

Solar altitude angles and bearings from true north for northern hemisphere sites; bearings must be corrected for the southern hemisphere, see footnote (©J K Page; used with permission) NC VK/WF G'2Å

Latitude	Solar time	Solar altitude angle and bearing for stated date in northern (N) and southern (S) hemispheres													
		(N) Jan 29 (S) Jul 3	Feb 26 Aug 3	Mar 29 Sep 3	Apr 28 Oct 3	May 29 Nov 3	Jun 21 Dec 21	Jul 4 Jan 28	Aug 4 Feb 25	Sep 4 Mar 28	Oct 4 Apr 28	Nov 4 May 29	Dec 4 Jun 3		
		Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear		
0°	06:30	7 108	7 99	7 87	7 76	7 68	7 66	7 67	7 73	7 83	7 94	7 106	7 112		
	07:30	21 110	22 100	22 86	22 75	21 67	21 65	21 66	21 72	22 82	22 95	22 107	21 114		
	08:30	35 113	37 101	37 86	36 72	34 63	34 61	34 62	36 69	37 81	37 96	36 109	34 117		
	09:30	49 118	52 105	52 84	50 67	48 57	47 55	47 55	49 63	52 78	52 97	50 114	47 124		
	10:30	61 131	66 113	67 81	64 57	59 44	58 42	58 42	62 51	66 72	67 101	63 126	59 137		
	11:30	70 158	78 141	82 65	74 27	67 18	65 17	66 17	71 23	80 46	81 121	73 155	67 162		
	12:30	70 202	78 219	82 295	74 333	67 342	65 343	66 343	71 337	80 314	81 240	73 205	67 198		
	13:30	61 229	66 247	67 279	64 304	59 316	58 319	58 318	62 309	66 288	67 259	63 234	59 223		
	14:30	49 242	52 255	52 276	50 293	48 303	47 306	47 305	49 297	52 282	52 263	50 246	47 236		
	15:30	35 248	37 259	37 274	36 288	34 297	34 299	34 298	36 291	37 279	37 265	36 251	34 243		
	16:30	21 251	22 260	22 274	22 285	21 293	21 295	21 295	21 289	22 278	22 265	22 253	21 246		
	17:30	7 252	7 261	7 274	7 284	7 292	7 294	7 293	7 287	7 277	7 266	7 255	7 248		
	Sunrise:	06:00	06:00	06:00	06:00	06:00	06:00	06:00	06:00	06:00	06:00	06:00	06:00		
	Sunset:	18:00	18:00	18:00	18:00	18:00	18:00	18:00	18:00	18:00	18:00	18:00	18:00		

*Table continues*

*Note:* bearings from measured from true north and must be corrected for the southern hemisphere by subtracting the tabulated value from 180° if the tabulated value is less than 180° and from 540° if the tabulated value is greater than 180°.

Solar altitude angles and bearings from true north for northern hemisphere sites; bearings must be corrected for the southern hemisphere, see footnote (©J K Page; used with permission)"NCVK/WFG'32Å

Latitude	Solar time	Solar altitude angle and bearing for stated date in northern (N) and southern (S) hemispheres											
		(N) Jan 29 (S) Jul 3	Feb 26 Aug 3	Mar 29 Sep 3	Apr 28 Oct 3	May 29 Nov 3	Jun 21 Dec 21	Jul 4 Jan 28	Aug 4 Feb 25	Sep 4 Mar 28	Oct 4 Apr 28	Nov 4 May 29	Dec 4 Jun 3
		Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear
10°	05:30				1 76	2 68	2 67	2 67	1 73	1 83			
	06:30	5 110	7 100	8 88	10 77	11 70	11 68	11 68	10 74	9 84	7 96	6 107	5 114
	07:30	18 113	20 104	23 91	24 79	24 71	25 69	25 69	24 76	23 87	21 99	18 110	16 117
	08:30	31 118	34 108	38 93	39 80	38 70	38 68	38 69	39 76	38 89	36 103	32 115	29 123
	09:30	43 127	48 116	52 97	53 80	52 67	52 65	52 66	53 75	53 91	50 109	45 124	41 132
	10:30	54 142	61 130	67 105	68 77	65 59	65 55	65 56	67 69	68 96	63 122	56 139	51 146
	11:30	61 165	70 158	80 131	82 60	76 31	75 27	75 28	80 45	82 110	74 152	64 164	57 167
	12:30	61 195	70 202	80 229	82 301	76 329	75 333	75 332	80 316	82 250	74 208	64 196	57 193
	13:30	54 218	61 230	67 255	68 283	65 301	65 305	65 304	67 291	68 265	63 238	56 222	51 214
	14:30	43 233	48 244	52 263	53 280	52 293	52 295	52 295	53 285	53 269	50 251	45 236	41 228
	15:30	31 242	34 252	38 267	39 280	38 290	38 292	38 291	39 284	38 271	36 257	32 245	29 237
	16:30	18 247	20 256	23 270	24 281	24 289	25 291	25 291	24 285	23 274	21 261	18 250	16 243
	17:30	5 251	7 260	8 272	10 283	11 290	11 292	11 292	10 286	9 276	7 264	6 253	5 246
	18:30				1 284	2 292	2 294	2 293	1 287	1 277			
	Sunrise:	06:13	06:06	05:58	05:50	05:44	05:42	05:43	05:47	05:55	06:03	06:11	06:17
	Sunset:	17:47	17:54	18:02	18:10	18:16	18:18	18:17	18:13	18:05	17:57	17:49	17:43

Table continues

Note: bearings from measured from true north and must be corrected for the southern hemisphere by subtracting the tabulated value from 180° if the tabulated value is less than 180° and from 540° if the tabulated value is greater than 180°.

Solar altitude angles and bearings from true north for northern hemisphere sites; bearings must be corrected for the southern hemisphere, see footnote (©J K Page; used with permission)'NCVKWF G'42Å

Latitude	Solar time	Solar altitude angle and bearing for stated date in northern (N) and southern (S) hemispheres											
		(N) Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4
		(S) Jul 3	Aug 3	Sep 3	Oct 3	Nov 3	Dec 21	Jan 28	Feb 25	Mar 28	Apr 28	May 29	Jun 3
		Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear
20°	05:30			1 87	2 76	4 68	4 67	4 67	3 73	1 83			
	06:30	4 111	5 102	8 89	12 79	14 72	14 70	14 71	13 76	9 86	6 97	4 108	3 115
	07:30	14 115	18 107	22 95	26 83	27 75	28 73	28 74	26 80	24 91	19 102	15 113	12 119
	08:30	26 123	31 114	36 101	40 88	41 78	41 76	41 77	40 84	38 97	33 110	27 121	24 127
	09:30	37 134	43 125	50 110	54 93	55 81	55 77	55 78	54 88	51 104	46 119	39 131	34 137
	10:30	46 149	53 141	63 124	68 102	69 82	69 77	69 78	69 94	65 117	57 135	48 146	42 151
	11:30	51 169	60 165	72 155	81 128	83 76	82 62	82 66	82 110	75 150	65 162	54 168	47 170
	12:30	51 191	60 195	72 205	81 232	83 285	82 298	82 294	82 250	75 211	65 198	54 192	47 190
	13:30	46 212	53 219	63 236	68 258	69 279	69 283	69 282	69 266	65 243	57 225	48 214	42 209
	14:30	37 226	43 235	50 251	54 267	55 280	55 283	55 282	54 272	51 256	46 241	39 229	34 223
	15:30	26 237	31 246	36 259	40 272	41 282	41 284	41 283	40 276	38 264	33 251	27 240	24 233
	16:30	14 245	18 253	22 265	26 277	27 285	28 287	28 286	26 280	24 269	19 258	15 247	12 241
	17:30	4 249	5 258	8 271	12 281	14 288	14 290	14 290	13 284	9 274	6 263	4 252	3 245
	18:30			1 273	2 284	4 292	4 294	4 293	3 287	1 277			
	Sunrise:	06:27	06:13	05:55	05:39	05:27	05:24	05:25	05:34	05:50	06:06	06:23	06:34
	Sunset:	17:33	17:47	18:05	18:21	18:33	18:36	18:35	18:26	18:10	17:54	17:37	17:26

Table continues

Note: bearings from measured from true north and must be corrected for the southern hemisphere by subtracting the tabulated value from 180° if the tabulated value is less than 180° and from 540° if the tabulated value is greater than 180°.

Solar altitude angles and bearings from true north for northern hemisphere sites; bearings must be corrected for the southern hemisphere, see footnote (©J K Page; used with permission)'NCVKWF G'52Å

Latitude	Solar time	Solar altitude angle and bearing for stated date in northern (N) and southern (S) hemispheres											
		(N) Jan 29 (S) Jul 3	Feb 26 Aug 3	Mar 29 Sep 3	Apr 28 Oct 3	May 29 Nov 3	Jun 21 Dec 21	Jul 4 Jan 28	Aug 4 Feb 25	Sep 4 Mar 28	Oct 4 Apr 28	Nov 4 May 29	Dec 4 Jun 3
		Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear
30°	05:30			1 87	4 76	5 68	6 66	6 67	4 73	2 83			
	06:30	2 112	4 103	8 91	13 81	17 74	18 73	17 73	15 78	10 88	5 98	2 109	1 116
	07:30	9 117	14 110	21 99	26 88	30 81	30 79	30 79	28 85	23 95	17 106	11 115	7 121
	08:30	20 127	26 119	34 108	39 96	42 87	43 85	43 86	41 93	36 104	29 115	22 124	17 130
	09:30	30 138	37 131	46 120	52 106	55 95	56 92	56 93	54 102	48 115	40 127	32 136	27 141
	10:30	37 153	45 148	56 137	64 122	68 107	69 103	69 104	66 117	59 133	49 144	40 151	33 155
	11:30	41 171	50 168	63 164	73 155	79 139	81 133	80 135	76 150	66 161	55 167	44 170	37 171
	12:30	41 190	50 192	63 196	73 205	79 221	81 227	80 225	76 210	66 199	55 193	44 190	37 189
	13:30	37 207	45 213	56 223	64 238	68 253	69 257	69 256	66 243	59 227	49 216	40 209	33 205
	14:30	30 222	37 229	46 241	52 254	55 265	56 268	56 267	54 258	48 245	40 233	32 224	27 219
	15:30	20 233	26 241	34 252	39 264	42 273	43 275	43 274	41 267	36 256	29 245	22 236	17 230
	16:30	9 243	14 250	21 261	26 272	30 279	30 281	30 281	28 275	23 265	17 254	11 245	7 239
	17:30	2 248	4 257	8 269	13 279	17 286	18 287	17 287	15 282	10 273	5 262	2 251	1 244
	18:30			1 274	4 284	5 292	6 294	6 293	4 288	2 277			
	Sunrise:	06:44	06:21	05:52	05:26	05:07	05:02	05:04	05:19	05:43	06:10	06:37	06:55
	Sunset:	17:16	17:39	18:08	18:34	18:53	18:58	18:56	18:41	18:17	17:50	17:23	17:05

Table continues

Note: bearings from measured from true north and must be corrected for the southern hemisphere by subtracting the tabulated value from 180° if the tabulated value is less than 180° and from 540° if the tabulated value is greater than 180°.

Solar altitude angles and bearings from true north for northern hemisphere sites; bearings must be corrected for the southern hemisphere, see footnote (©J K Page; used with permission)"NCVK/WF G'62Å

Latitude	Solar time	Solar altitude angle and bearing for stated date in northern (N) and southern (S) hemispheres																						
		(N) Jan 29 (S) Jul 3	Feb 26 Aug 3	Mar 29 Sep 3	Apr 28 Oct 3	May 29 Nov 3	Jun 21 Dec 21	Jul 4 Jan 28	Aug 4 Feb 25	Sep 4 Mar 28	Oct 4 Apr 28	Nov 4 May 29	Dec 4 Jun 3											
		Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear											
40°	04:30					2 63	2 61	2 61																
	05:30			1 87	4 75	8 69	9 67	9 68	5 72	2 83														
	06:30	3 104	8 92	15 84	19 78	20 76	20 76	17 81	10 89	4 99	1 111													
	07:30	5 119	11 112	19 102	26 93	31 86	32 85	31 85	28 91	22 99	14 108	6 116	3 123											
	08:30	14 129	21 123	30 114	38 104	42 96	43 94	43 95	39 101	33 110	25 120	16 127	11 132											
	09:30	22 141	30 136	40 127	48 118	53 109	54 106	54 107	50 114	43 124	34 133	25 140	19 144											
	10:30	28 156	37 152	48 145	58 136	63 127	65 124	64 125	60 133	51 143	41 150	31 155	24 157											
	11:30	31 172	40 170	53 168	63 164	71 159	72 157	72 157	66 162	56 166	45 169	34 171	27 172											
	12:30	31 188	40 190	53 193	63 196	71 201	72 203	72 203	66 198	56 194	45 191	34 189	27 188											
	13:30	28 204	37 208	48 215	58 224	63 233	65 236	64 235	60 227	51 218	41 210	31 205	24 203											
	14:30	22 219	30 224	40 233	48 243	53 251	54 254	54 253	50 246	43 236	34 227	25 220	19 217											
	15:30	14 231	21 237	30 247	38 256	42 264	43 266	43 265	39 259	33 250	25 240	16 233	11 228											
	16:30	5 241	11 248	19 258	26 267	31 274	32 275	31 275	28 270	22 261	14 252	6 244	3 237											
	17:30		3 256	8 268	15 276	19 283	20 284	20 284	17 279	10 271	4 261	1 249												
	18:30			1 274	4 285	8 291	9 293	9 292	5 288	2 277														
	19:30					2 297	2 299	2 299																
	Sunrise:	07:04	06:31	05:48	05:11	04:42	04:35	04:37	05:00	05:36	06:15	06:54	07:20											
	Sunset:	16:56	17:29	18:12	18:49	19:18	19:25	19:23	19:00	18:24	17:45	17:06	16:40											

Table continues

Note: bearings from measured from true north and must be corrected for the southern hemisphere by subtracting the tabulated value from 180° if the tabulated value is less than 180° and from 540° if the tabulated value is greater than 180°.

Solar altitude angles and bearings from true north for northern hemisphere sites; bearings must be corrected for the southern hemisphere, see footnote (©J K Page; used with permission)'NCVKWF G'72Å

Latitude	Solar time	Solar altitude angle and bearing for stated date in northern (N) and southern (S) hemispheres											
		(N) Jan 29 (S) Jul 3	Feb 26 Aug 3	Mar 29 Sep 3	Apr 28 Oct 3	May 29 Nov 3	Jun 21 Dec 21	Jul 4 Jan 28	Aug 4 Feb 25	Sep 4 Mar 28	Oct 4 Apr 28	Nov 4 May 29	Dec 4 Jun 3
		Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear
50°	04:30				1 69	4 60	5 58	4 59	2 65				
	05:30			1 86	6 75	12 70	13 69	13 70	8 73	3 82			
	06:30		1 106	7 94	16 86	21 81	22 80	22 80	18 84	10 91	3 101		
	07:30	2 122	7 113	17 105	25 98	31 92	32 91	32 91	28 96	20 103	11 110	3 119	
	08:30	8 131	15 126	26 118	35 111	40 105	42 103	41 104	37 109	29 116	19 123	10 129	4 133
	09:30	14 143	23 139	34 133	43 126	49 120	51 118	50 119	46 124	37 131	27 137	17 142	10 145
	10:30	19 157	28 155	40 150	50 145	57 140	58 138	58 139	53 143	43 149	32 153	22 157	15 159
	11:30	22 172	31 171	43 170	54 168	61 166	63 165	62 165	57 167	47 169	35 171	24 172	17 173
	12:30	22 188	31 189	43 190	54 192	61 195	63 195	62 195	57 193	47 191	35 189	24 188	17 187
	13:30	19 203	28 205	40 210	50 215	57 220	58 222	58 221	53 217	43 211	32 207	22 203	15 202
	14:30	14 217	23 221	34 227	43 234	49 240	51 242	50 241	46 236	37 229	27 223	17 218	10 215
	15:30	8 230	15 234	26 242	35 249	40 255	42 257	41 256	37 251	29 244	19 237	10 231	4 227
	16:30	2 238	7 247	17 255	25 262	31 268	32 269	32 269	28 264	20 257	11 250	3 241	
	17:30		1 254	7 267	16 274	21 279	22 280	22 280	18 276	10 269	3 259		
	18:30			1 274	6 285	12 290	13 291	13 291	8 287	3 278			
	19:30				1 292	4 300	5 302	4 301	2 295				
	Sunrise:	07:32	06:44	05:44	04:50	04:07	03:56	03:59	04:33	05:26	06:21	07:17	07:57
	Sunset:	16:28	17:16	18:16	19:10	19:53	20:04	20:01	19:27	18:34	17:39	16:43	16:03

Table continues

Note: bearings from measured from true north and must be corrected for the southern hemisphere by subtracting the tabulated value from 180° if the tabulated value is less than 180° and from 540° if the tabulated value is greater than 180°.

Solar altitude angles and bearings from true north for northern hemisphere sites; bearings must be corrected for the southern hemisphere, see footnote (©J K Page; used with permission) LATITUDE 55°"

Latitude	Solar time	Solar altitude angle and bearing for stated date in northern (N) and southern (S) hemispheres											
		(N) Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4
		(S) Jul 3	Aug 3	Sep 3	Oct 3	Nov 3	Dec 21	Jan 28	Feb 25	Mar 28	Apr 28	May 29	Jun 3
		Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear
55°	03:30					1 52	2 50	2 50					
	04:30				2 67	6 60	7 59	7 59	3 64				
	05:30			1 86	7 76	13 71	15 70	14 71	10 74	3 82			
	06:30		1 107	7 94	16 88	22 83	23 82	23 82	18 86	10 92	2 101		
	07:30		5 114	16 107	24 100	30 95	32 94	31 94	27 98	19 105	9 111	2 120	
	08:30	4 131	12 127	23 120	33 114	39 109	40 108	40 108	35 112	27 118	17 124	7 130	2 135
	09:30	10 144	19 141	30 135	40 130	46 125	48 123	48 124	43 128	34 134	23 139	13 143	6 146
	10:30	14 158	23 156	35 152	46 148	53 144	54 143	54 143	48 147	39 151	28 155	17 157	10 159
	11:30	17 173	26 172	38 171	49 169	56 167	58 167	57 167	52 168	42 170	30 171	19 172	12 173
	12:30	17 187	26 188	38 190	49 191	56 193	58 193	57 193	52 192	42 190	30 189	19 188	12 187
	13:30	14 202	23 204	35 208	46 212	53 216	54 217	54 217	48 214	39 209	28 206	17 203	10 201
	14:30	10 216	19 219	30 225	40 230	46 235	48 237	48 236	43 232	34 227	23 221	13 217	6 215
	15:30	4 229	12 233	23 240	33 246	39 251	40 253	40 252	35 248	27 242	17 236	7 230	2 225
	16:30		5 246	16 253	24 260	30 265	32 266	31 266	27 262	19 255	9 249	2 240	
	17:30		1 253	7 266	16 272	22 277	23 278	23 278	18 274	10 268	2 259		
	18:30			1 274	7 284	13 289	15 290	14 289	10 286	3 278			
	19:30				2 293	6 300	7 301	7 301	3 297				
	20:30					1 308	2 311	2 310					
	Sunrise:	07:52	06:53	05:40	04:35	03:42	03:27	03:32	04:15	05:19	06:25	07:33	08:23
	Sunset:	16:08	17:07	18:20	19:25	20:18	20:33	20:28	19:45	18:41	17:35	16:27	15:37

Table continues

Note: bearings from measured from true north and must be corrected for the southern hemisphere by subtracting the tabulated value from 180° if the tabulated value is less than 180° and from 540° if the tabulated value is greater than 180°.

Solar altitude angles and bearings from true north for northern hemisphere sites; bearings must be corrected for the southern hemisphere, see footnote (©J K Page; used with permission) LATITUDE 60°

Latitude	Solar time	Solar altitude angle and bearing for stated date in northern (N) and southern (S) hemispheres											
		(N) Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4
		(S) Jul 3	Aug 3	Sep 3	Oct 3	Nov 3	Dec 21	Jan 28	Feb 25	Mar 28	Apr 28	May 29	Jun 3
		Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear	Alt Bear
60°	02:30						1 39						
	03:30					2 48	4 47	3 47	1 55				
	04:30				2 65	8 60	10 59	9 60	4 62				
	05:30			1 86	9 76	15 73	17 72	16 72	11 75	3 81			
	06:30			7 95	16 89	22 85	24 84	23 84	19 88	10 93	2 102		
	07:30		3 114	14 108	23 103	30 98	31 97	31 97	26 101	17 106	7 112		
	08:30	2 133	9 127	21 122	30 117	37 113	39 111	38 112	33 115	24 120	14 126	4 130	
	09:30	6 144	15 142	27 137	37 133	43 129	45 128	45 128	39 131	30 136	19 140	9 144	2 146
	10:30	10 158	19 157	31 154	41 150	48 148	50 147	50 147	44 149	34 153	23 156	12 158	6 159
	11:30	12 173	21 172	33 171	44 170	51 169	53 169	53 169	47 170	37 171	25 172	14 173	8 173
	12:30	12 187	21 188	33 189	44 190	51 191	53 192	53 191	47 191	37 189	25 188	14 188	8 187
	13:30	10 202	19 204	31 206	41 210	48 213	50 213	50 213	44 211	34 207	23 205	12 202	6 201
	14:30	6 216	15 219	27 223	37 227	43 231	45 232	45 232	39 229	30 224	19 220	9 216	2 214
	15:30	2 227	9 233	21 238	30 243	37 248	39 249	38 248	33 245	24 240	14 235	4 230	
	16:30		3 246	14 252	23 258	30 262	31 263	31 263	26 259	17 254	7 248		
	17:30			7 265	16 271	22 275	24 276	23 276	19 272	10 267	2 258		
	18:30			1 274	9 284	15 287	17 288	16 288	11 285	3 279			
	19:30				2 295	8 300	10 301	9 300	4 298				
	20:30					2 312	4 313	3 313	1 305				
	21:30						1 321						
	Sunrise:	08:18	07:04	05:36	04:16	03:06	02:45	02:52	03:50	05:10	06:31	07:54	09:00
	Sunset:	15:42	16:56	18:24	19:44	20:54	21:15	21:08	20:10	18:50	17:29	16:06	15:00

Note: bearings from measured from true north and must be corrected for the southern hemisphere by subtracting the tabulated value from 180° if the tabulated value is less than 180° and from 540° if the tabulated value is greater than 180°.