

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

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	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	80.00	80	81.00	60	82.00	60	83.00	60	84.00	60	85.00	60	86.00	60	87.00	60	88.00	60	89.00	60	90.00	60	89.00	60	88.00	60	87.00	60	86.00	60	85.00	60	84.00	60	83.00	60	82.00	60	81.00	60	80.00	60																																																																																																																		
1	79.57	80	80.57	58	81.56	58	82.55	58	83.54	58	84.53	58	85.52	58	86.51	58	87.50	58	88.49	58	89.48	58	90.47	58	89.46	58	88.45	58	87.44	58	86.43	58	85.42	58	84.41	58	83.40	58	82.39	58	81.38	58	80.37	58																																																																																																																
2	79.48	59	169.80	31	81.28	56	159.82	34	83.05	54	157.83	32	84.81	52	155.82	30	86.60	50	153.77	28	88.37	48	151.72	26	89.15	46	149.65	24	90.93	44	147.55	22	92.70	40	145.39	20	94.46	38	143.25	18	96.32	16	98.18	14	100.04	12																																																																																																														
3	79.34	56	158.80	31	81.14	55	158.00	31	81.57	53	156.94	29	82.42	51	155.92	27	83.36	49	154.93	25	84.34	47	153.95	23	85.37	45	152.99	21	86.44	43	152.05	19	87.56	41	151.14	39	88.72	37	150.27	35	89.99	33	149.54	29	151.11	25	152.51	19	153.84	13																																																																																																										
4	79.14	56	158.80	31	81.00	54	158.00	31	81.57	52	158.00	31	82.42	50	157.00	29	83.36	48	156.00	27	84.34	46	155.00	25	85.37	44	154.00	23	86.44	42	153.00	21	87.56	40	152.00	19	88.72	38	151.00	17	90.00	15	150.00	13	152.00	07	154.00	01	156.00	00																																																																																																										
5	78.50	53	153.79	42	80.35	50	148.80	47	81.25	48	144.83	45	82.10	43	138.80	40	83.00	38	134.80	36	83.88	35	130.80	33	84.72	31	126.80	28	85.60	26	122.80	23	86.40	19	118.80	15	87.15	12	114.80	11	87.90	09	110.80	07	106.80	05	102.80	03	98.80	02	94.80	01																																																																																																								
6	78.21	51	145.79	37	80.01	47	143.80	44	80.68	44	139.81	41	81.33	40	135.80	38	82.00	37	131.80	35	82.75	34	127.80	32	83.55	30	123.80	27	84.30	21	119.80	18	85.00	14	115.80	11	85.75	08	111.80	06	107.80	03	103.80	01	99.80	00	95.80	00	91.80	00	87.80	00																																																																																																								
7	77.49	48	145.79	37	79.24	44	139.80	41	80.08	44	135.80	40	80.75	39	131.80	38	81.50	35	127.80	33	82.25	30	123.80	28	83.00	25	119.80	21	83.75	15	115.80	10	84.50	08	111.80	05	107.80	01	103.80	00	99.80	00	95.80	00	91.80	00	87.80	00	83.80	00	79.80	00	75.80	00																																																																																																						
8	77.13	46	138.78	43	78.43	42	135.79	42	79.25	41	131.78	41	80.00	40	127.77	40	80.75	39	123.76	39	81.50	38	119.75	38	82.25	37	115.74	37	83.00	36	111.73	36	83.75	35	107.72	35	103.71	35	99.70	35	95.69	35	91.68	35	87.67	35	83.66	35	79.65	35	75.64	35																																																																																																								
9	76.35	43	138.78	43	77.18	42	133.78	42	78.00	41	129.77	41	79.00	40	125.76	40	79.75	39	121.75	39	80.50	38	117.74	38	81.25	37	113.73	37	82.00	36	109.72	36	82.75	35	105.71	35	101.70	35	97.69	35	93.68	35	89.67	35	85.66	35	81.65	35	77.64	35	73.63	35																																																																																																								
10	75.54	41	135.76	40	77.15	40	132.77	39	77.55	39	128.77	39	78.00	38	124.76	38	78.75	37	120.75	37	79.50	36	116.74	36	80.25	35	112.73	35	79.00	34	109.71	34	79.75	33	105.70	33	101.69	33	97.68	33	93.67	33	89.66	33	85.65	33	81.64	33	77.63	33	73.62	33	69.61	33	65.60	33																																																																																																				
11	75.11	39	132.75	37	76.50	37	129.76	37	77.25	36	125.75	36	78.00	35	121.74	35	78.75	34	117.73	34	79.50	33	113.72	33	80.25	32	109.71	32	79.00	31	105.69	31	101.68	31	97.67	31	93.66	31	89.65	31	85.64	31	81.63	31	77.62	31	73.61	31	69.60	31	65.59	31	61.58	31	57.57	31	53.56	31	49.55	31	45.54	31	41.53	31	37.52	31	33.51	31	29.50	31	25.49	31	21.48	31	17.47	31	13.46	31	9.45	31	5.44	31	1.43	31	0.00	31																																																																						
12	74.26	37	129.75	35	75.98	33	123.76	33	76.11	32	118.77	32	77.25	31	113.76	31	78.00	30	109.75	30	78.75	29	105.74	29	80.25	28	101.73	28	79.00	27	97.71	27	93.70	27	89.69	27	85.68	27	81.67	27	77.66	27	73.65	27	69.64	27	65.63	27	61.62	27	57.61	27	53.60	27	49.59	27	45.58	27	41.57	27	37.56	27	33.55	27	29.54	27	25.53	27	21.52	27	17.51	27	13.50	27	9.49	27	5.48	27	1.47	27	0.00	27																																																																										
13	73.39	36	127.74	33	75.19	32	121.75	32	76.11	31	117.74	31	77.25	30	113.73	30	78.00	29	109.72	29	78.75	28	105.71	28	80.25	27	79.00	26	77.75	25	76.50	24	75.25	23	74.00	22	72.75	21	71.50	20	70.25	19	69.00	18	67.75	17	66.50	16	65.25	15	64.00	14	62.75	13	61.50	12	60.25	11	59.00	10	57.75	09	56.50	08	55.25	07	54.00	06	52.75	05	51.50	04	50.25	03	49.00	02	47.75	01	46.50	00	45.25	00	44.00	00	42.75	00	41.50	00	40.25	00	39.00	00	37.75	00	36.50	00	35.25	00	34.00	00	32.75	00	31.50	00	30.25	00	29.00	00	27.75	00	26.50	00	25.25	00	24.00	00	22.75	00	21.50	00	20.25	00	19.00	00	17.75	00	16.50	00	15.25	00	14.00	00	12.75	00	11.50	00	10.25	00	9.00	00	7.75	00	6.50	00	5.25	00	4.00	00	2.75	00	1.50	00	0.25	00	0.00	00
14	72.51	34	125.73	32	74.25	32	119.74	32	75.19	31	115.73	31	76.11	30	111.72	30	77.25	29	108.71	29	78.75	28	104.70	28	80.25	27	79.00	26	77.75	25	76.50	24	75.25	23	74.00	22	72.75	21	71.50	20	70.25	19	69.00	18	67.75	17	66.50	16	65.25	15	64.00	14	62.75	13	61.50	12	60.25	11	59.00	10	57.75	09	56.50	08	55.25	07	54.00	06	52.75	05	51.50	04	50.25	03	49.00	02	47.75	01	46.50	00	45.25	00	44.00	00	42.75	00	41.50	00	40.25	00	39.00	00	37.75	00	36.50	00	35.25	00	34.00	00	32.75	00	31.50	00	30.25	00	29.00	00	27.75	00	26.50	00	25.25	00	24.00	00	22.75	00	21.50	00	20.25	00	19.00	00	17.75	00	16.50	00	15.25	00	14.00	00	12.75	00	11.50	00	10.25	00	9.00	00	7.75	00	6.50	00	5.25	00	4.00	00	2.75	00	1.50	00	0.25	00	0.00	00
15	71.12	31	121.72	30	73.05	28	117.73	30	74.25	28	113.72	28	75.19	27	109.71	27	76.11	26	105.70	26	77.25	25	101.69	25	78.00	24	76.75	23	75.50	22	74.25	21	73.00	20	71.75	19	70.50	18	69.25	17	68.00	16	66.75	15	65.50	14	64.25	13	63.00	12	61.75	11	60.50	10	59.25	09	58.00	08	56.75	07	55.50	06	54.25	05	53.00	04	51.75	03	50.50	02	49.25	01	48.00	00	46.75	00	45.50	00	44.25	00	43.00	00	41.75	00	40.50	00	39.25	00	38.00	00	36.75	00	35.50	00	34.25	00	33.00	00	31.75	00	30.50	00	29.25	00	28.00	00	26.75	00	25.50	00	24.25	00	23.00	00	21.75	00	20.50	00	19.25	00	18.00	00	16.75	00	15.50	00	14.25	00	13.00	00	11.75	00	10.50	00	9.25	00	8.00	00	6.75	00	5.50	00	4.25	00	3.00	00	1.75	00	0.50	00	0.00	00				
16	70.21	30	120.71	28	72.12	26	116.73	28	73.05	26	112.72	26	74.25	25	108.71	25	75.19	24	101.70	24	77.25	23	97.69	23	78.00	22	76.75	21	75.50	20	74.25	19	73.00	18	71.75	17	70.50	16	69.25	15	68.00	14	66.75	13	65.50	12	64.25	11	63.00	10	61.75	09	60.50	08	59.25	07	58.00	06	56.75	05	55.50	04	54.25	03	53.00	02	51.75	01	50.50	00	49.25	00	48.00	00	46.75	00	45.50	00	44.25	00	43.00	00	41.75	00	40.50	00	39.25	00	38.00	00	36.75	00	35.50	00	34.25	00	33.00	00	31.75	00	30.50	00	29.25	00	28.00	00	26.75	00	25.50	00	24.25	00	23.00	00	21.75	00	20.50	00	19.25	00	18.00	00	16.75	00	15.50	00	14.25	00	13.00	00	11.75	00	10.50	00	9.25	00	8.00	00	6.75	00	5.50	00	4.25	00	3.00	00	1.75	00	0.50	00	0.00	00				
17	69.29	29	119.70	26	71.03	24	115.74	26	72.12	24	111.73	24	73.05	23	107.72	23	74.25	22	93.71	23	75.19	22																																																																																																																																						

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		Hc	d	Z																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
70	19.41	11	94	19.52	10	93	20.02	11	92	20.13	10	91	20.24	10	90	20.35	09	89	20.46	08	88	20.57	07	87	21.08	06	86	21.19	05	85	21.30	04	84	21.41	03	83	21.52	02	82	22.03	01	81	22.14	00	80	22.25	00	79	22.36	00	78	22.47	00	77	22.58	00	76	23.09	00	75	23.20	00	74	23.31	00	73	23.42	00	72	23.53	00	71	24.04	00	70	24.15	00	69	24.26	00	68	24.37	00	67	24.48	00	66	24.59	00	65	25.10	00	64	25.21	00	63	25.32	00	62	25.43	00	61	25.54	00	60	26.05	00	59	26.16	00	58	26.27	00	57	26.38	00	56	26.49	00	55	26.60	00	54	26.71	00	53	26.82	00	52	26.93	00	51	27.04	00	50	27.15	00	49	27.26	00	48	27.37	00	47	27.48	00	46	27.59	00	45	28.10	00	44	28.21	00	43	28.32	00	42	28.43	00	41	28.54	00	40	29.05	00	39	29.16	00	38	29.27	00	37	29.38	00	36	29.49	00	35	30.00	00	34	30.11	00	33	30.22	00	32	30.33	00	31	30.44	00	30	30.55	00	29	31.06	00	28	31.17	00	27	31.28	00	26	31.39	00	25	31.50	00	24	32.01	00	23	32.12	00	22	32.23	00	21	32.34	00	20	32.45	00	19	32.56	00	18	33.07	00	17	33.18	00	16	33.29	00	15	33.40	00	14	33.51	00	13	34.02	00	12	34.13	00	11	34.24	00	10	34.35	00	9	34.46	00	8	34.57	00	7	35.08	00	6	35.19	00	5	35.30	00	4	35.41	00	3	35.52	00	2	36.03	00	1	36.14	00	0	36.25	00	0	36.36	00	0	36.47	00	0	36.58	00	0	37.09	00	0	37.20	00	0	37.31	00	0	37.42	00	0	37.53	00	0	38.04	00	0	38.15	00	0	38.26	00	0	38.37	00	0	38.48	00	0	38.59	00	0	39.10	00	0	39.21	00	0	39.32	00	0	39.43	00	0	39.54	00	0	40.05	00	0	40.16	00	0	40.27	00	0	40.38	00	0	40.49	00	0	40.60	00	0	40.71	00	0	40.82	00	0	40.93	00	0	41.04	00	0	41.15	00	0	41.26	00	0	41.37	00	0	41.48	00	0	41.59	00	0	42.10	00	0	42.21	00	0	42.32	00	0	42.43	00	0	42.54	00	0	43.05	00	0	43.16	00	0	43.27	00	0	43.38	00	0	43.49	00	0	43.60	00	0	43.71	00	0	43.82	00	0	43.93	00	0	44.04	00	0	44.15	00	0	44.26	00	0	44.37	00	0	44.48	00	0	44.59	00	0	45.10	00	0	45.21	00	0	45.32	00	0	45.43	00	0	45.54	00	0	46.05	00	0	46.16	00	0	46.27	00	0	46.38	00	0	46.49	00	0	46.60	00	0	46.71	00	0	46.82	00	0	46.93	00	0	47.04	00	0	47.15	00	0	47.26	00	0	47.37	00	0	47.48	00	0	47.59	00	0	48.10	00	0	48.21	00	0	48.32	00	0	48.43	00	0	48.54	00	0	49.05	00	0	49.16	00	0	49.27	00	0	49.38	00	0	49.49	00	0	49.60	00	0	49.71	00	0	49.82	00	0	49.93	00	0	50.04	00	0	50.15	00	0	50.26	00	0	50.37	00	0	50.48	00	0	50.59	00	0	51.10	00	0	51.21	00	0	51.32	00	0	51.43	00	0	51.54	00	0	52.05	00	0	52.16	00	0	52.27	00	0	52.38	00	0	52.49	00	0	52.60	00	0	52.71	00	0	52.82	00	0	52.93	00	0	53.04	00	0	53.15	00	0	53.26	00	0	53.37	00	0	53.48	00	0	53.59	00	0	54.10	00	0	54.21	00	0	54.32	00	0	54.43	00	0	54.54	00	0	55.05	00	0	55.16	00	0	55.27	00	0	55.38	00	0	55.49	00	0	55.60	00	0	55.71	00	0	55.82	00	0	55.93	00	0	56.04	00	0	56.15	00	0	56.26	00	0	56.37	00	0	56.48	00	0	56.59	00	0	57.10	00	0	57.21	00	0	57.32	00	0	57.43	00	0	57.54	00	0	58.05	00	0	58.16	00	0	58.27	00	0	58.38	00	0	58.49	00	0	58.60	00	0	58.71	00	0	58.82	00	0	58.93	00	0	59.04	00	0	59.15	00	0	59.26	00	0	59.37	00	0	59.48	00	0	59.59	00	0	60.10	00	0	60.21	00	0	60.32	00	0	60.43	00	0	60.54	00	0	61.05	00	0	61.16	00	0	61.27	00	0	61.38	00	0	61.49	00	0	61.60	00	0	61.71	00	0	61.82	00	0	61.93	00	0	62.04	00	0	62.15	00	0	62.26	00	0	62.37	00	0	62.48	00	0	62.59	00	0	63.10	00	0	63.21	00	0	63.32	00	0	63.43	00	0	63.54	00	0	64.05	00	0	64.16	00	0	64.27	00	0	64.38	00	0	64.49	00	0	64.60	00	0	64.71	00	0	64.82	00	0	64.93	00	0	65.04	00	0	65.15	00	0	65.26	00	0	65.37	00	0	65.48	00	0	65.59	00	0	66.10	00	0	66.21	00	0	66.32	00	0	66.43	00	0	66.54	00	0	67.05	00	0	67.16	00	0	67.27	00	0	67.38	00	0	67.49	00	0	67.60	00	0	67.71	00	0	67.82	00	0	67.93	00	0	68.04	00	0	68.15	00	0	68.26	00	0	68.37	00	0	68.48	00	0	68.59	00	0	69.10	00	0	69.21	00	0	69.32	00	0	69.43	00	0	69.54	00	0	70.05	00	0	70.16	00	0	70.27	00	0	70.38	00	0	70.49	00	0	70.60	00	0	70.71	00	0	70.82	00	0	70.93	00	0	71.04	00	0	71.15	00	0	71.26	00	0	71.37	00	0	71.48	00	0	71.59	00	0	72.10	00	0	72.21	00	0	72.32	00	0	72.43	00	0	72.54	00	0	73.05	00	0	73.16	00	0	73.27	00	0	73.38	00	0	73.49	00	0	73.60	00	0	73.71	00	0	73.82	00	0	73.93	00	0	74.04	00	0	74.15	00	0	74.26	00	0	74.37	00	0	74.48	00	0	74.59	00	0	75.10	00	0	75.21	00	0	75.32	00	0	75.43	00	0	75.54	00	0	76.05	00	0	76.16	00	0	76.27	00	0	76.38	00	0	76.49	00	0	76.60	00	0	76.71	00	0	76.82	00	0	76.93	00	0	77.04	00	0	77.15	00	0	77.26	00	0	77.37	00	0	77.48	00	0	77.59	00	0	78.10	00	0	78.21	00	0	78.32	00	0	78.43	00	0	78.54	00	0	79.05	00	0	79.16	00	0	79.27	00	0	79.38	00	0	79.49	00	0	79.60	00	0	79.71	00	0	79.82	00	0	79.93	00	0	80.04	00	0	80.15	00	0	80.26	00	0	80.37	00	0	80.48	00	0	80.59	00	0	81.10	00	0	81.21	00	0	81.32	00	0	81.43	00	0	81.54	00	0	82.05	00	0	82.16	00	0	82.27	00	0	82.38	00	0	82.49	00	0	82.60	00	0	82.71	00	0	82.82	00	0	82.93	00	0	83.04	00	0	83.15	00	0	83.26	00	0	83.37	00	0	83.48	00	0	83.59	00	0	84.10	00	0	84.21	00	0	84.32	00	0	84.43	00	0	84.54	00	0	85.05	00	0	85.16	00	0	85.27	00	0	85.38	00	0	85.49	00	0	85.60	00	0	85.71	00	0	85.82	00	0	85.93	00	0	86.04	00	0	86.15	00	0	86.26	00	0	86.37	00	0	86.48	00	0	86.59	00	0	87.10	00	0	87.21	00	0	87.32	00	0	87.43	00	0	87.54	00	0	88.05	00	0	88.16	00	0	88.27	00	0	88.38	00	0	88.49	00	0	88.60	00	0	88.71	00	0	88.82	00	0	88.93	00	0	89.04	00	0	89.15	00	0	89.26	00	0	89.37	00	0	89.48	00	0	89.59	00	0	90.10	00	0	90.21	00	0	90.32	00	0	90.43	00	0	90.54	00	0	91.05	00	0	91.16	00	0	91.27	00	0	91.38	00	0	91.49	00	0	91.60	00	0	91.71	00	0	91.82	00	0	91.93	00	0	92.04	00	0	92.15	00	0	92.26	00	0	92.37	00	0	92.48	00	0	92.59	00	0	93.10	00	0	93.21	00	0	93.32	00	0	93.43	00	0	93.54	00	0	94.05	00	0	94.16	00	0	94.27	00	0	94.38	00	0	94.49	00	0	94.60	00	0	94.71	00	0	94.82	00	0	94.93	00	0	95.04	00	0	95.15	00	0	95.26	00	0	95.37	00	0	95.48	00	0	95.59	00	0	96.10	00	0	96.21	00	0	96.32	00	0	96.43	00	0	96.54	00	0	97.05	00	0	97.16	00	0	97.27	00	0	97.38	00	0	97.49	00	0	97.60	00	0	97.71	00	0	97.82	00	0	97.93	00	0	98.04	00	0	98.15	00	0	98.26	00	0	98.37	00	0</

LAT 10°

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

Table with columns for LHA, 0° to 14° latitude, and 0° to 14° declination. Each cell contains a 3-digit number representing the value at that intersection.

DECLINATION (0° - 14°) 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 (15° – 29°) SAME NAME AS 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	Hc	d Z	Hc	d Z			
0	85.00	-0.60	84.00	-0.60	83.00	-0.60	82.00	-0.60	81.00	-0.60	80.00	-0.60	79.00	-0.60	78.00	-0.60	77.00	-0.60	76.00	-0.60	75.00	-0.60	74.00	-0.60	73.00	-0.60	72.00	-0.60	71.00	-0.60	70.00	-0.60	360
1	84.54	-0.59	83.55	-0.59	82.56	-0.60	81.56	-0.59	80.57	-0.60	79.57	-0.59	78.57	-0.59	77.58	-0.60	76.58	-0.60	75.58	-0.60	74.58	-0.60	73.58	-0.60	72.58	-0.59	71.58	-0.59	70.59	-0.60	389		
2	84.36	-0.52	83.42	-0.55	82.45	-0.56	81.46	-0.58	80.43	-0.58	79.38	-0.59	78.31	-0.59	77.22	-0.59	76.12	-0.59	75.00	-0.59	73.87	-0.59	72.73	-0.59	71.58	-0.59	70.42	-0.59	69.25	-0.59	388		
3	84.12	-0.36	83.20	-0.55	82.25	-0.56	81.29	-0.56	80.33	-0.58	79.35	-0.57	78.35	-0.57	77.34	-0.57	76.31	-0.57	75.27	-0.57	74.22	-0.57	73.16	-0.57	72.09	-0.57	71.01	-0.57	69.83	-0.57	357		
4	83.89	-0.48	82.91	-0.51	81.97	-0.55	81.07	-0.55	80.12	-0.55	79.17	-0.56	78.21	-0.57	77.24	-0.57	76.27	-0.58	75.29	-0.58	74.30	-0.58	73.30	-0.58	72.29	-0.58	71.27	-0.58	70.24	-0.58	356		
5	83.03	-0.45	82.16	-0.47	81.33	-0.50	80.54	-0.52	80.00	-0.52	79.46	-0.53	79.00	-0.54	78.54	-0.54	78.47	-0.54	78.38	-0.55	78.29	-0.55	78.19	-0.55	78.07	-0.55	77.94	-0.55	77.81	-0.55	355		
6	82.18	-0.40	81.38	-0.45	80.62	-0.49	80.00	-0.51	80.00	-0.51	80.00	-0.51	80.00	-0.51	80.00	-0.51	80.00	-0.51	80.00	-0.51	80.00	-0.51	80.00	-0.51	80.00	-0.51	80.00	-0.51	80.00	-0.51	354		
7	81.32	-0.37	80.55	-0.41	80.00	-0.43	80.00	-0.43	80.00	-0.43	80.00	-0.43	80.00	-0.43	80.00	-0.43	80.00	-0.43	80.00	-0.43	80.00	-0.43	80.00	-0.43	80.00	-0.43	80.00	-0.43	80.00	-0.43	353		
8	80.44	-0.34	80.00	-0.38	80.00	-0.42	80.00	-0.46	80.00	-0.50	80.00	-0.54	80.00	-0.58	80.00	-0.62	80.00	-0.66	80.00	-0.70	80.00	-0.74	80.00	-0.78	80.00	-0.82	80.00	-0.86	80.00	-0.90	352		
9	79.54	-0.31	79.23	-0.35	79.00	-0.39	78.84	-0.43	78.78	-0.47	78.84	-0.51	78.90	-0.55	79.00	-0.59	79.10	-0.63	79.20	-0.67	79.30	-0.71	79.40	-0.75	79.50	-0.79	79.60	-0.83	79.70	-0.87	351		
10	79.02	-0.28	78.34	-0.32	78.00	-0.36	78.00	-0.40	78.00	-0.44	78.00	-0.48	78.00	-0.52	78.00	-0.56	78.00	-0.60	78.00	-0.64	78.00	-0.68	78.00	-0.72	78.00	-0.76	78.00	-0.80	78.00	-0.84	350		
11	78.09	-0.26	77.43	-0.30	77.13	-0.34	77.00	-0.38	77.00	-0.42	77.00	-0.46	77.00	-0.50	77.00	-0.54	77.00	-0.58	77.00	-0.62	77.00	-0.66	77.00	-0.70	77.00	-0.74	77.00	-0.78	77.00	-0.82	349		
12	77.16	-0.24	76.66	-0.28	76.34	-0.32	76.00	-0.36	76.00	-0.40	76.00	-0.44	76.00	-0.48	76.00	-0.52	76.00	-0.56	76.00	-0.60	76.00	-0.64	76.00	-0.68	76.00	-0.72	76.00	-0.76	76.00	-0.80	348		
13	76.22	-0.23	75.89	-0.25	75.54	-0.30	75.04	-0.34	75.04	-0.38	75.04	-0.42	75.04	-0.46	75.04	-0.50	75.04	-0.54	75.04	-0.58	75.04	-0.62	75.04	-0.66	75.04	-0.70	75.04	-0.74	75.04	-0.78	347		
14	75.27	-0.21	74.68	-0.24	74.42	-0.27	74.15	-0.30	74.00	-0.34	74.00	-0.38	74.00	-0.42	74.00	-0.46	74.00	-0.50	74.00	-0.54	74.00	-0.58	74.00	-0.62	74.00	-0.66	74.00	-0.70	74.00	-0.74	346		
15	74.32	-0.19	74.13	-0.23	74.00	-0.26	74.00	-0.30	74.00	-0.34	74.00	-0.38	74.00	-0.42	74.00	-0.46	74.00	-0.50	74.00	-0.54	74.00	-0.58	74.00	-0.62	74.00	-0.66	74.00	-0.70	74.00	-0.74	345		
16	73.36	-0.18	73.18	-0.21	73.00	-0.24	73.00	-0.28	73.00	-0.32	73.00	-0.36	73.00	-0.40	73.00	-0.44	73.00	-0.48	73.00	-0.52	73.00	-0.56	73.00	-0.60	73.00	-0.64	73.00	-0.68	73.00	-0.72	344		
17	72.40	-0.16	72.24	-0.20	72.04	-0.23	72.04	-0.27	72.04	-0.31	72.04	-0.35	72.04	-0.39	72.04	-0.43	72.04	-0.47	72.04	-0.51	72.04	-0.55	72.04	-0.59	72.04	-0.63	72.04	-0.67	72.04	-0.71	343		
18	71.44	-0.15	71.29	-0.19	71.10	-0.21	71.00	-0.25	71.00	-0.29	71.00	-0.33	71.00	-0.37	71.00	-0.41	71.00	-0.45	71.00	-0.49	71.00	-0.53	71.00	-0.57	71.00	-0.61	71.00	-0.65	71.00	-0.69	342		
19	70.48	-0.15	70.33	-0.17	70.16	-0.21	70.00	-0.25	70.00	-0.29	70.00	-0.33	70.00	-0.37	70.00	-0.41	70.00	-0.45	70.00	-0.49	70.00	-0.53	70.00	-0.57	70.00	-0.61	70.00	-0.65	70.00	-0.69	341		
20	69.51	-0.14	69.37	-0.16	69.21	-0.19	69.08	-0.22	69.00	-0.25	69.00	-0.29	69.00	-0.33	69.00	-0.37	69.00	-0.41	69.00	-0.45	69.00	-0.49	69.00	-0.53	69.00	-0.57	69.00	-0.61	69.00	-0.65	340		
21	68.58	-0.13	68.45	-0.16	68.26	-0.18	68.08	-0.21	68.00	-0.24	68.00	-0.28	68.00	-0.32	68.00	-0.36	68.00	-0.40	68.00	-0.44	68.00	-0.48	68.00	-0.52	68.00	-0.56	68.00	-0.60	68.00	-0.64	339		
22	67.65	-0.13	67.53	-0.14	67.31	-0.17	67.00	-0.20	67.00	-0.24	67.00	-0.28	67.00	-0.32	67.00	-0.36	67.00	-0.40	67.00	-0.44	67.00	-0.48	67.00	-0.52	67.00	-0.56	67.00	-0.60	67.00	-0.64	338		
23	66.71	-0.12	66.59	-0.16	66.35	-0.19	66.00	-0.22	66.00	-0.26	66.00	-0.30	66.00	-0.34	66.00	-0.38	66.00	-0.42	66.00	-0.46	66.00	-0.50	66.00	-0.54	66.00	-0.58	66.00	-0.62	66.00	-0.66	337		
24	66.03	-0.10	65.53	-0.13	65.04	-0.16	65.00	-0.19	65.00	-0.23	65.00	-0.27	65.00	-0.31	65.00	-0.35	65.00	-0.39	65.00	-0.43	65.00	-0.47	65.00	-0.51	65.00	-0.55	65.00	-0.59	65.00	-0.63	336		
25	65.06	-0.10	64.56	-0.12	64.44	-0.15	64.29	-0.18	64.24	-0.22	64.24	-0.26	64.24	-0.30	64.24	-0.34	64.24	-0.38	64.24	-0.42	64.24	-0.46	64.24	-0.50	64.24	-0.54	64.24	-0.58	64.24	-0.62	335		
26	64.09	-0.10	63.59	-0.11	63.48	-0.14	63.34	-0.15	63.34	-0.19	63.34	-0.23	63.34	-0.27	63.34	-0.31	63.34	-0.35	63.34	-0.39	63.34	-0.43	63.34	-0.47	63.34	-0.51	63.34	-0.55	63.34	-0.59	334		
27	63.11	-0.08	62.75	-0.11	62.52	-0.13	62.39	-0.15	62.39	-0.19	62.39	-0.23	62.39	-0.27	62.39	-0.31	62.39	-0.35	62.39	-0.39	62.39	-0.43	62.39	-0.47	62.39	-0.51	62.39	-0.55	62.39	-0.59	333		
28	62.14	-0.07	61.09	-0.10	61.55	-0.12	61.43	-0.14	61.43	-0.18	61.43	-0.22	61.43	-0.26	61.43	-0.30	61.43	-0.34	61.43	-0.38	61.43	-0.42	61.43	-0.46	61.43	-0.50	61.43	-0.54	61.43	-0.58	332		
29	61.16	-0.07	60.11	-0.10	60.59	-0.12	60.47	-0.13	60.47	-0.17	60.47	-0.21	60.47	-0.25	60.47	-0.29	60.47	-0.33	60.47	-0.37	60.47	-0.41	60.47	-0.45	60.47	-0.49	60.47	-0.53	60.47	-0.57	331		
30	60.19	-0.07	60.12	-0.10	60.02	-0.11	60.02	-0.12	60.02	-0.14	60.02	-0.16	60.02	-0.18	60.02	-0.20	60.02	-0.22	60.02	-0.24	60.02	-0.26	60.02	-0.28	60.02	-0.30	60.02	-0.32	60.02	-0.34	330		
31	59.21	-0.07	59.14	-0.08	59.03	-0.11	58.55	-0.11	58.55	-0.14	58.55	-0.16	58.55	-0.18	58.55	-0.20	58.55	-0.22	58.55	-0.24	58.55	-0.26	58.55	-0.28	58.55	-0.30	58.55	-0.32	58.55	-0.34	329		
32	58.23	-0.07	58.17	-0.08	58.09	-0.11	58.00	-0.11	58.00	-0.14	58.00	-0.16	58.00	-0.18	58.00	-0.20	58.00	-0.22	58.00	-0.24	58.00	-0.26	58.00	-0.28	58.00	-0.30	58.00	-0.32	58.00	-0.34	328		
33	57.26	-0.06	57.22	-0.07	57.15	-0.09	57.03	-0.11	57.03	-0.13	57.03	-0.15	57.03	-0.17	57.03	-0.19	57.03	-0.21	57.03	-0.23	57.03	-0.25	57.03	-0.27	57.03	-0.29	57.03	-0.31	57.03	-0.33	327		
34	56.28	-0.06	56.22	-0.07	56.15	-0.09	56.07	-0.11	56.07	-0.13	56.07	-0.15	56.07	-0.17	56.07	-0.19	56.07	-0.21	56.07	-0.23	56.07	-0.25	56.07	-0.27	56.07	-0.29	56.07	-0.31	56.07	-0.33	326		
35	55.30	-0.05	55.25	-0.06	55.19	-0.08	55.10	-0.09	55.10	-0.11	55.10	-0.13	55.10	-0.15	55.10	-0.17	55.10	-0.19	55.10	-0.21	55.10	-0.23	55.10	-0.25	55.10	-0.27	55.10	-0.29	55.10	-0.31	325		
36	54.32	-0.04	54.28	-0.06	54.22	-0.08	54.14	-0.09	54.14	-0.11	54.14	-0.13	54.14	-0.15	54.14	-0.17	54.14	-0.19	54.14	-0.21	54.14	-0.23	54.14	-0.25	54.14	-0.27	54.14	-0.29	54.14	-0.31	324		
37	53.35	-0.04	53.30	-0.05	53.25	-0.07	53.17	-0.08	53.17	-0.10	53.17	-0.12	53.17	-0.14	53.17	-0.16	53.17	-0.18	53.17	-0.20	53.17	-0.22	53.17	-0.24	53.17	-0.26	53.17	-0.28	53.17	-0.30	323		
38	52.37	-0.04	52.33	-0.05	52.27	-0.06	52.21	-0.08	52.21	-0.10	52.21	-0.12	52.21	-0.14	52.21	-0.16	52.21	-0.18	52.21	-0.20	52.21	-0.22	52.21	-0.24	52.21	-0.26	52.21	-0.28	52.21				

LAT 10°

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 code (Hc, d, Z) and a 3-digit code (Hc, d, Z). The table is organized in a grid where the top row represents the latitude and the left column represents the declination.

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

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

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 latitude and the left column represents the declination.

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

LAT 11°

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	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z		Hc	d	Z																																						
0	79.00	0	180	80.00	0	180	81.00	0	180	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	78.57	0	175	79.57	0	174	80.57	0	173	81.56	0	172	82.56	0	171	83.55	0	170	84.54	0	169	85.53	0	168	86.52	0	167	87.51	0	166	88.50	0	165	89.49	0	164	90.48	0	163	91.47	0	162	92.46	0	161	93.45	0	160	94.44	0	159	95.43	0	158	96.42	0	157	97.41	0	156	98.40	0	155	99.39	0	154	100.38	0	153																		
2	78.49	59	170	79.48	59	169	80.47	59	168	81.45	58	167	82.44	58	166	83.43	58	165	84.41	57	164	85.40	57	163	86.38	57	162	87.36	56	161	88.34	56	160	89.32	55	159	90.30	55	158	91.28	54	157	92.26	54	156	93.24	53	155	94.22	53	154	95.20	52	153	96.18	52	152	97.16	51	151	98.14	51	150	99.12	50	149	100.10	50	148																		
3	78.36	58	165	79.34	57	163	80.31	57	162	81.28	56	161	82.24	56	160	83.21	55	159	84.18	54	158	85.14	54	157	86.11	53	156	87.07	52	155	88.04	51	154	89.00	51	153	90.00	50	152	91.00	49	151	92.00	48	150	93.00	47	149	94.00	46	148	95.00	45	147	96.00	44	146	97.00	43	145	98.00	42	144	99.00	41	143	100.00	40	142																		
4	78.18	56	160	79.14	55	158	80.10	54	156	81.04	54	155	82.00	53	154	82.96	52	153	83.91	51	152	84.86	51	151	85.81	50	150	86.76	49	149	87.71	48	148	88.66	47	147	89.61	46	146	90.56	45	145	91.51	44	144	92.46	43	143	93.41	42	142	94.36	41	141	95.31	40	140	96.26	39	139	97.21	38	138	98.16	37	137	99.11	36	136	100.06	35	135															
5	77.56	54	155	78.50	53	153	79.43	52	151	80.35	50	148	81.25	48	144	82.13	45	140	82.99	42	136	83.84	39	132	84.68	35	128	85.51	31	124	86.33	27	119	87.14	23	114	87.94	19	109	88.73	15	104	89.51	11	99	90.28	7	94	91.04	3	89	91.80	0	84	92.55	0	79	93.30	0	74	94.04	0	69	94.78	0	64	95.52	0	59	96.26	0	54	97.00	0	49	97.74	0	44	98.48	0	39	99.22	0	34	100.00	0	29
6	77.29	53	151	78.22	50	148	79.12	50	146	80.00	47	142	80.87	44	138	81.73	40	134	82.58	36	130	83.42	32	126	84.15	28	122	84.87	24	118	85.58	20	114	86.28	16	110	87.07	12	106	87.85	8	102	88.62	4	98	89.39	0	94	90.15	0																																					

DECLINATION (0° - 14°) 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 (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

Table with columns for LHA and latitude (0° to 14°) and rows for declination (0° to 14°). Each cell contains a 3-digit number representing the declination value.

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

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

Table with columns for LHA and latitude (0° to 14°) and rows for declination (0° to 14°). Each cell contains a 3-digit number representing the declination value.

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

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 11°

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	21.57	06	78	22.03	05	77	22.08	06	76	22.14	04	75	22.18	05	74	22.23	04	73	22.27	03	72	22.30	03	71	22.33	03	69	22.36	02	68	22.38	02	67	22.40	01	66	22.41	01	65	22.42	01	64	22.43	00	63	280			
71	20.59	07	78	21.05	06	77	21.11	06	76	21.17	05	75	21.22	05	74	21.27	04	73	21.31	04	72	21.35	04	71	21.38	03	69	21.41	03	68	21.44	02	67	21.46	02	66	21.47	02	65	21.48	01	64	21.50	01	63	289			
72	20.01	07	78	20.08	06	77	20.14	06	76	20.20	05	75	20.25	05	74	20.30	05	73	20.35	04	72	20.39	04	71	20.43	04	69	20.47	03	68	20.50	02	67	20.52	02	66	20.53	02	65	20.54	02	64	20.56	02	63	288			
73	19.04	07	78	19.13	07	77	19.20	06	76	19.27	05	75	19.33	05	74	19.38	05	73	19.44	04	72	19.49	04	71	19.53	04	69	19.57	03	68	19.59	03	66	20.01	03	65	20.02	03	64	20.03	03	63	287						
74	18.06	07	78	18.16	07	77	18.24	06	76	18.32	06	75	18.39	06	74	18.45	06	73	18.52	05	72	18.58	05	71	19.03	05	69	19.07	04	68	19.09	04	67	19.10	04	65	19.11	04	64	19.13	04	63	286						
75	17.09	07	78	17.16	07	76	17.23	07	75	17.30	06	74	17.36	06	73	17.42	06	72	17.48	05	71	17.53	05	70	17.58	05	69	18.02	04	68	18.03	04	67	18.11	03	66	18.14	03	65	18.15	03	64	18.21	03	63	285			
76	16.11	08	77	16.19	07	76	16.26	07	75	16.33	06	74	16.39	06	73	16.46	06	72	16.52	05	71	16.57	05	70	17.03	05	69	17.08	04	68	17.07	04	67	17.17	04	66	17.17	04	65	17.28	03	64	17.28	03	63	284			
77	15.14	08	77	15.22	07	76	15.29	07	75	15.36	07	74	15.43	07	73	15.50	07	72	15.56	06	71	16.02	06	70	16.08	06	69	16.13	05	68	16.18	05	67	16.23	05	66	16.28	04	65	16.32	04	64	16.36	03	63	283			
78	14.16	08	77	14.24	08	76	14.32	08	75	14.40	07	74	14.47	07	73	14.54	07	72	15.01	07	71	15.07	06	70	15.13	06	69	15.19	05	68	15.24	05	67	15.29	05	66	15.34	05	65	15.39	04	64	15.43	05	63	282			
79	13.19	08	77	13.27	08	76	13.35	08	75	13.43	07	74	13.50	07	73	13.58	07	72	14.05	07	71	14.11	06	70	14.18	06	69	14.24	06	68	14.30	06	67	14.36	05	66	14.41	05	65	14.46	05	64	14.51	05	63	281			
80	12.24	08	77	12.30	08	76	12.38	08	75	12.46	08	74	12.54	08	73	13.02	07	72	13.09	07	71	13.16	07	70	13.23	07	69	13.30	06	68	13.36	06	67	13.42	06	66	13.48	05	65	13.53	06	64	13.59	05	63	280			
81	11.24	08	77	11.33	08	76	11.41	08	75	11.50	08	74	11.58	08	73	12.06	07	72	12.13	08	71	12.21	07	70	12.28	07	69	12.35	07	68	12.42	06	67	12.48	07	66	12.55	06	65	13.01	06	64	13.07	05	63	279			
82	10.27	08	77	10.36	08	76	10.45	08	75	10.53	08	74	11.02	08	73	11.11	08	72	11.18	08	71	11.26	07	70	11.33	08	69	11.41	07	68	11.48	07	66	11.55	07	65	12.02	06	64	12.09	06	63	12.14	06	62	278			
83	09.30	08	77	09.39	08	76	09.48	08	75	09.57	08	74	10.06	08	73	10.14	08	72	10.22	08	71	10.31	08	70	10.39	08	69	10.46	07	68	10.54	07	66	11.01	07	65	11.08	07	64	11.15	07	63	11.22	07	62	277			
84	08.32	08	76	08.42	08	75	08.51	09	74	09.00	08	73	09.09	08	72	09.18	08	71	09.27	08	70	09.35	08	69	09.44	08	68	09.52	08	67	10.01	08	66	10.08	07	65	10.15	08	64	10.23	07	63	10.30	07	62	276			
85	07.35	10	76	07.45	10	75	07.55	09	74	08.04	09	73	08.13	10	72	08.23	09	71	08.32	08	70	08.40	09	69	08.49	09	68	08.58	09	67	09.06	08	66	09.14	08	65	09.22	08	64	09.30	08	63	09.38	08	62	275			
86	06.38	10	76	06.48	10	75	06.58	10	74	07.08	09	73	07.17	10	72	07.27	09	71	07.36	09	70	07.45	09	69	07.54	09	68	08.03	09	67	08.12	08	66	08.21	08	65	08.29	09	64	08.38	08	63	08.46	08	62	274			
87	05.41	10	76	05.51	10	75	06.01	10	74	06.11	10	73	06.21	10	72	06.31	10	71	06.41	09	70	06.50	09	69	07.00	09	68	07.09	09	67	07.18	10	66	07.28	08	65	07.36	09	64	07.45	09	63	07.54	09	62	273			
88	04.44	10	76	04.54	11	75	05.05	10	74	05.15	10	73	05.25	11	72	05.36	10	71	05.46	10	70	05.56	09	69	06.05	10	68	06.15	10	67	06.25	09	66	06.34	10	65	06.44	09	64	06.53	09	63	07.02	09	62	272			
89	03.47	11	75	03.56	10	74	04.08	11	73	04.19	11	72	04.30	10	71	04.40	10	70	04.50	11	69	05.01	10	68	05.11	10	67	05.21	10	66	05.31	10	65	05.41	10	64	05.51	10	63	06.01	09	62	06.10	10	61	06.21	09	60	271
90	02.50	11	75	03.04	11	74	03.15	12	73	03.23	11	72	03.34	11	71	03.45	10	70	03.55	11	69	04.06	11	68	04.17	11	67	04.27	11	66	04.38	10	65	04.48	10	64	04.58	10	63	05.06	11	62	05.18	10	61	05.27	10	60	270
91	01.53	11	75	02.04	11	74	02.12	12	73	02.27	11	72	02.38	11	71	02.49	11	70	03.00	11	69	03.11	11	68	03.22	11	67	03.33	11	66	03.44	11	65	03.55	11	64	04.06	10	63	04.16	11	62	04.27	10	61	04.39	10	60	269
92	00.56	12	75	01.08	11	74	01.19	12	73	01.31	12	72	01.42	12	71	01.54	12	70	02.05	12	69	02.17	12	68	02.28	12	67	02.39	12	66	02.50	12	65	03.02	11	64	03.13	11	63	03.24	11	62	03.35	11	61	03.46	10	60	268
93	00.01	12	75	00.11	12	74	00.23	12	73	00.35	12	72	00.47	11	71	00.58	12	70	01.09	12	69	01.22	12	68	01.34	11	67	01.45	12	66	01.57	12	65	02.09	11	64	02.20	11	63	02.32	12	62	02.44	11	61	02.56	11	60	267
94	-0.58	13	75	-0.45	12	74	-0.33	12	73	-0.21	12	72	-0.09	12	71	00.03	12	70	00.15	12	69	00.27	13	68	00.40	12	67	00.52	12	66	01.04	12	65	01.16	12	64	01.28	12	63	01.40	12	62	01.52	12	61	02.04	11	60	266
95	-1.54	12	74	-1.42	13	73	-1.29	12	72	-1.17	12	71	-1.05	13	70	-0.92	13	69	-0.80	13	68	-0.67	13	67	-0.54	13	66	-0.42	13	65	00.48	13	64	00.59	13	63	01.10	13	62	01.21	13	61	01.32	13	60	1.44	12	60	265
96	-2.51	13	74	-2.38	13	73	-2.26	13	72	-2.13	13	71	-2.00	13	70	-1.87	13	69	-1.74	13	68	-1.61	13	67	-1.48	13	66	-1.35	13	65	00.55	13	64	01.06	13	63	01.17	13	62	01.28	13	61	01.39	13	60	1.70	13	60	264
97	-3.44	13	74	-3.31	13	73	-3.22	13	72	-3.09	14	71	-2.95	13	70	-2.82	13	69	-2.69	14	68	-2.56	14	67	-2.42	14	66	-2.29	14	65	01.02	14	64	01.13	14	63	01.24	14	62	01.35	14	61	01.46	14	60	2.63	14	60	263
98	-4.44	13	74	-4.31	13	73	-4.18	14	72	-4.04	13	71	-3.91	14	70	-3.77	13	69	-3.64	14	68	-3.51	14	67	-3.38	14	66	-3.25	14	65	01.02	14	64	01.13	14	63	01.24	14	62	01.35	14	61	01.46	14	60	3.23	14	60	262
99	-5.41	14	73	-5.27	14	72	-5.13	13	72	-5.00	14	71	-4.86	14	70	-4.72	14	69	-4.59	14	68	-4.46	14	67	-4.33	14	66	-4.20	14	65	01.03	14	64	01.14	14	63	01.25	14	62	01.36	14	61	01.47	14	60	4.21	14	60	261
100	-6.37	14	73	-6.23	14	72	-6.09	14	71	-5.95	14	70	-5.81	14	69	-5.67	15	68																															

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 16°), and declination (15° to 29°). Each declination column contains three sub-columns: Hc, d, and Z. The table lists 360 rows of data.

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

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

Table with columns for LHA (70-97) and latitude (0°-14°). Each latitude row contains 12 columns of data (Hc, d, Z) for each degree of declination (0°-14°).

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

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

Table with columns for LHA (97-290) and latitude (0°-14°). Each latitude row contains 12 columns of data (Hc, d, Z) for each degree of declination (0°-14°).

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

LAT 12°

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

Table with columns for LHA (0-78) and rows for declination (0-14). Each cell contains a 3x3 grid of values for hour, degree, and minute.

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

LAT 12°

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

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 latitude and the left column represents the 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 Longitude (LHA). Each cell contains a 3-digit number representing declination. The table is organized into 15-degree latitude bands, with each band containing 12 columns of longitude data.

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 13°

LHA	0°		1°		2°		3°		4°		5°		6°		7°		8°		9°		10°		11°		12°		13°		14°			
	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	77.00	60	80.00	60	83.00	60	86.00	60	89.00	60	92.00	60	95.00	60	98.00	60	101.00	60	104.00	60	107.00	60	110.00	60	113.00	60	116.00	60	119.00	60	122.00	60
1	76.58	00	79.57	00	82.56	00	85.55	00	88.54	00	91.53	00	94.52	00	97.51	00	100.50	00	103.49	00	106.48	00	109.47	00	112.46	00	115.45	00	118.44	00	121.43	00
2	76.15	59	79.14	59	82.13	59	85.12	59	88.11	59	91.10	59	94.09	59	97.08	59	100.07	59	103.06	59	106.05	59	109.04	59	112.03	59	115.02	59	118.01	59	121.00	59
3	75.72	57	78.71	57	81.70	57	84.69	57	87.68	57	90.67	57	93.66	57	96.65	57	99.64	57	102.63	57	105.62	57	108.61	57	111.60	57	114.59	57	117.58	57	120.57	57
4	75.29	56	78.28	56	81.27	56	84.26	56	87.25	56	90.24	56	93.23	56	96.22	56	99.21	56	102.20	56	105.19	56	108.18	56	111.17	56	114.16	56	117.15	56	120.14	56
5	74.86	55	77.85	55	80.84	55	83.83	55	86.82	55	89.81	55	92.80	55	95.79	55	98.78	55	101.77	55	104.76	55	107.75	55	110.74	55	113.73	55	116.72	55	119.71	55
6	74.43	54	77.42	54	80.41	54	83.40	54	86.39	54	89.38	54	92.37	54	95.36	54	98.35	54	101.34	54	104.33	54	107.32	54	110.31	54	113.30	54	116.29	54	119.28	54
7	74.00	53	76.99	53	79.98	53	82.97	53	85.96	53	88.95	53	91.94	53	94.93	53	97.92	53	100.91	53	103.90	53	106.89	53	109.88	53	112.87	53	115.86	53	118.85	53
8	73.57	52	76.56	52	79.55	52	82.54	52	85.53	52	88.52	52	91.51	52	94.50	52	97.49	52	100.48	52	103.47	52	106.46	52	109.45	52	112.44	52	115.43	52	118.42	52
9	73.14	51	76.13	51	79.12	51	82.11	51	85.10	51	88.09	51	91.08	51	94.07	51	97.06	51	100.05	51	103.04	51	106.03	51	109.02	51	112.01	51	115.00	51	117.99	51
10	72.71	50	75.70	50	78.69	50	81.68	50	84.67	50	87.66	50	90.65	50	93.64	50	96.63	50	99.62	50	102.61	50	105.60	50	108.59	50	111.58	50	114.57	50	117.56	50
11	72.28	49	75.27	49	78.26	49	81.25	49	84.24	49	87.23	49	90.22	49	93.21	49	96.20	49	99.19	49	102.18	49	105.17	49	108.16	49	111.15	49	114.14	49	117.13	49
12	71.85	48	74.84	48	77.83	48	80.82	48	83.81	48	86.80	48	89.79	48	92.78	48	95.77	48	98.76	48	101.75	48	104.74	48	107.73	48	110.72	48	113.71	48	116.70	48
13	71.42	47	74.41	47	77.40	47	80.39	47	83.38	47	86.37	47	89.36	47	92.35	47	95.34	47	98.33	47	101.32	47	104.31	47	107.30	47	110.29	47	113.28	47	116.27	47
14	70.99	46	73.98	46	76.97	46	79.96	46	82.95	46	85.94	46	88.93	46	91.92	46	94.91	46	97.90	46	100.89	46	103.88	46	106.87	46	109.86	46	112.85	46	115.84	46
15	70.56	45	73.55	45	76.54	45	79.53	45	82.52	45	85.51	45	88.50	45	91.49	45	94.48	45	97.47	45	100.46	45	103.45	45	106.44	45	109.43	45	112.42	45	115.41	45
16	70.13	44	73.12	44	76.11	44	79.10	44	82.09	44	85.08	44	88.07	44	91.06	44	94.05	44	97.04	44	100.03	44	103.02	44	106.01	44	109.00	44	111.99	44	114.98	44
17	69.70	43	72.69	43	75.68	43	78.67	43	81.66	43	84.65	43	87.64	43	90.63	43	93.62	43	96.61	43	99.60	43	102.59	43	105.58	43	108.57	43	111.56	43	114.55	43
18	69.27	42	72.26	42	75.25	42	78.24	42	81.23	42	84.22	42	87.21	42	90.20	42	93.19	42	96.18	42	99.17	42	102.16	42	105.15	42	108.14	42	111.13	42	114.12	42
19	68.84	41	71.83	41	74.82	41	77.81	41	80.80	41	83.79	41	86.78	41	89.77	41	92.76	41	95.75	41	98.74	41	101.73	41	104.72	41	107.71	41	110.70	41	113.69	41
20	68.41	40	71.40	40	74.39	40	77.38	40	80.37	40	83.36	40	86.35	40	89.34	40	92.33	40	95.32	40	98.31	40	101.30	40	104.29	40	107.28	40	110.27	40	113.26	40
21	67.98	39	70.97	39	73.96	39	76.95	39	79.94	39	82.93	39	85.92	39	88.91	39	91.90	39	94.89	39	97.88	39	100.87	39	103.86	39	106.85	39	109.84	39	112.83	39
22	67.55	38	70.54	38	73.53	38	76.52	38	79.51	38	82.50	38	85.49	38	88.48	38	91.47	38	94.46	38	97.45	38	100.44	38	103.43	38	106.42	38	109.41	38	112.40	38
23	67.12	37	70.11	37	73.10	37	76.09	37	79.08	37	82.07	37	85.06	37	88.05	37	91.04	37	94.03	37	97.02	37	100.01	37	103.00	37	106.99	37	109.98	37	112.97	37
24	66.69	36	69.68	36	72.67	36	75.66	36	78.65	36	81.64	36	84.63	36	87.62	36	90.61	36	93.60	36	96.59	36	99.58	36	102.57	36	105.56	36	108.55	36	111.54	36
25	66.26	35	69.25	35	72.24	35	75.23	35	78.22	35	81.21	35	84.20	35	87.19	35	90.18	35	93.17	35	96.16	35	99.15	35	102.14	35	105.13	35	108.12	35	111.11	35
26	65.83	34	68.82	34	71.81	34	74.80	34	77.79	34	80.78	34	83.77	34	86.76	34	89.75	34	92.74	34	95.73	34	98.72	34	101.71	34	104.70	34	107.69	34	110.68	34
27	65.40	33	68.39	33	71.38	33	74.37	33	77.36	33	80.35	33	83.34	33	86.33	33	89.32	33	92.31	33	95.30	33	98.29	33	101.28	33	104.27	33	107.26	33	110.25	33
28	64.97	32	67.96	32	70.95	32	73.94	32	76.93	32	79.92	32	82.91	32	85.90	32	88.89	32	91.88	32	94.87	32	97.86	32	100.85	32	103.84	32	106.83	32	109.82	32
29	64.54	31	67.53	31	70.52	31	73.51	31	76.50	31	79.49	31	82.48	31	85.47	31	88.46	31	91.45	31	94.44	31	97.43	31	100.42	31	103.41	31	106.40	31	109.39	31
30	64.11	30	67.10	30	70.09	30	73.08	30	76.07	30	79.06	30	82.05	30	85.04	30	88.03	30	91.02	30	94.01	30	97.00	30	100.99	30	103.98	30	106.97	30	109.96	30
31	63.68	29	66.67	29	69.66	29	72.65	29	75.64	29	78.63	29	81.62	29	84.61	29	87.60	29	90.59	29	93.58	29	96.57	29	99.56	29	102.55	29	105.54	29	108.53	29
32	63.25	28	66.24	28	69.23	28	72.22	28	75.21	28	78.20	28	81.19	28	84.18	28	87.17	28	90.16	28	93.15	28	96.14	28	99.13	28	102.12	28	105.11	28	108.10	28
33	62.82	27	65.81	27	68.80	27	71.79	27	74.78	27	77.77	27	80.76	27	83.75	27	86.74	27	89.73	27	92.72	27	95.71	27	98.70	27	101.69	27	104.68	27	107.67	27
34	62.39	26	65.38	26	68.37	26	71.36	26	74.35	26	77.34	26	80.33	26	83.32	26	86.31	26	89.30	26	92.29	26	95.28	26	98.27	26	101.26	26	104.25	26	107.24	26
35	61.96	25	64.95	25	67.94	25	70.93	25	73.92	25	76.91	25	79.90	25	82.89	25	85.88	25	88.87	25	91.86	25	94.85	25	97.84	25	100.83	25	103.82	25	106.81	25
36	61.53	24	64.52	24	67.51	24	70.50	24	73.49	24	76.48	24	79.47	24	82.46	24	85.45	24	88.44	24	91.43	24	94.42	24	97.41	24	100.40	24	103.39	24	106.38	24
37	61.10	23	64.09	23	67.08	23	70.07	23	73.06	23	76.05	23	79.04	23	82.03	23	85.02	23	88.01	23	91.00	23	93.99	23	96.98	23	99.97	23	102.96	23	105.95	23
38	60.67	22	63.66	22	66.65	22	69.64	22	72.63	22	75.62	22	78.61	22	81.60	22	84.59	22	87.58	22	90.57	22	93.56	22	96.55	22	99.54	22	102.53	22	105.52	22
39	60.24	21	63.23	21	66.22	21	69.21	21	72.20	21	75.19	21	78.18	21	81.17	21	84.16	21	87.15	21	90.14	21	93.13	21	96.12	21	99.11	21	102.10	21	105.09	21
40	59.81	20	62.80	20	65.79	20	68.78	20	71.77	20	74.76	20	77.75	20	80.74	20	83.73	20	86.72	20	89.71	20	92.70	20	95.69							

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

	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	Hc	d	Z	Hc	d	Z	Hc	d	Z						
70	19.28	14	94	19.56	13	93	20.09	13	92	20.22	13	91	20.35	12	89	20.47	12	88	20.59	12	87	21.11	11	86	21.23	10	84	21.33	10	83	21.43	10	82	21.53	10	82	22.03	09	81	22.12	08	80			
71	18.30	14	94	18.88	13	92	19.11	13	91	19.24	13	90	19.37	12	88	19.49	12	88	20.01	12	87	20.13	11	86	20.25	11	85	20.35	10	83	20.45	10	83	20.55	10	82	21.05	09	81	21.14	08	80			
72	17.31	14	94	17.59	13	92	17.82	13	91	18.03	13	90	18.16	12	88	18.28	12	88	18.39	12	87	18.50	12	86	19.01	11	85	19.10	10	83	19.19	10	82	19.29	10	82	19.38	09	81	19.47	08	80			
73	16.33	14	94	16.47	14	93	16.71	14	92	17.01	14	91	17.25	14	89	17.37	14	89	17.52	14	88	18.04	14	88	18.16	13	87	18.26	13	86	18.36	13	85	18.46	13	85	18.55	12	84	19.05	12	83	19.14	11	82
74	15.35	14	94	15.49	13	93	16.02	14	92	16.29	13	91	16.59	13	89	16.54	13	89	16.54	13	88	17.06	13	88	17.18	12	87	17.29	12	86	17.39	12	85	17.48	12	84	17.58	12	83	18.08	11	82	18.17	10	81
75	14.36	14	94	14.50	14	92	15.04	13	91	15.30	13	90	15.59	12	88	15.55	12	88	15.55	12	87	16.07	12	86	16.19	11	85	16.31	11	84	16.42	11	83	16.53	11	82	17.04	11	81	17.14	10	80			
76	13.38	14	93	13.52	13	92	14.05	14	91	14.32	12	89	14.44	13	88	14.57	12	88	14.57	12	87	15.09	12	86	15.21	12	85	15.33	11	84	15.44	11	83	15.55	11	82	16.06	11	81	16.17	10	80			
77	12.40	14	93	12.53	14	92	13.07	13	91	13.33	13	90	13.46	13	88	13.59	12	88	13.59	12	87	14.11	12	86	14.23	12	85	14.35	11	84	14.46	11	83	14.57	11	82	15.08	11	81	15.19	10	80			
78	11.41	14	93	11.55	13	92	12.08	14	91	12.35	13	89	12.48	13	88	13.00	12	88	13.00	12	87	13.12	13	86	13.23	12	85	13.35	12	84	13.46	12	83	13.56	12	83	14.00	11	82	14.11	11	81			
79	10.43	14	93	10.57	13	92	11.10	13	91	11.23	13	90	11.36	13	89	11.49	13	88	12.02	12	88	12.14	12	87	12.26	12	86	12.38	12	85	12.50	12	84	13.02	12	83	13.13	11	82	13.24	11	81			
80	09.44	14	92	09.58	14	91	10.12	13	90	10.25	13	89	10.38	13	88	10.51	13	87	11.03	13	86	11.16	12	85	11.28	12	84	11.40	12	83	11.52	12	82	12.04	12	81	12.15	12	80						
81	08.46	14	92	08.60	13	91	09.13	13	90	09.26	13	89	09.39	13	88	09.52	13	87	10.05	13	86	10.18	12	85	10.30	12	84	10.42	12	83	10.54	12	82	11.06	12	81	11.18	11	80						
82	07.48	14	92	07.62	13	90	08.28	13	89	08.41	13	88	08.54	13	87	09.07	12	86	09.19	12	85	09.32	12	84	09.44	12	83	09.56	12	82	10.08	12	81	10.20	12	80	10.32	11	79						
83	06.49	14	92	06.63	13	90	07.29	13	89	07.43	13	88	07.56	12	86	08.08	13	87	08.20	13	86	08.32	13	85	08.44	12	84	08.56	12	83	09.08	12	82	09.20	12	81	09.32	11	80						
84	05.51	13	91	05.65	14	90	06.18	13	89	06.31	13	88	06.44	13	87	06.57	13	86	07.10	13	85	07.23	13	84	07.36	12	83	07.49	12	82	08.01	12	81	08.13	12	80	08.25	12	79						
85	04.52	14	91	04.66	13	89	05.33	13	88	05.46	13	87	05.59	13	86	06.12	13	85	06.25	13	84	06.38	12	83	06.51	12	82	07.04	12	81	07.17	12	80	07.30	12	79	07.43	12	78						
86	03.54	14	91	04.07	13	89	04.34	13	88	04.47	13	87	04.60	13	86	04.73	13	85	04.86	13	84	04.99	13	83	05.12	12	82	05.25	12	81	05.38	12	80	05.51	12	79	06.03	12	78						
87	02.55	14	91	03.09	13	90	03.22	14	89	03.36	13	88	03.50	14	87	04.02	13	86	04.15	14	85	04.29	13	84	04.42	13	83	04.54	13	82	05.07	13	81	05.20	13	80	05.33	13	79						
88	01.57	14	90	02.10	14	89	02.24	13	88	02.37	14	87	02.51	14	86	03.04	13	85	03.17	13	84	03.30	14	83	03.44	13	82	03.57	13	81	04.10	13	80	04.23	12	79	04.36	13	78						
89	00.58	14	90	01.12	13	88	01.25	14	87	01.39	13	86	01.52	14	85	02.06	13	84	02.19	13	83	02.32	14	82	02.46	13	81	02.59	13	80	03.12	13	79	03.26	13	78	03.40	13	77						
90	00.00	13	90	00.13	14	89	00.27	13	88	00.40	14	87	00.54	13	86	01.07	14	85	01.21	13	84	01.34	14	83	01.48	13	82	02.01	14	81	02.14	14	80	02.28	13	79	02.41	13	78						
91	-0.57	14	90	-0.45	14	89	-0.31	13	88	-0.18	14	87	-0.04	13	86	0.09	14	85	0.23	13	84	0.36	14	83	0.50	13	82	0.63	14	81	0.77	14	80	0.90	14	79	1.04	14	78						
92	-1.57	14	90	-1.43	13	89	-1.30	14	88	-1.16	13	87	-1.03	14	86	-0.89	13	85	-0.75	14	84	-0.62	14	83	-0.48	13	82	-0.34	14	81	0.00	14	80	0.14	13	79	0.28	14	78						
93	-2.55	13	89	-2.42	14	88	-2.28	13	87	-2.15	14	86	-2.01	14	85	-1.87	13	84	-1.73	14	83	-1.60	14	82	-1.46	13	81	-1.33	13	80	-1.20	14	79	-1.08	14	78	-0.95	14	77						
94	-3.54	14	89	-3.40	13	88	-3.27	14	87	-3.13	14	86	-3.00	14	85	-2.87	14	84	-2.74	14	83	-2.61	14	82	-2.48	13	81	-2.35	14	80	-2.22	14	79	-2.09	14	78	-1.96	14	77						
95	-4.52	13	88	-4.39	14	87	-4.25	14	86	-4.11	14	85	-3.97	13	84	-3.84	14	83	-3.70	14	82	-3.56	14	81	-3.43	15	80	-3.30	14	79	-3.17	14	78	-3.04	14	77	-2.91	15	76						
96	-5.51	14	88	-5.37	14	87	-5.23	13	86	-5.10	14	85	-4.96	14	84	-4.83	14	83	-4.69	14	82	-4.56	14	81	-4.43	15	80	-4.30	14	79	-4.17	14	78	-4.04	15	77	-3.91	15	76						
97	-6.49	13	88	-6.36	14	87	-6.22	14	86	-6.08	14	85	-5.94	14	84	-5.80	15	83	-5.66	15	82	-5.52	15	81	-5.39	15	80	-5.25	15	79	-5.11	15	78	-4.98	15	77	-4.84	16	76						

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

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

	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	Hc	d	Z	Hc	d	Z	Hc	d	Z
97	-6.49	-14	88	-6.06	-13	90	-5.63	-13	93	-5.20	-13	96	-4.77	-13	99	-4.34	-13	102	-3.91	-13	105	-3.48	-13	108	-3.05	-13	111	-2.62	-13	114	-2.19	-13	117	-1.76					

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

CONTRARY NAME TO LATITUDE

LAT 13°

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	Hc	d	Z	Hc	d	Z	Hc	d	Z																																																																																																																																																																																																																																																																																																																																																																																																			
68	20	26	-14	95	20	12	-15	96	19	57	-16	97	19	41	-15	98	19	26	-16	99	19	10	-17	100	18	53	-16	101	18	37	-17	102	18	20	-18	103	18	02	-18	104	17	45	-18	105	17	27	-18	106	17	10	-19	107	16	50	-19	108	16	33	-19	109	16	16	-20	110	15	58	-20	111	15	41	-21	112	15	24	-21	113	15	07	-21	114	14	50	-21	115	14	33	-22	116	14	16	-22	117	14	00	-22	118	13	43	-22	119	13	26	-23	120	13	09	-23	121	12	52	-23	122	12	35	-24	123	12	18	-24	124	11	51	-24	125	11	34	-25	126	11	17	-25	127	11	01	-26	128	10	44	-26	129	10	27	-27	130	10	10	-27	131	9	53	-27	132	9	36	-28	133	9	19	-28	134	9	02	-29	135	8	45	-29	136	8	28	-30	137	8	11	-30	138	7	54	-30	139	7	37	-31	140	7	20	-31	141	7	03	-32	142	6	46	-32	143	6	29	-33	144	6	12	-33	145	5	55	-34	146	5	38	-34	147	5	21	-35	148	5	04	-35	149	4	47	-35	150	4	30	-36	151	4	13	-36	152	3	56	-36	153	3	39	-37	154	3	22	-37	155	3	05	-38	156	2	48	-38	157	2	31	-39	158	2	14	-39	159	1	57	-39	160	1	40	-40	161	1	23	-40	162	1	06	-41	163	0	49	-41	164	0	32	-42	165	0	15	-42	166	0	00	-43	167	0	14	-43	168	0	00	-44	169	0	00	-45	170	0	00	-46	171	0	00	-47	172	0	00	-48	173	0	00	-49	174	0	00	-50	175	0	00	-51	176	0	00	-52	177	0	00	-53	178	0	00	-54	179	0	00	-55	180	0	00	-56	181	0	00	-57	182	0	00	-58	183	0	00	-59	184	0	00	-60	185	0	00	-61	186	0	00	-62	187	0	00	-63	188	0	00	-64	189	0	00	-65	190	0	00	-66	191	0	00	-67	192	0	00	-68	193	0	00	-69	194	0	00	-70	195	0	00	-71	196	0	00	-72	197	0	00	-73	198	0	00	-74	199	0	00	-75	200	0	00

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

Table with columns for LHA (0-69) and rows for declination (15°-29°). Each cell contains a 3x3 grid of values for Hc, d, and Z.

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

LAT 13°

LAT 13°

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 100°) and Declination (15° to 29°). Each cell contains a 3-digit number representing the declination value.

Table with columns for Latitude (93° to 70°) and Declination (29° to 15°). Each cell contains a 3-digit number representing the declination value.

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 (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 Longitude (LHA to Z). Each cell contains a numerical value representing declination. The table is organized into 15-degree latitude bands, with each band containing 12 columns of longitude data.

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

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

Table with columns for LHA, 0°, 1°, 2°, 3°, 4°, 5°, 6°, 7°, 8°, 9°, 10°, 11°, 12°, 13°, 14°, and LHA. Rows 70-97 contain numerical data for declinations 0° to 14°.

Table with columns for LHA, 1°, 2°, 3°, 4°, 5°, 6°, 7°, 8°, 9°, 10°, 11°, 12°, 13°, 14°, and LHA. Rows 97-290 contain numerical data for declinations 14° to 180°.

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

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

Main table with columns for LHA, 0°, 1°, 2°, 3°, 4°, 5°, 6°, 7°, 8°, 9°, 10°, 11°, 12°, 13°, 14° and rows for LHA from 68 to 360.

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 (0-69) and rows for declination (15°-29°). Each cell contains a 3x3 grid of values for Hc, d, and Z.

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 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 values. The table lists 360 rows of data.

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

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

Table with columns for LHA (70-97) and degrees 0° to 14°. Each degree column contains three sub-columns: Hc (Height of Celestial Body), d (Declination), and Z (Zenith Distance).

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

LAT 15°		14°		13°		12°		11°		10°		9°		8°		7°		6°		5°		4°		3°		2°		1°		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																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
68	20	15	-17	96	19	58	-17	97	19	41	-17	98	20	14	-18	99	19	06	-18	100	18	48	-18	101	18	30	-19	102	18	12	18	15	-19	103	17	54	-19	104	17	36	-19	105	17	18	-19	106	17	00	-20	107	16	42	-20	108	16	24	-20	109	16	06	-21	110	15	50	-21	111	15	32	-21	112	15	14	-21	113	14	58	-21	114	14	40	-21	115	14	22	-21	116	14	04	-21	117	13	48	-21	118	13	30	-21	119	13	12	-21	120	12	56	-21	121	12	38	-21	122	12	20	-21	123	12	02	-21	124	11	46	-21	125	11	28	-21	126	11	10	-22	127	10	54	-22	128	10	36	-22	129	10	18	-22	130	10	00	-22	131	9	44	-22	132	9	26	-22	133	9	08	-22	134	8	52	-22	135	8	34	-22	136	8	16	-22	137	8	00	-22	138	7	44	-22	139	7	26	-22	140	7	08	-22	141	6	52	-22	142	6	34	-22	143	6	16	-22	144	6	00	-22	145	5	44	-22	146	5	26	-22	147	5	08	-22	148	4	52	-22	149	4	34	-22	150	4	16	-22	151	4	00	-22	152	3	44	-22	153	3	26	-22	154	3	08	-22	155	2	52	-22	156	2	34	-22	157	2	16	-22	158	2	00	-22	159	1	44	-22	160	1	26	-22	161	1	08	-22	162	1	00	-22	163	0	44	-22	164	0	26	-22	165	0	08	-22	166	0	00	-22	167	0	00	-22	168	0	00	-22	169	0	00	-22	170	0	00	-22	171	0	00	-22	172	0	00	-22	173	0	00	-22	174	0	00	-22	175	0	00	-22	176	0	00	-22	177	0	00	-22	178	0	00	-22	179	0	00	-22	180	0	00	-22	181	0	00	-22	182	0	00	-22	183	0	00	-22	184	0	00	-22	185	0	00	-22	186	0	00	-22	187	0	00	-22	188	0	00	-22	189	0	00	-22	190	0	00	-22	191	0	00	-22	192	0	00	-22	193	0	00	-22	194	0	00	-22	195	0	00	-22	196	0	00	-22	197	0	00	-22	198	0	00	-22	199	0	00	-22	200	0	00	-22	201	0	00	-22	202	0	00	-22	203	0	00	-22	204	0	00	-22	205	0	00	-22	206	0	00	-22	207	0	00	-22	208	0	00	-22	209	0	00	-22	210	0	00	-22	211	0	00	-22	212	0	00	-22	213	0	00	-22	214	0	00	-22	215	0	00	-22	216	0	00	-22	217	0	00	-22	218	0	00	-22	219	0	00	-22	220	0	00	-22	221	0	00	-22	222	0	00	-22	223	0	00	-22	224	0	00	-22	225	0	00	-22	226	0	00	-22	227	0	00	-22	228	0	00	-22	229	0	00	-22	230	0	00	-22	231	0	00	-22	232	0	00	-22	233	0	00	-22	234	0	00	-22	235	0	00	-22	236	0	00	-22	237	0	00	-22	238	0	00	-22	239	0	00	-22	240	0	00	-22	241	0	00	-22	242	0	00	-22	243	0	00	-22	244	0	00	-22	245	0	00	-22	246	0	00	-22	247	0	00	-22	248	0	00	-22	249	0	00	-22	250	0	00	-22	251	0	00	-22	252	0	00	-22	253	0	00	-22	254	0	00	-22	255	0	00	-22	256	0	00	-22	257	0	00	-22	258	0	00	-22	259	0	00	-22	260	0	00	-22	261	0	00	-22	262	0	00	-22	263	0	00	-22	264	0	00	-22	265	0	00	-22	266	0	00	-22	267	0	00	-22	268	0	00	-22	269	0	00	-22	270	0	00	-22	271	0	00	-22	272	0	00	-22	273	0	00	-22	274	0	00	-22	275	0	00	-22	276	0	00	-22	277	0	00	-22	278	0	00	-22	279	0	00	-22	280	0	00	-22	281	0	00	-22	282	0	00	-22	283	0	00	-22	284	0	00	-22	285	0	00	-22	286	0	00	-22	287	0	00	-22	288	0	00	-22	289	0	00	-22	290	0	00	-22	291	0	00	-22	292	0	00	-22	293	0	00	-22	294	0	00	-22	295	0	00	-22	296	0	00	-22	297	0	00	-22	298	0	00	-22	299	0	00	-22	300	0	00	-22	301	0	00	-22	302	0	00	-22	303	0	00	-22	304	0	00	-22	305	0	00	-22	306	0	00	-22	307	0	00	-22	308	0	00	-22	309	0	00	-22	310	0	00	-22	311	0	00	-22	312	0	00	-22	313	0	00	-22	314	0	00	-22	315	0	00	-22	316	0	00	-22	317	0	00	-22	318	0	00	-22	319	0	00	-22	320	0	00	-22	321	0	00	-22	322	0	00	-22	323	0	00	-22	324	0	00	-22	325	0	00	-22	326	0	00	-22	327	0	00	-22	328	0	00	-22	329	0	00	-22	330	0	00	-22	331	0	00	-22	332	0	00	-22	333	0	00	-22	334	0	00	-22	335	0	00	-22	336	0	00	-22	337	0	00	-22	338	0	00	-22	339	0	00	-22	340	0	00	-22	341	0	00	-22	342	0	00	-22	343	0	00	-22	344	0	00	-22	345	0	00	-22	346	0	00	-22	347	0	00	-22	348	0	00	-22	349	0	00	-22	350	0	00	-22	351	0	00	-22	352	0	00	-22	353	0	00	-22	354	0	00	-22	355	0	00	-22	356	0	00	-22	357	0	00	-22	358	0	00	-22	359	0	00	-22	360	0	00	-22	361	0	00	-22	362	0	00	-22	363	0	00	-22	364	0	00	-22	365	0	00	-22	366	0	00	-22	367	0	00	-22	368	0	00	-22	369	0	00	-22	370	0	00	-22	371	0	00	-22	372	0	00	-22	373	0	00	-22	374	0	00	-22	375	0	00	-22	376	0	00	-22	377	0	00	-22	378	0	00	-22	379	0	00	-22	380	0	00	-22	381	0	00	-22	382	0	00	-22	383	0	00	-22	384	0	00	-22	385	0	00	-22	386	0	00	-22	387	0	00	-22	388	0	00	-22	389	0	00	-22	390	0	00	-22	391	0	00	-22	392	0	00	-22	393	0	00	-22	394	0	00	-22	395	0	00	-22	396	0	00	-22	397	0	00	-22	398	0	00	-22	399	0	00	-22	400	0	00	-22	401	0	00	-22	402	0	00	-22	403	0	00	-22	404	0	00	-22	405	0	00	-22	406	0	00	-22	407	0	00	-22	408	0	00	-22	409	0	00	-22	410	0	00	-22	411	0	00	-22	412	0	00	-22	413	0	00	-22	414	0	00	-22	415	0	00	-22	416	0	00	-22	417	0	00	-22	418	0	00	-22	419	0	00	-22	420	0	00	-22	421	0	00	-22	422	0	00	-22	423	0	00	-22	424	0	00	-22	425	0	00	-22	426	0	00	-22	427	0	00	-22	428	0	00	-22	429	0	00	-22	430	0	00	-22	431	0	00	-22	432	0	00	-22	433	0	00	-22	434	0	00	-22	435	0	00	-22	436	0	00	-22	437	0	00	-22	438	0	00	-22	439	0	00	-22	440	0	00	-22	441	0	00	-22	442	0	00	-22	443	0	00	-22	444	0	00	-22	445	0	00	-22	446	0	00	-22	447	0	00	-22	448	0	00	-22	449	0	00	-22	450	0	00	-22	451	0	00	-22	452	0	00	-22	453	0	00	-22	454	0	00	-22	455	0	00	-22	456	0	00	-22	457	0	00	-22	458	0	00	-22	459	0	00	-22	460	0	00	-22	461	0	00	-22	462	0	00	-22	463	0	00	-22	464	0	00	-22	465	0	00	-22	466	0	00	-22	467	0	00	-22	468	0	00	-22	469	0	00	-22	470	0	00	-22	471	0	00	-22	472	0	00	-22	473	0	00	-22	474	0	00	-22	475	0	00	-22	476	0	00	-22	477	0	00	-22	478	0	00	-22	479	0	00	-22	480	0	00	-22	481	0	00	-22	482	0	00	-22	483	0	00	-22	484	0	00	-22	485	0	00	-22	486	0	00	-22	487	0	00	-22	488	0	00	-22	489	0	00	-22	490	0	00	-22	491	0	00	-22	492	0	00	-22	493	0	00	-22	494	0	00	-22	495	0	00	-22	496	0	00	-22	497	0	00	-22	498	0	00	-22	499	0	00	-22	500	0	00	-22	501	0	00	-22	502	0	00	-22	503	0	00	-22	504	0	00	-22	505	0	00	-22	506	0	00	-22	507	0	00	-22	508	0	00	-22	509	0	00	-22	510	0	00	-22	511	0	00	-22	512	0	00	-22	513	0	00	-22	514	0	00</

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 in a grid where the top row represents the latitude and the left column represents the 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°) SAME NAME AS LATITUDE

LAT 15°

LAT 15°

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 represents the latitude and the left column represents the declination.

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

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 represents the latitude and the left column represents the declination.

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	15.30	-21	111	15.09	-21	112	14.48	-22	113	14.04	-22	114	13.42	-23	115	13.04	-23	116	12.57	-23	117	12.34	-23	118	12.11	-24	119	11.47	-23	120	11.24	-24	121	11.00	-23	122	10.37	-24	123	10.13	-24	124	291			
68	16.25	-22	111	16.03	-22	112	15.19	-22	114	14.57	-23	115	14.34	-23	116	14.04	-23	117	13.48	-23	118	13.25	-24	119	13.01	-24	120	12.27	-23	121	12.14	-25	122	11.49	-24	123	11.25	-24	124	292						
67	17.19	-23	112	16.57	-23	113	16.12	-23	115	15.49	-23	116	15.26	-24	117	14.96	-24	118	14.39	-24	119	14.15	-24	120	13.51	-24	121	13.27	-24	122	13.03	-25	123	12.38	-25	124	12.16	-25	125	293						
66	18.13	-24	113	17.50	-24	114	17.28	-24	116	16.41	-24	117	16.18	-24	118	15.82	-25	119	15.34	-25	120	15.06	-24	121	14.42	-25	122	14.17	-24	123	13.52	-25	124	13.02	-26	125	12.36	-26	126	294						
65	19.06	-25	114	18.44	-25	115	18.21	-25	117	17.34	-25	118	17.11	-24	119	16.46	-25	120	16.21	-25	121	15.56	-26	122	15.11	-25	123	14.55	-26	124	14.21	-26	125	13.49	-26	126	12.23	-26	127	295						
64	20.00	-26	115	19.33	-26	116	19.10	-26	118	18.04	-26	119	17.41	-26	120	17.07	-26	121	16.42	-26	122	15.87	-27	123	15.32	-27	124	14.50	-26	125	14.37	-27	126	13.10	-27	127	296									
63	20.53	-27	116	20.06	-27	118	19.42	-27	120	18.53	-27	121	18.20	-27	122	17.58	-27	123	17.00	-28	124	16.46	-28	125	15.80	-27	126	15.27	-27	127	14.44	-27	128	13.28	-28	129	297									
62	21.47	-28	117	21.23	-28	119	20.59	-28	121	19.44	-28	122	18.68	-28	123	17.84	-28	124	17.06	-28	125	16.26	-28	126	15.18	-28	127	14.72	-28	128	15.12	-29	129	14.34	-29	130	298									
61	22.40	-29	118	22.16	-29	120	21.26	-29	122	20.05	-29	123	18.85	-29	124	17.62	-29	125	16.87	-29	126	16.00	-29	127	15.04	-29	128	14.29	-29	129	16.59	-29	130	15.84	-30	131	299									
60	23.33	-30	119	23.08	-30	121	22.43	-30	123	21.52	-30	124	20.18	-30	125	18.72	-30	126	17.87	-30	127	17.00	-30	128	16.07	-30	129	15.16	-30	130	17.45	-30	131	16.79	-30	132	300									
59	24.26	-31	120	23.15	-31	122	23.09	-31	124	22.16	-31	125	20.24	-31	126	18.60	-31	127	17.74	-31	128	16.84	-31	129	15.59	-31	130	14.79	-31	131	18.32	-31	132	17.45	-31	133	301									
58	25.18	-32	121	24.53	-32	123	24.27	-32	125	23.07	-32	126	21.14	-32	127	19.46	-32	128	18.04	-32	129	16.68	-32	130	15.43	-32	131	14.31	-32	132	19.23	-32	133	18.02	-32	134	302									
57	26.11	-33	122	25.45	-33	124	25.18	-33	126	24.06	-33	127	22.11	-33	128	20.31	-33	129	18.53	-33	130	17.20	-33	131	16.05	-33	132	14.90	-33	133	20.04	-33	134	18.61	-33	135	303									
56	27.03	-34	123	26.36	-34	125	26.42	-34	127	25.19	-34	128	23.22	-34	129	21.38	-34	130	20.05	-34	131	18.24	-34	132	16.83	-34	133	15.42	-34	134	20.94	-34	135	19.33	-34	136	304									
55	27.55	-35	124	27.28	-35	126	27.17	-35	128	26.05	-35	129	24.15	-35	130	22.29	-35	131	20.46	-35	132	18.57	-35	133	17.33	-35	134	16.20	-35	135	21.83	-35	136	20.18	-35	137	305									
54	28.47	-36	125	28.19	-36	127	27.51	-36	129	26.54	-36	130	24.42	-36	131	22.55	-36	132	20.80	-36	133	19.23	-36	134	17.87	-36	135	17.07	-36	136	22.94	-36	137	21.07	-36	138	306									
53	29.38	-37	126	29.10	-37	128	28.42	-37	130	27.44	-37	131	25.31	-37	132	23.28	-37	133	21.43	-37	134	19.90	-37	135	18.46	-37	136	17.94	-37	137	23.30	-37	138	22.31	-37	139	307									
52	30.30	-38	127	30.01	-38	129	29.32	-38	131	28.33	-38	132	26.24	-38	133	24.22	-38	134	22.32	-38	135	20.33	-38	136	19.16	-38	137	18.11	-38	138	24.54	-38	139	23.31	-38	140	308									
51	31.21	-39	128	30.52	-39	130	29.53	-39	132	29.22	-39	133	27.17	-39	134	26.13	-39	135	24.19	-39	136	22.30	-39	137	20.30	-39	138	18.95	-39	139	25.06	-39	140	24.31	-39	141	309									
50	32.11	-40	129	31.42	-40	131	30.42	-40	133	30.11	-40	134	28.08	-40	135	28.52	-40	136	26.13	-40	137	24.24	-40	138	22.34	-40	139	20.49	-40	140	25.16	-40	141	25.16	-40	142	310									
49	33.02	-41	130	32.32	-41	132	31.31	-41	134	31.00	-41	135	28.84	-41	136	29.40	-41	137	27.43	-41	138	25.56	-41	139	23.71	-41	140	22.04	-41	141	26.07	-41	142	26.07	-41	143	311									
48	33.52	-42	131	33.22	-42	133	32.21	-42	135	31.89	-42	136	29.78	-42	137	30.31	-42	138	28.00	-42	139	26.43	-42	140	24.51	-42	141	22.55	-42	142	27.17	-42	143	27.17	-42	144	312									
47	34.42	-43	132	34.11	-43	134	33.08	-43	136	32.78	-43	137	30.63	-43	138	29.19	-43	139	27.42	-43	140	25.59	-43	141	24.02	-43	142	23.46	-43	143	28.06	-43	144	28.06	-43	145	313									
46	35.32	-44	133	35.00	-44	135	33.96	-44	137	33.66	-44	138	31.50	-44	139	29.89	-44	140	27.47	-44	141	26.45	-44	142	24.93	-44	143	23.86	-44	144	28.91	-44	145	28.91	-44	146	314									
45	36.21	-45	134	35.89	-45	136	34.83	-45	138	34.53	-45	139	32.37	-45	140	30.42	-45	141	28.42	-45	142	27.39	-45	143	25.40	-45	144	24.38	-45	145	29.78	-45	146	29.78	-45	147	315									
44	37.10	-46	135	36.77	-46	137	35.70	-46	139	35.42	-46	140	33.30	-46	141	31.30	-46	142	29.40	-46	143	28.36	-46	144	26.35	-46	145	25.32	-46	146	30.75	-46	147	30.75	-46	148	316									
43	37.99	-47	136	37.66	-47	138	36.58	-47	140	36.34	-47	141	34.26	-47	142	32.27	-47	143	30.49	-47	144	29.44	-47	145	27.43	-47	146	26.40	-47	147	31.14	-47	148	31.14	-47	149	317									
42	38.87	-48	137	38.54	-48	139	37.45	-48	141	37.21	-48	142	35.23	-48	143	33.19	-48	144	31.44	-48	145	30.60	-48	146	28.57	-48	147	27.54	-48	148	31.53	-48	149	31.53	-48	150	318									
41	39.75	-49	138	39.42	-49	140	38.32	-49	142	38.07	-49	143	36.00	-49	144	34.06	-49	145	32.33	-49	146	31.69	-49	147	29.83	-49	148	28.79	-49	149	32.42	-49	150	32.42	-49	151	319									
40	40.62	-50	139	40.30	-50	141	39.19	-50	143	38.87	-50	144	36.51	-50	145	34.74	-50	146	33.11	-50	147	31.90	-50	148	30.05	-50	149	29.19	-50	150	33.31	-50	151	33.31	-50	152	320									
39	41.49	-51	140	41.17	-51	142	39.57	-51	144	39.57	-51	145	38.43	-51	146	36.55	-51	147	34.58	-51	148	32.99	-51	149	30.94	-51	150	29.48	-51	151	34.21	-51	152	34.21	-51	153	321									
38	42.36	-52	141	42.05	-52	143	40.43	-52	145	39.29	-52	146	38.10	-52	147	37.44	-52	148	35.62	-52	149	33.11	-52	150	31.19	-52	151	29.87	-52	152	34.98	-52	153	34.98	-52	154	322									
37	43.23	-53	142	42.93	-53	144	41.30	-53	146	40.16	-53	147	38.71	-53	148	36.93	-53	149	34.34	-53	150	32.93	-53	151	30.90	-53	152	29.75	-53	153	35.85	-53	154	35.85	-53	155	323									
36	44.10	-54	143	43.80	-54	145	42.16	-54	147	41.01	-54	148	39.54	-54	149	37.64	-54	150	35.57	-54	151	33.75	-54	152	31.31	-54	153	30.62	-54	154	36.76	-54	155	36.76	-54	156	324									
35	44.97	-55	144	44.67	-55	146	42.99	-55	148	41.86	-55	149	40.37	-55	150	38.43	-55	151	36.43	-55	152	34.55	-55	153	32.13	-55	154	30.97	-55	155	37.67	-55	156	37.67	-55	157	325									
34	45.84	-56	145	45.54	-56	147	43.84	-56	149	42.70	-56	150	41.22	-56	151	39.25	-56	152	37.00	-56	153	35.68	-56	154	32.99	-56	155	31.36	-56	156	38.58	-56	157	38.58	-56	158	326									
33	46.71	-57	146	46.41	-57	148	44.69	-5																																						

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

Table with columns for LHA and degrees 0° to 14°. Each degree column contains sub-columns for Hc, d, and Z. Values range from 0 to 289.

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

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

Table with columns for LHA and degrees 0° to 14°. Each degree column contains sub-columns for Hc, d, and Z. Values range from 0 to 290.

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

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

LAT 16°

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	Hc	d																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
68	20	09	-18	96	19	51	-16	97	19	33	-18	98	19	15	-19	99	18	58	-19	100	18	37	-20	101	18	17	-19	102	17	58	-21	103	17	37	-20	104	17	17	-21	105	16	56	-20	106	16	36	-21	107	16	16	-21	108	15	53	-22	109	15	33	-23	110	15	13	-24	111	15	13	-25	112	14	50	-26	113	14	30	-27	114	14	10	-28	115	14	10	-29	116	13	47	-30	117	13	27	-31	118	13	07	-32	119	12	44	-33	120	12	24	-34	121	12	04	-35	122	11	41	-36	123	11	21	-37	124	11	01	-38	125	10	38	-39	126	10	18	-40	127	10	18	-41	128	9	55	-42	129	9	35	-43	130	9	15	-44	131	8	52	-45	132	8	32	-46	133	8	12	-47	134	7	49	-48	135	7	29	-49	136	7	09	-50	137	6	48	-51	138	6	28	-52	139	6	08	-53	140	5	47	-54	141	5	27	-55	142	5	07	-56	143	4	46	-57	144	4	26	-58	145	4	06	-59	146	3	45	-60	147	3	25	-61	148	3	05	-62	149	2	44	-63	150	2	24	-64	151	2	04	-65	152	1	43	-66	153	1	23	-67	154	1	03	-68	155	0	42	-69	156	0	22	-70	157	0	02	-71	158	0	02	-72	159	0	02	-73	160	0	02	-74	161	0	02	-75	162	0	02	-76	163	0	02	-77	164	0	02	-78	165	0	02	-79	166	0	02	-80	167	0	02	-81	168	0	02	-82	169	0	02	-83	170	0	02	-84	171	0	02	-85	172	0	02	-86	173	0	02	-87	174	0	02	-88	175	0	02	-89	176	0	02	-90	177	0	02	-91	178	0	02	-92	179	0	02	-93	180	0	02	-94	181	0	02	-95	182	0	02	-96	183	0	02	-97	184	0	02	-98	185	0	02	-99	186	0	02	-100	187	0	02	-101	188	0	02	-102	189	0	02	-103	190	0	02	-104	191	0	02	-105	192	0	02	-106	193	0	02	-107	194	0	02	-108	195	0	02	-109	196	0	02	-110	197	0	02	-111	198	0	02	-112	199	0	02	-113	200	0	02	-114	201	0	02	-115	202	0	02	-116	203	0	02	-117	204	0	02	-118	205	0	02	-119	206	0	02	-120	207	0	02	-121	208	0	02	-122	209	0	02	-123	210	0	02	-124	211	0	02	-125	212	0	02	-126	213	0	02	-127	214	0	02	-128	215	0	02	-129	216	0	02	-130	217	0	02	-131	218	0	02	-132	219	0	02	-133	220	0	02	-134	221	0	02	-135	222	0	02	-136	223	0	02	-137	224	0	02	-138	225	0	02	-139	226	0	02	-140	227	0	02	-141	228	0	02	-142	229	0	02	-143	230	0	02	-144	231	0	02	-145	232	0	02	-146	233	0	02	-147	234	0	02	-148	235	0	02	-149	236	0	02	-150	237	0	02	-151	238	0	02	-152	239	0	02	-153	240	0	02	-154	241	0	02	-155	242	0	02	-156	243	0	02	-157	244	0	02	-158	245	0	02	-159	246	0	02	-160	247	0	02	-161	248	0	02	-162	249	0	02	-163	250	0	02	-164	251	0	02	-165	252	0	02	-166	253	0	02	-167	254	0	02	-168	255	0	02	-169	256	0	02	-170	257	0	02	-171	258	0	02	-172	259	0	02	-173	260	0	02	-174	261	0	02	-175	262	0	02	-176	263	0	02	-177	264	0	02	-178	265	0	02	-179	266	0	02	-180	267	0	02	-181	268	0	02	-182	269	0	02	-183	270	0	02	-184	271	0	02	-185	272	0	02	-186	273	0	02	-187	274	0	02	-188	275	0	02	-189	276	0	02	-190	277	0	02	-191	278	0	02	-192	279	0	02	-193	280	0	02	-194	281	0	02	-195	282	0	02	-196	283	0	02	-197	284	0	02	-198	285	0	02	-199	286	0	02	-200	287	0	02	-201	288	0	02	-202	289	0	02	-203	290	0	02	-204	291	0	02	-205	292	0	02	-206	293	0	02	-207	294	0	02	-208	295	0	02	-209	296	0	02	-210	297	0	02	-211	298	0	02	-212	299	0	02	-213	300	0	02	-214	301	0	02	-215	302	0	02	-216	303	0	02	-217	304	0	02	-218	305	0	02	-219	306	0	02	-220	307	0	02	-221	308	0	02	-222	309	0	02	-223	310	0	02	-224	311	0	02	-225	312	0	02	-226	313	0	02	-227	314	0	02	-228	315	0	02	-229	316	0	02	-230	317	0	02	-231	318	0	02	-232	319	0	02	-233	320	0	02	-234	321	0	02	-235	322	0	02	-236	323	0	02	-237	324	0	02	-238	325	0	02	-239	326	0	02	-240	327	0	02	-241	328	0	02	-242	329	0	02	-243	330	0	02	-244	331	0	02	-245	332	0	02	-246	333	0	02	-247	334	0	02	-248	335	0	02	-249	336	0	02	-250	337	0	02	-251	338	0	02	-252	339	0	02	-253	340	0	02	-254	341	0	02	-255	342	0	02	-256	343	0	02	-257	344	0	02	-258	345	0	02	-259	346	0	02	-260	347	0	02	-261	348	0	02	-262	349	0	02	-263	350	0	02	-264	351	0	02	-265	352	0	02	-266	353	0	02	-267	354	0	02	-268	355	0	02	-269	356	0	02	-270	357	0	02	-271	358	0	02	-272	359	0	02	-273	360	0	02	-274	361	0	02	-275	362	0	02	-276	363	0	02	-277	364	0	02	-278	365	0	02	-279	366	0	02	-280	367	0	02	-281	368	0	02	-282	369	0	02	-283	370	0	02	-284	371	0	02	-285	372	0	02	-286	373	0	02	-287	374	0	02	-288	375	0	02	-289	376	0	02	-290	377	0	02	-291	378	0	02	-292	379	0	02	-293	380	0	02	-294	381	0	02	-295	382	0	02	-296	383	0	02	-297	384	0	02	-298	385	0	02	-299	386	0	02	-300	387	0	02	-301	388	0	02	-302	389	0	02	-303	390	0	02	-304	391	0	02	-305	392	0	02	-306	393	0	02	-307	394	0	02	-308	395	0	02	-309	396	0	02	-310	397	0	02	-311	398	0	02	-312	399	0	02	-313	400	0	02	-314	401	0	02	-315	402	0	02	-316	403	0	02	-317	404	0	02	-318	405	0	02	-319	406	0	02	-320	407	0	02	-321	408	0	02	-322	409	0	02	-323	410	0	02	-324	411	0	02	-325	412	0	02	-326	413	0	02	-327	414	0	02	-328	415	0	02	-329	416	0	02	-330	417	0	02	-331	418	0	02	-332	419	0	02	-333	420	0	02	-334	421	0	02	-335	422	0	02	-336	423	0	02	-337	424	0	02	-338	425	0	02	-339	426	0	02	-340	427	0	02	-341	428	0	02	-342	429	0	02	-343	430	0	02	-344	431	0	02	-345	432	0	02	-346	433	0	02	-347	434	0	02	-348	435	0	02	-349	436	0	02	-350	437	0	02	-351	438	0	02	-352	439	0	02	-353	440	0	02	-354	441	0	02	-355	442	0	02	-356	443	0	02	-357	444	0	02	-358	445	0	02	-359	446	0	02	-360	447	0	02	-361	448	0	02	-362	449	0	02	-363	450	0	02	-364	451	0	02	-365	452	0	02	-366	453	0	02	-367	454	0	02	-368	455	0	02	-369	456	0	02	-370	457	0	02	-371	458	0	02	-372	459	0	02	-373	460	0	02	-374	461	0	02	-375	462	0	02	-376	463	0	02	-377	464	0	02	-378	465	0	02	-379	466	0	02	-380	467	0	02	-381	468	0	02	-382	469	0	02	-383	470	0	02	-384	471	0	02	-385	472	0	02	-386	473	0	02	-387	474	0	02	-388	475	0	02	-389	476	0	02	-390	477	0	02	-391	478	0	02	-392	479	0	02	-393	480	0	02	-394	481	0	02	-395	482	0	02	-396	483	0	02	-397	484	0	02	-398	485	0	02	-399	486	0	02	-400	487	0	02	-401	488	0	02	-402	489	0	02	-403	490	0	02	-404	491	0	02	-405	492	0	02	-406	493	0	02	-407	494	0	02	-408	495	0	02	-409	496	0	02	-410	497	0	02	-411	498	0	02	-412	499	0	02	-413	500	0	02	-414	501	0	02	-41

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 (0-69) and rows for declination (15°-29°). Each cell contains a 3x3 grid of values for hour angle (Hc) and distance (d) in degrees and minutes.

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

LAT 16°

LAT 16°

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 three values: Hc, d, Z. The table is organized in a grid where rows represent declination and columns represent 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 three values: Hc, d, Z. The table is organized in a grid where rows represent declination and columns represent 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 (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 16°), and declination (15° to 29°). Each declination column contains three sub-columns for Hc, d, and Z. The table provides astronomical data for a latitude of 16° North.

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

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		Hc	d	Hc	d	Hc	d	Z																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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40	38 45	02 40	39 02	01 40	39 19	00 40	39 36	59 39	39 53	58 38	40 10	57 37	40 26	56 36	40 41	55 35	40 56	54 34	41 11	53 33	41 26	52 32	41 41	51 31	41 56	50 30	42 11	49 29	42 30	48 28	42 49	47 27	42 68	46 26	42 87	45 25	43 06	44 24	43 24	43 43	43 43	43 62	43 81	44 00	44 19	44 38	44 57	45 16	45 35	45 54	46 13	46 32	46 51	47 10	47 29	47 48	48 07	48 26	48 45	49 04	49 23	49 42	49 61	50 00	50 19	50 38	50 57	51 16	51 35	51 54	52 13	52 32	52 51	53 10	53 29	53 48	54 07	54 26	54 45	55 04	55 23	55 42	55 61	55 80	56 00	56 19	56 38	56 57	57 16	57 35	57 54	58 13	58 32	58 51	59 10	59 29	59 48	59 67	60 00	60 19	60 38	60 57	61 16	61 35	61 54	62 13	62 32	62 51	63 10	63 29	63 48	64 07	64 26	64 45	64 64	64 83	65 02	65 21	65 40	65 59	66 18	66 37	66 56	67 15	67 34	67 53	68 12	68 31	68 50	69 09	69 28	69 47	69 66	70 00	70 19	70 38	70 57	71 16	71 35	71 54	72 13	72 32	72 51	73 10	73 29	73 48	73 67	73 86	74 05	74 24	74 43	74 62	74 81	75 00	75 19	75 38	75 57	76 16	76 35	76 54	77 13	77 32	77 51	78 10	78 29	78 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24	224 43	224 62	224 81	225 00	225 19	225 38	225 57	226 16	226 35	226 54	227 13	227 32	227 51	228 10	228 29	228 48	228 67	228 86	229 05	229 24	229 43	229 62	229 81	230 00	230 19	230 38	230 57	231 16	231 35	231 54	232 13	232 32	232 51	233 10	233 29	233 48	233 67	233 86	234 05	234 24	234 43	234 62	234 81	235 00	235 19	235 38	235 57	236 16	236 35	236 54	237 13	237 32	237 51	238 10	238 29	238 48	238 67	238 86	239 05	239 24	239 43	239 62	239 81	240 00	240 19	240 38	240 57	241 16	241 35	241 54	242 13	242 32	242 51	243 10	243 29	243 48	243 67	243 86	244 05	244 24	244 43	244 62	244 81	245 00	245 19	245 38	245 57	246 16	246 35	246 54	247 13	247 32	247 51	248 10	248 29	248 48	248 67	248 86	249 05	249 24	249 43	249 62	249 81	250 00	250 19	250 38	250 57	251 16	251 35	251 54	252 13	252 32	252 51	253 10	253 29	253 48	253 67	253 86	254 05	254 24	254 43	254 62	254 81	255 00	255 19	255 38	255 57	256 16	256 35	256 54	257 13	257 32	257 51	258 10	258 29	258 48	258 67	258 86	259 05	259 24	259 43	259 62	259 81	260 00	260 19	260 38	260 57	261 16	261 35	261 54	262 13	262 32	262 51	263 10	263 29	263 48	263 67	263 86	264 05	264 24	264 43	264 62	264 81	265 00	265 19	265 38	265 57	266 16	266 35	266 54	267 13	267 32	267 51	268 10	268 29	268 48	268 67	268 86	269 05	269 24	269 43	269 62	269 81	270 00	270 19	270 38	270 57	271 16	271 35	27

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

LAT 17°

LAT 17°

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

Table with columns for LHA, degrees 0 to 14, and minutes 0 to 60. Each cell contains three values: degree, minute, and second.

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

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

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 in 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 17°

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																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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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 18°) 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 represents the latitude and the left column represents the declination.

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

Table with columns for Declination (0° to 14°) and Latitude (0° to 18°). Each cell contains a 3-digit number representing the hour, minute, and second of the Local Hour Angle (LHA). The table is organized into a grid where the top row represents the latitude (LAT) and the left column represents the declination (DECLINATION).

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	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z		
70	18 59	19	96	19 18	20	95	19 38	18	94	18 56	19	93	20 15	18	92	20 33	18	91	20 51	17	90	21 08	17	89	21 25	17	88	21 42	16	87	21 58	16	86	22 14	15	85	22 29	15	84	22 44	15	83	22 59	14	82	230							
71	18 02	20	96	18 22	19	95	18 41	18 84	18 59	19	93	19 18	18 92	19 36	17	91	19 53	18	90	20 11	17	89	20 28	17	88	20 45	16	87	21 01	16	86	21 16	15	85	21 32	15	84	21 47	15	83	22 02	15	82	220									
72	17 05	19	95	16 28	19	94	16 47	18 93	17 05	93	17 24	18 91	17 42	17 90	17 59	18	89	18 18	88	19 34	17 87	18 51	16	86	18 07	16 85	19 54	15	83	19 54	15	82	20 51	15	81	20 51	15	80	21 06	14	82	210											
73	15 12	19	95	15 31	19	94	15 50	18 93	16 08	19	92	16 27	18 91	16 45	17 90	17 02	18	89	17 17	88	17 37	17 87	17 54	16	86	16 10	16 85	18 58	15	82	19 54	15	81	20 51	15	80	21 06	14	82	210													
74	14 15	19	95	14 34	19	94	14 53	18 93	15 11	93	15 42	18 91	15 08	17 90	16 05	18	89	16 23	88	16 40	17 87	17 57	17 30	16	84	17 30	16 84	18 42	16	83	18 01	16	82	18 01	16	81	18 17	15	81	205													
75	13 18	19	94	13 37	19	93	13 56	18 92	14 14	93	14 46	18 90	14 11	18 88	14 29	17 87	15 03	18	88	14 46	17 86	15 03	17 85	16	83	15 03	16 84	16 49	16	82	16 08	15	81	16 24	15	80	205																
76	12 21	19	94	12 40	19	93	12 59	18 92	13 17	93	13 50	18 90	13 23	18 88	13 11	18 86	13 26	18	88	13 43	17 85	14 00	17 84	15 12	16	81	15 28	15	80	15 43	15	79	16 04	15	78	16 19	14	78	210														
77	11 24	19	94	11 43	19	93	12 02	18 92	12 20	93	12 53	18 91	12 26	18 89	12 14	18 87	12 27	18	89	12 44	17 86	13 01	17 85	14 18	15 12	16	81	14 32	15	80	14 47	15	79	15 02	14	78	16 17	14	77	210													
78	10 27	19	93	10 46	19	92	11 05	18 91	11 23	93	11 56	18 90	11 29	18 88	11 17	18 86	11 29	18	88	11 46	17 84	12 01	17 83	13 19	14 18	15 12	16	81	13 43	16	80	13 59	15	79	14 25	14	78	15 40	14	77	210												
79	09 30	19	93	09 49	19	92	10 08	18 91	10 26	93	10 59	18 90	10 32	18 88	10 20	18 86	10 32	18	88	10 51	17 82	11 08	17 81	12 26	13 25	14 24	15 12	16	81	13 13	16	80	13 29	15	79	14 01	14	78	14 54	13	78	210											
80	08 33	19	93	08 52	19	92	09 11	18 91	09 29	18 90	09 47	18 89	09 15	18 87	09 03	18 85	09 15	18	88	09 34	17 80	09 51	17 79	11 07	12 06	13 05	14 04	15 03	16	81	12 30	16	80	12 45	15	79	13 22	15	78	14 17	14	77	210										
81	07 36	19	92	07 55	19	91	08 14	18 91	08 32	18 90	08 50	18 89	08 18	18 87	08 06	18 85	08 18	18	88	08 39	17 76	08 56	17 75	10 01	11 00	12 00	13 00	14 00	15 00	16	81	11 23	16	80	11 38	15	79	12 23	15	78	13 15	14	77	210									
82	06 39	19	92	06 58	19	91	07 16	18 90	07 35	18 89	07 53	18 88	07 21	18 86	07 09	18 85	07 21	18	87	07 42	17 73	08 00	17 72	09 16	10 15	11 15	12 15	13 15	14 15	15 00	16	81	10 31	16	80	10 46	15	79	11 31	15	78	12 18	14	77	210								
83	05 42	19	92	05 61	19	91	05 80	18 89	05 99	18 88	06 17	18 87	05 45	18 85	05 33	18 84	05 45	18	86	05 64	17 64	06 22	17 63	07 37	08 36	09 35	10 34	11 33	12 33	13 33	14 33	15 00	16	81	09 35	17	80	09 50	16	79	10 37	15	78	11 24	14	77	210						
84	04 45	19	92	04 64	19	91	04 83	18 89	05 02	18 88	05 20	18 87	04 48	18 85	04 36	18 84	04 48	18	86	04 69	17 59	05 27	17 58	06 41	07 40	08 39	09 38	10 37	11 36	12 36	13 36	14 36	15 00	16	81	08 39	17	80	08 54	16	79	09 56	15	78	10 43	14	77	210					
85	03 48	19	91	03 67	19	90	03 86	18 88	04 05	18 87	04 23	18 86	03 51	18 84	03 39	18 83	03 51	18	85	03 72	17 50	04 40	17 49	05 53	06 52	07 51	08 50	09 49	10 48	11 48	12 48	13 48	14 48	15 00	16	81	07 43	17	80	07 58	16	79	08 59	15	78	09 46	14	77	210				
86	02 51	19	91	03 10	19	90	03 28	18 88	03 47	18 87	03 65	18 86	03 34	18 84	03 22	18 83	03 34	18	84	03 47	17 48	04 35	17 47	05 40	06 39	07 38	08 37	09 36	10 35	11 35	12 35	13 35	14 35	15 00	16	81	06 35	18	79	06 50	17	78	07 51	16	77	210							
87	01 54	19	91	02 13	19	90	02 31	18 89	02 50	18 88	03 08	18 87	02 37	18 85	02 25	18 84	02 37	18	86	02 50	17 49	03 38	17 48	04 31	05 30	06 29	07 28	08 27	09 26	10 26	11 26	12 26	13 26	14 26	15 00	16	81	05 25	18	79	05 40	17	78	06 41	16	77	210						
88	00 57	19	90	01 16	19	89	01 34	18 88	01 53	18 87	02 11	18 86	01 40	18 84	01 28	18 83	01 40	18	85	01 53	17 48	02 41	17 47	03 34	04 33	05 32	06 31	07 30	08 29	09 29	10 29	11 29	12 29	13 29	14 29	15 00	16	81	04 19	18	79	04 34	17	78	05 35	16	77	210					
89	00 00	19	90	00 19	19	89	00 37	18 88	00 56	18 87	01 14	18 86	01 01	18 85	00 89	18 84	00 99	18	84	01 12	17 47	01 55	17 46	02 33	03 32	04 31	05 30	06 29	07 29	08 29	09 29	10 29	11 29	12 29	13 29	14 29	15 00	16	81	03 08	18	79	03 23	17	78	04 24	16	77	210				
90	00 00	19	90	00 19	19	89	00 37	18 88	00 56	18 87	01 14	18 86	01 01	18 85	00 89	18 84	00 99	18	84	01 12	17 47	01 55	17 46	02 33	03 32	04 31	05 30	06 29	07 29	08 29	09 29	10 29	11 29	12 29	13 29	14 29	15 00	16	81	01 52	18	79	02 07	17	78	03 08	16	77	210				
91	-0 54	19	89	-0 36	19	88	-0 17	18 88	-0 01	18 87	00 17	18 86	00 36	18 85	00 54	18 84	01 13	18	83	01 31	17 46	02 19	17 45	03 02	04 01	05 00	06 00	07 00	08 00	09 00	10 00	11 00	12 00	13 00	14 00	15 00	16	81	00 27	18	79	01 31	17	78	02 32	16	77	210					
92	-1 57	18	89	-1 39	18	88	-1 17	18 87	09 07	18 86	08 08	18 85	07 09	18 84	06 10	18 83	05 11	18	82	04 12	17 44	03 09	17 41	02 06	01 05	00 04	01 03	02 03	03 03	04 03	05 03	06 03	07 03	08 03	09 03	10 03	11 03	12 03	13 03	14 03	15 03	16	81	00 12	18	79	00 49	17	78	01 50	16	77	210
93	-2 51	18	89	-2 33	18	88	-2 14	18 87	08 11	18 86	07 12	18 85	06 13	18 84	05 14	18 83	04 15	18	82	03 16	17 42	02 11	17 34	01 06	00 05	01 04	02 04	03 04	04 04	05 04	06 04	07 04	08 04	09 04	10 04	11 04	12 04	13 04	14 04	15 04	16	81	00 01	18	79	00 38	17	78	01 39	16	77	210	
94	-3 48	18	88	-3 30	18	87	-3 11	18 87	07 14	18 86	06 15	18 85	05 16	18 84	04 17	18 83	03 18	18	82	02 19	17 40	01 14	17 32	00 08	00 07	01 06	02 06	03 06	04 06	05 06	06 06	07 06	08 06	09 06	10 06	11 06	12 06	13 06	14 06	15 06	16	81	00 00	18	79	00 27	17	78	01 28	16	77	210	
95	-4 45	18	88	-4 27	18	87	-4 08	18 87	06 17	18 86	05 18	18 85	04 19	18 84	03 20	18 83	02 21	18	82	01 22	17 39	00 26	17 31	00 20	00 19	01 18	02 18	03 18	04 18	05 18	06 18	07 18	08 18	09 18	10 18	11 18	12 18	13 18	14 18	15 18	16	81	00 00	18	79	00 16	17	78	01 17	16	77	210	
96	-5 42	18	88	-5 24	18	87	-5 05	18 86	05 20	18 85	04 21	18 84	03 22	18 83	02 23	18 82	01 24	18	81	00 25	17 36	00 24	17 30	00 13	00 12	01 11	02 11	03 11	04 11	05 11	06 11	07 11	08 11	09 11	10 11	11 11	12 11	13 11	14 11	15 11	16	81	00 00	18	79	00 05	17	78	01 06	16	77	210	
97	-6 39	18	88	-6 21	18	87	-6 02	18 86	04 23	18 85	03 24	18 84	02 25	18 83	01 26	18 82	00 27	18	81	00 28	17 37	00 27	17 33	00 16	00 15	01 14	02 14	03 14	04 14	05 14	06 14	07 14	08 14	09 14	10 14	11 14	12 14	13 14	14 14	15 14	16	81	0										

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

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

LAT 18°

180°		179°		178°		177°		176°		175°		174°		173°		172°		171°		170°		169°		168°		167°		166°		165°		164°		163°		162°		161°		160°		159°		158°		157°		156°		155°		154°		153°		152°		151°		150°		149°		148°		147°		146°		145°		144°		143°		142°		141°		140°		139°		138°		137°		136°		135°		134°		133°		132°		131°		130°		129°		128°		127°		126°		125°		124°		123°		122°		121°		120°		119°		118°		117°		116°		115°		114°		113°		112°		111°		110°		109°		108°		107°		106°		105°		104°		103°		102°		101°		100°		99°		98°		97°		96°		95°		94°		93°		92°		91°		90°		89°		88°		87°		86°		85°		84°		83°		82°		81°		80°		79°		78°		77°		76°		75°		74°		73°		72°		71°		70°		69°		68°		67°		66°		65°		64°		63°		62°		61°		60°		59°		58°		57°		56°		55°		54°		53°		52°		51°		50°		49°		48°		47°		46°		45°		44°		43°		42°		41°		40°		39°		38°		37°		36°		35°		34°		33°		32°		31°		30°		29°		28°		27°		26°		25°		24°		23°		22°		21°		20°		19°		18°		17°		16°		15°		14°		13°		12°		11°		10°		9°		8°		7°		6°		5°		4°		3°		2°		1°		0°		LHA																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
68	19 56	-20 97	19 36	-20 98	18 55	-21 100	18 34	-21 101	18 13	-22 102	17 51	-21 103	17 30	-22 104	17 08	-23 105	16 45	-22 106	16 23	-23 107	16 00	-23 108	15 37	-24 109	15 13	-25 110	14 50	-24 110	14 27	-25 111	14 04	-26 112	13 41	-27 113	13 18	-28 114	12 55	-29 115	12 32	-30 116	12 09	-31 117	11 45	-32 118	11 22	-33 119	10 59	-34 120	10 36	-35 121	10 12	-36 122	9 49	-37 123	9 25	-38 124	9 02	-39 125	8 38	-40 126	8 15	-41 127	7 51	-42 128	7 28	-43 129	7 04	-44 130	6 41	-45 131	6 17	-46 132	5 54	-47 133	5 30	-48 134	5 06	-49 135	4 43	-50 136	4 19	-51 137	3 55	-52 138	3 32	-53 139	3 08	-54 140	2 45	-55 141	2 21	-56 142	1 57	-57 143	1 34	-58 144	1 10	-59 145	8 47	-60 146	8 24	-61 147	8 00	-62 148	7 37	-63 149	7 13	-64 150	6 50	-65 151	6 26	-66 152	6 03	-67 153	5 39	-68 154	5 15	-69 155	4 52	-70 156	4 28	-71 157	4 04	-72 158	3 41	-73 159	3 17	-74 160	2 53	-75 161	2 30	-76 162	2 06	-77 163	1 42	-78 164	1 18	-79 165	9 52	-80 166	9 28	-81 167	9 04	-82 168	8 41	-83 169	8 17	-84 170	7 53	-85 171	7 30	-86 172	7 06	-87 173	6 42	-88 174	6 18	-89 175	5 54	-90 176	5 30	-91 177	5 06	-92 178	4 42	-93 179	4 18	-94 180	3 54	-95 181	3 30	-96 182	3 06	-97 183	2 42	-98 184	2 18	-99 185	1 54	-100 186	1 30	-101 187	1 06	-102 188	0 42	-103 189	0 18	-104 190	0 00	-105 191	0 00	-106 192	0 00	-107 193	0 00	-108 194	0 00	-109 195	0 00	-110 196	0 00	-111 197	0 00	-112 198	0 00	-113 199	0 00	-114 200	0 00	-115 201	0 00	-116 202	0 00	-117 203	0 00	-118 204	0 00	-119 205	0 00	-120 206	0 00	-121 207	0 00	-122 208	0 00	-123 209	0 00	-124 210	0 00	-125 211	0 00	-126 212	0 00	-127 213	0 00	-128 214	0 00	-129 215	0 00	-130 216	0 00	-131 217	0 00	-132 218	0 00	-133 219	0 00	-134 220	0 00	-135 221	0 00	-136 222	0 00	-137 223	0 00	-138 224	0 00	-139 225	0 00	-140 226	0 00	-141 227	0 00	-142 228	0 00	-143 229	0 00	-144 230	0 00	-145 231	0 00	-146 232	0 00	-147 233	0 00	-148 234	0 00	-149 235	0 00	-150 236	0 00	-151 237	0 00	-152 238	0 00	-153 239	0 00	-154 240	0 00	-155 241	0 00	-156 242	0 00	-157 243	0 00	-158 244	0 00	-159 245	0 00	-160 246	0 00	-161 247	0 00	-162 248	0 00	-163 249	0 00	-164 250	0 00	-165 251	0 00	-166 252	0 00	-167 253	0 00	-168 254	0 00	-169 255	0 00	-170 256	0 00	-171 257	0 00	-172 258	0 00	-173 259	0 00	-174 260	0 00	-175 261	0 00	-176 262	0 00	-177 263	0 00	-178 264	0 00	-179 265	0 00	-180 266	0 00	-181 267	0 00	-182 268	0 00	-183 269	0 00	-184 270	0 00	-185 271	0 00	-186 272	0 00	-187 273	0 00	-188 274	0 00	-189 275	0 00	-190 276	0 00	-191 277	0 00	-192 278	0 00	-193 279	0 00	-194 280	0 00	-195 281	0 00	-196 282	0 00	-197 283	0 00	-198 284	0 00	-199 285	0 00	-200 286	0 00	-201 287	0 00	-202 288	0 00	-203 289	0 00	-204 290	0 00	-205 291	0 00	-206 292	0 00	-207 293	0 00	-208 294	0 00	-209 295	0 00	-210 296	0 00	-211 297	0 00	-212 298	0 00	-213 299	0 00	-214 300	0 00	-215 301	0 00	-216 302	0 00	-217 303	0 00	-218 304	0 00	-219 305	0 00	-220 306	0 00	-221 307	0 00	-222 308	0 00	-223 309	0 00	-224 310	0 00	-225 311	0 00	-226 312	0 00	-227 313	0 00	-228 314	0 00	-229 315	0 00	-230 316	0 00	-231 317	0 00	-232 318	0 00	-233 319	0 00	-234 320	0 00	-235 321	0 00	-236 322	0 00	-237 323	0 00	-238 324	0 00	-239 325	0 00	-240 326	0 00	-241 327	0 00	-242 328	0 00	-243 329	0 00	-244 330	0 00	-245 331	0 00	-246 332	0 00	-247 333	0 00	-248 334	0 00	-249 335	0 00	-250 336	0 00	-251 337	0 00	-252 338	0 00	-253 339	0 00	-254 340	0 00	-255 341	0 00	-256 342	0 00	-257 343	0 00	-258 344	0 00	-259 345	0 00	-260 346	0 00	-261 347	0 00	-262 348	0 00	-263 349	0 00	-264 350	0 00	-265 351	0 00	-266 352	0 00	-267 353	0 00	-268 354	0 00	-269 355	0 00	-270 356	0 00	-271 357	0 00	-272 358	0 00	-273 359	0 00	-274 360	0 00	-275 361	0 00	-276 362	0 00	-277 363	0 00	-278 364	0 00	-279 365	0 00	-280 366	0 00	-281 367	0 00	-282 368	0 00	-283 369	0 00	-284 370	0 00	-285 371	0 00	-286 372	0 00	-287 373	0 00	-288 374	0 00	-289 375	0 00	-290 376	0 00	-291 377	0 00	-292 378	0 00	-293 379	0 00	-294 380	0 00	-295 381	0 00	-296 382	0 00	-297 383	0 00	-298 384	0 00	-299 385	0 00	-300 386	0 00	-301 387	0 00	-302 388	0 00	-303 389	0 00	-304 390	0 00	-305 391	0 00	-306 392	0 00	-307 393	0 00	-308 394	0 00	-309 395	0 00	-310 396	0 00	-311 397	0 00	-312 398	0 00	-313 399	0 00	-314 400	0 00	-315 401	0 00	-316 402	0 00	-317 403	0 00	-318 404	0 00	-319 405	0 00	-320 406	0 00	-321 407	0 00	-322 408	0 00	-323 409	0 00	-324 410	0 00	-325 411	0 00	-326 412	0 00	-327 413	0 00	-328 414	0 00	-329 415	0 00	-330 416	0 00	-331 417	0 00	-332 418	0 00	-333 419	0 00	-334 420	0 00	-335 421	0 00	-336 422	0 00	-337 423	0 00	-338 424	0 00	-339 425	0 00	-340 426	0 00	-341 427	0 00	-342 428	0 00	-343 429	0 00	-344 430	0 00	-345 431	0 00	-346 432	0 00	-347 433	0 00	-348 434	0 00	-349 435	0 00	-350 436	0 00	-351 437	0 00	-352 438	0 00	-353 439	0 00	-354 440	0 00	-355 441	0 00	-356 442	0 00	-357 443	0 00	-358 444	0 00	-359 445	0 00	-360 446	0 00	-361 447	0 00	-362 448	0 00	-363 449	0 00	-364 450	0 00	-365 451	0 00	-366 452	0 00	-367 453	0 00	-368 454	0 00	-369 455	0 00	-370 456	0 00	-371 457	0 00	-372 458	0 00	-373 459	0 00	-374 460	0 00	-375 461	0 00	-376 462	0 00	-377 463	0 00	-378 464	0 00	-379 465	0 00	-380 466	0 00	-381 467	0 00	-382 468	0 00	-383 469	0 00	-384 470	0 00	-385 471	0 00	-386 472	0 00	-387 473	0 00	-388 474	0 00	-389 475	0 00	-390 476	0 00	-391 477	0 00	-392 478	0 00	-393 479	0 00	-394 480	0 00	-395 481	0 00	-396 482	0 00	-397 483	0 00	-398 484	0 00	-399 485	0 00	-400 486	0 00	-401 487	0 00	-402 488	0 00	-403 489	0 00	-404 490	0 00	-405 491	0 00	-406 492	0 00	-407 493	0 00	-408 494	0 00	-409 495	0 00	-410 496	0 00	-411 497	0 00	-412 498	0 00	-413 499	0 00	-414 500	0 00	-415 501	0 00	-416 502	0 00	-417 503	0 00	-418 504	0 00	-419 505	0 00	-420 506	0 00	-421 507	0 00	-422 508	0 00	-423 509	0 00	-424 510	0 00	-425 511	0 00	-426 512	0 00	-427 513	0 00	-428 514	0 00	-429 515	0 00	-430 516	0 00	-431 517	0 00	-432 518	0 00	-433 519	0 00	-434 520	0 00	-435 521	0 00	-436 522	0 00	-437 523	0 00	-438 524	0 00	-439 525	0 00	-440 526	0 00	-441 527	0 00	-442 528	0 00	-443 529	0 00	-444 530	0 00	-445 531	0 00	-446 532	0 00	-447 533	0 00	-448 534	0 00	-449 535	0 00	-450 536	0 00	-451 537	0 00	-452 538	0 00	-453 539	0 00	-454 540	0 00	-455 541	0 00	-456 542	0 00	-457 543	0 00	-458 544	0 00	-459 545	0 00	-460 546	0 00	-461 547	0 00	-462 548	0 00	-463 549	0 00	-464 550	0 00	-465 551	0 00	-466 552	0 00	-467 553	0 00	-468 554	0 00	-469 555	0 00	-470 556	0 00	-471 557	0 00	-472 558	0 00	-473 559	0 00	-474 560	0 00	-475 561	0 00	-476 562	0 00	-477 563	0 00	-478 564	0 00	-479 565	0 00	-480 566	0 00	-481 567	0 00	-482 568	0 00	-483 569	0 00	-484 570	0 00	-48

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 (0-69) and rows for declination (15°-29°). Each cell contains a 3x3 grid of values for hour angle (Hc) and declination (d, Z).

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 18°

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 LHA. Rows 70-102.

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

LAT 18°

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

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

Table with columns for LHA, 15° to 29° (Hc, d, Z), and LHA. Rows 92-102.

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 Longitude (15° to 30°). Each cell contains a 3-digit number representing declination. The table is organized in a grid where the top row is labeled with latitude values and the left column with longitude values. The numbers in the cells represent the declination for that specific latitude and longitude intersection.

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

LAT 19°

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

Table with columns: LHA, Lat, Declination (0°-14°), and Latitude (19°-1°). It contains numerical data for each combination of these values.

DECLINATION (0° - 14°) 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 19°

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

Table with columns for Latitude (LHA) and Declination (0° to 14°) for the same name as latitude. It contains numerical values for various astronomical calculations.

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

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

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

Table with columns for Latitude (LHA) and Declination (0° to 14°) for the contrary name to latitude. It contains numerical values for various astronomical calculations.

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

LHA

CONTRARY NAME TO LATITUDE

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

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																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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53	-88	175	5 29	-89	176	5 05	-90	177	4 41	-91	178	4 17	-92	179	3 53	-93	180	3 29	-94	181	3 05	-95	182	2 41	-96	183	2 17	-97	184	1 53	-98	185	1 29	-99	186	1 05	-100	187	8 41	-101	188	8 17	-102	189	7 53	-103	190	7 29	-104	191	7 05	-105	192	6 41	-106	193	6 17	-107	194	5 53	-108	195	5 29	-109	196	5 05	-110	197	4 41	-111	198	4 17	-112	199	3 53	-113	200	3 29	-114	201	3 05	-115	202	2 41	-116	203	2 17	-117	204	1 53	-118	205	1 29	-119	206	1 05	-120	207	8 41	-121	208	8 17	-122	209	7 53	-123	210	7 29	-124	211	7 05	-125	212	6 41	-126	213	6 17	-127	214	5 53	-128	215	5 29	-129	216	5 05	-130	217	4 41	-131	218	4 17	-132	219	3 53	-133	220	3 29	-134	221	3 05	-135	222	2 41	-136	223	2 17	-137	224	1 53	-138	225	1 29	-139	226	1 05	-140	227	8 41	-141	228	8 17	-142	229	7 53	-143	230	7 29	-144	231	7 05	-145	232	6 41	-146	233	6 17	-147	234	5 53	-148	235	5 29	-149	236	5 05	-150	237	4 41	-151	238	4 17	-152	239	3 53	-153	240	3 29	-154	241	3 05	-155	242	2 41	-156	243	2 17	-157	244	1 53	-158	245	1 29	-159	246	1 05	-160	247	8 41	-161	248	8 17	-162	249	7 53	-163	250	7 29	-164	251	7 05	-165	252	6 41	-166	253	6 17	-167	254	5 53	-168	255	5 29	-169	256	5 05	-170	257	4 41	-171	258	4 17	-172	259	3 53	-173	260	3 29	-174	261	3 05	-175	262	2 41	-176	263	2 17	-177	264	1 53	-178	265	1 29	-179	266	1 05	-180	267	8 41	-181	268	8 17	-182	269	7 53	-183	270	7 29	-184	271	7 05	-185	272	6 41	-186	273	6 17	-187	274	5 53	-188	275	5 29	-189	276	5 05	-190	277	4 41	-191	278	4 17	-192	279	3 53	-193	280	3 29	-194	281	3 05	-195	282	2 41	-196	283	2 17	-197	284	1 53	-198	285	1 29	-199	286	1 05	-200	287	8 41	-201	288	8 17	-202	289	7 53	-203	290	7 29	-204	291	7 05	-205	292	6 41	-206	293	6 17	-207	294	5 53	-208	295	5 29	-209	296	5 05	-210	297	4 41	-211	298	4 17	-212	299	3 53	-213	300	3 29	-214	301	3 05	-215	302	2 41	-216	303	2 17	-217	304	1 53	-218	305	1 29	-219	306	1 05	-220	307	8 41	-221	308	8 17	-222	309	7 53	-223	310	7 29	-224	311	7 05	-225	312	6 41	-226	313	6 17	-227	314	5 53	-228	315	5 29	-229	316	5 05	-230	317	4 41	-231	318	4 17	-232	319	3 53	-233	320	3 29	-234	321	3 05	-235	322	2 41	-236	323	2 17	-237	324	1 53	-238	325	1 29	-239	326	1 05	-240	327	8 41	-241	328	8 17	-242	329	7 53	-243	330	7 29	-244	331	7 05	-245	332	6 41	-246	333	6 17	-247	334	5 53	-248	335	5 29	-249	336	5 05	-250	337	4 41	-251	338	4 17	-252	339	3 53	-253	340	3 29	-254	341	3 05	-255	342	2 41	-256	343	2 17	-257	344	1 53	-258	345	1 29	-259	346	1 05	-260	347	8 41	-261	348	8 17	-262	349	7 53	-263	350	7 29	-264	351	7 05	-265	352	6 41	-266	353	6 17	-267	354	5 53	-268	355	5 29	-269	356	5 05	-270	357	4 41	-271	358	4 17	-272	359	3 53	-273	360	3 29	-274	361	3 05	-275	362	2 41	-276	363	2 17	-277	364	1 53	-278	365	1 29	-279	366	1 05	-280	367	8 41	-281	368	8 17	-282	369	7 53	-283	370	7 29	-284	371	7 05	-285	372	6 41	-286	373	6 17	-287	374	5 53	-288	375	5 29	-289	376	5 05	-290	377	4 41	-291	378	4 17	-292	379	3 53	-293	380	3 29	-294	381	3 05	-295	382	2 41	-296	383	2 17	-297	384	1 53	-298	385	1 29	-299	386	1 05	-300	387	8 41	-301	388	8 17	-302	389	7 53	-303	390	7 29	-304	391	7 05	-305	392	6 41	-306	393	6 17	-307	394	5 53	-308	395	5 29	-309	396	5 05	-310	397	4 41	-311	398	4 17	-312	399	3 53	-313	400	3 29	-314	401	3 05	-315	402	2 41	-316	403	2 17	-317	404	1 53	-318	405	1 29	-319	406	1 05	-320	407	8 41	-321	408	8 17	-322	409	7 53	-323	410	7 29	-324	411	7 05	-325	412	6 41	-326	413	6 17	-327	414	5 53	-328	415	5 29	-329	416	5 05	-330	417	4 41	-331	418	4 17	-332	419	3 53	-333	420	3 29	-334	421	3 05	-335	422	2 41	-336	423	2 17	-337	424	1 53	-338	425	1 29	-339	426	1 05	-340	427	8 41	-341	428	8 17	-342	429	7 53	-343	430	7 29	-344	431	7 05	-345	432	6 41	-346	433	6 17	-347	434	5 53	-348	435	5 29	-349	436	5 05	-350	437	4 41	-351	438	4 17	-352	439	3 53	-353	440	3 29	-354	441	3 05	-355	442	2 41	-356	443	2 17	-357	444	1 53	-358	445	1 29	-359	446	1 05	-360	447	8 41	-361	448	8 17	-362	449	7 53	-363	450	7 29	-364	451	7 05	-365	452	6 41	-366	453	6 17	-367	454	5 53	-368	455	5 29	-369	456	5 05	-370	457	4 41	-371	458	4 17	-372	459	3 53	-373	460	3 29	-374	461	3 05	-375	462	2 41	-376	463	2 17	-377	464	1 53	-378	465	1 29	-379	466	1 05	-380	467	8 41	-381	468	8 17	-382	469	7 53	-383	470	7 29	-384	471	7 05	-385	472	6 41	-386	473	6 17	-387	474	5 53	-388	475	5 29	-389	476	5 05	-390	477	4 41	-391	478	4 17	-392	479	3 53	-393	480	3 29	-394	481	3 05	-395	482	2 41	-396	483	2 17	-397	484	1 53	-398	485	1 29	-399	486	1 05	-400	487	8 41	-401	488	8 17	-402	489	7 53	-403	490	7 29	-404	491	7 05	-405	492	6 41	-406	493	6 17	-407	494	5 53	-408	495	5 29	-409	496	5 05	-410	497	4 41	-411	498	4 17	-412	499	3 53	-413	500	3 29	-414	501	3 05	-415	502	2 41	-416	503	2 17	-417	504	1 53	-418	505	1 29	-419	506	1 05	-420	507	8 41	-421	508	8 17	-422	509	7 53	-423	510	7 29	-424	511	7 05	-425	512	6 41	-426	513	6 17	-427	514	5 53	-428	515	5 29	-429	516	5 05	-430	517	4 41	-431	518	4 17	-432	519	3 53	-433	520	3 29	-434	521	3 05	-435	522	2 41	-436	523	2 17	-437	524	1 53	-438	525	1 29	-439	526	1 05	-440	527	8 41	-441	528	8 17	-442	529	7 53	-443	530	7 29	-444	531	7 05	-445	532	6 41	-446	533	6 17	-447	534	5 53	-448	535	5 29	-449	536	5 05	-450	537	4 41	-451	538	4 17	-452	539	3 53	-453	540	3 29	-454	541	3 05	-455	542	2 41	-456	543	2 17	-457	544	1 53	-458	545	1 29	-459	546	1 05	-460	547	8 41	-461	548	8 17	-462	549	7 53	-463	550	7 29	-464	551	7 05	-465	552	6 41	-466	553	6 17	-467	554	5 53	-468	555	5 29	-469	556	5 05	-470	557	4 41	-471	558	4 17	-472	559	3 53	-473	560	3 29	-474	561	3 05	-475	562	2 41	-476	563	2 17	-477	564	1 53	-478	565	1 29	-479	566	1 05	-480	567	8 41	-481	568	8 17	-482	569	7 53	-483	570	7 29	-484	571	7 05	-485	572	6 41	-486	573	6 17	-487	574</

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°). Rows are labeled with LHA (0-69). Each cell contains a 5-digit number. The table is organized by 1-degree latitude increments, with each row representing a specific LHA value.

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 19°

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

Main table for declination 15° to 29° with same name as latitude. Columns include LHA, latitude (15°-29°), and longitude (15°-29°).

Main table for declination 15° to 29° with contrary name to latitude. Columns include LHA, latitude (15°-29°), and longitude (15°-29°).

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 (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 (69-360) and rows for latitude (15°-29°). Each cell contains a 3x3 grid of values for declination (15°-29°) and contrary name to 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