

## *Symbols and abbreviations*

☉	Sun	♃	Jupiter
●	midnight	♄	Saturn
☾	Moon	♅	Uranus
☿	Mercury	♆	Neptune
♀	Venus	♈	first point of Aries
♁	Earth	♊	ascending node
♂	Mars	♋	descending node

=	Begin a spreadsheet formula in a cell
*	Multiply two values together in a spreadsheet formula
'	Treat the contents of this spreadsheet cell as a label
####	Column width is too narrow in a spreadsheet
!	Use to link to a cell of another spreadsheet
,	Argument separator (delimiter) in <i>Excel</i>
;	Argument separator (delimiter) in <i>Calc</i>

$\alpha$	right ascension
$\beta$	geocentric ecliptic latitude
$\delta$	declination
$\Delta$	difference; error
$\Delta\lambda$	Moon's hourly motion in ecliptic longitude
$\Delta\beta$	Moon's hourly motion in ecliptic latitude
$\Delta A$	correction to azimuth
$\Delta T$	ET – UT
$\Delta t$	value of equation of time
$\varepsilon$	elongation; obliquity of the ecliptic; longitude of planet at epoch
$\varepsilon_g$	geocentric longitude of Sun at epoch
$\zeta$	apparent zenith angle
$\theta$	angular diameter; displacement; general coordinate
$\theta_t$	twilight zenith angle
$\lambda$	geocentric ecliptic longitude
$\mu$	general coordinate
$\nu$	true anomaly; general coordinate
$\pi$	parallax; constant = 3.141 592 654
$\varpi$	heliocentric longitude of perihelion
$\varpi_g$	geocentric longitude of Sun's perigee
$\rho$	distance
$\tau$	light-travel time
$\phi$	geographical latitude
$\phi'$	geocentric latitude
$\chi$	position-angle
$\psi$	heliocentric ecliptic latitude; angle at the horizon; general coordinate
$\Omega$	longitude of ascending node
$\omega$	to argument of perihelion
$A$	azimuth
<b>A</b> , etc.	matrix
$a$	altitude; semi-major axis
AD	Anno Domini
$A_e$	annual equation
$A_3$	third correction to Moon's mean anomaly
$A_4$	fourth correction to Moon's mean anomaly
AU	astronomical unit
$B$	heliographic latitude
$b$	galactic latitude
BC	Before Christ
BCE	Before the Common Era; Before the Christian Era
BST	British summer time
CRN	Carrington rotation number
CE	Common Era; Christian Era
DEC	declination
$D$	age of Moon or planet; number of days since an epoch
$d$	number of days; angle
$E$	eccentric anomaly
$E$	east point of horizon
$e$	eccentricity
$E_c$	correction applied in the equation of the centre
$E_v$	evection
EST	eastern standard time
ET	ephemeris time
$F$	phase

GBT	galactic barycentric time
GMT	Greenwich mean time
GST	Greenwich sidereal time
$H$	hour angle
$I$	inclination of Sun's equator
$i$	inclination
JD	Julian days
$L$	heliocentric longitude of Earth or heliographic longitude
$l$	galactic longitude; Moon's orbital longitude; heliocentric longitude of planet
LST	local sidereal time
$M$	mean anomaly
$m$	magnitude; precession constant
MJD	modified Julian date or day number
N	north point of horizon; longitude of ascending node
$n$	precession constant
NCP	north celestial pole
$P$	equatorial horizontal parallax; angle
$p$	(horizontal) parallax
$q$	perihelion distance
$R$	refraction angle; distance of Earth from Sun
$r$	radius vector
$r_0$	semi-major axis of orbit
RA	right ascension
S	south point on horizon
$S_p$	radius of Earth's penumbra
$S_u$	radius of Earth's umbra
SCP	south celestial pole
ST	sidereal time
$T$	period of orbit
$t, t_0$	epoch
TAI	International atomic time
TDT	terrestrial dynamic time
TT	terrestrial time
UT	universal time
$V$	variation
$v$	vertical shift
$\mathbf{v}$ , etc.	column vector
$V_0$	planet's brightness factor
W	west point on horizon
$Y$	years
$z$	real zenith angle