

LAT 89°N

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| LHA<br>Υ | Hc<br>Zn                | Hc<br>Zn                | Hc<br>Zn                | Hc<br>Zn                | Hc<br>Zn                | Hc<br>Zn                | Hc<br>Zn                | Hc<br>Zn | Hc<br>Zn |
|----------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|----------|----------|
| 0        | Dubhe<br>60°40' 013     | POLLUX<br>27°31' 063    | *CAPELLA<br>46°11' 099  | Alpheratz<br>30°12' 178 | *DENEBO<br>46°00' 230   | VEGA<br>38°58' 261      | *ARCTURUS<br>18°15' 326 |          |          |
| 2        | 60 41 015               | 27 33 065               | 46 13 101               | 30 12 180               | 45 58 232               | 38 56 263               | 18 14 328               |          |          |
| 4        | 60 41 017               | 27 35 067               | 46 15 103               | 30 12 182               | 45 56 234               | 38 53 265               | 18 13 330               |          |          |
| 6        | 60 42 019               | 27 37 069               | 46 17 105               | 30 12 184               | 45 55 236               | 38 51 267               | 18 12 332               |          |          |
| 8        | 60 43 021               | 27 39 071               | 46 19 107               | 30 12 186               | 45 53 238               | 38 49 269               | 18 11 334               |          |          |
| 10       | 60°44' 023              | 27°41' 073              | 46°21' 109              | 30°11' 188              | 45°51' 240              | 38°47' 271              | 18°10' 336              |          |          |
| 12       | 60 44 025               | 27 43 075               | 46 23 111               | 30 11 190               | 45 49 242               | 38 45 273               | 18 09 338               |          |          |
| 14       | 60 45 027               | 27 45 077               | 46 25 113               | 30 11 192               | 45 47 244               | 38 43 275               | 18 08 340               |          |          |
| 16       | 60 46 029               | 27 47 079               | 46 27 115               | 30 10 194               | 45 46 246               | 38 41 277               | 18 08 342               |          |          |
| 18       | 60 47 031               | 27 49 081               | 46 29 117               | 30 10 196               | 45 44 248               | 38 39 279               | 18 07 344               |          |          |
| 20       | *ARCTURUS<br>60°48' 033 | REGULUS<br>27°51' 083   | POLLUX<br>46°31' 120    | *CAPELLA<br>30°09' 208  | Alpheratz<br>45°42' 250 | *DENEBO<br>38°37' 281   | VEGA<br>18°07' 346      |          |          |
| 22       | 60 50 035               | 27 53 085               | 46 33 122               | 30 08 200               | 45 40 252               | 38 35 283               | 18 06 348               |          |          |
| 24       | 60 51 037               | 27 55 087               | 46 35 124               | 30 08 202               | 45 38 254               | 38 33 285               | 18 06 350               |          |          |
| 26       | 60 52 039               | 27 57 089               | 46 37 126               | 30 07 204               | 45 36 256               | 38 31 287               | 18 05 352               |          |          |
| 28       | 60 53 041               | 28 00 091               | 46 38 128               | 30 06 206               | 45 34 258               | 38 29 289               | 18 05 354               |          |          |
| 30       | Dubhe<br>60°55' 043     | POLLUX<br>28°02' 093    | *CAPELLA<br>46°40' 130  | Alpheratz<br>30°05' 208 | *DENEBO<br>45°32' 260   | VEGA<br>38°27' 291      | *ARCTURUS<br>18°05' 356 |          |          |
| 32       | 60 56 044               | 28 04 095               | 46 41 132               | 30 04 210               | 45 29 262               | 38 25 293               | 18 05 358               |          |          |
| 34       | 60 58 046               | 28 06 097               | 46 43 134               | 30 03 212               | 45 27 264               | 38 23 295               | 18 05 000               |          |          |
| 36       | 60 59 048               | 28 08 099               | 46 44 136               | 30 02 214               | 45 25 266               | 38 21 297               | 18 05 002               |          |          |
| 38       | 61 01 050               | 28 10 101               | 46 46 138               | 30 01 216               | 45 23 268               | 38 19 299               | 18 05 004               |          |          |
| 40       | 61°03' 052              | 28°12' 103              | 46°47' 140              | 29°59' 218              | 45°21' 270              | 38°17' 301              | 18°05' 006              |          |          |
| 42       | 61 04 054               | 28 14 105               | 46 48 142               | 29 58 220               | 45 19 272               | 38 16 303               | 18 05 008               |          |          |
| 44       | 61 06 056               | 28 16 107               | 46 50 144               | 29 57 222               | 45 17 274               | 38 14 305               | 18 06 010               |          |          |
| 46       | 61 08 058               | 28 18 109               | 46 51 146               | 29 55 224               | 45 15 276               | 38 12 307               | 18 06 012               |          |          |
| 48       | 61 10 060               | 28 20 111               | 46 52 148               | 29 54 226               | 45 13 278               | 38 11 309               | 18 07 014               |          |          |
| 50       | 61°11' 062              | 28°22' 113              | 46°53' 150              | 29°52' 228              | 45°11' 280              | 38°09' 311              | 18°07' 016              |          |          |
| 52       | 61 13 064               | 28 24 115               | 46 54 152               | 29 51 230               | 45 09 282               | 38 07 313               | 18 08 018               |          |          |
| 54       | 61 15 066               | 28 26 117               | 46 55 154               | 29 50 232               | 45 07 284               | 38 06 315               | 18 08 020               |          |          |
| 56       | 61 17 068               | 28 28 119               | 46 56 156               | 29 47 234               | 45 05 286               | 38 04 317               | 18 09 022               |          |          |
| 58       | 61 19 070               | 28 30 121               | 46 57 158               | 29 46 236               | 45 03 288               | 38 03 319               | 18 10 024               |          |          |
| 60       | *ARCTURUS<br>18°11' 026 | REGULUS<br>11°50' 087   | POLLUX<br>28°31' 123    | *CAPELLA<br>46°57' 160  | Alpheratz<br>29°44' 238 | *DENEBO<br>45°01' 290   | VEGA<br>38°02' 321      |          |          |
| 62       | 18 12 028               | 11 52 089               | 28 33 125               | 46 58 162               | 29 42 240               | 44 59 292               | 38 00 323               |          |          |
| 64       | 18 13 030               | 11 54 091               | 28 35 127               | 46 59 164               | 29 40 242               | 44 57 294               | 37 59 325               |          |          |
| 66       | 18 14 032               | 11 56 093               | 28 37 129               | 46 59 166               | 29 38 244               | 44 55 296               | 37 58 327               |          |          |
| 68       | 18 15 034               | 11 58 095               | 28 38 131               | 47 00 168               | 29 36 246               | 44 53 298               | 37 57 329               |          |          |
| 70       | 18°16' 036              | 12°00' 097              | 28°40' 133              | 47°00' 170              | 29°35' 248              | 44°51' 300              | 37°56' 331              |          |          |
| 72       | 18 17 038               | 12 02 099               | 28 41 135               | 47 00 172               | 29 33 250               | 44 49 302               | 37 55 333               |          |          |
| 74       | 18 19 040               | 12 04 101               | 28 43 137               | 47 01 174               | 29 31 252               | 44 48 304               | 37 54 335               |          |          |
| 76       | 18 20 042               | 12 06 103               | 28 44 139               | 47 01 176               | 29 29 254               | 44 46 306               | 37 53 337               |          |          |
| 78       | 18 22 044               | 12 08 105               | 28 45 141               | 47 01 178               | 29 27 256               | 44 44 308               | 37 52 339               |          |          |
| 80       | 18°23' 046              | 12°10' 107              | 28°47' 143              | 47°01' 180              | 29°24' 258              | 44°43' 310              | 37°52' 341              |          |          |
| 82       | 18 24 048               | 12 12 109               | 28 48 145               | 47 01 183               | 29 22 260               | 44 41 312               | 37 51 343               |          |          |
| 84       | 18 26 050               | 12 14 111               | 28 49 147               | 47 01 185               | 29 20 262               | 44 40 314               | 37 50 345               |          |          |
| 86       | 18 28 052               | 12 16 113               | 28 50 149               | 47 01 187               | 29 18 264               | 44 38 316               | 37 50 347               |          |          |
| 88       | 18 29 054               | 12 18 115               | 28 51 151               | 47 00 189               | 29 16 266               | 44 37 318               | 37 49 349               |          |          |
| 90       | *ARCTURUS<br>18°31' 056 | REGULUS<br>12°20' 117   | POLLUX<br>28°52' 153    | *CAPELLA<br>47°00' 191  | Alpheratz<br>29°14' 268 | *DENEBO<br>44°35' 320   | VEGA<br>37°49' 351      |          |          |
| 92       | 18 33 058               | 12 22 119               | 28 53 155               | 46 59 193               | 29 12 270               | 44 34 322               | 37 49 353               |          |          |
| 94       | 18 35 060               | 12 24 121               | 28 54 157               | 46 59 195               | 29 10 272               | 44 33 324               | 37 48 355               |          |          |
| 96       | 18 36 062               | 12 25 123               | 28 55 159               | 46 58 197               | 29 08 274               | 44 32 326               | 37 48 357               |          |          |
| 98       | 18 38 064               | 12 27 125               | 28 55 161               | 46 58 199               | 29 06 276               | 44 30 328               | 37 48 359               |          |          |
| 100      | 18°40' 066              | 12°29' 127              | 28°56' 163              | 46°57' 201              | 29°04' 278              | 44°29' 330              | 37°48' 001              |          |          |
| 102      | 18 42 068               | 12 30 129               | 28 57 165               | 46 56 203               | 29 02 280               | 44 28 332               | 37 48 003               |          |          |
| 104      | 18 44 070               | 12 32 131               | 28 58 167               | 46 55 205               | 29 00 282               | 44 27 334               | 37 48 005               |          |          |
| 106      | 18 46 072               | 12 34 133               | 28 58 169               | 46 55 207               | 28 58 284               | 44 26 336               | 37 49 007               |          |          |
| 108      | 18 48 074               | 12 35 135               | 28 58 171               | 46 54 209               | 28 55 286               | 44 26 338               | 37 49 008               |          |          |
| 110      | 18°50' 076              | 12°36' 137              | 28°58' 173              | 46°53' 211              | 28°53' 288              | 44°25' 340              | 37°49' 010              |          |          |
| 112      | 18 52 078               | 12 38 140               | 28 58 175               | 46 51 213               | 28 52 290               | 44 24 342               | 37 50 012               |          |          |
| 114      | 18 54 080               | 12 39 142               | 28 59 177               | 46 50 215               | 28 50 292               | 44 24 344               | 37 50 014               |          |          |
| 116      | 18 56 082               | 12 40 144               | 28 59 179               | 46 49 217               | 28 48 294               | 44 23 346               | 37 51 016               |          |          |
| 118      | 18 58 084               | 12 42 146               | 28 59 181               | 46 48 219               | 28 46 296               | 44 23 348               | 37 51 018               |          |          |
| 120      | VEGA<br>37°52' 020      | *ARCTURUS<br>19°00' 086 | REGULUS<br>12°43' 148   | POLLUX<br>28°58' 183    | *CAPELLA<br>46°46' 221  | Alpheratz<br>28°44' 298 | *DENEBO<br>44°22' 350   |          |          |
| 122      | 37 53 022               | 19 02 088               | 12 44 150               | 28 58 185               | 46 45 223               | 28 42 300               | 44 22 352               |          |          |
| 124      | 37 54 024               | 19 05 090               | 12 45 152               | 28 58 187               | 46 43 225               | 28 40 302               | 44 21 354               |          |          |
| 126      | 37 55 026               | 19 07 092               | 12 46 154               | 28 58 189               | 46 42 227               | 28 38 304               | 44 21 356               |          |          |
| 128      | 37 55 028               | 19 09 094               | 12 47 156               | 28 57 191               | 46 40 229               | 28 37 306               | 44 21 358               |          |          |
| 130      | 37°56' 030              | 19°11' 096              | 12°48' 158              | 28°57' 193              | 46°39' 231              | 28°35' 308              | 44°21' 359              |          |          |
| 132      | 37 57 032               | 19 13 098               | 12 48 160               | 28 56 196               | 46 37 233               | 28 33 310               | 44 21 001               |          |          |
| 134      | 37 59 034               | 19 15 100               | 12 49 162               | 28 56 198               | 46 35 235               | 28 32 312               | 44 21 003               |          |          |
| 136      | 38 00 036               | 19 17 102               | 12 50 164               | 28 55 200               | 46 34 237               | 28 30 314               | 44 21 005               |          |          |
| 138      | 38 01 038               | 19 19 104               | 12 50 166               | 28 54 202               | 46 32 239               | 28 29 316               | 44 22 007               |          |          |
| 140      | 38°02' 040              | 19°21' 106              | 12°51' 168              | 28°54' 204              | 46°30' 241              | 28°27' 318              | 44°22' 009              |          |          |
| 142      | 38 04 042               | 19 23 108               | 12 51 170               | 28 53 206               | 46 28 243               | 28 26 320               | 44 22 011               |          |          |
| 144      | 38 05 044               | 19 25 110               | 12 52 172               | 28 52 208               | 46 26 245               | 28 25 322               | 44 23 013               |          |          |
| 146      | 38 07 046               | 19 27 112               | 12 52 174               | 28 51 210               | 46 24 247               | 28 24 324               | 44 23 015               |          |          |
| 148      | 38 08 048               | 19 29 114               | 12 52 176               | 28 50 212               | 46 22 249               | 28 22 326               | 44 24 017               |          |          |
| 150      | *DENEBO<br>44°24' 019   | VEGA<br>38°10' 050      | *ARCTURUS<br>19°31' 116 | REGULUS<br>12°52' 178   | POLLUX<br>28°49' 214    | *CAPELLA<br>46°21' 251  | Alpheratz<br>28°21' 328 |          |          |
| 152      | 44 25 021               | 38 12 052               | 19 33 118               | 12 52 180               | 28 47 216               | 46 19 253               | 28 20 330               |          |          |
| 154      | 44 26 023               | 38 13 054               | 19 35 120               | 12 52 182               | 28 46 218               | 46 16 255               | 28 19 332               |          |          |
| 156      | 44 27 025               | 38 15 056               | 19 36 122               | 12 52 184               | 28 45 220               | 46 14 257               | 28 18 334               |          |          |
| 158      | 44 28 027               | 38 17 058               | 19 38 124               | 12 52 186               | 28 44 222               | 46 12 259               | 28 17 336               |          |          |
| 160      | 44°29' 029              | 38°18' 060              | 19°40' 126              | 12°52' 188              | 28°42' 224              | 46°10' 261              | 28°16' 338              |          |          |
| 162      | 44 30 031               | 38 20 062               | 19 42 128               | 12 51 190               | 28 41 226               | 46 08 263               | 28 16 340               |          |          |
| 164      | 44 31 033               | 38 22 064               | 19 43 130               | 12 51 192               | 28 39 228               | 46 06 265               | 28 15 342               |          |          |
| 166      | 44 32 035               | 38 24 066               | 19 45 132               | 12 51 194               | 28 38 230               | 46 04 267               | 28 14 344               |          |          |
| 168      | 44 33 037               | 38 26 068               | 19 46 134               | 12 50 196               | 28 36 232               | 46 02 269               | 28 14 346               |          |          |
| 170      | 44°33' 039              | 38°28' 070              | 19°48' 136              | 12°49' 198              | 28°34' 234              | 46°00' 271              | 28°13' 348              |          |          |
| 172      | 44 34 041               | 38 30 072               | 19 49 138               | 12 49 200               | 28 33 236               | 45 58 273               | 28 13 350               |          |          |
| 174      | 44 35 043               | 38 32 074               | 19 51 140               | 12 48 202               | 28 31 238               | 45 56 275               | 28 13 352               |          |          |
| 176      | 44 36 045               | 38 34 076               | 19 52 142               | 12 47 204               | 28 29 240               | 45 54 277               | 28 12 354               |          |          |
| 178      | 44 40 047               | 38 36 078               | 19 53 144               | 12 46 206               | 28 27 242               | 45 52 279               | 28 12 356               |          |          |

| LHA<br>Υ | Hc<br>Zn              | Hc<br>Zn           | Hc<br>Zn                | Hc<br>Zn              | Hc<br>Zn             | Hc<br>Zn               | Hc<br>Zn                | Hc<br>Zn | Hc<br>Zn |
|----------|-----------------------|--------------------|-------------------------|-----------------------|----------------------|------------------------|-------------------------|----------|----------|
| 180      | *DENEBO<br>44°42' 049 | VEGA<br>38°38' 080 | *ARCTURUS<br>19°54' 146 | REGULUS<br>12°45' 208 | POLLUX<br>28°25' 244 | *CAPELLA<br>45°50' 281 | Alpheratz<br>28°12' 358 |          |          |
| 182      | 44 43 051             | 38 40 082          | 19 56 148               | 12 44 210             | 28 23 246            | 45 47 283              | 28 12 002               |          |          |
| 184      | 44 45 053             | 38 42 084          | 19 57 150               | 12 43 212             | 28 21 248            | 45 45 285              | 28 12 004               |          |          |
| 186      | 44 47 055             | 38 44 086          | 19 58 152               | 12 42 214             | 28 19 250            | 45 43 287              | 28 12 006               |          |          |
| 188      | 44 48 057             | 38 46 088          | 19 59 154               | 12 41 216             | 28 18 252            | 45 41 289              | 28 12 008               |          |          |
| 190      | 44°50' 059            | 38°48' 090         | 20°00' 156              | 12°40' 218            | 28°16' 254           | 45°39' 291             | 28°12' 010              |          |          |
| 192      | 44 52 061             | 38 51 092          | 20 00 158               | 12 38 220             | 28 14 256            | 45 38 293              | 28 13 012               |          |          |
| 194      | 44 54 063             | 38 53 094          | 20 01 160               | 12 37 222             | 28                   |                        |                         |          |          |

Table with columns for LHA, Hc, Zn, and star names (DUBHE, POLLUX, CAPELLA, ALPHERATZ, DENEB, VEGA, ARCTURUS, REGULUS). It lists astronomical data for stars visible at 88 degrees North latitude.

Table with 8 columns: LHA, Hc, Zn, Hc, Zn, Hc, Zn, Hc, Zn, Hc, Zn. Rows include star names like Dubhe, POLLUX, \*CAPELLA, Alpheratz, \*DENEK, VEGA, \*ARCTURUS and numerical data for each.

Table with 8 columns: LHA, Hc, Zn, Hc, Zn, Hc, Zn, Hc, Zn. Rows include star names like \*DENEK, VEGA, \*ARCTURUS, REGULUS, POLLUX, \*CAPELLA, Alpheratz and numerical data for each.

| LHA<br>Υ | Hc<br>Zn                | Hc<br>Zn                | Hc<br>Zn                | Hc<br>Zn                | Hc<br>Zn                | Hc<br>Zn                | Hc<br>Zn                | Hc<br>Zn | Hc<br>Zn |
|----------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|----------|----------|
| 0        | Dubhe<br>57°45' 012     | POLLUX<br>26°08' 062    | *CAPELLA<br>46°36' 096  | Alpheratz<br>33°12' 178 | *DENEΒ<br>47°52' 233    | VEGA<br>39°21' 264      | *ARCTURUS<br>15°45' 327 |          |          |
| 2        | 57 47 014               | 26 15 064               | 46 44 098               | 33 12 180               | 47 45 235               | 39 12 266               | 15 41 329               |          |          |
| 4        | 57 49 016               | 26 23 066               | 46 53 100               | 33 12 182               | 47 38 237               | 39 04 268               | 15 37 330               |          |          |
| 6        | 57 51 018               | 26 30 067               | 47 01 102               | 33 11 184               | 47 31 239               | 38 56 270               | 15 33 332               |          |          |
| 8        | 57 54 019               | 26 38 069               | 47 09 104               | 33 11 186               | 47 24 241               | 38 47 272               | 15 29 334               |          |          |
| 10       | 57°57' 021              | 26°46' 071              | 47°17' 106              | 33°10' 188              | 47°16' 243              | 38°39' 274              | 15°25' 336              |          |          |
| 12       | 58 00 023               | 26 54 073               | 47 25 108               | 33 08 190               | 47 09 245               | 38 31 276               | 15 22 338               |          |          |
| 14       | 58 03 025               | 27 02 075               | 47 33 111               | 33 07 192               | 47 01 247               | 38 22 278               | 15 19 340               |          |          |
| 16       | 58 07 027               | 27 10 077               | 47 41 113               | 33 05 194               | 46 53 249               | 38 14 280               | 15 17 342               |          |          |
| 18       | 58 11 028               | 27 18 079               | 47 48 115               | 33 03 196               | 46 46 251               | 38 06 282               | 15 14 344               |          |          |
| 20       | 58°15' 030              | 27°22' 081              | 47°56' 117              | 33°00' 198              | 46°38' 253              | 37°58' 284              | 15°12' 346              |          |          |
| 22       | 58 19 032               | 27 30 083               | 48 03 119               | 32 57 200               | 46 30 255               | 37 50 286               | 15 10 348               |          |          |
| 24       | 58 24 034               | 27 43 085               | 48 11 121               | 32 54 203               | 46 21 257               | 37 42 288               | 15 09 350               |          |          |
| 26       | 58 28 036               | 27 52 087               | 48 18 123               | 32 51 205               | 46 13 259               | 37 34 290               | 15 07 352               |          |          |
| 28       | 58 33 037               | 28 00 089               | 48 25 125               | 32 47 207               | 46 05 262               | 37 26 292               | 15 06 354               |          |          |
| 30       | Dubhe<br>58°39' 039     | POLLUX<br>28°08' 091    | *CAPELLA<br>48°31' 127  | Alpheratz<br>32°43' 209 | *DENEΒ<br>45°57' 264    | VEGA<br>37°18' 294      | *ARCTURUS<br>15°05' 356 |          |          |
| 32       | 58 44 041               | 28 17 093               | 48 38 129               | 32 39 211               | 45 48 266               | 37 10 295               | 15 05 358               |          |          |
| 34       | 58 50 043               | 28 25 095               | 48 44 131               | 32 35 213               | 45 40 268               | 37 03 297               | 15 05 360               |          |          |
| 36       | 58 55 045               | 28 33 097               | 48 50 133               | 32 30 215               | 45 32 270               | 36 56 299               | 15 05 002               |          |          |
| 38       | 59 01 046               | 28 42 099               | 48 56 135               | 32 25 217               | 45 23 272               | 36 48 301               | 15 05 004               |          |          |
| 40       | 59°08' 048              | 28°50' 101              | 49°02' 138              | 32°20' 219              | 45°15' 274              | 36°41' 303              | 15°05' 006              |          |          |
| 42       | 59 14 050               | 28 58 103               | 49 08 140               | 32 15 221               | 45 06 276               | 36 34 305               | 15 07 008               |          |          |
| 44       | 59 20 052               | 29 06 105               | 49 13 142               | 32 09 223               | 44 58 277               | 36 28 307               | 15 08 010               |          |          |
| 46       | 59 27 054               | 29 14 107               | 49 18 144               | 32 03 225               | 44 50 279               | 36 21 309               | 15 10 012               |          |          |
| 48       | 59 34 056               | 29 22 109               | 49 23 146               | 31 57 227               | 44 42 281               | 36 15 311               | 15 12 014               |          |          |
| 50       | 59°41' 058              | 29°30' 111              | 49°27' 148              | 31°51' 229              | 44°33' 283              | 36°08' 313              | 15°14' 016              |          |          |
| 52       | 59 48 059               | 29 38 113               | 49 32 150               | 31 44 231               | 44 25 285               | 36 02 315               | 15 16 017               |          |          |
| 54       | 59 55 061               | 29 45 115               | 49 37 152               | 31 38 234               | 44 17 287               | 35 56 317               | 15 19 019               |          |          |
| 56       | 60 03 063               | 29 53 117               | 49 39 155               | 31 31 236               | 44 09 289               | 35 51 319               | 15 22 021               |          |          |
| 58       | 60 10 065               | 30 00 119               | 49 43 157               | 31 24 238               | 44 02 291               | 35 45 321               | 15 25 023               |          |          |
| 60       | *ARCTURUS<br>15°28' 025 | REGULUS<br>11°41' 087   | POLLUX<br>30°07' 121    | *CAPELLA<br>49°46' 159  | Alpheratz<br>31°17' 242 | *DENEΒ<br>43°54' 293    | VEGA<br>35°40' 322      |          |          |
| 62       | 15 32 027               | 11 49 089               | 30 14 124               | 49 49 161               | 31 10 242               | 43 46 295               | 35 35 324               |          |          |
| 64       | 15 36 029               | 11 57 091               | 30 21 126               | 49 51 163               | 31 02 244               | 43 39 297               | 35 30 326               |          |          |
| 66       | 15 40 031               | 12 06 093               | 30 28 128               | 49 54 165               | 30 55 246               | 43 31 299               | 35 26 328               |          |          |
| 68       | 15 45 033               | 12 14 095               | 30 35 130               | 49 56 168               | 30 47 248               | 43 24 301               | 35 22 330               |          |          |
| 70       | 15°49' 035              | 12°22' 097              | 30°41' 132              | 49°52' 170              | 30°39' 250              | 43°17' 303              | 35°18' 332              |          |          |
| 72       | 15 54 037               | 12 31 099               | 30 47 134               | 49 59 172               | 30 31 252               | 43 10 305               | 35 14 334               |          |          |
| 74       | 16 00 039               | 12 39 101               | 30 53 136               | 50 00 174               | 30 23 254               | 43 03 307               | 35 10 336               |          |          |
| 76       | 16 05 041               | 12 47 103               | 30 59 138               | 50 00 176               | 30 15 256               | 42 56 309               | 35 07 338               |          |          |
| 78       | 16 11 043               | 12 55 105               | 31 04 140               | 50 01 178               | 30 07 258               | 42 50 310               | 35 04 340               |          |          |
| 80       | 16°16' 045              | 13°03' 107              | 31°10' 142              | 50°01' 181              | 29°59' 262              | 42°44' 312              | 35°01' 342              |          |          |
| 82       | 16 22 047               | 13 11 109               | 31 15 144               | 50 01 183               | 29 50 260               | 42 38 314               | 34 59 343               |          |          |
| 84       | 16 29 049               | 13 19 111               | 31 19 146               | 50 00 185               | 29 42 264               | 42 32 316               | 34 56 345               |          |          |
| 86       | 16 35 051               | 13 27 113               | 31 24 148               | 49 59 187               | 29 34 266               | 42 26 318               | 34 54 347               |          |          |
| 88       | 16 42 053               | 13 35 115               | 31 28 150               | 49 58 189               | 29 25 268               | 42 21 320               | 34 53 349               |          |          |
| 90       | *ARCTURUS<br>16°55' 055 | REGULUS<br>13°42' 117   | POLLUX<br>31°32' 152    | *CAPELLA<br>49°57' 191  | Alpheratz<br>29°17' 270 | *DENEΒ<br>42°15' 322    | VEGA<br>34°51' 351      |          |          |
| 92       | 16 55 057               | 13 50 119               | 31 36 154               | 49 55 193               | 29 09 272               | 42 10 324               | 34 50 353               |          |          |
| 94       | 17 02 059               | 13 57 121               | 31 39 156               | 49 53 196               | 29 00 274               | 42 05 326               | 34 49 355               |          |          |
| 96       | 17 10 061               | 14 04 123               | 31 43 158               | 49 50 198               | 28 52 276               | 42 01 328               | 34 48 357               |          |          |
| 98       | 17 17 063               | 14 11 125               | 31 46 161               | 49 48 200               | 28 44 278               | 41 56 329               | 34 47 359               |          |          |
| 100      | 17°24' 065              | 14°18' 127              | 31°48' 163              | 49°45' 202              | 28°35' 280              | 41°52' 331              | 34°48' 001              |          |          |
| 102      | 17 32 067               | 14 24 129               | 31 51 165               | 49 41 204               | 28 27 282               | 41 48 333               | 34 48 002               |          |          |
| 104      | 17 40 069               | 14 31 131               | 31 53 167               | 49 38 206               | 28 19 284               | 41 45 335               | 34 49 004               |          |          |
| 106      | 17 48 071               | 14 37 133               | 31 56 169               | 49 34 208               | 28 11 286               | 41 41 337               | 34 50 006               |          |          |
| 108      | 17 56 073               | 14 43 135               | 31 56 171               | 49 30 211               | 28 03 288               | 41 38 339               | 34 51 008               |          |          |
| 110      | 18°04' 075              | 14°49' 137              | 31°57' 173              | 49°25' 213              | 27°55' 290              | 41°35' 341              | 34°52' 010              |          |          |
| 112      | 18 12 077               | 14 54 139               | 31 58 175               | 49 21 215               | 27 47 292               | 41 33 343               | 34 54 012               |          |          |
| 114      | 18 20 079               | 15 00 141               | 31 58 177               | 49 16 217               | 27 39 294               | 41 30 345               | 34 56 014               |          |          |
| 116      | 18 28 081               | 15 05 143               | 31 59 179               | 49 11 219               | 27 32 296               | 41 28 346               | 34 58 016               |          |          |
| 118      | 18 36 083               | 15 10 145               | 31 59 181               | 49 05 221               | 27 24 298               | 41 26 348               | 35 00 018               |          |          |
| 120      | VEGA<br>35°03' 020      | *ARCTURUS<br>18°45' 084 | REGULUS<br>15°14' 147   | POLLUX<br>31°58' 184    | *CAPELLA<br>49°00' 223  | Alpheratz<br>27°17' 300 | *DENEΒ<br>41°25' 350    |          |          |
| 122      | 35 06 021               | 18 53 086               | 15 19 149               | 31 58 186               | 48 54 225               | 27 10 301               | 41 24 352               |          |          |
| 124      | 35 09 023               | 19 01 088               | 15 23 151               | 31 57 188               | 48 48 228               | 27 03 303               | 41 23 354               |          |          |
| 126      | 35 12 025               | 19 10 090               | 15 27 153               | 31 55 190               | 48 41 230               | 26 56 305               | 41 22 356               |          |          |
| 128      | 35 16 027               | 19 18 092               | 15 31 155               | 31 54 192               | 48 35 232               | 26 49 307               | 41 21 358               |          |          |
| 130      | 35°20' 029              | 19°26' 094              | 15°34' 157              | 31°52' 194              | 48°28' 234              | 26°43' 309              | 41°21' 000              |          |          |
| 132      | 35 24 031               | 19 35 096               | 15 37 159               | 31 50 196               | 48 21 236               | 26 36 311               | 41 21 001               |          |          |
| 134      | 35 29 033               | 19 43 098               | 15 40 161               | 31 47 198               | 48 14 238               | 26 30 313               | 41 22 003               |          |          |
| 136      | 35 33 035               | 19 51 100               | 15 42 163               | 31 44 200               | 48 07 240               | 26 24 315               | 41 22 005               |          |          |
| 138      | 35 38 037               | 20 00 102               | 15 45 165               | 31 41 202               | 48 00 242               | 26 18 317               | 41 23 007               |          |          |
| 140      | 35°43' 039              | 20°08' 104              | 15°47' 167              | 31°38' 204              | 47°52' 244              | 26°13' 319              | 41°24' 009              |          |          |
| 142      | 35 49 041               | 20 16 106               | 15 48 169               | 31 35 206               | 47 45 246               | 26 07 321               | 41 26 011               |          |          |
| 144      | 35 54 042               | 20 24 108               | 15 50 171               | 31 31 208               | 47 37 248               | 26 02 323               | 41 27 013               |          |          |
| 146      | 36 00 044               | 20 32 110               | 15 51 173               | 31 27 210               | 47 29 250               | 25 57 325               | 41 29 014               |          |          |
| 148      | 36 06 046               | 20 39 112               | 15 52 175               | 31 22 212               | 47 21 252               | 25 52 327               | 41 31 016               |          |          |
| 150      | *DENEΒ<br>41°34' 018    | VEGA<br>36°12' 048      | *ARCTURUS<br>20°47' 115 | REGULUS<br>15°52' 178   | POLLUX<br>31°18' 215    | *CAPELLA<br>47°13' 255  | Alpheratz<br>25°48' 329 |          |          |
| 152      | 41 37 020               | 36 18 050               | 20 55 117               | 15 52 180               | 31 13 217               | 47 05 257               | 25 44 331               |          |          |
| 154      | 41 40 022               | 36 25 052               | 21 02 119               | 15 52 182               | 31 08 219               | 46 57 259               | 25 40 333               |          |          |
| 156      | 41 43 024               | 36 32 054               | 21 09 121               | 15 52 184               | 31 02 221               | 46 49 261               | 25 36 335               |          |          |
| 158      | 41 47 026               | 36 38 056               | 21 16 123               | 15 51 186               | 30 57 223               | 46 40 263               | 25 33 336               |          |          |
| 160      | 41°50' 028              | 36°45' 058              | 21°23' 125              | 15°50' 188              | 30°51' 227              | 46°32' 265              | 25°29' 338              |          |          |
| 162      | 41 54 030               | 36 53 060               | 21 30 127               | 15 49 190               | 30 45 229               | 46 24 267               | 25 26 340               |          |          |
| 164      | 41 59 031               | 37 00 062               | 21 37 129               | 15 47 192               | 30 39 231               | 46 15 269               | 25 24 342               |          |          |
| 166      | 42 03 033               | 37 07 064               | 21 43 131               | 15 45 194               | 30 32 233               | 46 07 271               | 25 21 344               |          |          |
| 168      | 42 08 035               | 37 15 066               | 21 50 133               | 15 43 196               | 30 26 235               | 45 59 273               | 25 19 346               |          |          |
| 170      | 42°13' 037              | 37°23' 068              | 21°56' 135              | 15°41' 198              | 30°19' 235              | 45°50' 275              | 25°17' 348              |          |          |
| 172      | 42 18 039               | 37 30 070               | 22 01 137               | 15 38 200               | 30 12 237               | 45 42 277               | 25 16 350               |          |          |
| 174      | 42 23 041               | 37 37 072               | 22 07 139               | 15 35 202               | 30 05 239               | 45 34 279               | 25 14 352               |          |          |
| 176      | 42 29 043               | 37 46 074               | 22 12 141               | 15 32 204               | 29 57 241               | 45 25 281               | 25 13 354               |          |          |
| 178      | 42 35 045               | 37 54 076               | 22 18 143               | 15 28 206               | 29 50 243               | 45 17 282               | 25 13 356               |          |          |

| LHA<br>Υ | Hc<br>Zn | Hc<br>Zn |
|----------|----------|----------|
|----------|----------|----------|

Main data table with columns for LHA, Hc, Zn, and star names (DUBHE, POLLUX, CAPELLA, ALPHAZERT, DENEB, VEGA, ARCTURUS, REGULUS) for various star groups.

Table with columns for LHA, Hc, Zn, and star names (DUBHE, POLLUX, CAPELLA, ALPHAZET, DENEB, VEGA, ARCTURUS, REGULUS) for various latitudes from 0 to 178. Each row contains 17 columns of data.

LAT 83°N

LAT 83°N

| LHA<br>Υ | Hc<br>Zn   | Hc<br>Zn   | Hc<br>Zn   | Hc<br>Zn   | Hc<br>Zn   | Hc<br>Zn   | Hc<br>Zn   | Hc<br>Zn  | Hc<br>Zn   | Hc<br>Zn   |
|----------|------------|------------|------------|------------|------------|------------|------------|-----------|------------|------------|
| 0        | 54°49' 011 | Dubhe      | POLLUX     | *CAPELLA   | Alpheratz  | *DENEK     | VEGA       | *ARCTURUS |            |            |
| 2        | 54 52 013  | 24 53 062  | 47 05 095  | 46 51 093  | 36 12 177  | 49 37 236  | 39 36 266  | 13 15 327 | 180        | 40 35 045  |
| 4        | 54 55 015  | 25 06 064  | 47 20 097  | 47 05 095  | 36 12 180  | 49 25 238  | 39 22 268  | 13 07 329 | 182        | 40 45 047  |
| 6        | 54 59 016  | 25 19 066  | 47 34 099  | 47 20 097  | 36 12 182  | 49 13 240  | 39 07 270  | 13 00 331 | 184        | 40 56 048  |
| 8        | 55 03 018  | 25 33 068  | 47 49 101  | 47 34 099  | 36 11 184  | 49 00 242  | 38 52 272  | 12 53 333 | 186        | 41 07 050  |
| 10       | 55°08' 020 | 25°46' 070 | 48°03' 103 | 36°08' 188 | 48°34' 246 | 38°23' 276 | 12°40' 337 | 190       | 41°30' 054 | 38°23' 085 |
| 12       | 55 13 021  | 26 00 072  | 48 17 105  | 36 06 190  | 48 20 248  | 38 09 278  | 12 35 339  | 192       | 41 42 056  | 38 47 087  |
| 14       | 55 19 023  | 26 14 074  | 48 31 107  | 36 03 193  | 48 06 250  | 37 54 280  | 12 30 341  | 194       | 41 54 058  | 39 01 089  |
| 16       | 55 24 025  | 26 28 076  | 48 45 109  | 35 59 195  | 47 52 252  | 37 40 282  | 12 25 342  | 196       | 42 07 060  | 39 16 091  |
| 18       | 55 31 026  | 26 43 078  | 48 59 112  | 35 55 197  | 47 38 254  | 37 26 284  | 12 21 344  | 198       | 42 19 061  | 39 30 093  |
| 20       | 55°37' 028 | 26°57' 080 | 49°12' 114 | 35°51' 199 | 47°24' 257 | 37°12' 286 | 12°17' 346 | 200       | 42°32' 063 | 39°45' 095 |
| 22       | 55 44 030  | 27 11 082  | 49 26 116  | 35 46 201  | 47 10 259  | 36 58 288  | 12 14 348  | 202       | 42 46 065  | 40 00 097  |
| 24       | 55 52 031  | 27 26 084  | 49 39 118  | 35 40 203  | 46 56 261  | 36 44 290  | 12 11 350  | 204       | 42 59 067  | 40 14 099  |
| 26       | 56 00 033  | 27 40 086  | 49 52 120  | 35 34 205  | 46 41 263  | 36 30 292  | 12 09 352  | 206       | 43 12 069  | 40 28 101  |
| 28       | 56 08 035  | 27 55 088  | 50 04 122  | 35 27 208  | 46 27 265  | 36 17 294  | 12 07 354  | 208       | 43 26 071  | 40 43 103  |
| 30       | 56°16' 036 | POLLUX     | *CAPELLA   | Alpheratz  | *DENEK     | VEGA       | *ARCTURUS  |           |            |            |
| 32       | 56 25 038  | 28 24 092  | 50 28 126  | 35 20 210  | 46 12 267  | 36 03 296  | 12 06 356  | 210       | 43 37 026  | 43 40 073  |
| 34       | 56 34 040  | 28 39 094  | 50 43 129  | 35 15 212  | 45 57 269  | 35 50 297  | 12 05 358  | 212       | 43 48 028  | 43 54 075  |
| 36       | 56 44 041  | 28 53 096  | 50 58 131  | 35 10 214  | 45 43 271  | 35 37 299  | 12 05 000  | 214       | 43 59 030  | 44 08 077  |
| 38       | 56 53 043  | 29 08 098  | 51 13 133  | 35 05 216  | 45 28 273  | 35 25 301  | 12 05 002  | 216       | 44 10 032  | 44 23 079  |
| 40       | 57°04' 045 | 29°22' 100 | 51°23' 135 | 34°38' 220 | 44°59' 277 | 35°00' 305 | 12°07' 006 | 220       | 44°53' 036 | 44°51' 082 |
| 42       | 57 11 047  | 29 37 102  | 51 38 137  | 34 29 223  | 44 45 278  | 34 48 307  | 12 09 008  | 222       | 45 06 038  | 45 06 084  |
| 44       | 57 25 048  | 29 51 104  | 51 53 140  | 34 20 225  | 44 30 280  | 34 37 309  | 12 11 010  | 224       | 45 19 039  | 45 21 086  |
| 46       | 57 36 050  | 30 05 106  | 51 68 142  | 34 11 227  | 44 16 282  | 34 26 311  | 12 13 012  | 226       | 45 32 041  | 45 35 088  |
| 48       | 57 47 052  | 30 19 108  | 51 83 144  | 34 02 229  | 44 02 284  | 34 15 313  | 12 17 013  | 228       | 45 45 043  | 45 48 090  |
| 50       | 57°59' 053 | 30°33' 110 | 51°59' 146 | 33°46' 231 | 43°47' 286 | 34°04' 314 | 12°20' 015 | 230       | 45°58' 045 | 46°04' 092 |
| 52       | 58 11 055  | 30 47 112  | 52 14 148  | 33 37 233  | 43 34 288  | 33 54 316  | 12 24 017  | 232       | 46 11 047  | 46 19 094  |
| 54       | 58 23 057  | 31 00 114  | 52 29 151  | 33 28 235  | 43 20 290  | 33 44 318  | 12 29 019  | 234       | 46 24 049  | 46 34 096  |
| 56       | 58 35 059  | 31 14 116  | 52 44 153  | 33 19 237  | 43 06 292  | 33 34 320  | 12 34 021  | 236       | 46 37 051  | 46 48 098  |
| 58       | 58 48 061  | 31 27 118  | 52 59 155  | 33 10 239  | 42 53 294  | 33 25 322  | 12 39 023  | 238       | 46 50 053  | 47 02 100  |
| 60       | *ARCTURUS  | Dubhe      | POLLUX     | *CAPELLA   | Alpheratz  | *DENEK     | VEGA       |           |            |            |
| 62       | 12 45 025  | 59 01 062  | 31 39 120  | 52 33 158  | 32 46 241  | 42 39 296  | 33 16 324  | 240       | 25 18 055  | 47 17 102  |
| 64       | 12 59 027  | 59 14 064  | 32 04 122  | 52 18 160  | 32 33 243  | 42 26 298  | 33 08 326  | 242       | 26 30 057  | 47 31 104  |
| 66       | 13 06 031  | 59 27 066  | 32 16 124  | 52 03 162  | 32 20 245  | 42 13 299  | 33 00 327  | 244       | 27 42 058  | 47 45 107  |
| 68       | 13 14 033  | 59 40 068  | 32 28 126  | 51 48 164  | 32 06 247  | 42 01 301  | 32 52 329  | 246       | 28 55 060  | 47 59 109  |
| 70       | 13 22 035  | 60 08 071  | 32 39 128  | 51 33 166  | 31 53 249  | 41 48 303  | 32 45 331  | 248       | 29 08 062  | 48 13 111  |
| 72       | 13 30 037  | 60 26 073  | 32 50 130  | 51 18 168  | 31 40 251  | 41 36 305  | 32 38 333  | 250       | 29 21 064  | 48 26 113  |
| 74       | 13 39 039  | 60 44 075  | 33 01 132  | 51 03 170  | 31 27 253  | 41 24 307  | 32 31 335  | 252       | 29 34 066  | 48 40 115  |
| 76       | 13 49 040  | 61 02 077  | 33 11 134  | 50 48 172  | 31 14 255  | 41 13 309  | 32 25 337  | 254       | 29 47 068  | 48 53 117  |
| 78       | 13 58 042  | 61 20 079  | 33 21 136  | 50 33 174  | 31 01 257  | 41 02 311  | 32 20 339  | 256       | 29 60 070  | 49 06 119  |
| 80       | 14 08 044  | 61 39 081  | 33 30 138  | 50 18 176  | 30 48 259  | 40 51 313  | 32 15 340  | 258       | 29 73 072  | 49 19 121  |
| 82       | 14 19 046  | 61 58 083  | 33 39 140  | 50 03 178  | 30 35 261  | 40 40 315  | 32 10 342  | 260       | 29 86 074  | 49 31 123  |
| 84       | 14 29 048  | 62 17 085  | 33 48 142  | 49 48 180  | 30 22 263  | 40 30 317  | 32 06 344  | 262       | 29 99 076  | 49 43 125  |
| 86       | 14 41 050  | 62 36 087  | 33 57 144  | 49 33 182  | 30 09 265  | 40 20 319  | 32 02 346  | 264       | 29 12 078  | 49 55 127  |
| 88       | 14 52 052  | 62 55 089  | 34 06 146  | 49 18 184  | 29 56 267  | 40 10 321  | 31 59 348  | 266       | 29 25 080  | 50 07 129  |
| 90       | *ARCTURUS  | REGULUS    | POLLUX     | *CAPELLA   | Alpheratz  | *DENEK     | VEGA       |           |            |            |
| 92       | 15 04 054  | 15 02 116  | 34 11 151  | 52 03 192  | 29 15 272  | 39 52 323  | 31 53 351  | 270       | 30 37 009  | 28 40 084  |
| 94       | 15 16 056  | 15 15 118  | 34 24 154  | 51 48 194  | 29 00 274  | 39 34 325  | 31 51 353  | 272       | 31 10 011  | 28 55 086  |
| 96       | 15 28 058  | 15 28 120  | 34 38 156  | 51 33 196  | 28 46 276  | 39 15 327  | 31 50 355  | 274       | 31 23 013  | 29 10 088  |
| 98       | 15 40 060  | 15 41 122  | 34 52 158  | 51 18 198  | 28 31 278  | 38 96 329  | 31 49 357  | 276       | 31 36 015  | 29 24 090  |
| 100      | 16 06 064  | 16 05 126  | 35 06 160  | 51 03 200  | 28 17 279  | 38 20 331  | 31 48 359  | 278       | 31 49 017  | 29 39 092  |
| 102      | 16 19 066  | 16 17 128  | 35 20 162  | 50 48 202  | 28 02 281  | 38 03 333  | 31 48 001  | 280       | 31 62 019  | 29 54 094  |
| 104      | 16 33 068  | 16 28 130  | 35 34 164  | 50 33 204  | 27 48 283  | 37 46 335  | 31 49 002  | 282       | 31 75 021  | 30 08 096  |
| 106      | 16 47 070  | 16 39 132  | 35 48 166  | 50 18 206  | 27 34 285  | 37 30 337  | 31 49 004  | 284       | 31 88 023  | 30 23 098  |
| 108      | 17 01 072  | 16 49 134  | 36 02 168  | 50 03 208  | 27 20 287  | 37 13 339  | 31 51 006  | 286       | 31 49 025  | 30 37 100  |
| 110      | 17 14 074  | 17 00 136  | 36 16 170  | 49 48 210  | 27 06 289  | 36 56 340  | 31 53 008  | 288       | 31 62 027  | 30 51 102  |
| 112      | 17 28 076  | 17 10 138  | 36 30 172  | 49 33 212  | 26 52 291  | 36 41 342  | 31 55 010  | 290       | 31 75 029  | 31 06 104  |
| 114      | 17 43 078  | 17 19 140  | 36 44 174  | 49 18 214  | 26 38 293  | 36 26 344  | 31 57 012  | 292       | 40 00 029  | 31 20 106  |
| 116      | 17 57 080  | 17 28 142  | 36 58 176  | 49 03 216  | 26 25 295  | 36 11 346  | 31 59 014  | 294       | 40 13 031  | 31 34 108  |
| 118      | 18 11 082  | 17 37 144  | 37 12 178  | 48 48 218  | 26 12 297  | 35 56 348  | 32 01 016  | 296       | 40 26 033  | 31 48 110  |
| 120      | VEGA       | *ARCTURUS  | REGULUS    | POLLUX     | *CAPELLA   | Alpheratz  | *DENEK     |           |            |            |
| 122      | 32 18 021  | 18 40 085  | 17 53 147  | 34 58 184  | 51 08 226  | 25 47 301  | 38 27 351  | 300       | 20 59 003  | 40 31 036  |
| 124      | 32 23 023  | 18 55 087  | 18 05 150  | 34 43 186  | 50 57 228  | 25 34 303  | 38 25 352  | 302       | 21 01 005  | 40 40 038  |
| 126      | 32 29 024  | 19 10 089  | 18 17 153  | 34 28 188  | 50 46 230  | 25 22 305  | 38 24 354  | 304       | 21 02 007  | 40 50 040  |
| 128      | 32 35 026  | 19 24 091  | 18 30 155  | 34 13 190  | 50 35 232  | 25 10 307  | 38 22 356  | 306       | 21 04 009  | 40 59 042  |
| 130      | 32 42 028  | 19 39 093  | 18 45 157  | 33 58 192  | 50 23 235  | 24 58 309  | 38 21 358  | 308       | 21 06 011  | 41 09 044  |
| 132      | 32 49 030  | 19 53 095  | 18 60 159  | 33 43 194  | 50 11 237  | 24 47 310  | 38 21 000  | 310       | 21 09 013  | 41 19 046  |
| 134      | 32 57 032  | 20 08 097  | 18 75 161  | 33 28 196  | 49 58 239  | 24 36 312  | 38 21 001  | 312       | 21 13 015  | 41 30 048  |
| 136      | 33 04 034  | 20 22 099  | 18 90 163  | 33 13 198  | 49 46 241  | 24 26 314  | 38 20 003  | 314       | 21 17 017  | 41 41 049  |
| 138      | 33 13 036  | 20 37 101  | 18 105 165 | 32 58 200  | 49 33 243  | 24 15 316  | 38 23 005  | 316       | 21 21 019  | 41 52 051  |
| 140      | 33 21 037  | 20 51 103  | 18 25 167  | 32 43 202  | 49 20 245  | 24 05 318  | 38 24 007  | 318       | 21 26 020  | 42 04 053  |
| 142      | 33 31 039  | 21 05 105  | 18 40 169  | 32 28 204  | 49 06 247  | 23 55 320  | 38 26 008  | 320       | 21 31 022  | 42 15 055  |
| 144      | 33 41 041  | 21 19 107  | 18 55 171  | 32 13 206  | 48 53 249  | 23 46 322  | 38 29 010  | 322       | 21 37 024  | 42 27 057  |
| 146      | 33 50 043  | 21 33 109  | 19 10 173  | 31 98 208  | 48 39 251  | 23 38 324  | 38 31 012  | 324       | 21 43 026  | 42 40 058  |
| 148      | 34 00 045  | 21 47 111  | 19 25 175  | 31 83 210  | 48 25 253  | 23 29 326  | 38 33 014  | 326       | 21 50 028  | 42 52 060  |
| 150      | *DENEK     | VEGA       | *ARCTURUS  | REGULUS    | POLLUX     | *CAPELLA   | Alpheratz  |           |            |            |
| 152      | 38 47 019  | 34 21 049  | 22 14 115  | 18 52 178  | 33 45 216  | 47 57 258  | 32 13 329  | 330       | 22 04 032  | 43 18 064  |
| 154      | 38 52 021  | 34 34 050  | 22 27 117  | 18 37 180  | 33 30 218  | 47 42 260  | 32 06 331  | 332       | 22 12 034  | 43 31 066  |
| 156      | 38 58 023  | 34 47 052  | 22 40 119  | 18 22 182  | 33 27 220  | 47 28 262  | 32 00 333  | 334       | 22 20 036  | 43 45 068  |
| 158      | 39 04 025  | 34 55 054  | 22 52 122  | 18 07 184  | 33 17 222  | 47 13 264  | 32 53 335  | 336       | 22 29 038  | 43 59 070  |
| 160      | 39 10 026  | 35 07 056  | 23 04 124  | 18 50 186  | 33 07 224  | 46 59 266  | 32 47 337  | 338       | 22 38 039  | 44 12 072  |
| 162      | 39 17 028  | 35 20 058  | 23 18 126  | 18 35 188  | 32 57 226  | 46 44 268  | 32 42 339  | 340       | 22 47 041  | 44 26 074  |
| 164      | 39 24 030  | 35 32 060  | 23 32 128  | 18 20 190  | 32 46 228  | 46 29 270  | 32 37 341  | 342       | 22 57 043  | 44 40 076  |
| 166      | 39 31 032  | 35 45 062  | 23 46 130  | 18 05 192  | 32 35 230  | 46 15 272  | 32 32 343  | 344       | 23 07 045  | 44 55 077  |
| 168      | 39 39 034  | 35 58 064  | 23 59 132  | 18 40 194  | 32 23 232  | 46 00 274  | 32 28 34   |           |            |            |

Table with columns: LHA, Hc, Zn, and star names (POLLUX, CAPELLA, Hamal, Alpheratz, DENEb, VEGA, Alioth) for various stars. Includes star names in bold and regular text.

Table with columns: LHA, Hc, Zn, and star names (DENEb, VEGA, ARCTURUS, REGULUS, POLLUX, CAPELLA, Alpheratz) for various stars. Includes star names in bold and regular text.



| LHA<br>Υ | Hc Zn                   | Hc Zn                   | Hc Zn                  | Hc Zn                   | Hc Zn                   | Hc Zn                  | Hc Zn                  | Hc Zn                   | Hc Zn                   |
|----------|-------------------------|-------------------------|------------------------|-------------------------|-------------------------|------------------------|------------------------|-------------------------|-------------------------|
| 0        | POLLUX<br>23°40' 060    | *CAPELLA<br>46°55' 091  | Hamal<br>31°05' 145    | Alpheratz<br>38°11' 177 | *DENEB<br>50°43' 238    | VEGA<br>39°42' 268     | *Ailoth<br>47°04' 349  |                         |                         |
| 2        | 23 56 061               | 47 14 093               | 31 15 147              | 38 12 180               | 50 27 240               | 39 24 270              | 47 00 350              |                         |                         |
| 4        | 24 13 063               | 47 33 095               | 31 25 150              | 38 12 182               | 50 11 242               | 39 05 272              | 46 58 352              |                         |                         |
| 6        | 24 30 065               | 47 51 097               | 31 34 152              | 38 11 184               | 49 54 244               | 38 46 274              | 46 55 354              |                         |                         |
| 8        | 24 47 067               | 48 10 099               | 31 43 154              | 38 09 186               | 49 37 246               | 38 27 276              | 46 53 355              |                         |                         |
| 10       | 25°04' 069              | 48°28' 101              | 31°51' 156             | 38°07' 188              | 49°20' 248              | 38°09' 278             | 46°52' 357             |                         |                         |
| 12       | 25 22 071               | 48 47 103               | 31 58 158              | 38 03 191               | 49 02 250               | 37 50 280              | 46 51 359              |                         |                         |
| 14       | 25 40 073               | 49 05 105               | 32 04 160              | 38 00 193               | 48 45 252               | 37 32 282              | 46 51 000              |                         |                         |
| 16       | 25 58 075               | 49 23 107               | 32 10 163              | 37 55 195               | 48 27 255               | 37 13 284              | 46 52 002              |                         |                         |
| 18       | 26 16 077               | 49 41 109               | 32 16 165              | 37 50 197               | 48 08 257               | 36 55 285              | 46 52 004              |                         |                         |
| 20       | 26 33 079               | 49 58 111               | 32 20 167              | 37 44 200               | 47 50 259               | 36 37 287              | 46 51 005              |                         |                         |
| 22       | 26 53 081               | 50 16 114               | 32 24 169              | 37 37 202               | 47 32 261               | 36 19 289              | 46 50 007              |                         |                         |
| 24       | 27 12 083               | 50 33 116               | 32 27 171              | 37 30 204               | 47 13 263               | 36 02 291              | 46 50 008              |                         |                         |
| 26       | 27 30 085               | 50 50 118               | 32 30 173              | 37 22 206               | 46 54 265               | 35 44 293              | 47 01 010              |                         |                         |
| 28       | 27 49 087               | 51 06 120               | 32 32 176              | 37 13 208               | 46 36 267               | 35 27 295              | 47 05 012              |                         |                         |
| 30       | *Ailoth<br>47°09' 013   | POLLUX<br>28°08' 089    | *CAPELLA<br>51°22' 122 | Hamal<br>32°33' 178     | Alpheratz<br>37°04' 211 | *DENEB<br>46°17' 269   | VEGA<br>35°10' 297     | Alpheratz<br>21°09' 026 | *DENEB<br>43°03' 071    |
| 32       | 47 14 015               | 28 27 091               | 51 38 124              | 32 33 180               | 36 54 213               | 45 58 271              | 34 54 299              | 21 18 028               | 43 21 073               |
| 34       | 47 19 017               | 28 45 093               | 51 53 127              | 32 32 182               | 36 44 215               | 45 39 273              | 34 37 301              | 21 27 029               | 43 39 075               |
| 36       | 47 24 018               | 29 04 095               | 52 08 129              | 32 32 184               | 36 33 217               | 45 21 275              | 34 21 302              | 21 36 031               | 43 57 077               |
| 38       | 47 30 020               | 29 23 096               | 52 22 131              | 32 30 186               | 36 21 219               | 45 02 277              | 34 06 304              | 21 46 033               | 44 15 079               |
| 40       | 47 37 022               | 29 41 098               | 52 36 133              | 32°28' 189              | 36°09' 221              | 44 43 278              | 33 50 306              | 22 01 037               | 44 34 080               |
| 42       | 47 44 023               | 30 00 100               | 52 50 136              | 32 25 191               | 35 57 223               | 44 25 280              | 33 35 308              | 22 22 038               | 44 52 082               |
| 44       | 47 52 025               | 30 18 103               | 53 02 138              | 32 21 193               | 35 43 226               | 44 06 282              | 33 21 310              | 22 42 039               | 45 11 084               |
| 46       | 48 00 027               | 30 36 105               | 53 15 140              | 32 16 195               | 35 30 228               | 43 48 284              | 33 07 312              | 22 62 041               | 45 30 086               |
| 48       | 48 09 028               | 30 55 107               | 53 27 142              | 32 11 197               | 35 16 230               | 43 30 286              | 32 53 314              | 22 84 043               | 45 48 088               |
| 50       | 48 18 030               | 31 12 109               | 53 38 145              | 32 05 199               | 35 01 232               | 43 12 288              | 32 39 315              | 22 57 044               | 46 07 090               |
| 52       | 48 28 032               | 31 30 111               | 53 53 147              | 31 58 202               | 34 46 234               | 42 54 290              | 32 26 317              | 23 10 046               | 46 26 092               |
| 54       | 48 38 033               | 31 48 113               | 53 58 149              | 31 51 204               | 34 31 236               | 42 37 292              | 32 14 319              | 23 24 048               | 46 45 094               |
| 56       | 48 48 035               | 32 05 115               | 54 07 152              | 31 43 206               | 34 15 238               | 42 20 294              | 32 02 321              | 23 38 050               | 47 03 096               |
| 58       | 48 59 037               | 32 22 117               | 54 16 154              | 31 35 208               | 34 03 240               | 42 02 295              | 31 50 323              | 23 53 052               | 47 22 098               |
| 60       | *Ailoth<br>49°11' 038   | POLLUX<br>32°35' 119    | *CAPELLA<br>54°24' 156 | Hamal<br>31 16 210      | Alpheratz<br>33 42 242  | *DENEB<br>41 46 297    | VEGA<br>31 39 324      | Alpheratz<br>24 20 056  | *DENEB<br>47 40 100     |
| 62       | 49 22 040               | 32 53 121               | 54 31 159              | 31 05 212               | 33 25 244               | 41 29 299              | 31 28 326              | 24 43 057               | 47 59 102               |
| 64       | 49 35 042               | 33 10 123               | 54 37 161              | 31 05 214               | 33 08 247               | 41 13 301              | 31 18 328              | 24 49 058               | 48 17 104               |
| 66       | 49 47 043               | 33 26 125               | 54 43 164              | 30 55 217               | 32 51 249               | 40 57 303              | 31 09 330              | 24 55 060               | 48 35 106               |
| 68       | 50 01 045               | 33 41 127               | 54 48 166              | 30 43 219               | 32 33 251               | 40 41 305              | 30 59 332              | 25 11 061               | 48 53 109               |
| 70       | 50 14 047               | 33 56 129               | 54 53 168              | 30 31 221               | 32 16 253               | 40 26 307              | 30 51 334              | 25 25 063               | 49 11 111               |
| 72       | 50 28 049               | 34 10 131               | 54 55 171              | 30 19 223               | 31 58 255               | 40 11 308              | 30 43 335              | 25 45 065               | 49 28 113               |
| 74       | 50 42 050               | 34 24 134               | 54 58 173              | 30 06 225               | 31 39 257               | 39 57 310              | 30 35 337              | 26 02 067               | 49 45 115               |
| 76       | 50 57 052               | 34 37 136               | 55 00 176              | 29 52 227               | 31 21 259               | 39 42 312              | 30 28 339              | 26 19 069               | 50 02 117               |
| 78       | 51 12 054               | 34 50 138               | 55 01 178              | 29 38 229               | 31 03 261               | 39 29 314              | 30 22 341              | 26 37 071               | 50 19 119               |
| 80       | 51 27 056               | 35 03 140               | 55 01 181              | 29 24 231               | 30 44 263               | 39 15 316              | 30 16 343              | 26 55 073               | 50 35 121               |
| 82       | 51 43 057               | 35 14 142               | 55 00 183              | 29 09 233               | 30 25 265               | 39 02 317              | 30 10 344              | 27 13 075               | 50 51 123               |
| 84       | 51 59 059               | 35 26 144               | 54 59 185              | 28 53 236               | 30 07 267               | 38 50 319              | 30 06 346              | 27 31 077               | 51 06 126               |
| 86       | 52 15 061               | 35 36 146               | 54 57 188              | 28 38 238               | 29 48 269               | 38 38 321              | 30 01 348              | 27 49 079               | 51 21 128               |
| 88       | 52 32 063               | 35 46 149               | 54 54 190              | 28 22 240               | 29 29 271               | 38 26 323              | 29 58 350              | 28 08 081               | 51 36 130               |
| 90       | *ARCTURUS<br>15°55' 054 | REGULUS<br>16 12 118    | POLLUX<br>36 05 153    | *CAPELLA<br>54°50' 193  | Alpheratz<br>29°10' 273 | *DENEB<br>44 43 324    | VEGA<br>29 55 352      | *CAPELLA<br>37°09' 009  | Alpheratz<br>28°26' 083 |
| 92       | 14 08 056               | 16 28 120               | 36 13 155              | 54 46 195               | 28 52 275               | 38 04 326              | 29 52 353              | 37 12 011               | 28 45 085               |
| 94       | 14 24 058               | 16 42 122               | 36 13 155              | 54 40 197               | 28 33 277               | 37 54 328              | 29 50 355              | 37 16 013               | 29 04 087               |
| 96       | 14 40 059               | 16 56 124               | 36 21 157              | 54 34 200               | 28 14 279               | 37 45 330              | 29 49 357              | 37 20 014               | 29 23 089               |
| 98       | 14 56 061               | 17 10 124               | 36 28 159              | 54 28 202               | 27 56 281               | 37 35 332              | 29 48 359              | 37 25 016               | 29 41 091               |
| 100      | 15 13 063               | 17 25 126               | 36 34 162              | 54 20 205               | 27 37 282               | 37 27 333              | 29 48 001              | 37 31 018               | 30 00 093               |
| 102      | 15 30 065               | 17 40 128               | 36 39 164              | 54 12 207               | 27 19 284               | 37 18 335              | 29 49 002              | 37 37 020               | 30 19 095               |
| 104      | 15 47 067               | 17 55 130               | 36 44 166              | 54 03 209               | 27 01 286               | 37 11 337              | 29 50 004              | 37 43 021               | 30 37 097               |
| 106      | 16 04 069               | 18 10 132               | 36 48 168              | 53 54 212               | 26 43 288               | 37 04 339              | 29 51 006              | 37 50 023               | 30 56 099               |
| 108      | 16 22 071               | 18 25 134               | 36 52 170              | 53 43 214               | 26 25 290               | 36 57 340              | 29 54 008              | 37 58 025               | 31 15 101               |
| 110      | 16 40 073               | 18 40 136               | 36 55 173              | 53 33 216               | 26 08 292               | 36 51 342              | 29 56 010              | 38 06 027               | 31 33 103               |
| 112      | 16 58 075               | 18 55 138               | 36 57 175              | 53 21 219               | 25 51 294               | 36 45 344              | 30 00 011              | 38 15 028               | 31 51 105               |
| 114      | 17 16 077               | 19 10 140               | 36 58 177              | 53 09 221               | 25 34 296               | 36 41 346              | 30 04 013              | 38 24 030               | 32 09 107               |
| 116      | 17 34 079               | 19 25 142               | 36 59 179              | 52 57 223               | 25 17 298               | 36 36 347              | 30 08 015              | 38 33 032               | 32 27 109               |
| 118      | 17 53 081               | 19 40 144               | 36 58 182              | 52 43 225               | 25 00 300               | 36 32 349              | 30 13 017              | 38 44 034               | 32 45 111               |
| 120      | VEGA<br>30°19' 019      | *ARCTURUS<br>18°12' 083 | REGULUS<br>19 25 146   | POLLUX<br>36 58 184     | *CAPELLA<br>52 30 228   | Alpheratz<br>24 44 302 | *DENEB<br>36 29 353    | POLLUX<br>18 59 003     | *CAPELLA<br>38 54 035   |
| 122      | 30 25 020               | 18 30 085               | 19 35 148              | 36 56 186               | 52 16 230               | 24 28 304              | 36 26 355              | 19 01 005               | 39 05 037               |
| 124      | 30 32 022               | 18 49 087               | 19 45 150              | 36 54 188               | 52 01 232               | 24 13 305              | 36 24 356              | 19 03 007               | 39 17 039               |
| 126      | 30 40 024               | 19 08 089               | 19 54 152              | 36 51 190               | 51 46 234               | 23 58 307              | 36 23 356              | 19 05 009               | 39 29 041               |
| 128      | 30 47 026               | 19 26 091               | 20 02 155              | 36 47 193               | 51 31 237               | 23 43 309              | 36 22 358              | 19 08 011               | 39 41 042               |
| 130      | 30 56 028               | 19 45 093               | 20 10 157              | 36 43 195               | 51 15 239               | 23 29 311              | 36 21 000              | 19 12 012               | 39 54 044               |
| 132      | 31 05 029               | 20 04 095               | 20 17 159              | 36 37 197               | 50 58 241               | 23 15 313              | 36 21 001              | 19 17 014               | 40 08 046               |
| 134      | 31 14 031               | 20 23 097               | 20 24 161              | 36 32 199               | 50 42 243               | 23 01 315              | 36 22 003              | 19 22 016               | 40 21 048               |
| 136      | 31 24 033               | 20 41 099               | 20 29 163              | 36 25 201               | 50 25 245               | 22 48 317              | 36 23 005              | 19 27 018               | 40 35 050               |
| 138      | 31 35 035               | 21 00 101               | 20 35 165              | 36 18 204               | 50 08 247               | 22 36 319              | 36 25 007              | 19 33 020               | 40 50 051               |
| 140      | 31 46 037               | 21 18 103               | 20 39 167              | 36 10 206               | 49 50 250               | 22 23 321              | 36 28 008              | 19 40 022               | 41 05 053               |
| 142      | 31 57 038               | 21 36 105               | 20 43 169              | 36 02 208               | 49 33 252               | 22 12 322              | 36 30 010              | 19 47 024               | 41 20 055               |
| 144      | 32 09 040               | 21 54 107               | 20 46 171              | 35 53 210               | 49 15 254               | 22 01 324              | 36 34 012              | 19 55 026               | 41 36 057               |
| 146      | 32 21 042               | 22 12 109               | 20 49 173              | 35 43 212               | 48 57 256               | 21 50 326              | 36 38 014              | 20 03 027               | 41 51 059               |
| 148      | 32 34 044               | 22 30 111               | 20 51 175              | 35 32 214               | 48 38 258               | 21 40 328              | 36 43 015              | 20 12 029               | 42 08 061               |
| 150      | *DENEB<br>36 48 017     | VEGA<br>32 47 046       | *ARCTURUS<br>22 47 113 | REGULUS<br>20 52 178    | POLLUX<br>35 22 217     | *CAPELLA<br>48 20 260  | Alpheratz<br>21 30 330 | POLLUX<br>20 22 031     | *CAPELLA<br>42 24 062   |
| 152      | 36 54 019               | 33 01 048               | 23 05 115              | 20 52 180               | 35 10 219               | 48 01 262              | 21 21 332              | 20 32 033               | 42 41 064               |
| 154      | 37 00 021               | 33 15 049               | 23 22 117              | 20 52 182               | 34 58 221               | 47 43 264              | 21 12 334              | 20 42 035               | 42 58 066               |
| 156      | 37 07 023               | 33 30 051               | 23 38 119              | 20 51 184               | 34 46 223               | 47 24 266              | 21 04 335              | 20 53 037               | 43 15 068               |
| 158      | 37 14 024               | 33 44 053               | 23 54 121              | 20 49 186               | 34 33 225               | 47 05 268              | 20 57 337              | 20 55 039               | 43 33 070               |
| 160      | 37 22 026               | 34 00 055               | 24 10 123              | 20 47 188               | 34 19 227               | 46 46 270              | 20 50 339              | 21 17 041               | 43 51 072               |
| 162      | 37                      |                         |                        |                         |                         |                        |                        |                         |                         |

