	-05	71	18.31	-05	70	18.26	-05	69	18.21	-06	68	18.15	-06	67	18.09	-06	66	18.03	-07	65	17.97	-07	64	17.90	-07	63	17.84	-07	62	17.77	-07	61	281
72	17.54	-03	75	17.51	-04	74	17.47	-03	73	17.44	-04	72	17.40	-04	71	17.35	-05	70	17.30	-05	69	17.25	-05	68	17.20	-06	67	17.14	-06	66	17.08	-06	65	17.02	-07	64	16.95	-07	63	16.89	-07	62	16.82	-07	61	282
73	16.56	-03	75	16.53	-03	74	16.50	-04	73	16.47	-04	72	16.43	-04	71	16.39	-04	70	16.35	-05	69	16.30	-05	68	16.25	-05	67	16.20	-06	66	16.14	-06	65	16.08	-06	64	16.02	-06	63	15.96	-06	62	15.89	-06	61	283
74	15.58	-02	75	15.56	-03	74	15.53	-03	73	15.50	-04	72	15.46	-04	71	15.43	-04	70	15.39	-05	69	15.34	-05	68	15.30	-05	67	15.25	-05	66	15.20	-06	65	15.14	-06	64	15.09	-06	63	15.03	-06	62	14.97	-06	61	284
75	15.00	-02	75	14.58	-02	74	14.56	-03	73	14.53	-03	72	14.50	-04	71	14.46	-03	70	14.43	-04	69	14.39	-04	68	14.35	-05	67	14.30	-04	66	14.26	-05	65	14.21	-05	64	14.16	-06	63	14.10	-06	62	14.04	-06	61	285
76	14.02	-02	75	14.00	-02	74	13.98	-03	73	13.96	-03	72	13.93	-03	71	13.90	-03	70	13.87	-04	69	13.84	-03	68	13.80	-04	67	13.76	-04	66	13.72	-05	65	13.67	-05	64	13.63	-05	63	13.59	-05	62	13.54	-05	61	286
77	13.04	-01	75	13.03	-02	74	13.01	-02	73	12.99	-03	72	12.96	-02	71	12.94	-03	70	12.91	-03	69	12.88	-03	68	12.85	-04	67	12.82	-04	66	12.79	-04	65	12.75	-04	64	12.72	-04	63	12.69	-04	62	12.65	-04	61	287
78	12.06	-01	75	12.05	-01	74	12.04	-02	73	12.02	-02	72	12.00	-03	71	11.97	-02	70	11.95	-03	69	11.92	-03	68	11.89	-03	67	11.86	-03	66	11.83	-03	65	11.80	-03	64	11.77	-03	63	11.74	-03	62	11.71	-03	61	288
79	11.08	-01	75	11.07	-01	74	11.06	-01	73	11.05	-02	72	11.03	-02	71	11.01	-02	70	10.99	-02	69	10.97	-03	68	10.95	-03	67	10.92	-03	66	10.89	-03	65	10.86	-03	64	10.83	-03	63	10.80	-03	62	10.77	-03	61	289
80	10.11	-01	75	10.10	-01	74	10.09	-01	73	10.08	-02	72	10.06	-01	71	10.05	-02	70	10.03	-02	69	10.01	-02	68	09.99	-02	67	09.97	-03	66	09.94	-02	65	09.92	-03	64	09.89	-03	63	09.86	-03	62	09.83	-03	61	290
81	09.13	-01	75	09.12	-01	74	09.11	-01	73	09.11	-01	72	09.10	-02	71	09.08	-01	70	09.07	-01	69	09.06	-02	68	09.04	-02	67	09.02	-02	66	09.00	-02	65	08.98	-02	64	08.96	-03	63	08.93	-03	62	08.90	-02	61	291
82	08.15	-01	75	08.14	-01	74	08.14	-01	73	08.14	-01	72	08.13	-01	71	08.12	-01	70	08.11	-01	69	08.10	-01	68	08.09	-02	67	08.07	-01	66	08.06	-02	65	08.04	-02	64	08.02	-02	63	08.00	-02	62	07.98	-02	61	292
83	07.17	00	75	07.17	00	74	07.17	00	73	07.16	00	72	07.16	00	71	07.16	-01	70	07.15	-01	69	07.14	-01	68	07.13	-01	67	07.12	-01	66	07.11	-01	65	07.10	-01	64	07.09	-02	63	07.07	-02	62	07.05	-01	61	293
84	06.19	00	75	06.19	00	74	06.19	00	73	06.19	00	72	06.19	00	71	06.19	00	70	06.19	00	69	06.19	-01	68	06.18	-01	67	06.18	-01	66	06.18	-01	65	06.16	-01	64	06.15	-01	63	06.14	-01	62	06.13	-01	61	294
85	05.21	00	75	05.21	01	74	05.22	00	73	05.22	01	72	05.23	00	71	05.23	00	70	05.23	00	69	05.23	00	68	05.23	00	67	05.23	00	66	05.23	00	65	05.22	00	64	05.22	00	63	05.21	00	62	05.21	00	61	295
86	04.23	01	75	04.24	01	74	04.25	00	73	04.25	01	72	04.26	01	71	04.27	00	70	04.27	00	69	04.27	01	68	04.28	00	67	04.28	00	66	04.28	00	65	04.28	00	64	04.28	00	63	04.28	00	62	04.28	00	61	296
87	03.25	01	75	03.26	01	74	03.27	01	73	03.28	01	72	03.29	01	71	03.30	01	70	03.31	01	69	03.32	01	68	03.33	01	67	03.33	01	66	03.34	01	65	03.34	01	64	03.34	01	63	03.35	00	62	03.36	00	61	297
88	02.27	01	75	02.28	02	74	02.30	01	73	02.31	01	72	02.32	02	71	02.34	01	70	02.35	01	69	02.36	01	68	02.37	01	67	02.38	01	66	02.39	01	65	02.40	01	64	02.41	01	63	02.42	01	62	02.43	01	61	298
89	01.29	02	75	01.31	01	74	01.32	02	73	01.34	02	72	01.36	01	71	01.37	02	70	01.39	02	69	01.41	01	68	01.42	02	67	01.44	01	66	01.45	02	65	01.47	01	64	01.48	01	63	01.49	02	62	01.51	01	61	299
90	00.31	02	75	00.33	02	74	00.35	02	73	00.37	02	72	00.39	02	71	00.41	02	70	00.43	02	69	00.45	02	68	00.47	02	67	00.49	02	66	00.51	02	65	00.53	01	64	00.54	02	63	00.56	02	62	00.58	02	61	300
91	00.27	02	75	00.25	03	74	00.22	02	73	00.20	02	72	00.18	03	71	00.15	02	70	00.13	02	69	00.11	03	68	00.08	02	67	00.06	02	66	00.04	03	65	00.01	02	64	00.01	02	63	00.03	03	62	00.06	02	61	301
92	-1.25	03	75	-1.22	02	74	-1.20	03	73	-1.17	03	72	-1.14	02	71	-1.12	03	70	-1.09	03	69	-1.06	03	68	-1.03	02	67	-1.01	03	66	-0.98	03	65	-0.95	03	64	-0.92	04	63	-0.90	03	62	-0.87	03	61	302
93	-2.23	03	75	-2.20	03	74	-2.17	03	73	-2.14	03	72	-2.11	03	71	-2.08	03	70	-2.05	03	69	-2.02	03	68	-1.99	04	67	-1.95	03	66	-1.92	03	65	-1.89	04	64	-1.86	04	63	-1.84	03	62	-1.81	03	61	303
94	-3.21	04	75	-3.17	03	74	-3.14	03	73	-3.11	03	72	-3.08	04	71	-3.04	03	70	-3.01	04	69	-2.97	03	68	-2.94	04	67	-2.90	03	66	-2.87	04	65	-2.83	04	64	-2.79	04	63	-2.76	04	62	-2.73	03	61	304
95	-4.18	03	75	-4.15	04	74	-4.13	04	73	-4.10	04	72	-4.07	04	71	-4.04	04	70	-4.01	04	69	-3.97	04	68	-3.94	04	67	-3.90	04	66	-3.87	04	65	-3.83	05	64	-3.79	04	63	-3.76	04	62	-3.73	05	61	305
96	-5.16	03	75	-5.13	04	74	-5.09	04	73	-5.05	04	72	-5.01	04	71	-4.97	04	70	-4.93	05	69	-4.88	04	68	-4.84	04	67	-4.80	04	66	-4.75	05	65	-4.70	05	64	-4.65	05	63	-4.61	05	62	-4.57	05	61	306
97	-6.14	04	75	-6.10	04	74	-6.06	04	73	-6.02	05	72	-5.97	04	71	-5.93	05	70	-5.88	05	69	-5.84	05	68	-5.79	05	67	-5.74	05	66	-5.69	05	65	-5.64	06	64	-5.59	06	63	-5.54	06	62	-5.49	06	61	307

DECLINATION (15° - 29°) CONTRARY NAME TO LATITUDE

S. Lat. { L.H.A. greater than 180°Zn=180°-Z
L.H.A. less than 180°Zn=180°+Z

LHA	15°			16°			17°			18°			19°			20°			21°			22°			23°			24°			25°			26°			27°			28°			29°							
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d
96	-6.19	00	105	-6.19	00	106	-6.19	00	107	-6.19	00	108	-6.19	00	109	-6.19	00	110	-6.19	00	111	-6.19	01	112	-6.18	00	113	-6.18	00	114	-6.17	01	115	-6.16	01	116	-6.15	01	117	-6.14	01	118	-6.13	01	119	-6.13	01	120	284	
97	-																																																	

DECLINATION (15° - 29°) CONTRARY NAME TO LATITUDE

N. Lat. { L.H.A. greater than 180°Zn=Z
L.H.A. less than 180°Zn=360°-Z

Table with columns for LHA, 15° to 29° (Hc, d, Z), and 29° to 15° (Hc, d, Z). Each degree column contains three sub-columns for Hc, d, and Z. The table lists values for 360 different LHA entries.

DECLINATION (15° - 29°) CONTRARY NAME TO LATITUDE

S. Lat. { L.H.A. greater than 180°Zn=180°-Z
L.H.A. less than 180°Zn=180°+Z

N. Lat. { L.H.A. greater than 180°Zn-Z
 { L.H.A. less than 180°Zn=360°-Z

DECLINATION (0° - 14°) SAME NAME AS LATITUDE

LAT 3°

0°		1°		2°		3°		4°		5°		6°		7°		8°		9°		10°		11°		12°		13°		14°																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
LHA	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	LHA																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
0	87	00	0	88	00	0	89	00	0	90	00	0	91	00	0	92	00	0	93	00	0	94	00	0	95	00	0	96	00	0	97	00	0	98	00	0	99	00	0	100	00	0	101	00	0	102	00	0	103	00	0	104	00	0	105	00	0	106	00	0	107	00	0	108	00	0	109	00	0	110	00	0	111	00	0	112	00	0	113	00	0	114	00	0	115	00	0	116	00	0	117	00	0	118	00	0	119	00	0	120	00	0	121	00	0	122	00	0	123	00	0	124	00	0	125	00	0	126	00	0	127	00	0	128	00	0	129	00	0	130	00	0	131	00	0	132	00	0	133	00	0	134	00	0	135	00	0	136	00	0	137	00	0	138	00	0	139	00	0	140	00	0	141	00	0	142	00	0	143	00	0	144	00	0	145	00	0	146	00	0	147	00	0	148	00	0	149	00	0	150	00	0	151	00	0	152	00	0	153	00	0	154	00	0	155	00	0	156	00	0	157	00	0	158	00	0	159	00	0	160	00	0	161	00	0	162	00	0	163	00	0	164	00	0	165	00	0	166	00	0	167	00	0	168	00	0	169	00	0	170	00	0	171	00	0	172	00	0	173	00	0	174	00	0	175	00	0	176	00	0	177	00	0	178	00	0	179	00	0	180	00	0	181	00	0	182	00	0	183	00	0	184	00	0	185	00	0	186	00	0	187	00	0	188	00	0	189	00	0	190	00	0	191	00	0	192	00	0	193	00	0	194	00	0	195	00	0	196	00	0	197	00	0	198	00	0	199	00	0	200	00	0	201	00	0	202	00	0	203	00	0	204	00	0	205	00	0	206	00	0	207	00	0	208	00	0	209	00	0	210	00	0	211	00	0	212	00	0	213	00	0	214	00	0	215	00	0	216	00	0	217	00	0	218	00	0	219	00	0	220	00	0	221	00	0	222	00	0	223	00	0	224	00	0	225	00	0	226	00	0	227	00	0	228	00	0	229	00	0	230	00	0	231	00	0	232	00	0	233	00	0	234	00	0	235	00	0	236	00	0	237	00	0	238	00	0	239	00	0	240	00	0	241	00	0	242	00	0	243	00	0	244	00	0	245	00	0	246	00	0	247	00	0	248	00	0	249	00	0	250	00	0	251	00	0	252	00	0	253	00	0	254	00	0	255	00	0	256	00	0	257	00	0	258	00	0	259	00	0	260	00	0	261	00	0	262	00	0	263	00	0	264	00	0	265	00	0	266	00	0	267	00	0	268	00	0	269	00	0	270	00	0	271	00	0	272	00	0	273	00	0	274	00	0	275	00	0	276	00	0	277	00	0	278	00	0	279	00	0	280	00	0	281	00	0	282	00	0	283	00	0	284	00	0	285	00	0	286	00	0	287	00	0	288	00	0	289	00	0	290	00	0	291	00	0	292	00	0	293	00	0	294	00	0	295	00	0	296	00	0	297	00	0	298	00	0	299	00	0	300	00	0	301	00	0	302	00	0	303	00	0	304	00	0	305	00	0	306	00	0	307	00	0	308	00	0	309	00	0	310	00	0	311	00	0	312	00	0	313	00	0	314	00	0	315	00	0	316	00	0	317	00	0	318	00	0	319	00	0	320	00	0	321	00	0	322	00	0	323	00	0	324	00	0	325	00	0	326	00	0	327	00	0	328	00	0	329	00	0	330	00	0	331	00	0	332	00	0	333	00	0	334	00	0	335	00	0	336	00	0	337	00	0	338	00	0	339	00	0	340	00	0	341	00	0	342	00	0	343	00	0	344	00	0	345	00	0	346	00	0	347	00	0	348	00	0	349	00	0	350	00	0	351	00	0	352	00	0	353	00	0	354	00	0	355	00	0	356	00	0	357	00	0	358	00	0	359	00	0	360	00	0	361	00	0	362	00	0	363	00	0	364	00	0	365	00	0	366	00	0	367	00	0	368	00	0	369	00	0	370	00	0	371	00	0	372	00	0	373	00	0	374	00	0	375	00	0	376	00	0	377	00	0	378	00	0	379	00	0	380	00	0	381	00	0	382	00	0	383	00	0	384	00	0	385	00	0	386	00	0	387	00	0	388	00	0	389	00	0	390	00	0	391	00	0	392	00	0	393	00	0	394	00	0	395	00	0	396	00	0	397	00	0	398	00	0	399	00	0	400	00	0	401	00	0	402	00	0	403	00	0	404	00	0	405	00	0	406	00	0	407	00	0	408	00	0	409	00	0	410	00	0	411	00	0	412	00	0	413	00	0	414	00	0	415	00	0	416	00	0	417	00	0	418	00	0	419	00	0	420	00	0	421	00	0	422	00	0	423	00	0	424	00	0	425	00	0	426	00	0	427	00	0	428	00	0	429	00	0	430	00	0	431	00	0	432	00	0	433	00	0	434	00	0	435	00	0	436	00	0	437	00	0	438	00	0	439	00	0	440	00	0	441	00	0	442	00	0	443	00	0	444	00	0	445	00	0	446	00	0	447	00	0	448	00	0	449	00	0	450	00	0	451	00	0	452	00	0	453	00	0	454	00	0	455	00	0	456	00	0	457	00	0	458	00	0	459	00	0	460	00	0	461	00	0	462	00	0	463	00	0	464	00	0	465	00	0	466	00	0	467	00	0	468	00	0	469	00	0	470	00	0	471	00	0	472	00	0	473	00	0	474	00	0	475	00	0	476	00	0	477	00	0	478	00	0	479	00	0	480	00	0	481	00	0	482	00	0	483	00	0	484	00	0	485	00	0	486	00	0	487	00	0	488	00	0	489	00	0	490	00	0	491	00	0	492	00	0	493	00	0	494	00	0	495	00	0	496	00	0	497	00	0	498	00	0	499	00	0	500	00	0	501	00	0	502	00	0	503	00	0	504	00	0	505	00	0	506	00	0	507	00	0	508	00	0	509	00	0	510	00	0	511	00	0	512	00	0	513	00	0	514	00	0	515	00	0	516	00	0	517	00	0	518	00	0	519	00	0	520	00	0	521	00	0	522	00	0	523	00	0	524	00	0	525	00	0	526	00	0	527	00	0	528	00	0	529	00	0	530	00	0	531	00	0	532	00	0	533	00	0	534	00	0	535	00	0	536	00	0	537	00	0	538	00	0	539	00	0	540	00	0	541	00	0	542	00	0	543	00	0	544	00	0	545	00	0	546	00	0	547	00	0	548	00	0	549	00	0	550	00	0	551	00	0	552	00	0	553	00	0	554	00	0	555	00	0	556	00	0	557	00	0	558	00	0	559	00	0	560	00	0	561	00	0	562	00	0	563	00	0	564	00	0	565	00	0	566	00	0	567	00	0	568	00	0	569	00	0	570	00	0	571	00	0	572	00	0	573	00	0	574	00	0	575	00	0	576	00	0	577	00	0	578	00	0	579	00	0	580	00	0	581	00	0	582	00	0	583	00	0	584	00	0	585	00	0	586	00	0	587	00	0	588	00	0	589	00	0	590	00	0	591	00	0	592	00	0	593	00	0	594	00	0	595	00	0	596	00	0	597	00	0	598	00	0	599	00	0	600	00	0	601	00	0	602	00	0	603	00	0	604	00	0	605	00	0	606	00	0	607	00	0	608	00	0	609	00	0	610	00	0	611	00	0	612	00	0	613	00	0	614	00	0	615	00	0	616	00	0	617	00	0	618	00	0	619	00	0	620	00	0	621	00	0	622	00	0	623	00	0	624	00	0	625	00	0	626	00	0	627	00	0	628	00	0	629	00	0	630	00	0	631	00	0	632	00	0	633	00	0	634	00	0	635	00	0	636	00	0	637	00	0	638	00	0	639	00	0	640	00	0	641	00	0	642	00	0	643	00	0	644	00	0	645	00	0	646	00	0	647	00	0	648

DECLINATION (0° – 14°) CONTRARY NAME TO LATITUDE

LAT 3°

N. Lat. { L.H.A. greater than 180°Zn=Z
L.H.A. less than 180°Zn=360°-Z

LHA	0°		1°		2°		3°		4°		5°		6°		7°		8°		9°		10°		11°		12°		13°		14°		LHA												
	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d													
68	20 58	-03	91	20 55	-04	92	20 46	-04	94	20 42	-06	95	20 36	-05	96	20 31	-06	98	20 19	-07	100	20 12	-07	101	20 05	-08	102	19 57	-07	103	19 50	-09	104	19 41	-08	105	19 33	-09	106	281			
67	22 58	-04	91	22 54	-05	92	22 46	-05	94	22 41	-06	96	22 36	-06	97	22 30	-06	98	22 18	-07	100	22 11	-07	101	22 04	-08	102	21 96	-08	103	20 48	-09	104	20 39	-09	105	20 30	-09	106	282			
66	23 58	-04	91	23 54	-04	92	23 46	-05	94	23 41	-06	96	23 36	-06	97	23 29	-06	98	23 16	-07	100	23 09	-07	101	23 02	-08	102	22 53	-08	103	22 44	-09	104	22 33	-10	105	22 25	-09	106	283			
65	24 58	-04	91	24 54	-04	92	24 45	-05	94	24 40	-06	96	24 34	-06	97	24 28	-06	98	24 15	-07	100	24 07	-07	101	23 59	-08	102	23 51	-08	103	23 42	-09	104	23 30	-10	105	23 23	-10	106	284			
64	25 58	-04	91	25 54	-04	92	25 45	-05	94	25 40	-06	96	25 34	-06	97	25 27	-07	98	25 14	-08	100	25 06	-08	101	24 58	-09	102	24 49	-09	103	24 40	-10	105	24 28	-10	106	24 20	-10	107	285			
63	26 58	-04	92	26 54	-05	93	26 45	-05	95	26 39	-06	96	26 33	-06	97	26 27	-07	98	26 13	-08	100	26 05	-08	101	25 58	-09	102	25 49	-09	103	25 40	-10	105	25 28	-10	106	25 19	-11	107	286			
62	27 57	-03	92	27 54	-04	93	27 44	-05	95	27 38	-06	96	27 33	-06	97	27 26	-07	98	27 12	-08	100	27 04	-08	101	26 55	-09	102	26 46	-10	103	26 36	-10	105	26 24	-11	106	26 15	-11	107	287			
61	28 57	-03	92	28 54	-04	93	28 44	-05	95	28 38	-06	96	28 32	-06	97	28 25	-08	98	28 10	-09	100	28 02	-09	101	27 53	-09	102	27 44	-10	103	27 34	-11	105	27 21	-12	106	27 12	-12	107	288			
60	29 57	-04	92	29 53	-04	93	29 44	-05	95	29 38	-06	96	29 32	-06	97	29 25	-08	98	29 09	-09	100	29 01	-10	101	28 51	-09	102	28 42	-11	103	28 31	-11	105	28 18	-12	106	28 09	-12	107	289			
59	30 57	-04	92	30 53	-04	93	30 43	-05	95	30 37	-06	96	30 31	-07	98	30 24	-08	99	30 07	-09	100	29 59	-09	101	29 49	-10	102	29 40	-11	103	29 29	-11	105	29 16	-12	106	29 07	-12	107	290			
58	31 57	-04	92	31 53	-04	93	31 43	-05	95	31 37	-06	96	31 30	-07	98	31 23	-08	99	31 07	-09	100	30 58	-10	101	30 48	-10	102	30 38	-11	103	30 27	-11	105	30 14	-12	106	30 03	-12	107	291			
57	32 57	-04	92	32 53	-05	93	32 43	-06	95	32 37	-07	97	32 30	-08	98	32 22	-08	99	32 06	-10	101	31 56	-10	102	31 46	-10	103	31 36	-12	104	31 24	-11	106	31 11	-13	107	31 00	-13	108	292			
56	33 57	-04	92	33 53	-05	93	33 42	-06	95	33 36	-07	97	33 29	-07	98	33 22	-09	99	33 03	-10	101	32 55	-10	102	32 45	-11	103	32 34	-12	104	32 22	-12	106	32 09	-13	107	31 57	-13	108	293			
55	34 57	-04	92	34 53	-05	93	34 42	-06	95	34 36	-07	97	34 29	-08	98	34 21	-09	99	34 02	-10	101	33 43	-11	102	33 33	-12	103	33 21	-13	104	33 09	-13	105	32 56	-14	106	32 47	-14	107	294			
54	35 57	-05	93	35 52	-05	93	35 47	-05	95	35 40	-07	97	35 29	-08	98	35 20	-09	100	35 00	-10	101	34 52	-11	102	34 41	-12	103	34 29	-13	104	34 17	-13	105	34 04	-14	106	33 50	-14	107	295			
53	36 56	-04	92	36 52	-05	94	36 47	-06	96	36 35	-07	97	36 27	-08	98	36 18	-09	100	36 00	-10	101	36 00	-10	102	35 49	-11	103	35 37	-12	104	35 25	-12	106	35 11	-13	107	34 50	-14	108	296			
52	37 56	-04	92	37 52	-05	94	37 47	-06	96	37 34	-08	97	37 26	-08	98	37 18	-09	100	37 09	-10	101	36 57	-11	102	36 46	-11	103	36 34	-12	104	36 22	-12	106	36 08	-13	107	35 58	-15	108	297			
51	38 56	-04	92	38 52	-06	94	38 46	-06	96	38 33	-07	98	38 26	-08	99	38 17	-09	100	38 08	-11	101	37 57	-11	102	37 46	-11	103	37 35	-12	104	37 22	-13	106	37 09	-14	108	36 40	-15	109	298			
50	39 56	-04	93	39 52	-06	95	39 46	-06	97	39 33	-07	99	39 25	-08	99	39 16	-10	100	39 06	-11	101	38 45	-13	102	38 34	-14	103	38 22	-14	104	38 09	-15	106	37 51	-15	108	36 40	-16	110	299			
49	40 56	-05	93	40 51	-06	94	40 46	-07	96	40 32	-08	98	40 24	-09	99	40 15	-10	100	40 05	-11	101	39 43	-13	102	39 32	-14	103	39 20	-14	104	39 07	-15	106	38 48	-16	108	37 36	-16	110	300			
48	41 56	-05	93	41 51	-06	94	41 45	-06	96	41 31	-08	98	41 23	-09	99	41 14	-10	100	41 04	-11	101	40 41	-13	102	40 30	-14	103	40 18	-14	104	40 05	-15	106	39 44	-16	108	38 32	-16	111	301			
47	42 56	-05	93	42 51	-06	94	42 45	-07	96	42 31	-08	98	42 22	-09	100	42 13	-10	101	42 02	-11	102	41 39	-14	103	41 28	-14	104	41 16	-14	105	41 03	-15	106	40 00	-16	108	39 28	-17	111	302			
46	43 55	-04	93	43 51	-06	94	43 45	-07	96	43 30	-08	98	43 21	-09	100	43 11	-10	101	43 01	-12	102	42 49	-13	103	42 38	-14	104	42 26	-14	105	42 13	-15	106	41 00	-16	108	40 24	-17	111	303			
45	44 55	-05	93	44 50	-06	94	44 44	-07	96	44 29	-08	98	44 20	-10	100	44 10	-11	101	43 59	-12	102	43 47	-13	103	43 34	-14	104	43 22	-14	105	43 09	-15	106	41 53	-16	108	41 20	-18	112	304			
44	45 55	-05	93	45 50	-06	95	45 44	-07	96	45 29	-08	98	45 19	-10	100	45 09	-11	101	44 58	-13	102	44 45	-13	103	44 32	-14	104	44 20	-14	105	44 07	-15	106	42 50	-16	108	42 30	-17	111	305			
43	46 55	-05	93	46 50	-06	95	46 44	-07	96	46 29	-08	98	46 18	-10	100	46 08	-12	102	45 56	-13	103	45 43	-13	104	45 30	-14	105	45 18	-14	106	45 04	-15	106	43 46	-17	110	43 25	-18	111	306			
42	47 55	-06	93	47 50	-07	95	47 43	-07	96	47 27	-09	99	47 16	-11	101	47 06	-12	102	46 54	-13	103	46 41	-14	104	46 27	-15	105	46 14	-15	106	45 56	-16	108	44 46	-18	110	44 25	-19	112	307			
41	48 55	-06	93	48 49	-06	95	48 43	-07	96	48 26	-10	99	48 16	-11	100	48 05	-13	102	47 39	-14	103	47 26	-15	104	47 12	-16	105	46 58	-16	106	46 45	-17	108	45 39	-18	111	45 21	-19	112	308			
40	49 54	-05	94	49 49	-07	95	49 42	-08	97	49 34	-08	98	49 25	-10	100	49 15	-12	101	49 05	-14	102	48 51	-14	103	48 37	-15	104	48 22	-16	105	48 06	-17	108	47 49	-18	110	47 31	-20	111	46 16	-20	114	309
39	50 54	-05	94	50 49	-07	95	50 42	-08	97	50 34	-10	98	50 24	-12	100	50 14	-12	102	49 49	-15	105	49 34	-15	106	49 20	-16	107	49 05	-17	108	48 46	-18	109	48 28	-19	110	48 07	-21	113	47 11	-20	114	310
38	51 54	-06	94	51 48	-07	95	51 41	-08	97	51 33	-10	99	51 23	-11	100	51 12	-12	102	50 32	-16	106	50 16	-17	108	49 45	-19	110	49 29	-21	112	49 11	-22	114	48 40	-22	115	48 07	-21	113	48 07	-22	115	311
37	52 54	-06	94	52 47	-07	96	52 40	-08	97	52 32	-10	99	52 22	-11	101	52 11	-13	102	51 29	-16	107	51 13	-17	108	50 50	-19	110	50 33	-20	111	50 17	-21	113	49 56	-22	114	49 24	-23	116	48 34	-23	116	312
36	53 54	-07	94	53 47	-07	96	53 40	-08	97	53 31	-10	99	53 21	-12	101	53 09	-13	102	52 56	-14	104	52 42	-15	105	52 27	-16	107	52 10	-18	109	51 52	-20	112	51 32	-21	113	50 51	-23	115	50 28	-24	116	313
35	54 53	-06	94	54 47	-08	96	54 39	-09	98	54 30	-10	99	54 20	-12	101	54 08	-13	103	53 55	-15	104	53 40	-16	106	53 24	-18	108	53 06	-19	110	52 48	-20	112	52 31	-22	114	51 45	-23	115	51 22	-25	117	314
34	55 53	-06	94	55 4																																							

DECLINATION (15° - 29°) SAME NAME AS LATITUDE

N. Lat. { L.H.A. greater than 180°Zn=Z
L.H.A. less than 180°Zn=360°-Z

Table with columns for Latitude (15° to 29°) and Longitude (0° to 69°). Each cell contains a 3-digit number representing declination. The table is organized into 15-degree latitude bands, with each band containing 15-degree longitude increments.

DECLINATION (15° - 29°) SAME NAME AS LATITUDE

S. Lat. { L.H.A. greater than 180°Zn=180°-Z
L.H.A. less than 180°Zn=180°+Z

LAT 3°

DECLINATION (15° - 29°) SAME NAME AS LATITUDE

N. Lat. { L.H.A. greater than 180°Zn=Z
L.H.A. less than 180°Zn=360°-Z

LHA	15°			16°			17°			18°			19°			20°			21°			22°			23°			24°			25°			26°			27°			28°			29°			LHA
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z							
70	20.05	-02	75	20.03	-03	74	20.00	-04	73	19.56	-03	72	19.53	-05	71	19.48	-04	70	19.44	-05	69	19.39	-05	68	19.34	-06	67	19.28	-06	66	19.22	-06	65	19.16	-07	63	19.09	-07	62	19.02	-07	61	18.55	-08	60	290
71	19.07	-02	75	19.05	-03	74	19.02	-03	73	18.99	-04	72	18.96	-04	71	18.92	-04	70	18.88	-04	69	18.84	-05	68	18.80	-05	67	18.76	-05	66	18.72	-06	65	18.68	-06	64	18.64	-07	63	18.59	-06	61	18.55	-08	60	289
72	18.09	-02	75	18.07	-03	74	18.05	-03	73	18.02	-03	72	17.99	-04	71	17.96	-04	70	17.92	-04	69	17.88	-04	68	17.84	-05	67	17.80	-05	66	17.76	-05	65	17.72	-06	64	17.68	-06	63	17.64	-07	62	17.60	-08	61	288
73	17.11	-01	75	17.10	-02	74	17.08	-03	73	17.05	-03	72	17.03	-03	71	17.00	-04	70	16.96	-04	69	16.93	-04	68	16.89	-05	67	16.84	-04	66	16.80	-05	65	16.76	-05	64	16.72	-06	63	16.68	-06	62	16.64	-07	61	287
74	16.14	-01	75	16.12	-02	74	16.10	-02	73	16.08	-02	72	16.06	-03	71	16.03	-03	70	16.00	-03	69	15.97	-03	68	15.94	-04	67	15.90	-04	66	15.86	-05	65	15.82	-05	64	15.78	-05	63	15.74	-06	62	15.70	-06	61	286
75	15.16	-02	75	15.14	-01	74	15.13	-02	73	15.11	-02	72	15.09	-02	71	15.07	-03	70	15.04	-02	69	15.02	-04	68	14.98	-03	67	14.95	-04	66	14.91	-04	65	14.87	-04	64	14.83	-05	63	14.79	-05	62	14.74	-05	61	285
76	14.18	-01	75	14.17	-01	74	14.16	-02	73	14.14	-01	72	14.13	-02	71	14.11	-03	70	14.08	-02	69	14.06	-03	68	14.03	-03	67	14.00	-03	66	13.97	-04	65	13.93	-04	64	13.90	-04	63	13.86	-05	62	13.81	-04	61	284
77	13.20	-01	75	13.19	-01	74	13.18	-01	73	13.17	-01	72	13.16	-02	71	13.14	-02	70	13.12	-01	69	13.10	-02	68	13.08	-03	67	13.05	-02	66	13.03	-03	65	13.00	-04	64	12.96	-03	63	12.93	-04	62	12.89	-04	61	283
78	12.22	-01	75	12.21	-01	74	12.20	-01	73	12.19	-01	72	12.19	-01	71	12.18	-02	70	12.16	-01	69	12.15	-02	68	12.13	-02	67	12.11	-02	66	12.09	-03	65	12.06	-03	64	12.03	-03	63	12.00	-03	62	11.97	-04	61	282
79	11.24	-00	74	11.24	-00	74	11.24	-01	73	11.23	-01	72	11.22	-01	71	11.22	-02	70	11.20	-01	69	11.19	-01	68	11.18	-02	67	11.16	-02	66	11.14	-02	65	11.12	-02	64	11.10	-03	63	11.07	-03	62	11.04	-03	61	281
80	10.26	-00	75	10.26	-00	74	10.26	-00	73	10.26	-01	72	10.26	-01	71	10.25	-01	70	10.24	-01	69	10.24	-02	68	10.22	-01	67	10.21	-01	66	10.20	-02	65	10.18	-02	64	10.16	-02	63	10.14	-02	62	10.12	-03	61	280
81	09.28	-00	75	09.28	-01	74	09.29	-00	73	09.29	-00	72	09.29	-00	71	09.29	-01	70	09.28	-00	69	09.28	-01	68	09.27	-01	67	09.26	-01	66	09.25	-01	65	09.24	-01	64	09.23	-02	63	09.21	-02	62	09.19	-02	61	279
82	08.30	-01	75	08.31	-00	74	08.31	-01	73	08.32	-00	72	08.32	-00	71	08.32	-00	70	08.32	-00	69	08.32	-00	68	08.32	-00	67	08.32	-01	66	08.30	-01	65	08.30	-01	64	08.29	-01	63	08.28	-01	62	08.27	-01	61	278
83	07.32	-01	75	07.33	-01	74	07.34	-01	73	07.35	-01	72	07.35	-01	71	07.36	-01	70	07.36	-01	69	07.37	-01	68	07.37	-01	67	07.37	-01	66	07.36	-01	65	07.36	-01	64	07.36	-01	63	07.35	-01	62	07.34	-01	61	277
84	06.34	-01	75	06.35	-02	74	06.37	-01	73	06.38	-01	72	06.39	-01	71	06.40	-00	70	06.40	-00	69	06.41	-01	68	06.42	-00	67	06.42	-00	66	06.42	-00	65	06.42	-00	64	06.42	-00	63	06.42	-00	62	06.42	-00	61	276
85	05.36	-02	75	05.38	-01	74	05.39	-02	73	05.41	-01	72	05.42	-01	71	05.43	-01	70	05.44	-01	69	05.45	-01	68	05.46	-01	67	05.47	-01	66	05.48	-01	65	05.48	-01	64	05.49	-01	63	05.49	-01	62	05.50	-01	61	275
86	04.38	-02	75	04.40	-02	74	04.42	-02	73	04.44	-01	72	04.45	-02	71	04.47	-01	70	04.48	-02	69	04.50	-01	68	04.51	-01	67	04.52	-01	66	04.54	-01	65	04.54	-01	64	04.55	-01	63	04.56	-01	62	04.57	-01	61	274
87	03.40	-02	75	03.42	-02	74	03.45	-02	73	03.47	-02	72	03.49	-02	71	03.51	-01	70	03.52	-02	69	03.54	-02	68	03.56	-02	67	03.58	-01	66	03.60	-01	65	03.61	-01	64	03.62	-01	63	03.63	-02	62	03.65	-01	61	273
88	02.42	-03	75	02.45	-03	74	02.47	-03	73	02.50	-02	72	02.52	-02	71	02.54	-02	70	02.56	-03	69	02.59	-02	68	03.01	-02	67	03.03	-02	66	03.05	-02	65	03.07	-02	64	03.09	-01	63	03.10	-02	62	03.12	-02	61	272
89	01.44	-03	75	01.47	-03	74	01.50	-03	73	01.53	-03	72	01.55	-03	71	01.58	-02	70	02.00	-03	69	02.03	-02	68	02.05	-03	67	02.08	-02	66	02.10	-03	65	02.13	-02	64	02.15	-02	63	02.17	-03	62	02.20	-02	61	271
90	00.47	-03	75	00.50	-03	74	00.53	-03	73	00.56	-03	72	00.59	-03	71	01.02	-02	70	01.04	-03	69	01.07	-03	68	01.10	-03	67	01.13	-03	66	01.16	-03	65	01.19	-03	64	01.22	-02	63	01.24	-03	62	01.27	-03	61	270
91	-01.11	-03	75	-01.08	-03	74	-01.05	-03	73	-01.01	-03	72	00.02	-03	71	00.05	-04	70	00.09	-03	69	00.12	-03	68	00.15	-03	67	00.18	-04	66	00.22	-03	65	00.25	-03	64	00.28	-04	63	00.32	-03	62	00.35	-03	61	269
92	-1.09	-04	75	-1.06	-04	74	-1.02	-04	73	-0.98	-03	72	-0.95	-04	71	-0.91	-04	70	-0.87	-04	69	-0.84	-04	68	-0.80	-04	67	-0.76	-04	66	-0.73	-04	65	-0.70	-04	64	-0.65	-04	63	-0.61	-04	62	-0.58	-04	61	268
93	-2.07	-04	75	-2.03	-04	74	-1.99	-04	73	-1.95	-04	72	-1.91	-04	71	-1.87	-04	70	-1.83	-04	69	-1.79	-04	68	-1.75	-04	67	-1.71	-04	66	-1.67	-04	65	-1.63	-04	64	-1.58	-04	63	-1.54	-04	62	-1.50	-04	61	267
94	-3.05	-04	75	-3.01	-04	74	-2.96	-04	73	-2.92	-04	72	-2.88	-04	71	-2.84	-04	70	-2.79	-04	69	-2.75	-04	68	-2.70	-04	67	-2.66	-04	66	-2.62	-04	65	-2.58	-04	64	-2.54	-04	63	-2.50	-04	62	-2.46	-04	61	266
95	-4.03	-05	75	-3.98	-05	74	-3.94	-05	73	-3.89	-05	72	-3.84	-05	71	-3.80	-05	70	-3.75	-05	69	-3.70	-05	68	-3.65	-05	67	-3.60	-05	66	-3.56	-05	65	-3.52	-05	64	-3.48	-05	63	-3.43	-05	62	-3.38	-05	61	265
96	-5.00	-05	75	-4.95	-05	74	-4.91	-05	73	-4.86	-05	72	-4.81	-05	71	-4.76	-05	70	-4.71	-05	69	-4.66	-05	68	-4.61	-05	67	-4.56	-05	66	-4.51	-05	65	-4.46	-05	64	-4.41	-05	63	-4.36	-05	62	-4.31	-05	61	264
97	-5.58	-05	75	-5.53	-05	74	-5.48	-05	73	-5.43	-05	72	-5.38	-05	71	-5.33	-05	70	-5.27	-05	69	-5.22	-05	68	-5.17	-05	67	-5.12	-05	66	-5.07	-05	65	-5.02	-05	64	-4.97	-05	63	-4.92	-05	62	-4.87	-05	61	263
98	-6.51	-06	73	-6.45	-06	72	-6.40	-06	71	-6.34	-06	70	-6.28	-06	69	-6.22	-06	68	-6.16	-06	67	-6.10	-06	66	-6.04	-06	65	-5.98	-06	64	-5.92	-06	63	-5.86	-06	62	-5.80	-06	61	-5.74	-06	60	-5.68	-06	60	262
99	-6.45	-07	63	-6.40	-07	62	-6.34	-07	61	-6.28	-07	60	-6.22	-07	59	-6.16	-07	58	-6.10	-07	57	-6.04	-07	56	-5.98	-07	55	-5.92	-07	54	-5.86	-07	53	-5.80	-07	52	-5.74	-07	51	-5.68	-07	50	-5.62	-07	50	261

DECLINATION (15° - 29°) CONTRARY NAME TO LATITUDE

S. Lat. { L.H.A. greater than 180°Zn=180°-Z
L.H.A. less than 180°Zn=180°+Z

LHA	15°			16°			17°			18°			19°			20°			21°			22°			23°			24°			25°			26°			27°			28°			29°		
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N. Lat. { L.H.A. greater than 180°Zn=Z
 { L.H.A. less than 180°Zn=360°-Z

DECLINATION (15° - 29°) CONTRARY NAME TO LATITUDE

LHA	15°			16°			17°			18°			19°			20°			21°			22°			23°			24°			25°			26°			27°			28°			29°			LHA							
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z														
69	19	24	09	107	19	15	-10	108	18	55	-10	110	18	45	-11	111	18	34	-11	112	18	23	-11	113	18	12	-12	114	18	00	-12	115	17	50	-12	116	17	39	-13	118	17	27	-13	119	17	16	-14	120	16	43	-14	122	291
68	20	21	-09	107	20	12	-10	108	19	51	-11	110	19	40	-11	111	19	29	-11	112	19	18	-12	113	19	06	-12	115	18	54	-13	116	18	41	-12	117	18	30	-14	118	18	15	-13	119	17	48	-14	121	292				
67	21	16	-10	107	21	06	-10	108	20	38	-11	111	20	26	-11	112	20	15	-12	113	20	03	-12	114	20	01	-13	115	19	48	-13	116	19	35	-13	117	19	22	-14	118	19	08	-14	119	18	40	-15	121	293				
66	22	16	-11	108	22	05	-10	109	21	35	-12	110	21	32	-12	111	21	20	-12	113	21	08	-13	114	21	05	-13	115	20	42	-14	116	20	28	-13	117	20	15	-15	118	20	04	-14	119	19	46	-15	122	294				
65	23	13	-11	108	23	02	-11	109	22	32	-12	111	22	19	-12	112	22	15	-13	113	22	02	-13	114	22	01	-14	115	21	36	-14	116	21	22	-14	117	21	07	-15	118	21	03	-15	119	20	44	-16	123	295				
64	24	10	-11	108	23	59	-12	109	23	47	-12	111	23	23	-12	112	23	10	-13	113	23	05	-14	114	23	04	-15	115	22	49	-14	115	22	35	-15	116	22	19	-16	117	22	00	-16	118	21	41	-17	123	296				
63	25	07	-12	108	24	53	-12	109	24	43	-12	110	24	31	-13	111	24	05	-13	113	24	05	-14	114	24	04	-15	115	23	38	-15	116	23	23	-16	117	23	08	-16	118	22	49	-17	124	297								
62	26	04	-12	108	25	52	-12	109	25	40	-13	111	25	27	-13	112	25	14	-14	113	25	00	-14	114	25	00	-15	115	24	16	-15	116	24	16	-16	117	24	01	-16	118	23	47	-17	125	298								
61	27	00	-12	109	26	46	-12	110	26	36	-13	111	26	23	-14	112	26	09	-14	113	26	05	-15	114	26	04	-16	115	25	18	-16	116	26	04	-17	117	26	04	-17	118	24	37	-18	126	299								
60	27	57	-12	109	27	45	-13	110	27	32	-14	111	27	18	-14	112	27	04	-14	113	27	01	-15	114	27	00	-16	115	26	14	-15	116	27	01	-16	117	27	01	-16	118	25	18	-17	127	300								
59	28	54	-13	109	28	41	-13	110	28	28	-14	111	28	14	-15	112	27	59	-15	113	27	44	-16	114	27	44	-17	115	27	17	-16	116	28	09	-17	117	28	06	-17	118	26	31	-18	128	301								
58	29	51	-14	109	29	37	-14	110	29	23	-14	111	29	09	-15	113	28	49	-16	114	28	33	-16	115	28	33	-17	116	28	06	-17	117	28	42	-18	118	28	24	-18	119	27	49	-19	129	302								
57	30	47	-14	109	30	33	-14	110	30	19	-15	112	30	04	-16	114	29	39	-16	115	29	17	-17	116	29	17	-18	117	28	42	-18	118	28	24	-19	119	28	05	-19	120	27	46	-20	130	303								
56	31	44	-15	110	31	29	-14	111	31	15	-15	112	31	01	-16	113	30	44	-16	114	30	27	-17	115	30	16	-18	116	29	16	-18	117	29	01	-19	118	29	16	-19	119	28	05	-20	131	304								
55	32	40	-15	110	32	25	-15	111	32	10	-16	112	31	55	-16	113	31	38	-17	115	31	21	-18	116	31	04	-19	117	30	06	-19	118	30	02	-20	119	30	08	-21	120	28	37	-21	132	305								
54	33	36	-15	110	33	21	-15	111	33	06	-16	113	32	50	-17	114	32	33	-18	115	32	15	-18	116	31	57	-18	117	31	09	-19	118	31	57	-19	119	31	51	-20	121	29	12	-21	133	306								
53	34	32	-15	111	34	17	-16	112	34	01	-17	113	33	44	-17	114	33	27	-18	115	33	09	-19	116	32	50	-19	117	32	11	-20	119	32	41	-20	120	31	51	-21	122	30	11	-22	134	307								
52	35	28	-15	111	35	13	-17	112	34	01	-17	113	34	39	-18	114	34	21	-18	116	34	03	-19	117	33	44	-20	118	32	43	-20	119	33	44	-21	120	32	43	-22	121	31	36	-23	135	308								
51	36	24	-16	111	36	08	-17	112	35	51	-18	114	35	33	-18	115	35	15	-19	116	34	56	-20	117	34	36	-21	118	33	34	-22	122	33	34	-23	123	33	34	-24	124	32	26	-24	136	309								
50	37	20	-17	111	37	03	-17	112	36	46	-18	114	36	28	-19	115	36	09	-20	116	35	49	-20	117	35	29	-21	119	35	08	-21	120	34	25	-22	123	34	25	-23	124	33	16	-25	140	310								
49	38	16	-17	112	37	59	-18	113	37	41	-19	114	37	22	-19	115	37	03	-20	116	36	43	-21	118	36	22	-22	119	36	02	-22	120	35	14	-23	122	35	14	-24	123	34	06	-26	142	311								
48	39	11	-17	112	38	54	-19	113	38	35	-19	115	38	16	-20	116	37	56	-21	117	37	35	-21	118	37	14	-22	120	36	22	-22	121	36	22	-23	122	36	22	-24	123	35	42	-26	143	312								
47	40	07	-17	112	39	49	-19	114	39	30	-20	115	39	00	-20	116	38	49	-21	117	38	28	-22	119	38	06	-23	120	37	28	-23	121	37	28	-24	122	37	28	-25	123	36	28	-27	144	313								
46	41	02	-19	113	40	43	-19	114	40	24	-20	116	40	04	-21	117	39	42	-21	118	39	21	-23	119	38	58	-24	120	38	12	-24	121	38	12	-25	122	38	12	-26	123	37	46	-28	145	314								
45	41	57	-19	113	41	38	-20	115	41	18	-21	116	40	57	-22	117	40	35	-22	118	40	13	-23	120	39	50	-24	121	39	26	-25	122	39	26	-26	123	39	26	-27	124	38	36	-28	146	315								
44	42	52	-20	114	42	32	-20	115	42	12	-22	116	41	50	-22	118	41	26	-23	119	41	05	-24	120	40	35	-25	121	40	13	-26	122	40	13	-27	123	40	13	-28	124	39	51	-28	147	316								
43	43	47	-20	114	43	27	-21	115	43	05	-22	117	42	43	-23	118	42	19	-24	119	42	01	-25	121	41	32	-26	122	41	06	-26	123	41	06	-27	124	41	06	-28	125	40	38	-30	150	317								
42	44	42	-21	115	44	21	-22	116	43	59	-23	117	43	36	-23	119	43	13	-25	120	43	03	-26	121	42	23	-27	123	42	08	-27	124	42	08	-28	125	42	08	-29	126	41	03	-31	131	318								
41	45	36	-22	116	45	14	-23	117	44	52	-24	118	44	29	-25	119	44	04	-26	120	43	39	-26	122	43	04	-28	124	43	03	-29	125	43	03	-30	126	43	03	-31	127	42	31	-32	132	319								
40	46	30	-22	116	46	08	-23	117	45	45	-24	118	45	21	-25	120	44	56	-26	121	44	30	-26	122	44	04	-28	124	44	03	-29	125	44	03	-30	126	44	03	-31	127	41	08	-32	133	320								
39	47	24	-23	116	47	01	-24	117	46	37	-24	119	46	13	-26	120	45	47	-26	121	45	21	-27	123	44	54	-29	124	45	25	-28	125	45	25	-29	126	45	25	-30	127	41	33	-33	134	321								
38	48	18	-24	117	47	54	-24	118	47	30	-26	120	47	04	-27	121	46	36	-27	122	46	11	-28	123	45	43	-30	124	46	31	-29	125	46	31	-30	126	46	31	-31	127	41	48	-34	135	322								
37	49	11	-24	117	48	47	-25	119	48	22	-27	121	47	56	-27	122	47	01	-28	123	47	01	-29	124	46	43	-31	125	47	11	-30	126	47	11	-31	127	46	43	-32	128	42	45	-35	136	323								
36	50	04	-25	118	49	39	-25	119	49	14	-28	121	48	47	-28	122	48	09	-29	123	47	50	-29	125	47	21	-30	126	48	01	-31	127	48	01	-32	128	47	50	-33	130	43	32	-34	137	324								
35																																																					

N. Lat. { L.H.A. greater than 180°Zn-Z
 { L.H.A. less than 180°Zn=360°-Z

DECLINATION (0° - 14°) SAME NAME AS LATITUDE

LAT 4°

0°		1°		2°		3°		4°		5°		6°		7°		8°		9°		10°		11°		12°		13°		14°				
LHA	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	LHA		
0	86	00	0	86	00	0	86	00	0	86	00	0	86	00	0	86	00	0	86	00	0	86	00	0	86	00	0	86	00	0	380	
1	86	53	57	163	86	54	36	162	87	00	0	86	53	59	14	86	54	39	14	86	54	39	14	86	54	39	14	86	54	39	389	
2	85	32	57	153	86	24	36	145	87	10	0	85	32	59	26	84	37	56	26	84	37	56	26	84	37	56	26	84	37	56	390	
3	84	21	39	143	85	46	38	135	86	24	0	84	21	41	33	84	22	45	33	84	22	45	33	84	22	45	33	84	22	45	391	
4	85	00	4	135	85	00	32	127	85	53	08	104	86	01	39	83	82	48	38	83	82	48	38	83	82	48	38	83	82	48	392	
5	83	36	34	129	84	10	27	121	84	55	06	101	85	01	34	59	83	37	49	59	83	37	49	59	83	37	49	59	83	37	393	
6	82	48	30	124	83	18	23	116	83	44	15	108	83	56	05	80	82	49	40	80	82	49	40	80	82	49	40	80	82	49	394	
7	81	57	26	120	82	23	21	113	82	14	13	106	82	57	12	82	57	12	82	57	12	82	57	12	82	57	12	82	57	12	395	
8	80	09	24	114	81	28	18	108	81	46	11	104	81	57	08	81	58	11	81	58	11	81	58	11	81	58	11	81	58	11	396	
9	79	18	19	110	80	48	15	102	80	58	08	102	80	58	08	80	49	16	77	80	33	21	71	80	12	65	79	45	44	397		
10	78	14	20	112	79	34	13	105	79	49	09	101	79	58	09	84	78	52	13	79	78	36	19	74	77	52	35	74	77	52	398	
11	77	19	19	110	78	37	13	105	78	50	09	100	78	59	07	84	78	21	22	69	77	59	26	63	77	53	38	50	75	15	41	399
12	77	22	17	108	77	39	12	104	77	51	08	99	77	59	07	85	77	05	20	71	77	05	20	71	77	05	20	71	77	05	400	
13	76	25	15	107	76	40	12	103	76	52	07	98	76	59	06	85	76	28	19	72	76	28	19	72	76	28	19	72	76	28	401	
14	75	27	15	106	75	42	11	102	75	53	06	96	75	59	05	81	75	45	14	77	75	45	14	77	75	45	14	77	75	45	402	
15	74	29	14	105	74	44	10	101	74	53	06	97	74	50	01	89	74	37	14	74	74	37	14	74	74	37	14	74	74	37	403	
16	73	31	13	104	73	44	10	100	73	54	06	97	73	44	00	89	73	26	16	73	73	26	16	73	73	26	16	73	73	26	404	
17	72	33	12	103	72	45	09	100	72	54	06	96	72	38	15	79	72	38	15	79	72	38	15	79	72	38	15	79	72	38	405	
18	71	35	11	102	71	46	08	99	71	55	05	96	71	58	04	84	71	50	10	80	71	50	10	80	71	50	10	80	71	50	406	
19	70	36	11	101	70	47	08	98	70	55	04	94	70	55	04	85	70	41	12	77	70	29	16	73	70	29	16	73	70	29	407	
20	69	37	11	100	69	48	08	98	69	56	05	95	70	01	89	70	02	03	86	69	59	07	83	69	59	07	83	69	59	07	408	
21	68	38	11	100	68	49	07	98	68	56	05	95	69	01	89	69	03	04	86	68	59	06	84	68	59	06	84	68	59	06	409	
22	67	39	10	99	67	49	07	97	67	56	05	94	67	01	89	67	03	04	86	67	06	17	71	66	67	06	17	71	66	67	410	
23	66	40	10	99	66	50	07	97	66	57	04	94	67	01	89	67	03	03	87	67	00	05	84	66	53	21	67	65	13	23	411	
24	65	41	09	98	65	50	07	96	65	57	04	94	66	01	89	66	03	02	87	66	01	05	84	65	48	08	65	48	08	65	48	412
25	64	42	08	98	64	51	06	96	64	57	05	94	65	02	91	65	04	00	89	65	04	00	89	65	04	00	89	65	04	00	413	
26	63	43	08	98	63	51	06	96	63	58	04	94	64	02	91	64	04	00	89	64	03	04	89	64	03	04	89	64	03	04	414	
27	62	44	08	97	62	52	06	95	62	58	04	93	63	02	91	63	04	00	89	63	02	04	89	63	02	04	89	63	02	04	415	
28	61	44	08	97	61	52	06	95	61	58	04	93	62	02	91	62	04	00	89	62	02	04	85	61	45	10	76	61	45	10	416	
29	60	45	08	97	60	53	05	95	60	58	04	93	61	02	91	61	04	00	89	61	03	04	85	60	46	09	79	60	46	09	417	
30	59	46	07	97	59	53	05	95	59	59	03	93	60	02	91	60	04	00	89	60	03	03	85	60	00	06	83	59	59	03	418	
31	58	46	07	97	58	53	05	95	58	59	03	93	59	03	91	59	05	02	89	59	04	00	83	58	55	06	81	58	55	06	419	
32	57	47	07	96	57	54	05	94	57	59	04	93	58	03	91	58	05	01	87	58	04	00	83	57	56	06	81	57	56	06	420	
33	56	47	07	96	56	54	05	94	56	59	04	92	57	03	91	57	05	00	89	57	04	00	83	56	57	06	81	56	57	06	421	
34	55	48	06	96	55	54	05	94	55	59	04	92	56	03	91	56	05	00	89	56	05	01	87	56	05	01	87	56	05	01	422	
35	54	48	06	96	54	55	05	94	54	50	03	92	55	03	90	55	05	00	89	55	06	01	87	55	06	01	87	55	06	01	423	
36	53	49	06	95	53	55	05	94	53	50	03	92	54	03	90	54	05	00	89	54	05	02	84	53	59	06	82	54	05	02	424	
37	52	49	06	95	52	55	05	94	52	50	04	92	53	04	90	53	06	00	89	53	06	02	84	53	06	02	84	53	06	02	425	
38	51	49	06	95	51	55	05	94	51	50	04	92	52	04	90	52	06	00	89	52	07	01	87	52	06	01	87	52	06	01	426	
39	50	50	06	95	50	56	04	93	51	00	04	92	51	04	92	51	06	00	89	51	06	01	87	51	06	01	87	51	06	01	427	
40	49	50	06	95	49	56	05	94	50	01	03	92	50	04	92	50	07	00	87	50	07	00	87	50	07	00	87	50	07	00	428	
41	48	50	06	95	49	56	05	94	49	01	03	92	49	06	91	49	06	00	89	49	07	00	87	49	07	00	87	49	07	00	429	
42	47	51	06	94	47	56	05	93	47	01	03	91	48	04	90	48	06	00	89	48	07	00	87	48	07	00	87	48	07	00	430	
43	46	51	06	94	46	57	04	93	47	01	04	91	47	04	90	47	04	00	89	47	04	00	87	47	04	00	87	47	04	00	431	
44	45	51	06	94	45	57	04	93	46	01	04	91	46	05	91	46	05	00	89	46	05	01	87	46	05	01	87	46	05	01	432	
45	44	52	05	94	44	57	04	93	45	01	04	91	45	05	90	45	05	00	89	45	05	02	84	45	05	02	84	45	05	02	433	
46	43	52	05	94	43	57	05	92	44	02	03	91	44	05	90	44	08	00	87	44	08	00	87	44	08	00	87	44	08	00	434	
47	42	52	05	94	42	57	05	92	43	02	03	91	43	05	90	43	07	00	89	43	07	00	87	43	07	00	87	43	07	00	435	
48	41	52	05	94	41	58	04	92	42	02	03	91	42	05	90	42	08	00	89	42	08	00	87	42	08	00	87	42	08	00	436	
49	40	53	05	93	40	58	04	92	41	02	03	91	41	05	90	41	08	00	89	41	08	00	87	41	08	00	87	41	08	00	437	
50	39	53	05	93	39	58	04	92	40	02	03	91	40	05	90	40	09	00	89	40	09	00	87	40	09	00	87	40	09	00	438	
51	38	53																														

DECLINATION (15° - 29°) SAME NAME AS LATITUDE

N. Lat. { L.H.A. greater than 180°Zn=Z
L.H.A. less than 180°Zn=360°-Z

Table with columns for Latitude (15° to 29°) and Longitude (0° to 60°). Each cell contains a 3-digit number representing declination. The table is organized into 15-degree latitude bands, with each band containing 60 columns for longitude. The numbers in the cells represent the declination value for that specific latitude and longitude intersection.

DECLINATION (15° - 29°) SAME NAME AS LATITUDE

S. Lat. { L.H.A. greater than 180°Zn=180°-Z
L.H.A. less than 180°Zn=180°+Z

DECLINATION (15° - 29°) SAME NAME AS LATITUDE

N. Lat. { L.H.A. greater than 180°Zn=Z
L.H.A. less than 180°Zn=360°-Z

LHA	15°		16°		17°		18°		19°		20°		21°		22°		23°		24°		25°		26°		27°		28°		29°		LHA												
	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d													
70	20.20	-01	75	20.19	-02	74	20.17	-02	73	20.15	-03	71	20.09	-03	70	20.06	-04	69	20.02	-05	68	19.57	-04	67	19.53	-05	66	19.48	-05	65	19.43	-06	64	19.37	-06	63	19.31	-07	62	19.24	-07	61	290
71	18.25	-02	75	18.24	-02	74	18.22	-02	73	18.18	-03	71	18.13	-03	70	18.10	-04	69	18.06	-04	68	18.02	-04	67	18.00	-04	66	17.98	-04	65	17.95	-05	64	17.94	-05	63	17.93	-05	62	17.92	-05	61	289
72	17.27	-01	76	17.26	-01	74	17.25	-01	73	17.24	-02	71	17.20	-02	70	17.18	-03	69	17.15	-03	68	17.12	-03	67	17.09	-04	66	17.07	-04	65	17.05	-04	64	17.04	-04	63	17.03	-04	62	17.02	-04	61	288
73	16.29	-01	76	16.28	00	74	16.28	00	73	16.27	-02	71	16.24	-02	70	16.22	-03	69	16.19	-02	68	16.17	-03	67	16.14	-03	66	16.11	-04	65	16.07	-04	64	16.04	-04	63	16.00	-05	62	16.55	-04	61	287
74	15.31	00	76	15.31	-01	74	15.30	00	73	15.30	-01	71	15.27	-01	70	15.26	-02	69	15.24	-02	68	15.22	-03	67	15.19	-02	66	15.17	-03	65	15.14	-04	64	15.10	-03	63	15.07	-04	62	15.03	-04	61	285
75	14.33	00	76	14.33	00	74	14.33	00	73	14.32	00	71	14.31	-01	70	14.30	-02	69	14.28	-02	68	14.27	-02	67	14.25	-03	66	14.22	-02	65	14.20	-03	64	14.17	-03	63	14.14	-03	62	14.11	-04	61	284
76	13.35	00	76	13.35	00	74	13.35	00	73	13.35	00	71	13.35	-01	70	13.34	-01	69	13.33	-02	68	13.31	-01	67	13.30	-02	66	13.28	-02	65	13.26	-02	64	13.24	-03	63	13.21	-03	62	13.18	-03	61	283
77	12.37	01	76	12.36	00	74	12.36	00	73	12.36	00	71	12.36	00	70	12.38	00	69	12.37	-01	68	12.36	-01	67	12.35	-01	66	12.34	-02	65	12.32	-02	64	12.30	-02	63	12.28	-02	62	12.26	-03	61	282
78	11.39	01	75	11.40	01	74	11.41	01	73	11.41	00	71	11.42	00	70	11.42	00	69	11.41	00	68	11.41	-01	67	11.40	-01	66	11.39	-01	65	11.38	-01	64	11.37	-02	63	11.35	-02	62	11.33	-02	61	281
79	10.41	01	75	10.42	01	74	10.43	01	73	10.44	01	71	10.45	01	70	10.46	00	69	10.46	00	68	10.46	-01	67	10.45	-01	66	10.45	-01	65	10.44	-01	64	10.43	-01	63	10.42	-01	62	10.41	-02	61	280
80	09.43	02	75	09.45	01	74	09.46	01	73	09.47	01	71	09.49	01	70	09.50	00	69	09.50	00	68	09.50	01	67	09.51	01	66	09.50	00	65	09.50	00	64	09.50	00	63	09.49	-01	62	09.48	-01	61	279
81	08.45	02	75	08.47	02	74	08.49	01	73	08.50	01	71	08.53	01	70	08.54	01	69	08.55	00	68	08.55	01	67	08.56	01	66	08.56	00	65	08.56	00	64	08.56	00	63	08.56	00	62	08.56	-01	61	278
82	07.47	02	75	07.49	02	74	07.51	02	73	07.53	02	71	07.56	02	70	07.57	01	69	07.59	01	68	08.00	01	67	08.01	01	66	08.02	00	65	08.02	00	64	08.03	00	63	08.03	00	62	08.03	00	61	277
83	06.49	03	75	06.52	02	74	06.54	02	73	06.56	02	71	07.00	02	70	07.02	01	69	07.05	01	68	07.07	01	67	07.06	01	66	07.07	01	65	07.08	01	64	07.09	01	63	07.10	00	62	07.11	00	61	276
84	05.51	03	75	05.54	03	74	05.57	03	73	05.59	02	71	06.03	03	70	06.06	02	69	06.08	02	68	06.10	01	67	06.11	02	66	06.13	02	65	06.15	01	64	06.16	01	63	06.17	01	62	06.18	02	61	275
85	04.53	03	75	04.56	03	74	04.59	03	73	04.62	03	71	04.67	03	70	04.70	02	69	04.72	02	68	04.74	01	67	04.75	02	66	04.77	02	65	04.79	01	64	04.80	01	63	04.81	02	62	04.82	02	61	274
86	03.56	03	75	03.59	03	74	04.02	03	73	04.05	03	71	04.11	03	70	04.14	02	69	04.16	03	68	04.18	03	67	04.22	03	66	04.24	03	65	04.27	02	64	04.29	02	63	04.31	03	62	04.34	02	61	273
87	02.58	03	75	03.01	04	74	03.05	04	73	03.08	03	71	03.15	03	70	03.18	03	69	03.21	03	68	03.24	03	67	03.27	04	66	03.30	03	65	03.33	03	64	03.36	02	63	03.38	03	62	03.41	03	61	272
88	02.00	04	75	02.04	03	74	02.07	04	73	02.11	04	71	02.18	04	70	02.22	03	69	02.25	04	68	02.29	03	67	02.32	04	66	02.36	03	65	02.39	03	64	02.42	03	63	02.45	04	62	02.49	03	61	271
89	01.02	04	75	01.06	04	74	01.10	04	73	01.14	04	71	01.22	04	70	01.26	04	69	01.30	04	68	01.34	04	67	01.38	03	66	01.41	04	65	01.45	04	64	01.49	04	63	01.53	03	62	01.56	04	61	270
90	00.04	05	75	00.09	04	74	00.13	04	73	00.17	04	71	00.26	04	70	00.30	04	69	00.34	05	68	00.39	04	67	00.43	04	66	00.47	05	65	00.51	05	64	00.56	04	63	01.00	04	62	01.04	04	61	269
91	-0.54	05	75	-0.49	05	74	-0.44	05	73	-0.40	05	71	-0.30	04	70	-0.26	05	69	-0.22	05	68	-0.17	05	67	-0.12	05	66	-0.07	05	65	-0.02	04	64	-0.02	05	63	00.07	05	62	00.12	04	61	268
92	-1.51	05	75	-1.46	04	74	-1.42	05	73	-1.37	05	71	-1.27	05	70	-1.22	05	69	-1.17	05	68	-1.12	06	67	-1.06	05	66	-1.01	05	65	-0.56	05	64	-0.51	05	63	-0.46	05	62	-0.41	05	61	267
93	-2.49	05	75	-2.44	05	74	-2.39	06	73	-2.33	06	71	-2.23	06	70	-2.17	05	69	-2.12	05	68	-2.07	06	67	-2.01	06	66	-1.95	05	65	-1.50	06	64	-1.44	05	63	-1.39	06	62	-1.33	06	61	266
94	-3.47	06	75	-3.41	06	74	-3.36	06	73	-3.30	06	71	-3.19	06	70	-3.13	06	69	-3.07	05	68	-3.02	06	67	-2.96	06	66	-2.90	06	65	-2.44	07	64	-2.37	06	63	-2.31	06	62	-2.25	06	61	265
95	-4.45	06	75	-4.39	06	74	-4.33	06	73	-4.27	06	71	-4.15	06	70	-4.09	06	69	-4.03	07	68	-3.96	06	67	-3.50	06	66	-3.44	06	65	-3.30	06	64	-3.31	07	63	-3.24	07	62	-3.17	06	61	264
96	-5.42	06	74	-5.36	06	73	-5.30	06	72	-5.24	06	71	-5.18	07	70	-5.11	06	69	-5.07	07	68	-4.58	07	67	-4.45	07	66	-4.45	07	65	-4.38	07	64	-4.31	07	63	-4.24	07	62	-4.17	08	61	263
97	-6.40	06	74	-6.34	07	73	-6.27	06	72	-6.21	07	71	-6.14	07	70	-6.07	07	69	-6.00	07	68	-5.53	07	67	-5.46	07	66	-5.53	07	65	-5.24	07	64	-5.24	07	63	-5.17	08	62	-5.09	07	61	262
98	-7.40	06	74	-7.34	07	73	-7.27	06	72	-7.21	07	71	-7.14	07	70	-7.07	07	69	-7.00	07	68	-6.49	08	67	-6.41	08	66	-6.49	08	65	-6.18	08	64	-6.18	08	63	-6.10	08	62	-6.02	08	61	261

DECLINATION (15° - 29°) CONTRARY NAME TO LATITUDE

S. Lat. { L.H.A. greater than 180°Zn=180°-Z
L.H.A. less than 180°Zn=180°+Z

LHA	15°		16°		17°		18°		19°		20°		21°		22°		23°		24°		25°		26°		27°		28°		29°		LHA																					
	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d																						
96	-6.49	-03	105	-6.52	-02	106	-6.54	-02	107	-6.54	-02	109	-6.59	-02	108	-6.59	-02	107	-6.59	-02	106	-6.59	-02	105	-6.59	-02	104	-6.59	-02	103	-6.59	-02	102	-6.59	-02	101	-6.59	-02	100	-6.59	-02	99	-6.59	-02	98	-6.59	-02	97	-6.59	-02	96	264
97	-5.51	-03	105	-5.54	-03	106	-5.57	-03	107	-5.57	-03	109	-5.62	-03	108	-5.62	-03	107	-5.62	-03	106	-5.62	-03	105	-5.62	-03	104	-5.62	-03	103	-5.62	-03	102	-5.62	-03	101	-5.62	-03	100	-5.62	-03	99	-5.62	-03	98	-5.62	-03	97	-5.62	-03	96	263
98	-4.53	-03	105	-4.56	-03																																															

LAT 5°

DECLINATION (15° - 29°) SAME NAME AS LATITUDE

N. Lat. { L.H.A. greater than 180°Zn=Z
L.H.A. less than 180°Zn=360°-Z

LHA	15°			16°			17°			18°			19°			20°			21°			22°			23°			24°			25°			26°			27°			28°			29°			LHA																			
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z																										
70	20	35	0	76	20	35	-01	75	20	34	-01	74	20	33	-02	73	20	31	-02	72	20	29	-02	71	20	27	-03	69	20	24	-03	68	20	21	-04	67	20	17	-04	66	20	13	-04	65	20	09	-05	64	20	04	-05	63	19	59	-05	62	19	56	-05	61	19	54	-06	61	280
71	18	39	0	76	18	37	-01	75	18	37	-01	74	18	36	-02	73	18	34	-02	72	18	33	-02	71	18	31	-02	69	18	28	-03	68	18	26	-03	67	18	22	-03	66	18	19	-04	65	18	15	-04	64	18	11	-04	63	18	07	-05	62	18	03	-05	61	18	00	-06	61	279
72	17	41	0	76	17	40	-01	75	17	40	-01	74	17	39	-02	73	17	38	-02	72	17	36	-02	71	17	35	-02	69	17	32	-03	68	17	30	-03	67	17	26	-03	66	17	23	-04	65	17	19	-04	64	17	15	-04	63	17	11	-05	62	17	07	-05	61	17	04	-06	61	278
73	16	44	0	76	16	44	0	75	16	44	0	74	16	43	-01	73	16	42	-01	72	16	40	-01	71	16	39	-01	69	16	36	-02	68	16	34	-02	67	16	30	-02	66	16	27	-03	65	16	23	-03	64	16	19	-04	63	16	15	-04	62	16	12	-05	61	16	08	-05	61	277
74	16	44	0	76	16	44	0	75	16	45	-01	74	16	45	-01	73	16	44	-01	72	16	42	-02	71	16	41	-01	69	16	38	-02	68	16	36	-02	67	16	32	-02	66	16	29	-03	65	16	25	-03	64	16	21	-04	63	16	17	-04	62	16	14	-05	61	16	10	-05	61	276
75	15	46	0	76	15	47	0	75	15	48	0	74	15	48	0	73	15	48	0	72	15	47	0	71	15	47	-01	69	15	45	-01	68	15	44	-01	67	15	43	-01	66	15	43	-01	65	15	43	-01	64	15	43	-02	63	15	43	-02	62	15	43	-02	61	15	43	-03	61	285
76	14	48	0	76	14	49	0	75	14	50	0	74	14	50	0	73	14	50	0	72	14	50	0	71	14	51	0	69	14	50	0	68	14	50	0	67	14	49	-01	66	14	49	-01	65	14	49	-01	64	14	49	-02	63	14	49	-02	62	14	49	-02	61	14	49	-02	61	284
77	13	50	0	76	13	51	0	75	13	52	0	74	13	53	0	73	13	54	0	72	13	55	0	71	13	55	0	69	13	55	0	68	13	55	0	67	13	54	-01	66	13	54	-01	65	13	52	-02	64	13	52	-02	63	13	52	-02	62	13	52	-02	61	13	52	-02	61	283
78	12	52	0	76	12	54	0	75	12	55	0	74	12	56	0	73	12	57	0	72	12	58	0	71	12	59	0	69	12	59	0	68	12	59	0	67	12	59	0	66	12	59	0	65	12	59	0	64	12	59	0	63	12	59	0	62	12	59	0	61	12	59	0	61	282
79	11	54	0	76	11	56	0	75	11	58	0	74	11	59	0	73	11	60	0	72	11	62	0	71	11	63	0	69	11	63	0	68	11	63	0	67	11	63	0	66	11	63	0	65	11	63	0	64	11	63	0	63	11	63	0	62	11	63	0	61	11	63	0	61	281
80	10	56	0	76	10	58	0	75	11	00	0	74	11	01	0	73	11	02	0	72	11	03	0	71	11	04	0	69	11	04	0	68	11	04	0	67	11	04	0	66	11	04	0	65	11	04	0	64	11	04	0	63	11	04	0	62	11	04	0	61	11	04	0	61	280
81	09	58	0	76	10	01	0	75	10	03	0	74	10	05	0	73	10	07	0	72	10	09	0	71	10	11	0	69	10	11	0	68	10	11	0	67	10	11	0	66	10	11	0	65	10	11	0	64	10	11	0	63	10	11	0	62	10	11	0	61	10	11	0	61	279
82	09	00	0	76	09	03	0	75	09	06	0	74	09	08	0	73	09	11	0	72	09	13	0	71	09	15	0	69	09	15	0	68	09	17	0	67	09	19	0	66	09	21	0	65	09	22	0	64	09	23	0	63	09	24	0	62	09	25	0	61	278				
83	08	02	0	76	08	05	0	75	08	08	0	74	08	11	0	73	08	14	0	72	08	16	0	71	08	19	0	69	08	21	0	68	08	23	0	67	08	25	0	66	08	27	0	65	08	28	0	64	08	30	0	63	08	31	0	62	08	32	0	61	277				
84	07	04	0	76	07	08	0	75	07	11	0	74	07	14	0	73	07	17	0	72	07	20	0	71	07	23	0	69	07	25	0	68	07	27	0	67	07	30	0	66	07	32	0	65	07	34	0	64	07	36	0	63	07	38	0	62	07	40	0	61	276				
85	06	07	0	75	06	10	0	74	06	14	0	73	06	17	0	72	06	21	0	71	06	24	0	70	06	27	0	69	06	30	0	68	06	33	0	67	06	35	0	66	06	38	0	65	06	41	0	64	06	43	0	63	06	45	0	62	06	47	0	61	275				
86	05	09	0	75	05	13	0	74	05	17	0	73	05	20	0	72	05	24	0	71	05	27	0	70	05	31	0	69	05	34	0	68	05	38	0	67	05	41	0	66	05	44	0	65	05	47	0	64	05	49	0	63	05	52	0	62	05	55	0	61	274				
87	04	11	0	75	04	15	0	74	04	19	0	73	04	23	0	72	04	27	0	71	04	31	0	70	04	35	0	69	04	39	0	68	04	42	0	67	04	46	0	66	04	49	0	65	04	53	0	64	04	56	0	63	04	59	0	62	04	62	0	61	273				
88	03	13	0	75	03	18	0	74	03	22	0	73	03	26	0	72	03	31	0	71	03	35	0	70	03	39	0	69	03	43	0	68	03	47	0	67	03	51	0	66	03	54	0	65	03	58	0	64	03	62	0	63	03	66	0	62	03	70	0	61	272				
89	02	15	0	75	02	20	0	74	02	25	0	73	02	29	0	72	02	34	0	71	02	39	0	70	02	43	0	69	02	48	0	68	02	52	0	67	02	57	0	66	02	61	0	65	02	65	0	64	02	69	0	63	02	73	0	62	02	77	0	61	271				
90	01	18	0	75	01	23	0	74	01	28	0	73	01	33	0	72	01	38	0	71	01	42	0	70	01	47	0	69	01	52	0	68	01	57	0	67	01	62	0	66	01	66	0	65	01	70	0	64	01	74	0	63	01	78	0	62	01	82	0	61	270				
91	00	20	0	75	00	25	0	74	00	30	0	73	00	35	0	72	00	40	0	71	00	45	0	70	00	50	0	69	00	55	0	68	00	60	0	67	00	65	0	66	00	70	0	65	00	75	0	64	00	80	0	63	00	85	0	62	00	90	0	61	269				
92	-0	38	0	75	-0	32	0	74	-0	27	0	73	-0	21	0	72	-0	15	0	71	-0	09	0	70	-0	03	0	69	-0	03	0	68	-0	03	0	67	-0	03	0	66	-0	03	0	65	-0	03	0	64	-0	03	0	63	-0	03	0	62	-0	03	0	61	268				
93	-1	36	0	75	-1	30	0	74	-1	24	0	73	-1	18	0	72	-1	12	0	71	-1	06	0	70	-1	00	0	69	-0	04	0	68	-0	04	0	67	-0	04	0	66	-0	04	0	65	-0	04	0	64	-0	04	0	63	-0	04	0	62	-0	04	0	61	267				
94	-2	33	0	75	-2	27	0	74	-2	21	0	73	-2	15	0	72	-2	08	0	71	-2	02	0	70	-2	06	0	69	-1	06	0	68	-1	06	0	67	-1	06	0	66	-1	06	0	65	-1	06	0	64	-1	06	0	63	-1	06	0	62	-1	06	0	61	266				
95	-3	31	0	75	-3	24	0	74	-3	18	0	73	-3	11	0	72	-3	05	0	71	-3	00	0	70	-3	04	0	69	-2	04	0	68	-2	04	0	67	-2	04	0	66	-2	04	0	65	-2	04	0	64	-2	04	0	63	-2	04	0	62	-2	04	0	61	265				
96	-4	29	0	75	-4	22	0	74	-4	15	0	73	-4	08	0	72	-4	01	0	71	-4	01	0	70	-4	07	0	69	-3	03	0	68	-3	03	0	67	-3	03	0	66	-3	03	0	65																					

N. Lat. { L.H.A. greater than 180°Zn=Z
L.H.A. less than 180°Zn=360°-Z

DECLINATION (15° - 29°) CONTRARY NAME TO LATITUDE

LHA	15°			16°			17°			18°			19°			20°			21°			22°			23°			24°			25°			26°			27°			28°			29°			LHA																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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385	491	0	0	-386	492	0	0	-387	493	0	0	-388	494	0	0	-389	495	0	0	-390	496	0	0	-391	497	0	0	-392	498	0	0	-393	499	0	0	-394	500	0	0	-395	501	0	0	-396	502	0	0	-397	503	0	0	-398	504	0	0	-399	505	0	0	-400	506	0	0	-401	507	0	0	-402	508	0	0	-403	509	0	0	-404	510	0	0	-405	511	0	0	-406	512	0	0	-407	513	0	0	-408	514	0	0	-409	515	0	0	-410	516	0	0	-411	517	0	0	-412	518	0	0	-413	519	0	0	-414	520	0	0	-415	521	0	0	-416	522	0	0	-417	523	0	0	-418	524	0	0	-419	525	0	0	-4

DECLINATION (0° - 14°) SAME NAME AS LATITUDE

N. Lat. { L.H.A. greater than 180°Zn=Z
L.H.A. less than 180°Zn=360°-Z

LHA	0°		1°		2°		3°		4°		5°		6°		7°		8°		9°		10°		11°		12°		13°		14°		LHA																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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70	19.53	07	92	20.00	06	91	20.06	05	90	20.11	04	89	20.17	03	88	20.22	02	87	20.26	01	86	20.31	00	85	20.34	04	84	20.38	03	83	20.41	02	82	20.43	01	81	20.45	00	80	20.46	01	79	20.47	02	78	20.49	01	77	20.50	00	76	20.51	01	75	20.52	02	74	20.53	01	73	20.54	00	72	20.55	01	71	20.56	02	70	20.57	01	69	20.58	00	68	20.59	01	67	21.00	00	66	21.01	01	65	21.02	00	64	21.03	01	63	21.04	00	62	21.05	01	61	21.06	00	60	21.07	01	59	21.08	00	58	21.09	01	57	21.10	00	56	21.11	01	55	21.12	00	54	21.13	01	53	21.14	00	52	21.15	01	51	21.16	00	50	21.17	01	49	21.18	00	48	21.19	01	47	21.20	00	46	21.21	01	45	21.22	00	44	21.23	01	43	21.24	00	42	21.25	01	41	21.26	00	40	21.27	01	39	21.28	00	38	21.29	01	37	21.30	00	36	21.31	01	35	21.32	00	34	21.33	01	33	21.34	00	32	21.35	01	31	21.36	00	30	21.37	01	29	21.38	00	28	21.39	01	27	21.40	00	26	21.41	01	25	21.42	00	24	21.43	01	23	21.44	00	22	21.45	01	21	21.46	00	20	21.47	01	19	21.48	00	18	21.49	01	17	21.50	00	16	21.51	01	15	21.52	00	14	21.53	01	13	21.54	00	12	21.55	01	11	21.56	00	10	21.57	01	09	21.58	00	08	21.59	01	07	22.00	00	06	22.01	01	05	22.02	00	04	22.03	01	03	22.04	00	02	22.05	01	01	22.06	00	00	22.07	01	99	22.08	00	98	22.09	01	97	22.10	00	96	22.11	01	95	22.12	00	94	22.13	01	93	22.14	00	92	22.15	01	91	22.16	00	90	22.17	01	89	22.18	00	88	22.19	01	87	22.20	00	86	22.21	01	85	22.22	00	84	22.23	01	83	22.24	00	82	22.25	01	81	22.26	00	80	22.27	01	79	22.28	00	78	22.29	01	77	22.30	00	76	22.31	01	75	22.32	00	74	22.33	01	73	22.34	00	72	22.35	01	71	22.36	00	70	22.37	01	69	22.38	00	68	22.39	01	67	22.40	00	66	22.41	01	65	22.42	00	64	22.43	01	63	22.44	00	62	22.45	01	61	22.46	00	60	22.47	01	59	22.48	00	58	22.49	01	57	22.50	00	56	22.51	01	55	22.52	00	54	22.53	01	53	22.54	00	52	22.55	01	51	22.56	00	50	22.57	01	49	22.58	00	48	22.59	01	47	23.00	00	46	23.01	01	45	23.02	00	44	23.03	01	43	23.04	00	42	23.05	01	41	23.06	00	40	23.07	01	39	23.08	00	38	23.09	01	37	23.10	00	36	23.11	01	35	23.12	00	34	23.13	01	33	23.14	00	32	23.15	01	31	23.16	00	30	23.17	01	29	23.18	00	28	23.19	01	27	23.20	00	26	23.21	01	25	23.22	00	24	23.23	01	23	23.24	00	22	23.25	01	21	23.26	00	20	23.27	01	19	23.28	00	18	23.29	01	17	23.30	00	16	23.31	01	15	23.32	00	14	23.33	01	13	23.34	00	12	23.35	01	11	23.36	00	10	23.37	01	09	23.38	00	08	23.39	01	07	23.40	00	06	23.41	01	05	23.42	00	04	23.43	01	03	23.44	00	02	23.45	01	01	23.46	00	00	23.47	01	99	23.48	00	98	23.49	01	97	23.50	00	96	23.51	01	95	23.52	00	94	23.53	01	93	23.54	00	92	23.55	01	91	23.56	00	90	23.57	01	89	23.58	00	88	23.59	01	87	24.00	00	86	24.01	01	85	24.02	00	84	24.03	01	83	24.04	00	82	24.05	01	81	24.06	00	80	24.07	01	79	24.08	00	78	24.09	01	77	24.10	00	76	24.11	01	75	24.12	00	74	24.13	01	73	24.14	00	72	24.15	01	71	24.16	00	70	24.17	01	69	24.18	00	68	24.19	01	67	24.20	00	66	24.21	01	65	24.22	00	64	24.23	01	63	24.24	00	62	24.25	01	61	24.26	00	60	24.27	01	59	24.28	00	58	24.29	01	57	24.30	00	56	24.31	01	55	24.32	00	54	24.33	01	53	24.34	00	52	24.35	01	51	24.36	00	50	24.37	01	49	24.38	00	48	24.39	01	47	24.40	00	46	24.41	01	45	24.42	00	44	24.43	01	43	24.44	00	42	24.45	01	41	24.46	00	40	24.47	01	39	24.48	00	38	24.49	01	37	24.50	00	36	24.51	01	35	24.52	00	34	24.53	01	33	24.54	00	32	24.55	01	31	24.56	00	30	24.57	01	29	24.58	00	28	24.59	01	27	25.00	00	26	25.01	01	25	25.02	00	24	25.03	01	23	25.04	00	22	25.05	01	21	25.06	00	20	25.07	01	19	25.08	00	18	25.09	01	17	25.10	00	16	25.11	01	15	25.12	00	14	25.13	01	13	25.14	00	12	25.15	01	11	25.16	00	10	25.17	01	09	25.18	00	08	25.19	01	07	25.20	00	06	25.21	01	05	25.22	00	04	25.23	01	03	25.24	00	02	25.25	01	01	25.26	00	00	25.27	01	99	25.28	00	98	25.29	01	97	25.30	00	96	25.31	01	95	25.32	00	94	25.33	01	93	25.34	00	92	25.35	01	91	25.36	00	90	25.37	01	89	25.38	00	88	25.39	01	87	25.40	00	86	25.41	01	85	25.42	00	84	25.43	01	83	25.44	00	82	25.45	01	81	25.46	00	80	25.47	01	79	25.48	00	78	25.49	01	77	25.50	00	76	25.51	01	75	25.52	00	74	25.53	01	73	25.54	00	72	25.55	01	71	25.56	00	70	25.57	01	69	25.58	00	68	25.59	01	67	26.00	00	66	26.01	01	65	26.02	00	64	26.03	01	63	26.04	00	62	26.05	01	61	26.06	00	60	26.07	01	59	26.08	00	58	26.09	01	57	26.10	00	56	26.11	01	55	26.12	00	54	26.13	01	53	26.14	00	52	26.15	01	51	26.16	00	50	26.17	01	49	26.18	00	48	26.19	01	47	26.20	00	46	26.21	01	45	26.22	00	44	26.23	01	43	26.24	00	42	26.25	01	41	26.26	00	40	26.27	01	39	26.28	00	38	26.29	01	37	26.30	00	36	26.31	01	35	26.32	00	34	26.33	01	33	26.34	00	32	26.35	01	31	26.36	00	30	26.37	01	29	26.38	00	28	26.39	01	27	26.40	00	26	26.41	01	25	26.42	00	24	26.43	01	23	26.44	00	22	26.45	01	21	26.46	00	20	26.47	01	19	26.48	00	18	26.49	01	17	26.50	00	16	26.51	01	15	26.52	00	14	26.53	01	13	26.54	00	12	26.55	01	11	26.56	00	10	26.57	01	09	26.58	00	08	26.59	01	07	27.00	00	06	27.01	01	05	27.02	00	04	27.03	01	03	27.04	00	02	27.05	01	01	27.06	00	00	27.07	01	99	27.08	00	98	27.09	01	97	27.10	00	96	27.11	01	95	27.12	00	94	27.13	01	93	27.14	00	92	27.15	01	91	27.16	00	90	27.17	01	89	27.18	00	88	27.19	01	87	27.20	00	86	27.21	01	85	27.22	00	84	27.23	01	83	27.24	00	82	27.25	01	81	27.26	00	80	27.27	01	79	27.28	00	78	27.29	01	77	27.30	00	76	27.31	01	75	27.32	00	74	27.33	01	73	27.34	00	72	27.35	01	71	27.36	00	70	27.37	01	69	27.38	00	68	27.39	01	67	27.40	00	66	27.41	01	65	27.42	00	64	27.43	01	63	27.44	00	62	27.45	01	61	27.46	00	60	27.47	01	59	27.48	00	58	27.49	01	57	27.50	00

DECLINATION (0° – 14°) CONTRARY NAME TO LATITUDE

LAT 6°

L.H.A. greater than 180°Zn=Z
 N. Lat. { L.H.A. less than 180°Zn=360°-Z

LHA	0°		1°		2°		3°		4°		5°		6°		7°		8°		9°		10°		11°		12°		13°		14°		LHA																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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68	20	53	-07	92	20	39	-08	94	20	31	-08	95	20	23	-09	97	20	14	-08	98	20	06	-10	99	19	56	-09	100	19	47	-10	101	19	37	-11	102	19	28	-12	103	19	18	-13	104	19	08	-14	105	18	58	-15	106	18	48	-16	107	18	38	-17	108	18	28	-18	109	18	18	-19	110	18	08	-20	111	17	58	-21	112	17	48	-22	113	17	38	-23	114	17	28	-24	115	17	18	-25	116	17	08	-26	117	17	00	-27	118	17	00	-28	119	17	00	-29	120	17	00	-30	121	17	00	-31	122	17	00	-32	123	17	00	-33	124	17	00	-34	125	17	00	-35	126	17	00	-36	127	17	00	-37	128	17	00	-38	129	17	00	-39	130	17	00	-40	131	17	00	-41	132	17	00	-42	133	17	00	-43	134	17	00	-44	135	17	00	-45	136	17	00	-46	137	17	00	-47	138	17	00	-48	139	17	00	-49	140	17	00	-50	141	17	00	-51	142	17	00	-52	143	17	00	-53	144	17	00	-54	145	17	00	-55	146	17	00	-56	147	17	00	-57	148	17	00	-58	149	17	00	-59	150	17	00	-60	151	17	00	-61	152	17	00	-62	153	17	00	-63	154	17	00	-64	155	17	00	-65	156	17	00	-66	157	17	00	-67	158	17	00	-68	159	17	00	-69	160	17	00	-70	161	17	00	-71	162	17	00	-72	163	17	00	-73	164	17	00	-74	165	17	00	-75	166	17	00	-76	167	17	00	-77	168	17	00	-78	169	17	00	-79	170	17	00	-80	171	17	00	-81	172	17	00	-82	173	17	00	-83	174	17	00	-84	175	17	00	-85	176	17	00	-86	177	17	00	-87	178	17	00	-88	179	17	00	-89	180	17	00	-90	181	17	00	-91	182	17	00	-92	183	17	00	-93	184	17	00	-94	185	17	00	-95	186	17	00	-96	187	17	00	-97	188	17	00	-98	189	17	00	-99	190	17	00	-100	191	17	00	-101	192	17	00	-102	193	17	00	-103	194	17	00	-104	195	17	00	-105	196	17	00	-106	197	17	00	-107	198	17	00	-108	199	17	00	-109	200	17	00	-110	201	17	00	-111	202	17	00	-112	203	17	00	-113	204	17	00	-114	205	17	00	-115	206	17	00	-116	207	17	00	-117	208	17	00	-118	209	17	00	-119	210	17	00	-120	211	17	00	-121	212	17	00	-122	213	17	00	-123	214	17	00	-124	215	17	00	-125	216	17	00	-126	217	17	00	-127	218	17	00	-128	219	17	00	-129	220	17	00	-130	221	17	00	-131	222	17	00	-132	223	17	00	-133	224	17	00	-134	225	17	00	-135	226	17	00	-136	227	17	00	-137	228	17	00	-138	229	17	00	-139	230	17	00	-140	231	17	00	-141	232	17	00	-142	233	17	00	-143	234	17	00	-144	235	17	00	-145	236	17	00	-146	237	17	00	-147	238	17	00	-148	239	17	00	-149	240	17	00	-150	241	17	00	-151	242	17	00	-152	243	17	00	-153	244	17	00	-154	245	17	00	-155	246	17	00	-156	247	17	00	-157	248	17	00	-158	249	17	00	-159	250	17	00	-160	251	17	00	-161	252	17	00	-162	253	17	00	-163	254	17	00	-164	255	17	00	-165	256	17	00	-166	257	17	00	-167	258	17	00	-168	259	17	00	-169	260	17	00	-170	261	17	00	-171	262	17	00	-172	263	17	00	-173	264	17	00	-174	265	17	00	-175	266	17	00	-176	267	17	00	-177	268	17	00	-178	269	17	00	-179	270	17	00	-180	271	17	00	-181	272	17	00	-182	273	17	00	-183	274	17	00	-184	275	17	00	-185	276	17	00	-186	277	17	00	-187	278	17	00	-188	279	17	00	-189	280	17	00	-190	281	17	00	-191	282	17	00	-192	283	17	00	-193	284	17	00	-194	285	17	00	-195	286	17	00	-196	287	17	00	-197	288	17	00	-198	289	17	00	-199	290	17	00	-200	291	17	00	-201	292	17	00	-202	293	17	00	-203	294	17	00	-204	295	17	00	-205	296	17	00	-206	297	17	00	-207	298	17	00	-208	299	17	00	-209	300	17	00	-210	301	17	00	-211	302	17	00	-212	303	17	00	-213	304	17	00	-214	305	17	00	-215	306	17	00	-216	307	17	00	-217	308	17	00	-218	309	17	00	-219	310	17	00	-220	311	17	00	-221	312	17	00	-222	313	17	00	-223	314	17	00	-224	315	17	00	-225	316	17	00	-226	317	17	00	-227	318	17	00	-228	319	17	00	-229	320	17	00	-230	321	17	00	-231	322	17	00	-232	323	17	00	-233	324	17	00	-234	325	17	00	-235	326	17	00	-236	327	17	00	-237	328	17	00	-238	329	17	00	-239	330	17	00	-240	331	17	00	-241	332	17	00	-242	333	17	00	-243	334	17	00	-244	335	17	00	-245	336	17	00	-246	337	17	00	-247	338	17	00	-248	339	17	00	-249	340	17	00	-250	341	17	00	-251	342	17	00	-252	343	17	00	-253	344	17	00	-254	345	17	00	-255	346	17	00	-256	347	17	00	-257	348	17	00	-258	349	17	00	-259	350	17	00	-260	351	17	00	-261	352	17	00	-262	353	17	00	-263	354	17	00	-264	355	17	00	-265	356	17	00	-266	357	17	00	-267	358	17	00	-268	359	17	00	-269	360	17	00	-270	361	17	00	-271	362	17	00	-272	363	17	00	-273	364	17	00	-274	365	17	00	-275	366	17	00	-276	367	17	00	-277	368	17	00	-278	369	17	00	-279	370	17	00	-280	371	17	00	-281	372	17	00	-282	373	17	00	-283	374	17	00	-284	375	17	00	-285	376	17	00	-286	377	17	00	-287	378	17	00	-288	379	17	00	-289	380	17	00	-290	381	17	00	-291	382	17	00	-292	383	17	00	-293	384	17	00	-294	385	17	00	-295	386	17	00	-296	387	17	00	-297	388	17	00	-298	389	17	00	-299	390	17	00	-300	391	17	00	-301	392	17	00	-302	393	17	00	-303	394	17	00	-304	395	17	00	-305	396	17	00	-306	397	17	00	-307	398	17	00	-308	399	17	00	-309	400	17	00	-310	401	17	00	-311	402	17	00	-312	403	17	00	-313	404	17	00	-314	405	17	00	-315	406	17	00	-316	407	17	00	-317	408	17	00	-318	409	17	00	-319	410	17	00	-320	411	17	00	-321	412	17	00	-322	413	17	00	-323	414	17	00	-324	415	17	00	-325	416	17	00	-326	417	17	00	-327	418	17	00	-328	419	17	00	-329	420	17	00	-330	421	17	00	-331	422	17	00	-332	423	17	00	-333	424	17	00	-334	425	17	00	-335	426	17	00	-336	427	17	00	-337	428	17	00	-338	429	17	00	-339	430	17	00	-340	431	17	00	-341	432	17	00	-342	433	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DECLINATION (15° - 29°) SAME NAME AS LATITUDE

N. Lat. { L.H.A. greater than 180°Zn=Z
L.H.A. less than 180°Zn=360°-Z

Table with columns for Latitude (15° to 29°) and Declination (15° to 29°). Each cell contains a 3-digit number representing the declination value. The table is organized into a grid where the top row and left column represent the latitude and declination values respectively.

DECLINATION (15° - 29°) SAME NAME AS LATITUDE

S. Lat. { L.H.A. greater than 180°Zn=180°-Z
L.H.A. less than 180°Zn=180°+Z

LAT 6°

DECLINATION (15° - 29°) SAME NAME AS LATITUDE

N. Lat. { L.H.A. greater than 180°Zn-Z
L.H.A. less than 180°Zn=360°-Z

LHA	15°			16°			17°			18°			19°			20°			21°			22°			23°			24°			25°			26°			27°			28°			29°			LHA			
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z										
70	20.50	00	76	20.50	01	75	20.51	00	74	20.51	-01	73	20.50	-01	72	20.49	-01	71	20.48	-01	70	20.46	-02	69	20.44	-03	68	20.41	-03	67	20.38	-03	66	20.35	-04	64	20.31	-04	63	20.27	-04	62	20.23	-05	61	280			
71	19.52	01	76	19.53	00	75	19.53	00	74	19.53	-01	73	19.53	-01	72	19.53	-01	71	19.52	-02	70	19.50	-02	69	19.49	-03	68	19.46	-02	67	19.44	-03	66	19.41	-03	64	19.38	-04	63	19.34	-04	62	19.30	-04	61	289			
72	18.54	01	76	18.55	00	75	18.55	00	74	18.55	-01	73	18.57	-01	72	18.56	-01	71	18.56	-01	70	18.55	-02	69	18.53	-02	68	18.52	-02	67	18.50	-02	66	18.47	-03	64	18.44	-03	63	18.41	-03	62	18.38	-04	61	288			
73	17.56	02	76	17.57	02	75	17.59	01	74	17.59	01	73	17.59	01	72	17.59	01	71	17.58	01	70	17.57	01	69	17.55	01	68	17.52	01	67	17.51	01	66	17.53	02	65	17.53	02	64	17.48	-03	63	17.45	-03	62	17.43	-03	61	287
74	16.58	02	76	17.00	01	75	17.01	01	74	17.02	01	73	17.03	01	72	17.04	00	71	17.04	00	70	17.03	00	69	17.03	-01	68	17.02	-01	67	17.01	-02	66	16.59	-01	65	16.58	-03	64	16.55	-02	63	16.53	-03	62	16.51	-03	61	286
75	16.00	02	76	16.02	02	75	16.04	01	74	16.05	01	73	16.06	01	72	16.07	01	71	16.08	00	70	16.08	00	69	16.08	-01	68	16.07	-01	67	16.07	-02	66	16.05	-01	65	16.04	-01	64	16.03	-02	63	16.01	-03	62	16.00	-03	61	285
76	15.02	03	76	15.05	01	75	15.06	02	74	15.08	02	73	15.10	01	72	15.11	01	71	15.12	00	70	15.12	00	69	15.12	00	68	15.12	00	67	15.12	00	66	15.12	00	65	15.11	-01	64	15.10	-02	63	15.08	-02	62	15.08	-02	61	284
77	14.04	03	76	14.07	02	75	14.09	02	74	14.11	02	73	14.13	01	72	14.14	02	71	14.16	01	70	14.17	00	69	14.18	00	68	14.18	00	67	14.18	00	66	14.18	00	65	14.17	00	64	14.17	-01	63	14.16	-02	62	14.16	-02	61	283
78	13.06	03	76	13.09	03	75	13.12	02	74	13.14	02	73	13.16	02	72	13.18	02	71	13.20	01	70	13.21	01	69	13.21	01	68	13.23	01	67	13.23	01	66	13.24	00	65	13.24	00	64	13.24	00	63	13.23	00	62	13.23	00	61	282
79	12.09	03	76	12.12	02	75	12.14	03	74	12.17	02	73	12.19	02	72	12.22	02	71	12.24	01	70	12.25	02	69	12.25	01	68	12.28	01	67	12.29	01	66	12.30	00	65	12.30	00	64	12.31	00	63	12.31	00	62	12.31	00	61	281
80	11.11	03	76	11.14	03	75	11.17	03	74	11.20	03	73	11.23	02	72	11.25	03	71	11.28	02	70	11.30	02	69	11.32	01	68	11.33	02	67	11.35	01	66	11.36	01	65	11.37	01	64	11.38	00	63	11.38	01	62	11.38	01	61	280
81	10.13	03	76	10.16	04	75	10.20	03	74	10.23	03	73	10.26	03	72	10.29	03	71	10.32	02	70	10.34	02	69	10.36	02	68	10.38	02	67	10.40	02	66	10.42	01	65	10.43	02	64	10.45	01	63	10.46	01	62	10.46	01	61	279
82	09.15	04	76	09.19	04	75	09.23	03	74	09.26	03	73	09.29	04	72	09.33	03	71	09.36	03	70	09.39	02	69	09.41	03	68	09.44	02	67	09.46	02	66	09.48	02	65	09.50	02	64	09.52	01	63	09.53	02	62	09.53	02	61	278
83	08.17	04	76	08.21	04	75	08.25	04	74	08.29	04	73	08.33	04	72	08.36	04	71	08.40	03	70	08.43	03	69	08.46	03	68	08.49	03	67	08.52	02	66	08.54	03	65	08.57	02	64	08.59	02	63	09.01	02	62	09.01	02	61	277
84	07.19	04	76	07.24	04	75	07.28	04	74	07.32	04	73	07.36	04	72	07.40	04	71	07.44	03	70	07.47	04	69	07.51	03	68	07.54	03	67	07.57	03	66	08.00	03	65	08.03	03	64	08.06	02	63	08.08	03	62	08.08	03	61	276
85	06.22	04	76	06.26	05	75	06.31	04	74	06.35	05	73	06.40	04	72	06.44	04	71	06.48	04	70	06.52	04	69	06.56	03	68	06.59	04	67	07.03	03	66	07.07	03	65	07.10	04	64	07.14	02	63	07.13	03	62	07.16	03	61	275
86	05.24	05	75	05.29	05	74	05.34	04	73	05.38	05	72	05.43	05	71	05.48	04	70	05.52	04	69	05.56	05	68	06.01	04	67	06.05	04	66	06.09	04	65	06.13	03	64	06.16	04	63	06.20	04	62	06.24	03	61	274			
87	04.26	05	75	04.31	05	74	04.36	06	73	04.42	05	72	04.47	04	71	04.51	05	70	04.56	05	69	05.01	05	68	05.06	04	67	05.10	04	66	05.14	05	65	05.19	04	64	05.23	04	63	05.27	04	62	05.31	04	61	273			
88	03.28	06	75	03.34	06	74	03.39	06	73	03.45	05	72	03.50	06	71	03.55	05	70	04.00	05	69	04.05	05	68	04.10	05	67	04.15	05	66	04.20	05	65	04.25	05	64	04.30	04	63	04.34	05	62	04.39	04	61	272			
89	02.31	06	75	02.36	06	74	02.42	06	73	02.48	05	72	02.53	06	71	02.59	06	70	03.05	05	69	03.10	05	68	03.15	05	67	03.21	05	66	03.26	05	65	03.31	05	64	03.36	06	63	03.42	05	62	03.47	05	61	271			
90	01.33	06	75	01.39	06	74	01.45	06	73	01.51	06	72	01.57	06	71	02.03	06	70	02.09	06	69	02.15	05	68	02.20	06	67	02.26	06	66	02.32	06	65	02.38	06	64	02.43	06	63	02.49	06	62	02.54	06	61	270			
91	00.35	07	75	00.42	06	74	00.48	06	73	00.54	07	72	01.01	06	71	01.07	06	70	01.13	06	69	01.19	06	68	01.25	07	67	01.32	06	66	01.38	06	65	01.44	06	64	01.50	06	63	01.56	06	62	02.02	06	61	269			
92	-0.22	07	75	-0.16	07	74	-0.09	07	73	-0.02	06	72	00.04	07	71	00.11	06	70	00.17	07	69	00.24	07	68	00.31	06	67	00.37	07	66	00.44	06	65	00.50	07	64	00.57	06	63	01.03	07	62	01.10	06	61	268			
93	-1.20	07	75	-1.13	07	74	-1.06	07	73	-0.99	07	72	-0.92	07	71	-0.85	07	70	-0.78	07	69	-0.71	07	68	-0.64	07	67	-0.57	07	66	-0.50	07	65	-0.43	07	64	00.37	07	63	00.30	07	62	00.18	07	61	267			
94	-2.17	07	75	-2.10	07	74	-2.03	07	73	-1.96	07	72	-1.89	07	71	-1.81	07	70	-1.74	07	69	-1.67	07	68	-1.60	07	67	-1.53	07	66	-1.46	07	65	-1.39	07	64	-1.32	07	63	-1.25	07	62	-1.18	07	61	266			
95	-3.15	08	74	-3.07	08	73	-3.00	08	72	-2.92	08	71	-2.85	08	70	-2.77	08	69	-2.70	08	68	-2.62	08	67	-2.55	08	66	-2.48	08	65	-2.41	08	64	-2.34	08	63	-2.27	08	62	-2.20	08	61	-2.13	08	60	-2.06	08	61	265
96	-4.12	08	74	-4.05	08	73	-3.97	08	72	-3.89	08	71	-3.82	08	70	-3.73	08	69	-3.65	08	68	-3.57	08	67	-3.50	08	66	-3.43	08	65	-3.35	08	64	-3.27	08	63	-3.20	08	62	-3.12	08	61	-3.05	08	60	-2.98	08	61	264
97	-5.10	08	74	-5.02	08	73	-4.94	08	72	-4.86	08	71	-4.79	08	70	-4.70	08	69	-4.62	08	68	-4.54	08	67	-4.47	08	66	-4.39	08	65	-4.31	08	64	-4.23	08	63	-4.15	08	62	-4.07	08	61	-4.00	08	60	-3.93	08	61	263
98	-6.07	08	74	-5.99	08	73	-5.91	08	72	-5.82	08	71	-5.73	08	70	-5.65	08	69	-5.57	08	68	-5.49	08	67	-5.41	08	66	-5.33	08	65	-5.25	08	64	-5.17	08	63	-5.10	08	62	-5.02	08	61	-4.95	08	60	-4.88	08	61	262
99	-6.47	08	72	-6.39	08	71	-6.30	08	70	-6.20	08	69	-6.11	08	68	-6.02	08	67	-5.94	08	66	-5.85	08	65	-5.76	08	64	-5.68	08	63	-5.59	08	62	-5.51	08	61	-5.42	08	60	-5.34	08	61	-5.26	08	60	-5.19	08		

N. Lat. { L.H.A. greater than 180°Zn=Z
L.H.A. less than 180°Zn=360°-Z

DECLINATION (15° - 29°) CONTRARY NAME TO LATITUDE

LHA	15°			16°			17°			18°			19°			20°			21°			22°			23°			24°			25°			26°			27°			28°			29°			LHA																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
69	18	30	-19	108	18	17	-12	109	18	05	-14	110	17	51	-19	111	17	38	-14	112	17	24	-14	113	17	10	-14	114	16	56	-14	115	16	42	-15	116	16	27	-16	117	16	11	-15	118	15	56	-16	119	15	40	-16	120	15	24	-16	121	15	08	-17	122	14	52	-17	123	14	36	-17	124	14	20	-17	125	14	04	-17	126	13	48	-17	127	13	32	-17	128	13	16	-17	129	13	00	-17	130	12	44	-17	131	12	28	-17	132	12	12	-17	133	11	56	-17	134	11	40	-17	135	11	24	-17	136	11	08	-17	137	10	52	-17	138	10	36	-17	139	10	20	-17	140	10	04	-17	141	09	48	-17	142	09	32	-17	143	09	16	-17	144	09	00	-17	145	08	44	-17	146	08	28	-17	147	08	12	-17	148	07	56	-17	149	07	40	-17	150	07	24	-17	151	07	08	-17	152	06	52	-17	153	06	36	-17	154	06	20	-17	155	06	04	-17	156	05	48	-17	157	05	32	-17	158	05	16	-17	159	05	00	-17	160	04	44	-17	161	04	28	-17	162	04	12	-17	163	03	56	-17	164	03	40	-17	165	03	24	-17	166	03	08	-17	167	02	52	-17	168	02	36	-17	169	02	20	-17	170	02	04	-17	171	01	48	-17	172	01	32	-17	173	01	16	-17	174	01	00	-17	175	00	44	-17	176	00	28	-17	177	00	12	-17	178	00	00	-17	179	00	00	-17	180	00	00	-17	181	00	00	-17	182	00	00	-17	183	00	00	-17	184	00	00	-17	185	00	00	-17	186	00	00	-17	187	00	00	-17	188	00	00	-17	189	00	00	-17	190	00	00	-17	191	00	00	-17	192	00	00	-17	193	00	00	-17	194	00	00	-17	195	00	00	-17	196	00	00	-17	197	00	00	-17	198	00	00	-17	199	00	00	-17	200	00	00	-17	201	00	00	-17	202	00	00	-17	203	00	00	-17	204	00	00	-17	205	00	00	-17	206	00	00	-17	207	00	00	-17	208	00	00	-17	209	00	00	-17	210	00	00	-17	211	00	00	-17	212	00	00	-17	213	00	00	-17	214	00	00	-17	215	00	00	-17	216	00	00	-17	217	00	00	-17	218	00	00	-17	219	00	00	-17	220	00	00	-17	221	00	00	-17	222	00	00	-17	223	00	00	-17	224	00	00	-17	225	00	00	-17	226	00	00	-17	227	00	00	-17	228	00	00	-17	229	00	00	-17	230	00	00	-17	231	00	00	-17	232	00	00	-17	233	00	00	-17	234	00	00	-17	235	00	00	-17	236	00	00	-17	237	00	00	-17	238	00	00	-17	239	00	00	-17	240	00	00	-17	241	00	00	-17	242	00	00	-17	243	00	00	-17	244	00	00	-17	245	00	00	-17	246	00	00	-17	247	00	00	-17	248	00	00	-17	249	00	00	-17	250	00	00	-17	251	00	00	-17	252	00	00	-17	253	00	00	-17	254	00	00	-17	255	00	00	-17	256	00	00	-17	257	00	00	-17	258	00	00	-17	259	00	00	-17	260	00	00	-17	261	00	00	-17	262	00	00	-17	263	00	00	-17	264	00	00	-17	265	00	00	-17	266	00	00	-17	267	00	00	-17	268	00	00	-17	269	00	00	-17	270	00	00	-17	271	00	00	-17	272	00	00	-17	273	00	00	-17	274	00	00	-17	275	00	00	-17	276	00	00	-17	277	00	00	-17	278	00	00	-17	279	00	00	-17	280	00	00	-17	281	00	00	-17	282	00	00	-17	283	00	00	-17	284	00	00	-17	285	00	00	-17	286	00	00	-17	287	00	00	-17	288	00	00	-17	289	00	00	-17	290	00	00	-17	291	00	00	-17	292	00	00	-17	293	00	00	-17	294	00	00	-17	295	00	00	-17	296	00	00	-17	297	00	00	-17	298	00	00	-17	299	00	00	-17	300	00	00	-17	301	00	00	-17	302	00	00	-17	303	00	00	-17	304	00	00	-17	305	00	00	-17	306	00	00	-17	307	00	00	-17	308	00	00	-17	309	00	00	-17	310	00	00	-17	311	00	00	-17	312	00	00	-17	313	00	00	-17	314	00	00	-17	315	00	00	-17	316	00	00	-17	317	00	00	-17	318	00	00	-17	319	00	00	-17	320	00	00	-17	321	00	00	-17	322	00	00	-17	323	00	00	-17	324	00	00	-17	325	00	00	-17	326	00	00	-17	327	00	00	-17	328	00	00	-17	329	00	00	-17	330	00	00	-17	331	00	00	-17	332	00	00	-17	333	00	00	-17	334	00	00	-17	335	00	00	-17	336	00	00	-17	337	00	00	-17	338	00	00	-17	339	00	00	-17	340	00	00	-17	341	00	00	-17	342	00	00	-17	343	00	00	-17	344	00	00	-17	345	00	00	-17	346	00	00	-17	347	00	00	-17	348	00	00	-17	349	00	00	-17	350	00	00	-17	351	00	00	-17	352	00	00	-17	353	00	00	-17	354	00	00	-17	355	00	00	-17	356	00	00	-17	357	00	00	-17	358	00	00	-17	359	00	00	-17	360	00	00	-17	361	00	00	-17	362	00	00	-17	363	00	00	-17	364	00	00	-17	365	00	00	-17	366	00	00	-17	367	00	00	-17	368	00	00	-17	369	00	00	-17	370	00	00	-17	371	00	00	-17	372	00	00	-17	373	00	00	-17	374	00	00	-17	375	00	00	-17	376	00	00	-17	377	00	00	-17	378	00	00	-17	379	00	00	-17	380	00	00	-17	381	00	00	-17	382	00	00	-17	383	00	00	-17	384	00	00	-17	385	00	00	-17	386	00	00	-17	387	00	00	-17	388	00	00	-17	389	00	00	-17	390	00	00	-17	391	00	00	-17	392	00	00	-17	393	00	00	-17	394	00	00	-17	395	00	00	-17	396	00	00	-17	397	00	00	-17	398	00	00	-17	399	00	00	-17	400	00	00	-17	401	00	00	-17	402	00	00	-17	403	00	00	-17	404	00	00	-17	405	00	00	-17	406	00	00	-17	407	00	00	-17	408	00	00	-17	409	00	00	-17	410	00	00	-17	411	00	00	-17	412	00	00	-17	413	00	00	-17	414	00	00	-17	415	00	00	-17	416	00	00	-17	417	00	00	-17	418	00	00	-17	419	00	00	-17	420	00	00	-17	421	00	00	-17	422	00	00	-17	423	00	00	-17	424	00	00	-17	425	00	00	-17	426	00	00	-17	427	00	00	-17	428	00	00	-17	429	00	00	-17	430	00	00	-17	431	00	00	-17	432	00	00	-17	433	00	00	-17	434	00	00	-17	435	00	00	-17	436	00	00	-17	437	00	00	-17	438	00	00	-17	439	00	00	-17	440	00	00	-17	441	00	00	-17	442	00	00	-17	443	00	00	-17	444	00	00	-17	445	00	00	-17	446	00	00	-17	447	00	00	-17	448	00	00	-17	449	00	00	-17	450	00	00	-17	451	00	00	-17	452	00	00	-17	453	00	00	-17	454	00	00	-17	455	00	00	-17	456	00	00	-17	457	00	00	-17	458	00	00	-17	459	00	00	-17	460	00	00	-17	461	00	00	-17	462	00	00	-17	463	00	00	-17	464	00	00	-17	465	00	00	-17	466	00	00	-17	467	00	00	-17	468	00	00	-17	469	00	00	-17	470	00	00	-17	471	00	00	-17	472	00	00	-17	473	00	00	-17	474	00	00	-17	475	00	00	-17	476	00	00	-17	477	00	00	-17	478	00	00	-17	479	00	00	-17	480	00	00	-17	481	00	00	-17	482	00	00	-17	483	00	00	-17	484	00	00	-17	485	00	00	-17	486	00	00	-17	487	00	00	-17	488	00	00	-17	489	00	00	-17	490	00	00	-17	491	00	00	-17	492	00	00	-17	493	00	00	-17	494	00	00	-17	495	00	00	-17	496	00	00	-17	497	00	00	-17	498	00	00	-17	499	00	00	-17	500	00	00	-17	501	00	00	-17	502	00	00	-17	503	00	00	-17	504	00	00	-17	505	00	00	-17	506	00	00	-17	507	00	00	-17	508	00	00	-17	509	00	00	-17	510	00	00	-17	511	00	00	-17

DECLINATION (0° - 14°) SAME NAME AS LATITUDE

N. Lat. { L.H.A. greater than 180°Zn=Z
 L.H.A. less than 180°Zn=360°-Z

LHA	0°		1°		2°		3°		4°		5°		6°		7°		8°		9°		10°		11°		12°		13°		14°		LHA															
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z																
70	19.51	07	93	19.58	07	91	20.05	07	90	20.12	07	89	20.19	06	88	20.25	06	87	20.31	05	86	20.36	05	85	20.41	04	84	20.45	04	83	20.49	04	82	20.53	03	81	20.56	03	80	20.59	03	79	21.02	02	78	290
71	18.51	08	92	18.58	07	91	19.06	07	90	19.13	06	89	19.19	06	88	19.25	06	87	19.31	05	86	19.36	05	85	19.41	05	84	19.46	04	83	19.50	04	82	19.54	04	81	19.58	03	80	20.01	03	79	20.04	02	78	289
72	17.52	08	92	17.59	07	91	18.06	07	90	18.13	06	89	18.20	06	88	18.26	06	87	18.32	05	86	18.37	05	85	18.42	05	84	18.47	04	83	18.51	04	82	18.55	04	81	18.59	03	80	19.03	03	79	19.06	02	78	288
73	16.52	08	92	16.59	07	91	17.07	07	90	17.14	06	89	17.20	06	88	17.26	06	87	17.32	05	86	17.38	05	85	17.43	05	84	17.48	04	83	17.53	04	82	17.57	04	81	18.01	03	80	18.04	03	79	18.07	02	78	287
74	15.53	08	92	15.60	07	91	16.07	07	90	16.14	06	89	16.21	06	88	16.27	06	87	16.33	05	86	16.39	05	85	16.44	05	84	16.49	04	83	16.54	04	82	16.58	04	81	17.02	04	80	17.06	03	79	17.09	02	78	286
75	14.53	08	92	14.60	07	91	15.08	07	90	15.15	06	89	15.21	06	88	15.27	06	87	15.34	05	86	15.39	05	85	15.45	05	84	15.50	04	83	15.55	04	82	15.59	04	81	16.03	04	80	16.07	03	79	16.11	02	78	285
76	13.54	07	92	13.61	07	91	14.08	07	90	14.15	06	89	14.22	06	88	14.28	06	87	14.34	05	86	14.40	05	85	14.46	05	84	14.51	04	83	14.56	04	82	14.59	04	81	15.01	04	80	15.05	04	79	15.09	04	78	284
77	12.54	07	92	12.61	07	91	13.08	07	90	13.16	06	89	13.22	06	88	13.29	06	87	13.35	05	86	13.41	05	85	13.46	05	84	13.51	04	83	13.56	04	82	13.59	04	81	14.02	04	80	14.06	04	79	14.11	04	78	283
78	11.55	07	91	11.62	07	90	12.09	07	89	12.16	06	88	12.23	06	87	12.29	06	86	12.35	05	86	12.41	05	84	12.47	05	83	12.53	04	82	12.58	04	81	13.03	04	80	13.08	04	79	13.12	04	78	13.17	04	77	282
79	10.55	07	91	10.62	07	90	11.10	07	89	11.17	06	88	11.23	06	87	11.30	06	86	11.36	05	86	11.42	05	84	11.48	05	83	11.54	04	82	11.59	04	81	12.04	05	80	12.09	05	79	12.14	05	78	12.19	05	77	281
80	09.55	08	91	10.03	07	90	10.51	07	89	10.58	06	88	11.04	06	87	11.10	06	86	11.16	05	86	11.22	05	84	11.28	05	83	11.34	04	82	11.39	04	81	11.45	05	80	11.50	05	79	11.55	05	78	11.60	05	77	280
81	08.56	08	91	09.03	07	90	09.91	07	89	09.97	06	88	10.04	06	87	10.10	06	86	10.16	05	86	10.22	05	84	10.28	05	83	10.34	04	82	10.39	04	81	10.45	05	80	10.50	05	79	10.55	05	78	10.60	05	77	279
82	07.56	08	91	08.04	07	90	08.91	07	89	08.97	06	88	09.04	06	87	09.10	06	86	09.16	05	86	09.22	05	84	09.28	05	83	09.34	04	82	09.39	04	81	09.45	05	80	09.50	05	79	09.55	05	78	09.60	05	77	278
83	06.57	07	91	07.04	07	90	07.91	07	89	07.97	06	88	08.04	06	87	08.10	06	86	08.16	05	86	08.22	05	84	08.28	05	83	08.34	04	82	08.39	04	81	08.45	05	80	08.50	05	79	08.55	05	78	08.60	05	77	277
84	05.57	08	91	06.05	07	90	06.92	07	89	06.98	06	88	07.05	06	87	07.11	06	86	07.17	05	86	07.23	05	84	07.29	05	83	07.35	04	82	07.40	04	81	07.46	05	80	07.51	05	79	07.56	05	78	07.61	05	77	276
85	04.58	07	91	05.05	07	90	05.92	07	89	05.98	06	88	06.05	06	87	06.11	06	86	06.17	05	86	06.23	05	84	06.29	05	83	06.35	04	82	06.40	04	81	06.46	05	80	06.51	05	79	06.56	05	78	06.61	05	77	275
86	03.58	08	90	04.06	07	89	04.93	07	88	04.99	06	87	05.06	06	86	05.12	06	85	05.18	05	86	05.24	05	84	05.30	05	83	05.36	04	82	05.41	04	81	05.47	05	80	05.52	05	79	05.57	05	78	05.62	05	77	274
87	02.59	08	90	03.06	07	89	03.93	07	88	03.99	06	87	04.06	06	86	04.12	06	85	04.18	05	86	04.24	05	84	04.30	05	83	04.36	04	82	04.41	04	81	04.47	05	80	04.52	05	79	04.57	05	78	04.62	05	77	273
88	01.59	07	90	02.06	08	89	02.93	07	88	02.99	06	87	03.06	06	86	03.12	06	85	03.18	05	86	03.24	05	84	03.30	05	83	03.36	04	82	03.41	04	81	03.47	05	80	03.52	05	79	03.57	05	78	03.62	05	77	272
89	01.00	07	90	01.07	07	89	01.14	07	88	01.21	07	87	01.28	07	86	01.34	07	85	01.40	07	84	01.46	07	83	01.52	07	82	01.58	07	81	02.04	07	80	02.10	07	79	02.16	07	78	02.22	07	77	02.28	07	76	271
90	00.00	07	90	00.07	08	89	00.14	07	88	00.21	07	87	00.27	08	86	00.33	07	85	00.39	07	84	00.45	07	83	00.51	07	82	00.57	07	81	01.03	07	80	01.09	07	79	01.15	07	78	01.21	07	77	01.27	07	76	270
91	-1.00	08	90	-0.92	08	89	-0.85	07	88	-0.78	07	87	-0.71	07	86	-0.64	07	85	-0.57	07	84	-0.50	07	83	-0.43	07	82	-0.36	07	81	-0.29	07	80	-0.22	07	79	-0.15	07	78	0.00	07	77	0.06	07	76	269
92	-1.59	07	90	-1.52	08	89	-1.44	07	88	-1.37	07	87	-1.30	07	86	-1.23	07	85	-1.15	07	84	-1.07	07	83	-1.00	07	82	-0.92	07	81	-0.85	07	80	-0.77	07	79	-0.70	07	78	-0.62	07	77	0.04	07	76	268
93	-2.59	08	90	-2.51	07	89	-2.44	08	88	-2.36	07	87	-2.29	07	86	-2.21	07	85	-2.14	07	84	-2.06	07	83	-1.99	07	82	-1.91	07	81	-1.83	07	80	-1.75	07	79	-1.67	07	78	-1.59	07	77	0.04	07	76	267
94	-3.58	07	90	-3.51	08	89	-3.43	07	88	-3.36	07	87	-3.28	07	86	-3.21	07	85	-3.13	07	84	-3.05	07	83	-2.97	07	82	-2.89	07	81	-2.81	07	80	-2.73	07	79	-2.65	07	78	-2.57	07	77	0.04	07	76	266
95	-4.58	08	89	-4.50	07	88	-4.43	07	87	-4.35	07	86	-4.28	07	85	-4.20	07	84	-4.12	07	83	-4.04	07	82	-3.96	07	81	-3.88	07	80	-3.80	07	79	-3.72	07	78	-3.64	07	77	-3.56	07	76	0.04	07	75	265
96	-5.57	07	89	-5.50	08	88	-5.42	07	87	-5.35	08	86	-5.27	08	85	-5.19	08	84	-5.11	08	83	-5.03	08	82	-4.95	08	81	-4.87	08	80	-4.79	08	79	-4.71	08	78	-4.63	08	77	-4.55	08	76	0.04	08	75	264
97	-6.57	08	89	-6.49	07	88	-6.42	08	87	-6.34	08	86	-6.26	08	85	-6.18	08	84	-6.10	08	83	-6.02	08	82	-5.94	08	81	-5.86	08	80	-5.78	08	79	-5.70												

DECLINATION (0° – 14°) CONTRARY NAME TO LATITUDE

LAT 7°

N. Lat. { L.H.A. greater than 180°Zn=Z
L.H.A. less than 180°Zn=360°-Z

LHA	0°		1°		2°		3°		4°		5°		6°		7°		8°		9°		10°		11°		12°		13°		14°																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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68	20	50	-08	93	20	42	-08	94	20	34	-09	95	20	25	-09	96	20	16	-10	97	20	06	-10	98	19	56	-10	99	19	46	-11	100	19	35	-11	101	19	24	-11	102	19	13	-12	103	19	01	-12	104	18	49	-12	105	18	37	-13	106	18	24	-13	107	18	12	-13	108	18	00	-14	109	17	48	-14	110	17	35	-14	111	17	22	-14	112	17	09	-14	113	16	55	-14	114	16	42	-14	115	16	29	-14	116	16	16	-14	117	15	03	-14	118	15	50	-14	119	15	37	-14	120	15	24	-14	121	15	11	-14	122	15	00	-14	123	14	47	-14	124	14	34	-14	125	14	21	-14	126	14	08	-14	127	14	00	-14	128	13	46	-14	129	13	33	-14	130	13	20	-14	131	13	07	-14	132	13	00	-14	133	12	47	-14	134	12	34	-14	135	12	21	-14	136	12	08	-14	137	12	00	-14	138	11	47	-14	139	11	34	-14	140	11	21	-14	141	11	08	-14	142	11	00	-14	143	10	47	-14	144	10	34	-14	145	10	21	-14	146	10	08	-14	147	10	00	-14	148	09	47	-14	149	09	34	-14	150	09	21	-14	151	09	08	-14	152	09	00	-14	153	08	47	-14	154	08	34	-14	155	08	21	-14	156	08	08	-14	157	08	00	-14	158	07	47	-14	159	07	34	-14	160	07	21	-14	161	07	08	-14	162	07	00	-14	163	06	47	-14	164	06	34	-14	165	06	21	-14	166	06	08	-14	167	06	00	-14	168	05	47	-14	169	05	34	-14	170	05	21	-14	171	05	08	-14	172	05	00	-14	173	04	47	-14	174	04	34	-14	175	04	21	-14	176	04	08	-14	177	04	00	-14	178	03	47	-14	179	03	34	-14	180	03	21	-14	181	03	08	-14	182	03	00	-14	183	02	47	-14	184	02	34	-14	185	02	21	-14	186	02	08	-14	187	02	00	-14	188	01	47	-14	189	01	34	-14	190	01	21	-14	191	01	08	-14	192	01	00	-14	193	00	47	-14	194	00	34	-14	195	00	21	-14	196	00	08	-14	197	00	00	-14	198	00	00	-14	199	00	00	-14	200	00	00	-14	201	00	00	-14	202	00	00	-14	203	00	00	-14	204	00	00	-14	205	00	00	-14	206	00	00	-14	207	00	00	-14	208	00	00	-14	209	00	00	-14	210	00	00	-14	211	00	00	-14	212	00	00	-14	213	00	00	-14	214	00	00	-14	215	00	00	-14	216	00	00	-14	217	00	00	-14	218	00	00	-14	219	00	00	-14	220	00	00	-14	221	00	00	-14	222	00	00	-14	223	00	00	-14	224	00	00	-14	225	00	00	-14	226	00	00	-14	227	00	00	-14	228	00	00	-14	229	00	00	-14	230	00	00	-14	231	00	00	-14	232	00	00	-14	233	00	00	-14	234	00	00	-14	235	00	00	-14	236	00	00	-14	237	00	00	-14	238	00	00	-14	239	00	00	-14	240	00	00	-14	241	00	00	-14	242	00	00	-14	243	00	00	-14	244	00	00	-14	245	00	00	-14	246	00	00	-14	247	00	00	-14	248	00	00	-14	249	00	00	-14	250	00	00	-14	251	00	00	-14	252	00	00	-14	253	00	00	-14	254	00	00	-14	255	00	00	-14	256	00	00	-14	257	00	00	-14	258	00	00	-14	259	00	00	-14	260	00	00	-14	261	00	00	-14	262	00	00	-14	263	00	00	-14	264	00	00	-14	265	00	00	-14	266	00	00	-14	267	00	00	-14	268	00	00	-14	269	00	00	-14	270	00	00	-14	271	00	00	-14	272	00	00	-14	273	00	00	-14	274	00	00	-14	275	00	00	-14	276	00	00	-14	277	00	00	-14	278	00	00	-14	279	00	00	-14	280	00	00	-14	281	00	00	-14	282	00	00	-14	283	00	00	-14	284	00	00	-14	285	00	00	-14	286	00	00	-14	287	00	00	-14	288	00	00	-14	289	00	00	-14	290	00	00	-14	291	00	00	-14	292	00	00	-14	293	00	00	-14	294	00	00	-14	295	00	00	-14	296	00	00	-14	297	00	00	-14	298	00	00	-14	299	00	00	-14	300	00	00	-14	301	00	00	-14	302	00	00	-14	303	00	00	-14	304	00	00	-14	305	00	00	-14	306	00	00	-14	307	00	00	-14	308	00	00	-14	309	00	00	-14	310	00	00	-14	311	00	00	-14	312	00	00	-14	313	00	00	-14	314	00	00	-14	315	00	00	-14	316	00	00	-14	317	00	00	-14	318	00	00	-14	319	00	00	-14	320	00	00	-14	321	00	00	-14	322	00	00	-14	323	00	00	-14	324	00	00	-14	325	00	00	-14	326	00	00	-14	327	00	00	-14	328	00	00	-14	329	00	00	-14	330	00	00	-14	331	00	00	-14	332	00	00	-14	333	00	00	-14	334	00	00	-14	335	00	00	-14	336	00	00	-14	337	00	00	-14	338	00	00	-14	339	00	00	-14	340	00	00	-14	341	00	00	-14	342	00	00	-14	343	00	00	-14	344	00	00	-14	345	00	00	-14	346	00	00	-14	347	00	00	-14	348	00	00	-14	349	00	00	-14	350	00	00	-14	351	00	00	-14	352	00	00	-14	353	00	00	-14	354	00	00	-14	355	00	00	-14	356	00	00	-14	357	00	00	-14	358	00	00	-14	359	00	00	-14	360	00	00	-14	361	00	00	-14	362	00	00	-14	363	00	00	-14	364	00	00	-14	365	00	00	-14	366	00	00	-14	367	00	00	-14	368	00	00	-14	369	00	00	-14	370	00	00	-14	371	00	00	-14	372	00	00	-14	373	00	00	-14	374	00	00	-14	375	00	00	-14	376	00	00	-14	377	00	00	-14	378	00	00	-14	379	00	00	-14	380	00	00	-14	381	00	00	-14	382	00	00	-14	383	00	00	-14	384	00	00	-14	385	00	00	-14	386	00	00	-14	387	00	00	-14	388	00	00	-14	389	00	00	-14	390	00	00	-14	391	00	00	-14	392	00	00	-14	393	00	00	-14	394	00	00	-14	395	00	00	-14	396	00	00	-14	397	00	00	-14	398	00	00	-14	399	00	00	-14	400	00	00	-14	401	00	00	-14	402	00	00	-14	403	00	00	-14	404	00	00	-14	405	00	00	-14	406	00	00	-14	407	00	00	-14	408	00	00	-14	409	00	00	-14	410	00	00	-14	411	00	00	-14	412	00	00	-14	413	00	00	-14	414	00	00	-14	415	00	00	-14	416	00	00	-14	417	00	00	-14	418	00	00	-14	419	00	00	-14	420	00	00	-14	421	00	00	-14	422	00	00	-14	423	00	00	-14	424	00	00	-14	425	00	00	-14	426	00	00	-14	427	00	00	-14	428	00	00	-14	429	00	00	-14	430	00	00	-14	431	00	00	-14	432	00	00	-14	433	00	00	-14	434	00	00	-14	435	00	00	-14	436	00	00	-14	437	00	00	-14	438	00	00	-14	439	00	00	-14	440	00	00	-14	441	00	00	-14	442	00	00	-14	443	00	00	-14	444	00	00	-14	445	00	00	-14	446	00	00	-14	447	00	00	-14	448	00	00	-14	449	00	00	-14	450	00	00	-14	451	00	00	-14	452	00	00	-14	453	00	00	-14	454	00	00	-14	455	00	00	-14	456	00	00	-14	457	00	00	-14	458	00	00	-14	459	00	00	-14	460	00	00	-14	461	00	00	-14	462	00	00	-14	463	00	00	-14	464	00	00	-14	465	00	00	-14	466	00	00	-14	467	00	00	-14	468	00	00	-14	469	00	00	-14	470	00	00	-14	471	00	00	-14	472	00	00	-14	473	00	00	-14	474	00	00	-14	475	00	00	-14	476	00	00	-14	477	00	00	-14	478	00	00	-14	479	00	00	-14	480	00	00	-14	481	00	00	-14	482	00	00	-14	483	00	00	-14	484	00	00	-14	485	00	00	-14	486	00	00	-14	487	00	00	-14	488	00	00	-14	489	00	00	-14	490	00	00	-14	491	00	00	-14	492	00	00	-14	493	00	00	-14	494	00	00	-14	495	00	00	-14	496	00	00	-14	497	00	00	-14	498	0

DECLINATION (15° - 29°) SAME NAME AS LATITUDE

N. Lat. { L.H.A. greater than 180°Zn=Z
L.H.A. less than 180°Zn=360°-Z

Table with columns for LHA, 15° to 29° (Hc, d, Z), and 29° to 15° (Hc, d, Z). Each cell contains numerical values for declination.

DECLINATION (15° - 29°) SAME NAME AS LATITUDE

S. Lat. { L.H.A. greater than 180°Zn=180°-Z
L.H.A. less than 180°Zn=180°+Z

LAT 7°

DECLINATION (15° - 29°) SAME NAME AS LATITUDE

N. Lat. { L.H.A. greater than 180°Zn-Z
L.H.A. less than 180°Zn=360°-Z

LHA	15°			16°			17°			18°			19°			20°			21°			22°			23°			24°			25°			26°			27°			28°			29°			LHA																																																																																																																																																																																																																																																																																																																																																																																																								
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z																																																																																																																																																																																																																																																																																																																																																																																																															
70	21	04	02	77	21	06	01	76	21	07	01	74	21	08	01	72	21	09	-01	71	21	08	-02	69	21	06	-01	68	21	05	-02	67	21	03	-02	66	21	01	-03	65	20	58	-03	64	20	55	-04	63	20	51	-04	62	200																																																																																																																																																																																																																																																																																																																																																																																																	
71	19	08	02	77	19	08	02	75	19	10	01	74	19	11	01	72	19	12	00	71	19	10	-01	69	19	08	-01	68	19	07	-01	67	19	04	-02	66	19	02	-03	65	18	59	-04	64	18	55	-04	63	18	51	-04	62	280																																																																																																																																																																																																																																																																																																																																																																																																	
72	17	02	07	19	10	02	75	19	12	02	74	19	14	01	73	19	15	00	71	19	16	00	69	19	16	00	68	19	15	00	67	19	12	01	66	19	09	-02	65	18	59	-03	64	18	55	-03	63	18	51	-03	62	288																																																																																																																																																																																																																																																																																																																																																																																																		
73	18	10	03	76	18	13	03	75	18	15	02	74	18	17	01	73	18	18	01	71	18	20	00	69	18	20	00	68	18	19	00	67	18	16	00	66	18	13	-02	65	18	11	-02	64	18	07	-02	63	18	03	-02	62	286																																																																																																																																																																																																																																																																																																																																																																																																	
74	17	12	03	76	17	15	03	75	17	18	02	74	17	20	01	73	17	22	01	71	17	24	01	69	17	25	01	68	17	24	01	67	17	21	01	66	17	18	-01	65	17	16	-01	64	17	12	-01	63	17	08	-01	62	287																																																																																																																																																																																																																																																																																																																																																																																																	
75	16	14	04	76	16	18	04	75	16	20	03	74	16	23	02	73	16	25	02	71	16	28	01	69	16	30	01	68	16	29	01	67	16	26	01	66	16	23	00	65	16	21	00	64	16	17	00	63	16	13	00	62	285																																																																																																																																																																																																																																																																																																																																																																																																	
76	15	17	03	76	15	20	03	75	15	23	03	74	15	26	02	73	15	28	02	71	15	32	02	69	15	34	01	68	15	33	01	67	15	30	01	66	15	27	00	65	15	25	00	64	15	21	00	63	15	17	00	62	284																																																																																																																																																																																																																																																																																																																																																																																																	
77	14	19	03	76	14	22	04	75	14	26	04	74	14	29	03	73	14	31	03	71	14	36	02	69	14	40	01	68	14	41	01	67	14	38	01	66	14	35	00	65	14	33	00	64	14	29	00	63	14	25	00	62	283																																																																																																																																																																																																																																																																																																																																																																																																	
78	13	21	04	76	13	25	04	75	13	28	04	74	13	32	03	73	13	35	03	71	13	40	02	69	13	44	01	68	13	45	01	67	13	42	01	66	13	40	00	65	13	37	00	64	13	33	00	63	13	29	00	62	282																																																																																																																																																																																																																																																																																																																																																																																																	
79	12	23	04	76	12	27	04	75	12	31	04	74	12	35	03	73	12	38	03	71	12	44	03	69	12	48	02	68	12	52	02	67	12	50	01	66	12	48	00	65	12	45	00	64	12	41	00	63	12	37	00	62	281																																																																																																																																																																																																																																																																																																																																																																																																	
80	11	25	05	76	11	30	04	75	11	34	04	74	11	38	03	73	11	42	03	71	11	48	03	69	11	54	03	68	11	57	02	67	11	55	02	66	11	53	01	65	11	51	01	64	11	47	01	63	11	43	01	62	280																																																																																																																																																																																																																																																																																																																																																																																																	
81	10	27	05	76	10	32	05	75	10	37	04	74	10	41	04	73	10	45	04	71	10	52	04	69	10	56	03	68	10	59	03	67	10	57	02	66	10	55	02	65	10	53	02	64	10	51	02	63	10	47	02	62	279																																																																																																																																																																																																																																																																																																																																																																																																	
82	09	30	05	76	09	35	04	75	09	39	05	74	09	44	04	73	09	48	04	71	09	56	04	69	10	00	04	68	10	04	03	67	10	07	04	66	10	10	03	65	10	13	03	64	10	16	03	63	10	19	03	62	278																																																																																																																																																																																																																																																																																																																																																																																																	
83	08	32	05	76	08	37	05	75	08	42	05	74	08	47	04	73	08	52	04	71	08	60	04	69	09	05	68	09	10	08	09	13	07	08	10	13	08	10	16	08	10	19	08	10	22	08	64	10	25	08	62	277																																																																																																																																																																																																																																																																																																																																																																																																		
84	07	34	05	76	07	40	05	75	07	45	05	74	07	50	05	73	07	55	04	71	08	05	04	69	08	09	08	09	13	07	08	10	13	08	10	16	08	10	19	08	10	22	08	64	10	25	08	62	276																																																																																																																																																																																																																																																																																																																																																																																																					
85	06	37	05	76	06	42	06	75	06	48	05	74	06	53	06	73	06	58	05	71	07	09	05	69	07	14	05	68	07	19	05	67	07	23	05	66	07	28	05	65	07	37	04	64	07	41	04	63	07	45	03	62	275																																																																																																																																																																																																																																																																																																																																																																																																	
86	05	39	06	76	05	45	06	75	05	51	05	74	05	56	06	73	05	62	06	71	06	13	05	69	06	18	06	06	24	05	68	06	29	05	67	06	38	05	66	06	43	05	64	06	48	04	63	06	52	05	61	274																																																																																																																																																																																																																																																																																																																																																																																																		
87	04	41	06	75	04	47	07	74	04	54	06	73	04	61	06	72	04	68	06	71	05	12	06	68	05	23	05	67	05	34	06	65	05	45	05	64	05	50	05	63	05	55	05	62	06	00	05	61	273																																																																																																																																																																																																																																																																																																																																																																																																					
88	03	44	06	75	03	50	07	74	03	57	06	73	03	64	06	72	03	71	04	15	07	04	70	04	22	06	68	04	34	06	66	04	39	06	65	04	51	06	64	04	57	05	63	05	02	06	62	05	08	05	61	272																																																																																																																																																																																																																																																																																																																																																																																																		
89	02	46	07	75	02	53	07	74	02	60	06	73	02	67	06	72	02	74	03	19	07	03	70	03	26	06	68	03	39	06	66	03	45	06	65	03	57	06	64	03	64	04	03	06	63	04	09	06	62	04	15	06	61	271																																																																																																																																																																																																																																																																																																																																																																																																
90	01	48	07	75	01	56	08	74	01	63	06	73	01	70	06	72	01	78	07	02	08	07	02	70	02	30	07	68	02	44	06	67	02	50	07	66	02	57	07	65	02	64	03	07	63	03	17	06	62	03	23	07	61	270																																																																																																																																																																																																																																																																																																																																																																																																
91	00	51	07	75	00	58	08	74	00	66	07	73	00	73	07	72	00	80	07	01	07	01	72	01	35	07	68	01	49	07	66	02	03	07	65	02	10	07	64	02	17	07	63	02	24	07	62	02	31	07	61	269																																																																																																																																																																																																																																																																																																																																																																																																		
92	-01	04	08	75	-00	01	08	74	-00	09	07	73	-00	16	08	72	-00	24	07	01	00	31	08	00	39	08	00	54	08	00	60	07	64	01	61	01	62	01	69	01	76	01	83	01	90	01	97	01	104	01	111	01	118	01	125	01	132	01	139	01	146	01	153	01	160	01	167	01	174	01	181	01	188	01	195	01	202	01	209	01	216	01	223	01	230	01	237	01	244	01	251	01	258	01	265	01	272	01	279	01	286	01	293	01	300	01	307	01	314	01	321	01	328	01	335	01	342	01	349	01	356	01	363	01	370	01	377	01	384	01	391	01	398	01	405	01	412	01	419	01	426	01	433	01	440	01	447	01	454	01	461	01	468	01	475	01	482	01	489	01	496	01	503	01	510	01	517	01	524	01	531	01	538	01	545	01	552	01	559	01	566	01	573	01	580	01	587	01	594	01	601	01	608	01	615	01	622	01	629	01	636	01	643	01	650	01	657	01	664	01	671	01	678	01	685	01	692	01	699	01	706	01	713	01	720	01	727	01	734	01	741	01	748	01	755	01	762	01	769	01	776	01	783	01	790	01	797	01	804	01	811	01	818	01	825	01	832	01	839	01	846	01	853	01	860	01	867	01	874	01	881	01	888	01	895	01	902	01	909	01	916	01	923	01	930	01	937	01	944	01	951	01	958	01	965	01	972	01	979	01	986	01	993	01	1000	01	1007	01	1014	01	1021	01	1028	01	1035	01	1042	01	1049	01	1056	01	1063	01	1070	01	1077	01	1084	01	1091	01	1098	01	1105	01	1112	01	1119	01	1126	01	1133	01	1140	01	1147	01	1154	01	1161	01	1168	01	1175	01	1182	01	1189	01	1196	01	1203	01	1210	01	1217	01	1224	01	1231	01	1238	01	1245	01	1252	01	1259	01	1266	01	1273	01	1280	01	1287	01	1294	01	1301	01	1308	01	1315	01	1322	01	1329	01	1336	01	1343	01	1350	01	1357	01	1364	01	1371	01	1378	01	1385	01	1392	01	1399	01	1406	01	1413	01	1420	01	1427	01	1434	01	1441	01	1448	01	1455	01	1462	01

DECLINATION (15° - 29°) CONTRARY NAME TO LATITUDE

N. Lat. { L.H.A. greater than 180°Zn=Z
L.H.A. less than 180°Zn=360°-Z

Table with columns for LHA, 15° to 29° (Hc, d, Z), and 29° to 15° (Hc, d, Z). Each degree column contains three sub-columns: Hc, d, and Z. The table lists 360 rows of data.

S. Lat. { L.H.A. greater than 180°Zn=180°-Z
L.H.A. less than 180°Zn=180°+Z

DECLINATION (15° - 29°) CONTRARY NAME TO LATITUDE

LAT 8°

DECLINATION (0° - 14°) SAME NAME AS LATITUDE

N. Lat. { L.H.A. greater than 180°Zn-Z
L.H.A. less than 180°Zn=360°-Z

LHA	0°			1°			2°			3°			4°			5°			6°			7°			8°			9°			10°			11°			12°			13°			14°																																																																																															
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z																																																																																																			
0	82.00	0	180	83.00	0	180	84.00	0	180	85.00	0	180	86.00	0	180	87.00	0	180	88.00	0	180	89.00	0	180	90.00	0	180	91.00	0	180	92.00	0	180	93.00	0	180	94.00	0	180	95.00	0	180	96.00	0	180	97.00	0	180	98.00	0	180	99.00	0	180	100.00	0	180																																																																																	
1	81.56	58	173	82.56	58	172	83.54	59	171	84.54	59	170	85.53	57	166	86.54	56	162	87.54	55	158	88.54	54	154	89.54	53	150	90.54	52	146	91.54	51	142	92.54	50	138	93.54	49	134	94.54	48	130	95.54	47	126	96.54	46	122	97.54	45	118	98.54	44	114	99.54	43	110	100.00	42	106																																																																														
2	81.45	58	166	82.43	58	164	83.41	58	162	84.37	57	158	85.35	55	153	86.34	54	149	87.33	53	145	88.33	52	141	89.33	51	137	90.33	50	133	91.33	49	129	92.33	48	125	93.33	47	121	94.33	46	117	95.33	45	113	96.33	44	109	97.33	43	105	98.33	42	101	99.33	41	97	100.00	40	93																																																																														
3	81.04	53	159	82.03	53	157	83.01	52	153	84.00	51	149	85.00	49	143	86.00	48	139	87.00	47	135	88.00	46	131	89.00	45	127	90.00	44	123	91.00	43	119	92.00	42	115	93.00	41	111	94.00	40	107	95.00	39	103	96.00	38	99	97.00	37	95	98.00	36	91	99.00	35	87	100.00	34	83																																																																														
4	81.04	53	153	82.03	53	151	83.01	52	147	84.00	51	143	85.00	49	137	86.00	48	133	87.00	47	129	88.00	46	125	89.00	45	121	90.00	44	117	91.00	43	113	92.00	42	109	93.00	41	105	94.00	40	101	95.00	39	97	96.00	38	93	97.00	37	89	98.00	36	85	99.00	35	81	100.00	34	77																																																																														
5	80.34	51	148	81.25	47	144	82.12	45	140	82.97	44	136	83.82	43	132	84.67	42	128	85.52	41	124	86.37	40	120	87.22	39	116	88.07	38	112	88.92	37	108	89.77	36	104	90.62	35	100	91.47	34	96	92.32	33	92	93.17	32	88	94.02	31	84	94.87	30	80	95.72	29	76	96.57	28	72	97.42	27	68	98.27	26	64	99.12	25	60	100.00	24	56																																																																		
6	80.01	47	143	80.48	44	139	81.32	41	135	82.16	39	131	83.00	37	127	83.84	36	123	84.68	34	119	85.52	33	115	86.36	31	111	87.20	29	107	88.04	27	103	88.88	25	99	89.72	23	95	90.56	21	91	91.40	19	87	92.24	17	83	93.08	15	79	93.92	13	75	94.76	11	71	95.60	9	67	96.44	7	63	97.28	5	59	98.12	3	55	98.96	1	51	99.80	0	47	100.00	0	43																																																												
7	79.23	42	139	80.07	41	135	80.48	38	130	81.26	36	126	82.05	34	122	82.84	33	118	83.63	31	114	84.42	29	110	85.21	27	106	86.00	25	102	86.79	23	98	87.58	21	94	88.37	19	90	89.16	17	86	89.95	15	82	90.74	13	78	91.53	11	74	92.32	9	70	93.11	7	66	93.90	5	62	94.69	3	58	95.48	1	54	96.27	0	50	97.06	0	46	97.85	0	42	98.64	0	38	99.43	0	34	100.00	0	30																																																						
8	78.42	42	135	79.24	38	131	80.03	36	127	80.82	34	123	81.61	32	119	82.40	30	115	83.19	28	111	83.98	26	107	84.77	24	103	85.56	22	99	86.35	20	95	87.14	18	91	87.93	16	87	88.72	14	83	89.51	12	79	90.30	10	75	91.09	8	71	91.88	6	67	92.67	4	63	93.46	2	59	94.25	0	55	95.04	0	51	95.83	0	47	96.62	0	43	97.41	0	39	98.20	0	35	98.99	0	31	99.78	0	27	100.00	0	23																																																			
9	77.59	38	128	78.37	35	124	79.15	33	120	79.93	31	116	80.71	29	112	81.49	27	108	82.27	25	104	83.05	23	100	83.83	21	96	84.61	19	92	85.39	17	88	86.17	15	84	86.95	13	80	87.73	11	76	88.51	9	72	89.29	7	68	90.07	5	64	90.85	3	60	91.63	1	56	92.41	0	52	93.19	0	48	93.97	0	44	94.75	0	40	95.53	0	36	96.31	0	32	97.09	0	28	97.87	0	24	98.65	0	20	99.43	0	16	100.00	0	12																																																
10	77.13	36	126	77.49	33	122	78.22	30	118	78.95	28	114	79.67	26	110	80.39	24	106	81.11	22	102	81.83	20	98	82.55	18	94	83.27	16	90	84.00	14	86	84.72	12	82	85.46	10	78	86.20	8	74	86.94	6	70	87.68	4	66	88.42	2	62	89.16	0	58	89.90	0	54	90.64	0	50	91.38	0	46	92.12	0	42	92.86	0	38	93.60	0	34	94.34	0	30	95.08	0	26	95.82	0	22	96.56	0	18	97.30	0	14	98.04	0	10	98.78	0	6	99.52	0	2	100.00	0	0																																							
11	76.26	34	126	77.00	31	122	77.71	28	117	78.42	26	113	79.13	24	109	79.84	22	105	80.55	20	101	81.26	18	97	81.97	16	93	82.68	14	89	83.39	12	85	84.10	10	81	84.81	8	77	85.52	6	73	86.23	4	69	86.94	2	65	87.65	0	61	88.36	0	57	89.07	0	53	89.78	0	49	90.49	0	45	91.20	0	41	91.91	0	37	92.62	0	33	93.33	0	29	94.04	0	25	94.75	0	21	95.46	0	17	96.17	0	13	96.88	0	9	97.59	0	5	98.30	0	1	99.01	0	0	99.72	0	0	100.00	0	0																																	
12	75.37	32	123	76.09	29	120	76.38	25	116	77.03	22	112	77.78	20	108	78.53	18	104	79.28	16	100	80.03	14	96	80.78	12	92	81.53	10	88	82.28	8	84	83.03	6	80	83.78	4	76	84.53	2	72	85.28	0	68	86.03	0	64	86.78	0	60	87.53	0	56	88.28	0	52	89.03	0	48	89.78	0	44	90.53	0	40	91.28	0	36	92.03	0	32	92.78	0	28	93.53	0	24	94.28	0	20	95.03	0	16	95.78	0	12	96.53	0	8	97.28	0	4	98.03	0	0	98.78	0	0	99.53	0	0	100.00	0	0																																	
13	74.46	31	121	75.17	28	118	75.44	24	114	76.08	21	110	76.72	19	106	77.36	17	102	78.00	15	98	78.64	13	94	79.28	11	90	79.92	9	86	80.56	7	82	81.20	5	78	81.84	3	74	82.48	1	70	83.12	0	66	83.76	0	62	84.40	0	58	85.04	0	54	85.68	0	50	86.32	0	46	86.96	0	42	87.60	0	38	88.24	0	34	88.88	0	30	89.52	0	26	90.16	0	22	90.80	0	18	91.44	0	14	92.08	0	10	92.72	0	6	93.36	0	2	94.00	0	0	94.64	0	0	95.28	0	0	95.92	0	0	96.56	0	0	97.20	0	0	97.84	0	0	98.48	0	0	99.12	0	0	99.76	0	0	100.00	0	0												
14	73.55	29	119	74.24	25	116	74.49	23	112	75.12	21	108	75.75	19	104	76.38	17	100	77.01	15	96	77.64	13	92	78.27	11	88	78.90	9	84	79.53	7	80	80.16	5	76	80.79	3	72	81.42	1	68	82.05	0	64	82.68	0	60	83.31	0	56	83.94	0	52	84.57	0	48	85.20	0	44	85.83	0	40	86.46	0	36	87.09	0	32	87.72	0	28	88.35	0	24	88.98	0	20	89.61	0	16	90.24	0	12	90.87	0	8	91.50	0	4	92.13	0	0	92.76	0	0	93.39	0	0	94.02	0	0	94.65	0	0	95.28	0	0	95.91	0	0	96.54	0	0	97.17	0	0	97.80	0	0	98.43	0	0	99.06	0	0	99.69	0	0	100.00	0	0						
15	72.09	26	116	72.35	24	114	73.54	22	110	74.16	18	106	74.78	16	102	75.40	14	98	76.02	12	94	76.64	10	90	77.26	8	86	77.88	6	82	78.50	4	78	79.12	2	74	79.74	0	70	80.36	0	66	80.98	0	62	81.60	0	58	82.22	0	54	82.84	0	50	83.46	0	46	84.08	0	42	84.70	0	38	85.32	0	34	85.94	0	30	86.56	0	26	87.18	0	22	87.80	0	18	88.42	0	14	89.04	0	10	89.66	0	6	90.28	0	2	90.90	0	0	91.52	0	0	92.14	0	0	92.76	0	0	93.38	0	0	94.00	0	0	94.62	0	0	95.24	0	0	95.86	0	0	96.48	0	0	97.10	0	0	97.72	0	0	98.34	0	0	98.96	0	0	99.58	0	0	100.00	0	0
16	71.16	24	114	71.40	22	112	72.02	20	108	72.64	18	104	73.26	16	100	73.88	14	96	74.50	12	92	75.12	10	88	75.74	8	84	76.36	6	80	76.98	4	76	77.60	2	72	78.22	0	68	78.84	0	64	79.46</																																																																																															

DECLINATION (15° - 29°) SAME NAME AS LATITUDE

N. Lat. { L.H.A. greater than 180°Zn=Z
L.H.A. less than 180°Zn=360°-Z

Table with columns for LHA, 15° to 29° (Hc, d, Z), and 29° to 15° (Hc, d, Z). Each cell contains numerical values for declination.

DECLINATION (15° - 29°) SAME NAME AS LATITUDE

S. Lat. { L.H.A. greater than 180°Zn=180°-Z
L.H.A. less than 180°Zn=180°+Z

DECLINATION (15° - 29°) CONTRARY NAME TO LATITUDE

N. Lat. { L.H.A. greater than 180°Zn=Z
L.H.A. less than 180°Zn=360-Z

Table with columns for latitude (15° to 29°) and declination (15° to 29°). Each cell contains a 3-digit number representing the declination value. The table is organized in a grid where the top row represents the declination and the left column represents the latitude.

DECLINATION (15° - 29°) CONTRARY NAME TO LATITUDE

S. Lat. { L.H.A. greater than 180°Zn=180-Z
L.H.A. less than 180°Zn=180+Z

DECLINATION (0° – 14°) SAME NAME AS LATITUDE

LAT 9°

N. Lat. { L.H.A. greater than 180°Zn=Z
L.H.A. less than 180°Zn=360°-Z

LHA	0°			1°			2°			3°			4°			5°			6°			7°			8°			9°			10°			11°			12°			13°			14°																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
0	81.00	0	180	82.00	60	180	83.00	60	180	84.00	60	180	85.00	60	180	86.00	60	180	87.00	60	180	88.00	60	180	89.00	60	180	90.00	60	180	91.00	60	180	92.00	60	180	93.00	60	180	94.00	60	180	95.00	60	180	96.00	60	180	97.00	60	180	98.00	60	180	99.00	60	180	100.00	60	180																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
1	80.57	58	174	81.56	58	176	82.56	59	172	83.55	59	174	84.54	59	176	85.53	59	178	86.52	59	180	87.51	59	182	88.50	59	184	89.49	59	186	90.48	59	188	91.47	59	190	92.46	59	192	93.45	59	194	94.44	59	196	95.43	59	198	96.42	59	200	97.41	59	202	98.40	59	204	99.39	59	206	100.38	59	208																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
2	80.47	58	167	81.45	58	169	82.43	58	165	83.41	58	167	84.39	58	169	85.37	58	171	86.35	58	173	87.33	58	175	88.31	58	177	89.29	58	179	90.27	58	181	91.25	58	183	92.23	58	185	93.21	58	187	94.19	58	189	95.17	58	191	96.15	58	193	97.13	58	195	98.11	58	197	99.09	58	199	100.07	58	201																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
3	80.31	57	161	81.28	55	159	82.23	55	157	83.18	53	153	84.11	53	149	85.01	46	143	85.87	47	135	86.70	47	127	87.51	47	119	88.30	47	111	89.07	46	105	89.82	46	99	90.55	46	93	91.26	45	87	91.95	45	81	92.62	45	75	93.28	44	69	93.93	44	63	94.58	44	57	95.22	44	51	95.85	44	45	96.48	44	39	97.11	44	33	97.74	44	27	98.37	44	21	99.00	44	15	99.63	44	9	100.26	44	3	100.89	44	-3	101.52	44	-9	102.15	44	-15	102.78	44	-21	103.41	44	-27	104.04	44	-33	104.67	44	-39	105.30	44	-45	105.93	44	-51	106.56	44	-57	107.19	44	-63	107.82	44	-69	108.45	44	-75	109.08	44	-81	109.71	44	-87	110.34	44	-93	110.97	44	-99	111.60	44	-105	112.23	44	-111	112.86	44	-117	113.49	44	-123	114.12	44	-129	114.75	44	-135	115.38	44	-141	116.01	44	-147	116.64	44	-153	117.27	44	-159	117.90	44	-165	118.53	44	-171	119.16	44	-177	119.79	44	-183	120.42	44	-189	121.05	44	-195	121.68	44	-201	122.31	44	-207	122.94	44	-213	123.57	44	-219	124.20	44	-225	124.83	44	-231	125.46	44	-237	126.09	44	-243	126.72	44	-249	127.35	44	-255	127.98	44	-261	128.61	44	-267	129.24	44	-273	129.87	44	-279	130.50	44	-285	131.13	44	-291	131.76	44	-297	132.39	44	-303	133.02	44	-309	133.65	44	-315	134.28	44	-321	134.91	44	-327	135.54	44	-333	136.17	44	-339	136.80	44	-345	137.43	44	-351	138.06	44	-357	138.69	44	-363	139.32	44	-369	139.95	44	-375	140.58	44	-381	141.21	44	-387	141.84	44	-393	142.47	44	-399	143.10	44	-405	143.73	44	-411	144.36	44	-417	144.99	44	-423	145.62	44	-429	146.25	44	-435	146.88	44	-441	147.51	44	-447	148.14	44	-453	148.77	44	-459	149.40	44	-465	150.03	44	-471	150.66	44	-477	151.29	44	-483	151.92	44	-489	152.55	44	-495	153.18	44	-501	153.81	44	-507	154.44	44	-513	155.07	44	-519	155.70	44	-525	156.33	44	-531	156.96	44	-537	157.59	44	-543	158.22	44	-549	158.85	44	-555	159.48	44	-561	160.11	44	-567	160.74	44	-573	161.37	44	-579	162.00	44	-585	162.63	44	-591	163.26	44	-597	163.89	44	-603	164.52	44	-609	165.15	44	-615	165.78	44	-621	166.41	44	-627	167.04	44	-633	167.67	44	-639	168.30	44	-645	168.93	44	-651	169.56	44	-657	170.19	44	-663	170.82	44	-669	171.45	44	-675	172.08	44	-681	172.71	44	-687	173.34	44	-693	173.97	44	-699	174.60	44	-705	175.23	44	-711	175.86	44	-717	176.49	44	-723	177.12	44	-729	177.75	44	-735	178.38	44	-741	179.01	44	-747	179.64	44	-753	180.27	44	-759	180.90	44	-765	181.53	44	-771	182.16	44	-777	182.79	44	-783	183.42	44	-789	184.05	44	-795	184.68	44	-801	185.31	44	-807	185.94	44	-813	186.57	44	-819	187.20	44	-825	187.83	44	-831	188.46	44	-837	189.09	44	-843	189.72	44	-849	190.35	44	-855	190.98	44	-861	191.61	44	-867	192.24	44	-873	192.87	44	-879	193.50	44	-885	194.13	44	-891	194.76	44	-897	195.39	44	-903	196.02	44	-909	196.65	44	-915	197.28	44	-921	197.91	44	-927	198.54	44	-933	199.17	44	-939	199.80	44	-945	200.43	44	-951	201.06	44	-957	201.69	44	-963	202.32	44	-969	202.95	44	-975	203.58	44	-981	204.21	44	-987	204.84	44	-993	205.47	44	-999	206.10	44	-1005	206.73	44	-1011	207.36	44	-1017	207.99	44	-1023	208.62	44	-1029	209.25	44	-1035	209.88	44	-1041	210.51	44	-1047	211.14	44	-1053	211.77	44	-1059	212.40	44	-1065	213.03	44	-1071	213.66	44	-1077	214.29	44	-1083	214.92	44	-1089	215.55	44	-1095	216.18	44	-1101	216.81	44	-1107	217.44	44	-1113	218.07	44	-1119	218.70	44	-1125	219.33	44	-1131	219.96	44	-1137	220.59	44	-1143	221.22	44	-1149	221.85	44	-1155	222.48	44	-1161	223.11	44	-1167	223.74	44	-1173	224.37	44	-1179	225.00	44	-1185	225.63	44	-1191	226.26	44	-1197	226.89	44	-1203	227.52	44	-1209	228.15	44	-1215	228.78	44	-1221	229.41	44	-1227	230.04	44	-1233	230.67	44	-1239	231.30	44	-1245	231.93	44	-1251	232.56	44	-1257	233.19	44	-1263	233.82	44	-1269	234.45	44	-1275	235.08	44	-1281	235.71	44	-1287	236.34	44	-1293	236.97	44	-1299	237.60	44	-1305	238.23	44	-1311	238.86	44	-1317	239.49	44	-1323	240.12	44	-1329	240.75	44	-1335	241.38	44	-1341	242.01	44	-1347	242.64	44	-1353	243.27	44	-1359	243.90	44	-1365	244.53	44	-1371	245.16	44	-1377	245.79	44	-1383	246.42	44	-1389	247.05	44	-1395	247.68	44	-1401	248.31	44	-1407	248.94	44	-1413	249.57	44	-1419	250.20	44	-1425	250.83	44	-1431	251.46	44	-1437	252.09	44	-1443	252.72	44	-1449	253.35	44	-1455	253.98	44	-1461	254.61	44	-1467	255.24	44	-1473	255.87	44	-1479	256.50	44	-1485	257.13	44	-1491	257.76	44	-1497	258.39	44	-1503	259.02	44	-1509	259.65	44	-1515	260.28	44	-1521	260.91	44	-1527	261.54	44	-1533	262.17	44	-1539	262.80	44	-1545	263.43	44	-1551	264.06	44	-1557	264.69	44	-1563	265.32	44	-1569	265.95	44	-1575	266.58	44	-1581	267.21	44	-1587	267.84	44	-1593	268.47	44	-1599	269.10	44	-1605	269.73	44	-1611	270.36	44	-1617	270.99	44	-1623	271.62	44	-1629	272.25	44	-1635	272.88	44	-1641	273.51	44	-1647	274.14	44	-1653	274.77	44	-1659	275.40	44	-1665	276.03	44	-1671	276.66	44	-1677	277.29	44	-1683	277.92	44	-1689	280.15	44	-1695	280.78	44	-1701	281.41	44	-1707	282.04	44	-1713	282.67	44	-1719	283.30	44	-1725	283.93	44	-1731	284.56	44	-1737	285.19	44	-1743	285.82	44	-1749	286.45	44	-1755	287.08	44	-1761	287.71	44	-1767	288.34	44	-1773	288.97	44	-1779	289.60	44	-1785	290.23	44	-1791	290.86	44	-1797	291.49	44	-1803	292.12	44	-1809	292.75	44	-1815	293.38	44	-1821	294.01	44	-1827	294.64	44	-1833	295.27	44	-1839	295.90	44	-1845	296.53	44	-1851	297.16	44	-1857	297.79	44	-1863	298.42	44	-1869	299.05	44	-1875	299.68	44	-1881	300.31	44	-1887	300.94	44	-1893	301.57	44	-1899	302.20	44	-1905	302.83	44	-1911	303.46	44	-1917	304.09	44	-1923	304.72	44	-1929	305.35	44	-1935	305.98	44	-1941	306.61	44	-1947	307.24	44	-1953	307.87	44	-1959	308.50	44	-1965	309.13	44	-1971	309.76	44	-1977	310.39	44	-1983	311.02	44	-1989	311.65	44	-1995	312.28	44	-2001	312.91	44	-2007	313.54	44	-2013	314.17	44	-2019	314.80	44	-2025	315.43	44	-2031	316.06	44	-2037	316.69	44	-2043	317.32	44	-2049	317.95	44	-2055	318.58	44	-2061	319.21	44	-2067	319.84	44	-2073	320.47	44	-2079	321.10	44	-2085	321.73	44	-2091	322.36	44	-2097	322.99	44	-2103	323.62	44	-2109	324.25	44	-2115	324.88	44	-2121	325.51	44	-2127	326.14	44	-2133	326.77	44	-2139</

DECLINATION (0° - 14°) SAME NAME AS LATITUDE

N. Lat. { L.H.A. greater than 180°Zn=Z
L.H.A. less than 180°Zn=360°-Z

LHA	0°		1°		2°		3°		4°		5°		6°		7°		8°		9°		10°		11°		12°		13°		14°		LHA															
	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d		Z														
70	19.45	08	93	19.54	10	92	20.04	09	91	20.13	08	90	20.22	08	89	20.30	08	88	20.38	07	87	20.45	07	86	20.52	07	85	20.59	06	84	21.05	06	83	21.11	06	82	21.17	05	81	21.22	05	79	21.27	04	78	290
71	18.45	10	93	18.55	10	92	19.05	09	91	19.14	09	90	19.22	08	89	19.31	08	88	19.39	07	87	19.46	07	86	19.53	07	85	20.00	07	84	20.07	06	83	20.13	05	82	20.18	05	80	20.24	05	79	20.29	04	78	289
72	17.46	10	93	17.56	09	92	18.05	09	91	18.14	09	90	18.23	08	89	18.31	08	88	18.39	07	87	18.47	07	86	18.54	07	85	19.01	07	84	19.08	06	83	19.14	06	81	19.20	05	80	19.25	05	79	19.31	04	78	288
73	16.47	10	93	16.57	09	92	17.06	09	91	17.15	09	90	17.24	08	89	17.32	08	88	17.40	08	87	17.48	07	86	17.55	07	85	18.02	07	84	18.09	06	83	18.16	06	81	18.22	05	80	18.27	05	79	18.33	04	78	287
74	15.48	09	93	15.57	10	92	16.07	09	91	16.16	09	90	16.25	08	89	16.33	08	87	16.41	08	86	16.49	07	85	16.56	08	84	17.04	06	83	17.10	07	82	17.17	06	81	17.23	06	80	17.29	06	79	17.35	05	78	286
75	14.49	09	92	14.58	10	91	15.08	09	90	15.17	09	89	15.25	08	88	15.34	08	87	15.42	08	86	15.50	07	85	15.57	08	84	16.05	07	83	16.12	06	82	16.18	06	81	16.25	06	80	16.31	06	79	16.37	05	78	285
76	13.49	10	92	13.59	09	91	14.08	09	90	14.17	09	89	14.26	08	88	14.35	08	87	14.43	08	86	14.51	07	85	14.58	08	84	15.06	07	83	15.13	07	82	15.20	06	81	15.26	07	80	15.33	06	79	15.39	05	78	284
77	12.50	10	92	13.00	09	91	13.09	09	90	13.18	09	89	13.27	08	88	13.35	08	87	13.44	08	86	13.52	07	85	14.00	07	84	14.07	07	83	14.14	07	82	14.21	07	81	14.28	07	80	14.35	06	79	14.41	06	78	283
78	11.51	09	92	12.00	10	91	12.10	09	90	12.19	09	89	12.28	08	88	12.36	08	87	12.45	08	86	12.53	08	85	13.01	07	84	13.08	07	83	13.16	07	82	13.23	07	81	13.30	06	80	13.36	07	79	13.43	06	78	282
79	10.52	09	92	11.01	09	91	11.10	09	90	11.20	09	89	11.28	08	88	11.37	08	87	11.45	08	86	11.54	08	85	12.02	07	84	12.09	08	83	12.17	07	82	12.24	08	81	12.32	07	80	12.38	07	79	12.45	06	78	281
80	09.53	09	92	10.02	09	91	10.11	09	90	10.20	09	89	10.29	08	88	10.38	08	87	10.46	08	86	10.55	08	85	11.03	08	84	11.11	07	83	11.18	08	82	11.26	07	81	11.33	07	80	11.40	07	79	11.47	07	78	280
81	08.53	10	91	09.03	09	90	09.12	09	89	09.21	09	88	09.30	08	87	09.39	08	86	09.47	08	85	09.56	08	84	10.04	08	83	10.12	08	82	10.20	07	81	10.27	08	80	10.35	07	79	10.42	07	78	10.49	07	77	279
82	07.54	09	91	08.03	10	90	08.13	09	89	08.22	09	88	08.31	08	87	08.40	08	86	08.48	08	85	08.57	08	84	09.05	08	83	09.13	08	82	09.21	08	81	09.29	08	80	09.37	07	79	09.44	08	78	09.52	07	77	278
83	06.55	09	91	07.04	09	90	07.13	10	89	07.23	09	88	07.32	08	87	07.40	08	86	07.49	08	85	07.58	08	84	08.06	08	83	08.15	08	82	08.23	08	81	08.31	08	80	08.39	07	79	08.46	08	78	08.54	07	77	277
84	05.56	09	91	06.05	09	90	06.14	09	89	06.23	09	88	06.32	08	87	06.41	08	86	06.50	08	85	06.59	08	84	07.07	09	83	07.16	09	82	07.24	08	81	07.32	08	80	07.40	08	79	07.48	08	78	07.56	08	77	276
85	04.56	10	91	05.05	09	90	05.14	09	89	05.24	09	88	05.32	08	87	05.42	08	86	05.51	08	85	06.00	08	84	06.09	08	83	06.17	09	82	06.26	08	81	06.34	08	80	06.42	08	79	06.50	08	78	06.58	08	77	275
86	03.57	09	90	04.06	10	90	04.16	09	89	04.25	09	88	04.34	09	87	04.43	09	86	04.52	09	85	05.01	09	84	05.10	09	83	05.19	08	82	05.27	09	81	05.36	08	80	05.44	08	79	05.52	08	78	06.01	08	77	274
87	02.58	09	90	03.07	09	89	03.16	10	88	03.26	09	87	03.35	09	86	03.44	09	85	03.53	09	84	04.02	09	83	04.11	09	82	04.20	09	81	04.29	08	80	04.37	08	79	04.46	08	78	04.54	08	77	05.03	08	76	273
88	01.59	09	90	02.08	09	89	02.17	10	88	02.27	09	87	02.36	09	86	02.45	09	85	02.54	09	84	03.03	09	83	03.12	09	82	03.21	09	81	03.30	09	80	03.39	09	79	03.48	09	78	03.57	08	77	04.05	09	76	272
89	00.59	10	90	01.09	09	89	01.18	09	88	01.27	10	87	01.37	09	86	01.46	09	85	01.55	09	84	02.04	10	83	02.14	09	82	02.23	09	81	02.32	09	80	02.41	09	79	02.50	09	78	02.59	08	77	03.08	09	76	271
90	00.00	09	90	00.09	09	89	00.18	09	88	00.28	10	87	00.38	09	86	00.47	09	85	00.56	10	84	01.06	09	83	01.15	09	82	01.24	09	81	01.33	10	80	01.43	09	79	01.52	09	78	02.01	09	77	02.10	09	76	270
91	-0.59	10	90	-0.50	10	89	-0.40	09	88	-0.31	09	87	-0.22	10	86	-0.12	09	85	-0.03	10	84	00.07	09	83	00.16	10	82	00.26	09	81	00.35	09	80	00.44	10	79	00.54	09	78	01.03	10	77	01.13	09	76	269
92	-1.59	10	90	-1.49	09	89	-1.40	10	88	-1.30	09	87	-1.21	10	86	-1.11	09	85	-1.02	10	84	-0.92	09	83	-0.83	10	82	-0.73	09	81	-0.64	10	80	-0.54	09	79	-0.46	08	78	-0.37	09	77	-0.28	08	76	268
93	-2.58	09	90	-2.48	09	89	-2.39	10	88	-2.29	09	87	-2.20	10	86	-2.10	09	85	-2.01	10	84	-1.91	09	83	-1.81	10	82	-1.71	09	81	-1.62	10	80	-1.52	09	79	-1.42	09	78	-1.33	08	77	-1.24	08	76	267
94	-3.57	09	89	-3.48	10	88	-3.38	09	87	-3.29	09	86	-3.19	10	85	-3.09	10	84	-2.99	09	83	-2.89	09	82	-2.79	10	81	-2.69	09	80	-2.59	10	79	-2.49	10	78	-2.39	10	77	-2.29	10	76	-2.19	10	75	266
95	-4.56	09	89	-4.47	10	88	-4.37	09	87	-4.28	10	86	-4.18	10	85	-4.08	10	84	-3.98	10	83	-3.88	10	82	-3.78	10	81	-3.68	10	80	-3.58	10	79	-3.48	10	78	-3.38	10	77	-3.27	10	76	-3.17	10	75	265
96	-5.56	10	89	-5.46	10	88	-5.36	09	87	-5.27	10	86	-5.17	10	85	-5.07	10	84	-4.97	10	83	-4.87	10	82	-4.77	10	81	-4.67	10	80	-4.57	10	79	-4.47	10	78	-4.37	10	77	-4.27	10	76	-4.17	10	75	264
97	-6.55	10	89	-6.45	09	88	-6.36	10	87	-6.26	10	86	-6.16	10	85	-6.06	10	84	-5.96	10	83	-5.86	10	82	-5.76	10	81	-5.66	10	80	-5.56	10	79	-5												

DECLINATION (0° – 14°) CONTRARY NAME TO LATITUDE

N. Lat. { L.H.A. greater than 180°Zn=Z
L.H.A. less than 180°Zn=360°-Z

LHA	0°		1°		2°		3°		4°		5°		6°		7°		8°		9°		10°		11°		12°		13°		14°		LHA																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d	Hc	d																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
68	20	44	-10	93	20	34	-11	94	20	12	-11	97	20	01	-12	98	19	49	-12	99	19	37	-13	100	19	24	-12	101	19	12	-14	102	18	58	-13	103	18	45	-14	104	18	31	-14	105	18	17	-15	106	18	02	-14	107	17	48	-15	108	17	34	-15	109	17	20	-16	110	17	06	-16	111	16	52	-16	112	16	38	-16	113	16	24	-17	114	16	10	-17	115	15	56	-17	116	15	42	-17	117	15	28	-17	118	15	14	-18	119	15	00	-18	120	14	46	-18	121	14	32	-18	122	14	18	-18	123	14	04	-19	124	13	50	-19	125	13	36	-19	126	13	22	-19	127	13	08	-19	128	12	54	-19	129	12	40	-19	130	12	26	-19	131	12	12	-20	132	12	00	-20	133	11	46	-20	134	11	32	-20	135	11	18	-20	136	11	04	-20	137	11	00	-20	138	10	46	-20	139	10	32	-20	140	10	18	-20	141	10	04	-20	142	9	50	-20	143	9	36	-20	144	9	22	-20	145	9	08	-20	146	8	54	-20	147	8	40	-20	148	8	26	-20	149	8	12	-20	150	8	00	-20	151	7	46	-20	152	7	32	-20	153	7	18	-20	154	7	04	-20	155	6	50	-20	156	6	36	-20	157	6	22	-20	158	6	08	-20	159	5	54	-20	160	5	40	-20	161	5	26	-20	162	5	12	-20	163	5	00	-20	164	4	46	-20	165	4	32	-20	166	4	18	-20	167	4	04	-20	168	3	50	-20	169	3	36	-20	170	3	22	-20	171	3	08	-20	172	2	54	-20	173	2	40	-20	174	2	26	-20	175	2	12	-20	176	2	00	-20	177	1	46	-20	178	1	32	-20	179	1	18	-20	180	1	04	-20	181	0	50	-20	182	0	36	-20	183	0	22	-20	184	0	08	-20	185	0	00	-20	186	0	00	-20	187	0	00	-20	188	0	00	-20	189	0	00	-20	190	0	00	-20	191	0	00	-20	192	0	00	-20	193	0	00	-20	194	0	00	-20	195	0	00	-20	196	0	00	-20	197	0	00	-20	198	0	00	-20	199	0	00	-20	200	0	00	-20	201	0	00	-20	202	0	00	-20	203	0	00	-20	204	0	00	-20	205	0	00	-20	206	0	00	-20	207	0	00	-20	208	0	00	-20	209	0	00	-20	210	0	00	-20	211	0	00	-20	212	0	00	-20	213	0	00	-20	214	0	00	-20	215	0	00	-20	216	0	00	-20	217	0	00	-20	218	0	00	-20	219	0	00	-20	220	0	00	-20	221	0	00	-20	222	0	00	-20	223	0	00	-20	224	0	00	-20	225	0	00	-20	226	0	00	-20	227	0	00	-20	228	0	00	-20	229	0	00	-20	230	0	00	-20	231	0	00	-20	232	0	00	-20	233	0	00	-20	234	0	00	-20	235	0	00	-20	236	0	00	-20	237	0	00	-20	238	0	00	-20	239	0	00	-20	240	0	00	-20	241	0	00	-20	242	0	00	-20	243	0	00	-20	244	0	00	-20	245	0	00	-20	246	0	00	-20	247	0	00	-20	248	0	00	-20	249	0	00	-20	250	0	00	-20	251	0	00	-20	252	0	00	-20	253	0	00	-20	254	0	00	-20	255	0	00	-20	256	0	00	-20	257	0	00	-20	258	0	00	-20	259	0	00	-20	260	0	00	-20	261	0	00	-20	262	0	00	-20	263	0	00	-20	264	0	00	-20	265	0	00	-20	266	0	00	-20	267	0	00	-20	268	0	00	-20	269	0	00	-20	270	0	00	-20	271	0	00	-20	272	0	00	-20	273	0	00	-20	274	0	00	-20	275	0	00	-20	276	0	00	-20	277	0	00	-20	278	0	00	-20	279	0	00	-20	280	0	00	-20	281	0	00	-20	282	0	00	-20	283	0	00	-20	284	0	00	-20	285	0	00	-20	286	0	00	-20	287	0	00	-20	288	0	00	-20	289	0	00	-20	290	0	00	-20	291	0	00	-20	292	0	00	-20	293	0	00	-20	294	0	00	-20	295	0	00	-20	296	0	00	-20	297	0	00	-20	298	0	00	-20	299	0	00	-20	300	0	00	-20	301	0	00	-20	302	0	00	-20	303	0	00	-20	304	0	00	-20	305	0	00	-20	306	0	00	-20	307	0	00	-20	308	0	00	-20	309	0	00	-20	310	0	00	-20	311	0	00	-20	312	0	00	-20	313	0	00	-20	314	0	00	-20	315	0	00	-20	316	0	00	-20	317	0	00	-20	318	0	00	-20	319	0	00	-20	320	0	00	-20	321	0	00	-20	322	0	00	-20	323	0	00	-20	324	0	00	-20	325	0	00	-20	326	0	00	-20	327	0	00	-20	328	0	00	-20	329	0	00	-20	330	0	00	-20	331	0	00	-20	332	0	00	-20	333	0	00	-20	334	0	00	-20	335	0	00	-20	336	0	00	-20	337	0	00	-20	338	0	00	-20	339	0	00	-20	340	0	00	-20	341	0	00	-20	342	0	00	-20	343	0	00	-20	344	0	00	-20	345	0	00	-20	346	0	00	-20	347	0	00	-20	348	0	00	-20	349	0	00	-20	350	0	00	-20	351	0	00	-20	352	0	00	-20	353	0	00	-20	354	0	00	-20	355	0	00	-20	356	0	00	-20	357	0	00	-20	358	0	00	-20	359	0	00	-20	360	0	00	-20	361	0	00	-20	362	0	00	-20	363	0	00	-20	364	0	00	-20	365	0	00	-20	366	0	00	-20	367	0	00	-20	368	0	00	-20	369	0	00	-20	370	0	00	-20	371	0	00	-20	372	0	00	-20	373	0	00	-20	374	0	00	-20	375	0	00	-20	376	0	00	-20	377	0	00	-20	378	0	00	-20	379	0	00	-20	380	0	00	-20	381	0	00	-20	382	0	00	-20	383	0	00	-20	384	0	00	-20	385	0	00	-20	386	0	00	-20	387	0	00	-20	388	0	00	-20	389	0	00	-20	390	0	00	-20	391	0	00	-20	392	0	00	-20	393	0	00	-20	394	0	00	-20	395	0	00	-20	396	0	00	-20	397	0	00	-20	398	0	00	-20	399	0	00	-20	400	0	00	-20	401	0	00	-20	402	0	00	-20	403	0	00	-20	404	0	00	-20	405	0	00	-20	406	0	00	-20	407	0	00	-20	408	0	00	-20	409	0	00	-20	410	0	00	-20	411	0	00	-20	412	0	00	-20	413	0	00	-20	414	0	00	-20	415	0	00	-20	416	0	00	-20	417	0	00	-20	418	0	00	-20	419	0	00	-20	420	0	00	-20	421	0	00	-20	422	0	00	-20	423	0	00	-20	424	0	00	-20	425	0	00	-20	426	0	00	-20	427	0	00	-20	428	0	00	-20	429	0	00	-20	430	0	00	-20	431	0	00	-20	432	0	00	-20	433	0	00	-20	434	0	00	-20	435	0	00	-20	436	0	00	-20	437	0	00	-20	438	0	00	-20	439	0	00	-20	440	0	00	-20	441	0	00	-20	442	0	00	-20	443	0	00	-20	444	0	00	-20	445	0	00	-20	446	0	00	-20	447	0	00	-20	448	0	00	-20	449	0	00	-20	450	0	00	-20	451	0	00	-20	452	0	00	-20	453	0	00	-20	454	0	00	-20	455	0	00	-20	456	0	00	-20	457	0	00	-20	458	0	00	-20	459	0	00	-20	460	0	00	-20	461	0	00	-20	462	0	00	-20	463	0	00	-20	464	0	00	-20	465	0	00	-20	466	0	00	-20	467	0	00	-20	468	0	00	-20	469	0	00	-20	470	0	00	-20	471	0	00	-20	472	0	00	-20	473	0	00	-20	474	0	00	-20	475	0	00	-20	476	0	00	-20	477	0	00	-20	478	0	00	-20	479	0	00	-20	480	0	00	-20	481	0	00	-20	482	0	00	-20	483	0	00	-20	484	0	00	-20	485	0	00	-20	486	0	00	-20	487	0	00	-20	488	0	00	-20	489	0	00	-20	490	0	00	-20	491	0	00	-20	492	0	00	-20	493	0	00	-20	494	0	00	-20	495	0	00	-20	496	0	00	-20	497	0	00	-20	498	0	00	-20	499	0	00	-20	500	0	00	-20	501	0	00	-20	502	0	00	-20	503	0	00	-20	504	0	00	-20	505	0	00	-20	506	0	00	-20	507	0	00	-20	508	0	00	-20	509	0	00	-20	510	0	00	-20	511	0	00	-20	512	0	00	-20	513	0	00	-20	

DECLINATION (15° - 29°) SAME NAME AS LATITUDE

N. Lat. { L.H.A. greater than 180°Zn=Z
L.H.A. less than 180°Zn=360°-Z

Table with columns for Latitude (15° to 29°) and Declination (15° to 29°). Each cell contains a 3-digit number representing the declination value. The table is organized into a grid where the top row and left column represent the latitude and declination values respectively.

DECLINATION (15° - 29°) SAME NAME AS LATITUDE

S. Lat. { L.H.A. greater than 180°Zn=180°-Z
L.H.A. less than 180°Zn=180°+Z

N. Lat. { L.H.A. greater than 180°Zn=Z
 { L.H.A. less than 180°Zn=360°-Z

DECLINATION (15° - 29°) CONTRARY NAME TO LATITUDE

LHA	15°			16°			17°			18°			19°			20°			21°			22°			23°			24°			25°			26°			27°			28°			29°			LHA			
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z										
69	17 33	-16	109	17 17	-16	110	17 01	-16	111	16 45	-16	112	16 29	-17	113	16 12	-16	114	15 56	-18	115	15 38	-17	116	15 21	-18	117	15 03	-18	118	14 45	-18	119	14 27	-18	120	14 09	-19	121	13 50	-19	122	13 31	-19	123	291			
68	18 29	-16	109	18 13	-16	110	17 57	-17	111	17 40	-16	112	17 24	-18	113	17 06	-17	114	16 49	-17	115	16 22	-18	116	16 05	-19	117	15 56	-19	118	15 37	-19	119	15 18	-19	120	14 59	-19	121	14 40	-19	122	14 21	-20	123	292			
67	19 24	-16	109	19 06	-16	111	18 52	-17	112	18 35	-17	113	18 18	-18	114	18 00	-17	115	17 43	-18	116	17 25	-19	117	17 06	-19	118	16 49	-20	119	16 29	-20	120	16 09	-20	121	15 50	-20	122	15 30	-20	123	15 10	-20	124	293			
66	20 20	-16	110	20 04	-16	111	19 47	-17	112	19 30	-18	113	19 12	-18	114	18 54	-18	115	18 36	-18	116	18 18	-19	117	17 59	-19	118	17 40	-20	119	17 20	-20	120	17 00	-20	121	16 40	-20	122	16 20	-20	123	16 00	-20	124	294			
65	21 16	-17	110	21 01	-17	111	20 42	-18	112	20 24	-18	113	20 06	-18	114	19 48	-19	115	19 29	-19	116	19 10	-20	117	18 51	-20	118	18 31	-20	119	18 11	-20	120	17 51	-20	121	17 31	-21	122	17 10	-21	123	16 49	-21	124	295			
64	22 12	-18	110	21 54	-17	111	21 37	-18	112	21 19	-18	113	21 01	-18	114	20 42	-18	115	20 22	-19	116	20 03	-20	117	19 43	-20	118	19 23	-20	119	19 03	-21	120	18 42	-21	121	18 21	-21	122	17 59	-21	123	17 38	-22	124	296			
63	23 07	-18	111	22 49	-18	112	22 31	-18	113	22 13	-19	114	21 54	-19	115	21 35	-20	116	21 15	-20	117	20 56	-21	118	20 37	-21	119	20 16	-21	120	19 54	-22	121	19 32	-21	122	19 11	-22	123	18 49	-22	124	18 27	-23	125	297			
62	24 03	-19	111	23 44	-18	112	23 26	-19	113	23 07	-19	114	22 48	-20	115	22 28	-20	116	22 08	-20	117	21 48	-21	118	21 27	-21	119	21 05	-22	120	20 44	-22	121	20 22	-22	122	20 00	-22	123	19 38	-22	124	19 15	-23	125	298			
61	24 58	-19	111	24 39	-18	112	24 21	-19	113	24 01	-19	114	23 42	-20	115	23 21	-20	116	23 01	-21	117	22 40	-21	118	22 19	-22	119	21 57	-22	120	21 35	-22	121	21 13	-23	122	20 50	-23	123	20 27	-24	124	20 03	-23	125	299			
60	25 53	-19	112	25 34	-19	113	25 15	-20	114	24 55	-20	115	24 35	-21	116	24 14	-21	117	23 53	-21	118	23 32	-22	119	23 10	-22	120	22 48	-23	121	22 26	-23	122	22 02	-24	123	21 13	-24	124	20 27	-24	125	20 03	-23	126	300			
59	26 48	-19	112	26 29	-20	113	26 09	-20	114	25 49	-21	115	25 28	-21	116	25 07	-21	117	24 46	-22	118	24 24	-23	119	24 01	-22	120	23 78	-23	121	23 56	-24	122	23 32	-24	123	23 08	-24	124	22 04	-24	125	21 40	-25	126	301			
58	27 43	-20	112	27 23	-20	114	27 03	-21	115	26 42	-21	116	26 21	-22	117	26 00	-22	118	25 38	-23	119	25 15	-24	120	24 53	-24	121	24 30	-25	122	24 06	-25	123	23 42	-25	124	23 17	-25	125	22 52	-25	126	22 27	-26	127	302			
57	28 38	-20	113	28 18	-21	114	27 57	-21	115	27 36	-22	116	27 14	-22	117	26 52	-22	118	26 30	-23	119	26 07	-24	120	25 43	-24	121	25 20	-25	122	24 54	-26	123	24 31	-26	124	24 06	-26	125	23 40	-26	126	23 15	-27	127	303			
56	29 32	-20	113	29 12	-21	114	28 51	-22	115	28 29	-22	116	28 07	-22	117	27 45	-23	118	27 22	-24	119	26 58	-24	120	26 34	-24	121	26 10	-25	122	25 45	-25	123	25 20	-26	124	24 54	-26	125	24 28	-26	126	24 02	-27	127	304			
55	30 27	-21	113	30 06	-22	114	29 44	-22	115	29 22	-22	116	29 00	-23	117	28 37	-24	118	28 13	-24	119	27 49	-24	120	27 25	-25	121	27 01	-26	122	26 26	-26	123	26 09	-27	124	25 42	-26	125	25 16	-27	127	24 49	-28	128	305			
54	31 21	-21	114	31 00	-22	115	30 38	-23	116	30 15	-23	117	29 52	-24	118	29 28	-24	119	29 04	-25	120	28 40	-25	121	28 15	-26	122	27 49	-26	123	27 23	-26	124	26 57	-27	125	26 30	-27	126	26 03	-27	127	25 35	-28	128	306			
53	32 15	-22	114	31 53	-22	115	31 31	-23	116	31 08	-24	117	30 44	-24	118	30 20	-25	119	30 00	-25	120	29 55	-26	121	29 30	-26	122	29 05	-26	123	28 39	-27	124	28 12	-27	125	27 45	-27	126	27 18	-28	127	26 50	-28	128	26 22	-29	129	307
52	33 09	-22	115	32 47	-23	116	32 24	-24	117	32 00	-24	118	31 36	-24	119	31 12	-26	120	30 46	-25	121	30 21	-26	122	29 55	-27	123	29 28	-27	124	29 01	-28	125	28 33	-28	126	28 05	-28	127	27 37	-28	128	27 08	-29	129	308			
51	34 03	-23	115	33 40	-24	116	33 17	-24	117	32 53	-25	118	32 28	-25	119	32 03	-26	121	31 37	-26	122	31 11	-27	123	30 44	-27	124	30 17	-28	125	29 49	-28	126	29 21	-28	127	28 52	-29	128	28 23	-30	129	27 53	-29	130	309			
50	34 57	-24	115	34 33	-24	117	34 09	-24	118	33 45	-26	119	33 19	-25	120	32 54	-27	121	32 27	-26	122	32 01	-28	123	31 33	-28	124	31 05	-28	125	30 30	-29	126	30 08	-29	127	29 39	-30	128	29 09	-30	129	28 39	-31	130	310			
49	35 50	-24	116	35 26	-25	117	35 01	-25	118	34 36	-25	119	34 11	-27	120	33 44	-27	121	33 17	-27	122	32 50	-28	123	32 22	-28	124	31 54	-29	125	31 25	-30	126	30 55	-30	127	30 25	-30	128	29 55	-31	129	29 24	-31	131	311			
48	36 43	-24	116	36 19	-26	118	35 54	-26	119	35 28	-26	120	35 02	-27	121	34 35	-28	122	34 07	-28	123	33 39	-28	124	33 11	-29	125	32 42	-30	126	32 12	-30	127	31 42	-31	128	31 11	-31	129	30 40	-31	130	30 09	-32	131	312			
47	37 36	-25	117	37 11	-26	118	36 45	-26	119	36 19	-27	120	35 52	-27	121	35 25	-28	123	34 57	-29	124	34 29	-28	125	33 59	-30	126	33 30	-30	127	32 59	-31	128	32 28	-31	129	31 57	-32	130	31 25	-32	131	30 53	-33	132	313			
46	38 29	-26	117	38 03	-27	119	37 37	-27	120	37 10	-27	121	36 43	-28	122	36 15	-29	123	35 46	-29	124	35 17	-30	125	34 47	-31	126	34 16	-30	127	33 46	-32	128	33 14	-32	129	32 42	-32	130	32 10	-33	131	31 37	-33	133	314			
45	39 21	-26	118	38 55	-27	119	38 28	-27	120	38 01	-28	121	37 33	-28	122	37 05	-30	125	36 35	-30	126	36 05	-31	126	35 34	-31	127	34 03	-30	128	33 42	-32	129	34 00	-33	130	33 27	-33	131	32 54	-33	132	32 21	-34	133	315			
44	40 13	-26	119	39 47	-28	120	39 19	-28	121	38 51	-28	122	38 23	-30	123	37 53	-30	124	37 23	-30	125	36 53	-31	126	36 22	-32	127	35 00	-32	128	35 18	-33	130	34 45	-33	131	34 12	-34	132	33 38	-34	133	33 04	-35	134	316			
43	41 05	-27	119	40 38	-28	120	40 10	-29	121	39 41	-29	123	39 12	-30	124	38 42	-30	125	38 12	-32	126	37 38	-30	127	37 09	-33	128	36 36	-33	129	36 30	-34	130	35 30	-34	131	34 56	-35	132	34 21	-34	133	33 47	-36	134	317			
42	41 57	-28	120	41 29	-28	121	41 01	-30	122	40 31	-30	123	40 01	-30	124	39 31	-32	125	38 59	-31	126	38 28	-33	127	37 55	-33	128	37 22	-34	129	36 48	-34	130	36 34	-34	131	35 04	-35	132	35 04	-36	133	34 29	-36	134	318			
41	42 48	-28	120	42 10	-29	121	41 51	-30	123	41 21	-31	124	41 00	-31	125	40 30	-32	126	39 47	-33	127	39 14	-33	128	38 41	-34	129	38 07	-34	130	37 33	-35	131	36 58	-35	132	36 23	-36	133	35 04	-36	134	34 29	-36	135	319			
40	43 39	-29	121	43 00	-30	122	42 40	-30	123	42 10	-32	124	41 50	-33	125	41 06	-32	126	40 34	-33	127	40 01	-34	128	38 41	-35	129	38 52	-35	130																			