[Template:Pp-protect](/wiki/Template:Pp-protect" \o "Template:Pp-protect) [Template:Other uses](/wiki/Template:Other_uses) [thumb|The Earth in its orbit around the](/wiki/File:Ecliptic_path.jpg) [Sun](/wiki/Sun) causes the Sun to appear on the celestial sphere moving over the [ecliptic](/wiki/Ecliptic) (red), which is tilted with respect to the equator (blue-white).

In both [astrology](/wiki/Astrology) and historical [astronomy](/wiki/Astronomy), the **zodiac** ([Greek](/wiki/Ancient_Greek): ζῳδιακός, *zōidiakos*) is a circle of twelve 30° divisions of celestial longitude that are centered upon the [ecliptic](/wiki/Ecliptic), the apparent path of the [Sun](/wiki/Sun) across the [celestial sphere](/wiki/Celestial_sphere) over the course of the year. The paths of the [Moon](/wiki/Moon) and visible [planets](/wiki/Planet) also remain close to the ecliptic, within the belt of the zodiac, which extends 8-9° north or south of the ecliptic, as measured in [celestial latitude](/wiki/Celestial_latitude). Because the divisions are regular, they do not correspond exactly to the boundaries of the twelve [constellations](/wiki/Constellations) after which they are named.

Historically, these twelve divisions are called [signs](/wiki/Astrological_sign). Essentially, the zodiac is a [celestial coordinate system](/wiki/Celestial_coordinate_system), or more specifically an [ecliptic coordinate system](/wiki/Ecliptic_coordinate_system), which takes the ecliptic as the origin of [latitude](/wiki/Celestial_latitude), and the position of the Sun at [vernal equinox](/wiki/Vernal_equinox) as the origin of [longitude](/wiki/Celestial_longitude).

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## Usage[[edit](/index.php?title=(none)&action=edit&section=1)]

The zodiac was in use by the [Roman era](/wiki/Roman_era), based on concepts inherited by [Hellenistic astronomy](/wiki/Hellenistic_astronomy) from [Babylonian astronomy](/wiki/Babylonian_astronomy) of the [Chaldean period](/wiki/Neo-Babylonian) (mid-1st millennium BC), which, in turn, derived from an earlier system of lists of stars along the ecliptic.[[1]](#cite_note-1) The construction of the zodiac is described in [Ptolemy's](/wiki/Ptolemy) vast 2nd century AD work, the [*Almagest*](/wiki/Almagest).[[2]](#cite_note-2) The term *zodiac* derives from [Latin](/wiki/Latin_language) *zōdiacus*, which in its turn comes from the [Greek](/wiki/Greek_language) [Template:Lang](/wiki/Template:Lang) (*zōdiakos kyklos*), meaning "circle of animals", derived from [Template:Lang](/wiki/Template:Lang) (*zōdion*), the diminutive of [Template:Lang](/wiki/Template:Lang) (*zōon*) "animal". The name is motivated by the fact that half of the signs of the classical Greek zodiac are represented as animals (besides two [mythological hybrids](/wiki/Mythological_hybrid)).

Although the zodiac remains the basis of the [ecliptic coordinate system](/wiki/Ecliptic_coordinate_system) in use in [astronomy](/wiki/Astronomy) besides the [equatorial](/wiki/Equatorial_coordinate_system) one,[[3]](#cite_note-3) the term and the names of the twelve signs are today mostly associated with [horoscopic astrology](/wiki/Horoscopic_astrology).[[4]](#cite_note-4) The term "zodiac" may also refer to the region of the [celestial sphere](/wiki/Celestial_sphere) encompassing the paths of the planets corresponding to the band of about eight arc degrees above and below the ecliptic. The zodiac of a given planet is the band that contains the path of that particular body; e.g., the "zodiac of the Moon" is the band of five degrees above and below the ecliptic. By extension, the "zodiac of the comets" may refer to the band encompassing most [short-period comets](/wiki/Short-period_comet).[[5]](#cite_note-5)

## History[[edit](/index.php?title=(none)&action=edit&section=2)]

[Template:Further](/wiki/Template:Further)

### Early history[[edit](/index.php?title=(none)&action=edit&section=3)]

[thumb|Wheel of the zodiac: This 6th century mosaic pavement in a synagogue incorporates Greek-Byzantine elements,](/wiki/File:Beit_Alpha.jpg) [Beit Alpha](/wiki/Beit_Alpha), [Israel](/wiki/Israel). [thumb|Zodiac circle with planets, c.1000 - *NLW MS 735C*](/wiki/File:F4.v._zodiac_circle_with_planets_-_NLW_MS_735C.png)

[Template:Further](/wiki/Template:Further) The division of the ecliptic into the zodiacal signs originates in [Babylonian](/wiki/Babylonia) ("[Chaldean](/wiki/Chaldea)") astronomy during the first half of the [1st millennium BC](/wiki/1st_millennium_BC), likely during [Median](/wiki/Median_Empire)/"[Neo-Babylonian](/wiki/Neo-Babylonian_Empire)" times (7th century BC).[[6]](#cite_note-6)The classical zodiac is a modification of the [MUL.APIN](/wiki/MUL.APIN) catalogue, which was compiled around 1000 BC. Some of the constellations can be traced even further back, to Bronze Age (Old Babylonian) sources, including [Gemini](/wiki/Gemini_(constellation)) "The Twins", from MAŠ.TAB.BA.GAL.GAL "The Great Twins", and [Cancer](/wiki/Cancer_(astrology)) "The Crab", from AL.LUL "The Crayfish", among others.

[Babylonian](/wiki/Babylonia) astronomers at some stage during the early 1st millennium BC divided the ecliptic into twelve equal *zones* of [celestial longitude](/wiki/Celestial_longitude) to create the first known celestial coordinate system: a coordinate system that boasts some advantages over modern systems (such as the [equatorial coordinate system](/wiki/Equatorial_coordinate_system)). The [Babylonian calendar](/wiki/Babylonian_calendar) as it stood in the 7th century BC assigned each month to a sign, beginning with the position of the Sun at [vernal equinox](/wiki/Vernal_equinox), which, at the time, was depicted as the [Aries constellation](/wiki/Aries_(constellation)) ("[Age of Aries](/wiki/Age_of_Aries)"), for which reason the first sign is still called "[Aries](/wiki/Aries_(astrology))" even after the vernal equinox has moved away from the Aries constellation due to the slow precession of the Earth's axis of rotation.[[7]](#cite_note-7) Because the division was made into equal arcs, 30° each, they constituted an ideal system of reference for making predictions about a planet's longitude. However, Babylonian techniques of observational measurements were in a rudimentary stage of evolution and it is unclear whether they had techniques to define in a precise way the boundary lines between the zodiacal signs in the sky.[[8]](#cite_note-8) Thus, the need to use stars close to the ecliptic (±9° of latitude) as a set of observational reference points to help positioning a planet within this ecliptic coordinate system.[[9]](#cite_note-9) Constellations were given the names of the signs and [asterisms](/wiki/Asterism_(astronomy)) could be connected in a way that would resemble the sign's name. Therefore, in spite of its conceptual origin, the Babylonian zodiac became sidereal.[[10]](#cite_note-10) In [Babylonian astronomical diaries](/wiki/Babylonian_astronomical_diaries), a planet position was generally given with respect to a zodiacal sign alone, less often in specific degrees within a sign.[[11]](#cite_note-11) When the degrees of longitude were given, they were expressed with reference to the 30° of the zodiacal sign, i.e., not with a reference to the continuous 360° ecliptic.[[12]](#cite_note-12) To the construction of their mathematical ephemerides, daily positions of a planet were not as important as the dates when the planet crossed from one zodiacal sign to the next.[[13]](#cite_note-13)

### Hebrew astrology[[edit](/index.php?title=(none)&action=edit&section=4)]

Knowledge of the Babylonian zodiac is also reflected in the [Tanakh](/wiki/Tanakh), but is the first recorded astrological division into 12 constellations, elaborated on in the [Talmuds](/wiki/Talmud), books of the [Midrash Rabba](/wiki/Midrash_Rabba), and other minor works. [E. W. Bullinger](/wiki/E._W._Bullinger) interpreted the creatures appearing in the book of [Ezekiel](/wiki/Book_of_Ezekiel) as the middle signs of the four quarters of the Zodiac,[[14]](#cite_note-14)[[15]](#cite_note-15) with the Lion as [Leo](/wiki/Leo_(astrology)), the Bull is [Taurus](/wiki/Taurus_(astrology)), the Man representing Aquarius and the Eagle representing Scorpio.[[16]](#cite_note-16) Some authors have linked the [twelve tribes of Israel](/wiki/Twelve_tribes_of_Israel) with the twelve signs. [Martin](/wiki/Ernest_L._Martin) and others have argued that the arrangement of the tribes around the [Tabernacle](/wiki/Tabernacle) (reported in the [Book of Numbers](/wiki/Book_of_Numbers)) corresponded to the order of the Zodiac, with [Judah](/wiki/Tribe_of_Judah), [Reuben](/wiki/Tribe_of_Reuben), [Ephraim](/wiki/Tribe_of_Ephraim), and [Dan](/wiki/Tribe_of_Dan) representing the middle signs of Leo, Aquarius, Taurus, and Scorpio, respectively.Such connections were taken up by [Thomas Mann](/wiki/Thomas_Mann), who in his novel [*Joseph and His Brothers*](/wiki/Joseph_and_His_Brothers) attributes characteristics of a sign of the zodiac to each tribe in his rendition of the [Blessing of Jacob](/wiki/Blessing_of_Jacob).

### Hellenistic and Roman era[[edit](/index.php?title=(none)&action=edit&section=5)]

[thumb|left|The 1st century BC](/wiki/File:Dendera.jpg) [Dendera zodiac](/wiki/Dendera_zodiac) (19th-century engraving) The Babylonian star catalogs entered [Greek astronomy](/wiki/Greek_astronomy) in the 4th century BC, via [Eudoxus of Cnidus](/wiki/Eudoxus_of_Cnidus).[[17]](#cite_note-17)[[18]](#cite_note-18)Babylonia or [Chaldea](/wiki/Chaldea) in the Hellenistic world came to be so identified with astrology that "Chaldean wisdom" became among [Greeks](/wiki/Greeks) and [Romans](/wiki/Ancient_Rome) the synonym of [divination](/wiki/Divination) through the [planets](/wiki/Planets) and [stars](/wiki/Star). [Hellenistic astrology](/wiki/Hellenistic_astrology) derived in part from Babylonian and [Egyptian astrology](/wiki/Ancient_Egyptian_astronomy).[[19]](#cite_note-19)[Horoscopic astrology](/wiki/Horoscopic_astrology) first appeared in [Ptolemaic Egypt](/wiki/Ptolemaic_Egypt). The [Dendera zodiac](/wiki/Dendera_zodiac), a relief dating to ca. 50 BC, is the first known depiction of the classical zodiac of twelve signs.

Particularly important in the development of Western horoscopic astrology was the astrologer and astronomer [Ptolemy](/wiki/Tetrabiblos), whose work *Tetrabiblos* laid the basis of the [Western astrological tradition](/wiki/Western_astrological_tradition).[[20]](#cite_note-20) Under the Greeks, and Ptolemy in particular, the planets, Houses, and signs of the zodiac were rationalized and their function set down in a way that has changed little to the present day.[[21]](#cite_note-21) Ptolemy lived in the 2nd century AD, three centuries after the discovery of the [precession of the equinoxes](/wiki/Precession_of_the_equinoxes) by [Hipparchus](/wiki/Hipparchus) around 130 BC. Hipparchus's lost work on precession never circulated very widely until it was brought to prominence by Ptolemy,[[22]](#cite_note-22) and there are few explanations of precession outside the work of Ptolemy until late Antiquity, by which time Ptolemy's influence was widely established.<ref name=Geminos>[Template:Cite book](/wiki/Template:Cite_book)</ref> Ptolemy clearly explained the theoretical basis of the western zodiac as being a [tropical coordinate system](/wiki/Tropical_astrology), by which the zodiac is aligned to the equinoxes and solstices, rather than the visible constellations that bear the same names as the zodiac signs.[[23]](#cite_note-23)

### Hindu zodiac[[edit](/index.php?title=(none)&action=edit&section=6)]

[Template:Unreferenced section](/wiki/Template:Unreferenced_section) The [Hindu zodiac](/wiki/Hindu_zodiac) uses the [sidereal coordinate system](/wiki/Sidereal_astrology), which makes reference to the fixed stars. The Tropical zodiac (of Mesopotamian origin) is divided by the intersections of the [ecliptic](/wiki/Ecliptic) and [equator](/wiki/Equator), which shifts in relation to the backdrop of fixed stars at a rate of 1° every 72 years, creating the phenomenon known as [precession of the equinoxes](/wiki/Precession_of_the_equinoxes). The Hindu zodiac, being sidereal, does not maintain this seasonal alignment, but there are still similarities between the two systems. The Hindu zodiac signs and corresponding Greek signs sound very different, being in Sanskrit and Greek respectively, but their symbols are nearly identical. For example, *dhanu* means "bow" and corresponds to Sagittarius, the "archer", and *kumbha* means "water-pitcher" and corresponds to Aquarius, the "water-carrier".

### Middle Ages[[edit](/index.php?title=(none)&action=edit&section=7)]

[thumb|Angers Cathedral South Rose Window of Christ (centre) with elders (bottom half) and Zodiac (top half). Mediaeval stained glass by Andre Robin after the fire of 1451](/wiki/File:Angers_Cathedral_South_Rose_Window_of_Christ_with_Zodiac.jpg)

The High Middle Ages saw a revival of [Greco-Roman magic](/wiki/Greco-Roman_magic), first in [Kabbalism](/wiki/Kabbalism) and later continued in [Renaissance magic](/wiki/Renaissance_magic). This included magical uses of the zodiac, as found, e.g., in the [Sefer Raziel HaMalakh](/wiki/Sefer_Raziel_HaMalakh).

The zodiac is found in mediaeval [stained glass](/wiki/Stained_glass) as at [Angers Cathedral](/wiki/Angers_Cathedral), where the master glassmaker, André Robin, made the ornate [rosettes](/wiki/Rosette_window) for the North and South transepts after the fire there in 1451.[[24]](#cite_note-24)

### Early modern[[edit](/index.php?title=(none)&action=edit&section=8)]

[thumb|left|The zodiac signs in a 16th-century woodcut](/wiki/File:zodiac_woodcut.png) [thumb|upright|A volvella of the moon. A volvella is a moveable device for working out the position of the sun and moon in the zodiac, 15th century](/wiki/File:P.9_a_volvella_of_the_moon._A_volvella_is_a_moveable_device_for_working_out_the_position_of_the_sun_and_moon_in_the_zodiac.jpg) [thumb|upright|17th-century fresco,](/wiki/File:Zodiac_mtskheta.jpg) [Cathedral of Living Pillar](/wiki/Svetitskhoveli), [Georgia](/wiki/Georgia_(country)) of [Christ](/wiki/Christ) in the Zodiac circle

An example of the use of signs as astronomical coordinates may be found in the *Nautical Almanac and Astronomical Ephemeris for the year 1767*. The "Longitude of the Sun" columns show the sign (represented as a digit from 0 to and including 11), degrees from 0 to 29, minutes, and seconds.[[25]](#cite_note-25) The zodiacal symbols are Early Modern simplifications of conventional pictorial representations of the signs, attested since Hellenistic times.

## Twelve signs[[edit](/index.php?title=(none)&action=edit&section=9)]

[Template:Main](/wiki/Template:Main)

What follows is a list of the twelve signs of the modern zodiac (with the ecliptic longitudes of their first points), where 0° Aries is understood as the vernal equinox, with their Latin, Greek, Sanskrit, and Babylonian names (but note that the Sanskrit and the Babylonian name equivalents (after c.500 BC) denote the constellations only, not the tropical zodiac signs). Also, the "English translation" is not usually used by English speakers. The Latin names are standard English usage.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **№** | **Symbol** | **Long.** | **Latin name** | **English translation** | **Greek name** | [**Sanskrit name**](/wiki/Hindu_zodiac) | [**Sumero-Babylonian name**](/wiki/Babylonian_zodiac)[**[26]**](#cite_note-26) |
| 1 | ♈ | 0° | [Aries](/wiki/Aries_(astrology)) | The [Ram](/wiki/Sheep) | [Template:Lang](/wiki/Template:Lang) (*Krios*) | [Template:IAST](/wiki/Template:IAST) ([Template:Lang](/wiki/Template:Lang)) | [Template:Lang](/wiki/Template:Lang) "The Agrarian Worker", [Dumuzi](/wiki/Dumuzid_the_Shepherd) |
| 2 | ♉ | 30° | [Taurus](/wiki/Taurus_(astrology)) | The [Bull](/wiki/Bull) | [Template:Lang](/wiki/Template:Lang) (*Tavros*) | [Template:IAST](/wiki/Template:IAST) ([Template:Lang](/wiki/Template:Lang)) | [Template:Lang](/wiki/Template:Lang) "The Steer of Heaven" |
| 3 | ♊ | 60° | [Gemini](/wiki/Gemini_(astrology)) | The [Twins](/wiki/Twin) | [Template:Lang](/wiki/Template:Lang) (*Didymoi*) | [Template:IAST](/wiki/Template:IAST) ([Template:Lang](/wiki/Template:Lang)) | [Template:Lang](/wiki/Template:Lang) "The Great Twins" ([Castor](/wiki/Castor_(star)) and [Pollux](/wiki/Pollux_(star))) |
| 4 | ♋ | 90° | [Cancer](/wiki/Cancer_(astrology)) | The [Crab](/wiki/Crab) | [Template:Lang](/wiki/Template:Lang) (*Karkinos*) | [Template:IAST](/wiki/Template:IAST) ([Template:Lang](/wiki/Template:Lang)) | [Template:Lang](/wiki/Template:Lang) "The Crayfish" |
| 5 | ♌ | 120° | [Leo](/wiki/Leo_(astrology)) | The [Lion](/wiki/Lion) | [Template:Lang](/wiki/Template:Lang) (*Leōn*) | [Template:IAST](/wiki/Template:IAST) ([Template:Lang](/wiki/Template:Lang)) | [Template:Lang](/wiki/Template:Lang) "The Lion" |
| 6 | ♍ | 150° | [Virgo](/wiki/Virgo_(astrology)) | The [Maiden](/wiki/Maiden) | [Template:Lang](/wiki/Template:Lang) (*Parthenos*) | [Template:IAST](/wiki/Template:IAST) ([Template:Lang](/wiki/Template:Lang)) | [Template:Lang](/wiki/Template:Lang) "The Furrow"; "The Furrow, the goddess [Shala's](/wiki/Shala) ear of corn" |
| 7 | ♎ | 180° | [Libra](/wiki/Libra_(astrology)) | The [Scales](/wiki/Weighing_scale) | [Template:Lang](/wiki/Template:Lang) (*Zygos*) | [Template:IAST](/wiki/Template:IAST) (तुला) | [Template:Lang](/wiki/Template:Lang) "The Scales" |
| 8 | ♏ | 210° | [Scorpio](/wiki/Scorpio_(astrology)) | The [Scorpion](/wiki/Scorpion) | [Template:Lang](/wiki/Template:Lang) (*Skorpios*) | [Template:IAST](/wiki/Template:IAST) ([Template:Lang](/wiki/Template:Lang)) | [Template:Lang](/wiki/Template:Lang) "The Scorpion" |
| 9 | ♐ | 240° | [Sagittarius](/wiki/Sagittarius_(astrology)) | The ([Centaur](/wiki/Centaur)) [Archer](/wiki/Archery) | [Template:Lang](/wiki/Template:Lang) (*Toxotēs*) | [Template:IAST](/wiki/Template:IAST) ([Template:Lang](/wiki/Template:Lang)) | [Template:Lang](/wiki/Template:Lang), *Nedu* "soldier" |
| 10 | ♑ | 270° | [Capricorn](/wiki/Capricorn_(astrology)) | "[Goat](/wiki/Goat)-horned" (The Sea-Goat) | [Template:Lang](/wiki/Template:Lang) (*Aigokerōs*) | [Template:IAST](/wiki/Template:IAST) ([Template:Lang](/wiki/Template:Lang)) | [Template:Lang](/wiki/Template:Lang) "The Goat-Fish" of [Enki](/wiki/Enki) |
| 11 | ♒ | 300° | [Aquarius](/wiki/Aquarius_(astrology)) | The [Water-Bearer](/wiki/Pitcher_(container)) | [Template:Lang](/wiki/Template:Lang) (*Hydrokhoos*) | [Template:IAST](/wiki/Template:IAST) ([Template:Lang](/wiki/Template:Lang)) | [Template:Lang](/wiki/Template:Lang) "The Great One", later [*Template:Lang*](/wiki/Template:Lang) "pitcher" |
| 12 | ♓ | 330° | [Pisces](/wiki/Pisces_(astrology)) | The [Fish](/wiki/Fish)[[27]](#cite_note-27) | [Template:Lang](/wiki/Template:Lang) (*Ikhthyes*) | [Template:IAST](/wiki/Template:IAST) ([Template:Lang](/wiki/Template:Lang)) | [Template:Lang](/wiki/Template:Lang) "The Tail of the Swallow", later DU.NU.NU "fish-cord" |

[thumb|18th century star map illustrating how the feet of](/wiki/File:Ophiuchus.jpg) [Ophiuchus](/wiki/Ophiuchus) cross the ecliptic

## Constellations[[edit](/index.php?title=(none)&action=edit&section=10)]

[Template:Constellations ecliptic equirectangular plot.svg](/wiki/Template:Constellations_ecliptic_equirectangular_plot.svg) The [zodiacal signs](/wiki/Astrological_sign) are distinct from the [constellations](/wiki/Constellation) associated with them, not only because of their drifting apart due to the [precession of equinoxes](/wiki/Precession_of_equinoxes) but also because the physical constellations take up varying widths of the ecliptic, so the Sun is not in each constellation for the same amount of time.<ref name=EdwardJ>[Template:Cite book](/wiki/Template:Cite_book)</ref>[Template:Rp](/wiki/Template:Rp) Thus, [Virgo](/wiki/Virgo_(constellation)) takes up five times as much [ecliptic longitude](/wiki/Ecliptic_longitude) as [Scorpius](/wiki/Scorpius_(constellation)). The zodiacal signs are an abstraction from the physical constellations, and each represent exactly one twelfth of the full circle, or the longitude traversed by the Sun in about 30.4 days.[[28]](#cite_note-28) Some "parazodiacal" constellations are also touched by the paths of the planets. The [MUL.APIN](/wiki/MUL.APIN) lists [Orion](/wiki/Orion_(constellation)), [Perseus](/wiki/Perseus_(constellation)), [Auriga](/wiki/Auriga_(constellation)), and [Andromeda](/wiki/Andromeda_(constellation)). Furthermore, there are a number of constellations mythologically associated with the zodiacal ones : [Piscis Austrinus](/wiki/Piscis_Austrinus), The Southern Fish, is attached to Aquarius. In classical maps, it swallows the stream poured out of Aquarius' pitcher, but perhaps it formerly just swam in it. [Aquila](/wiki/Aquila_(constellation)), The Eagle, was possibly associated with the zodiac by virtue of its main star, [Altair](/wiki/Altair).[Template:Citation needed](/wiki/Template:Citation_needed) [Hydra](/wiki/Hydra_(constellation)) in the Early Bronze Age marked the [celestial equator](/wiki/Celestial_equator) and was associated with Leo, which is shown standing on the serpent on the [Dendera zodiac](/wiki/Dendera_zodiac).[Template:Citation needed](/wiki/Template:Citation_needed) [Corvus](/wiki/Corvus_(constellation)) is the Crow or Raven mysteriously perched on the tail of Hydra.

Due to the [constellation boundaries](/wiki/Constellation_boundaries) being redefined in 1930 by the [International Astronomical Union](/wiki/International_Astronomical_Union), the path of the ecliptic now officially passes through thirteen constellations: the twelve traditional 'zodiac constellations' plus [Ophiuchus](/wiki/Ophiuchus), the bottom part of which interjects between Scorpio and Sagittarius. Ophiuchus is an anciently recognized constellation, catalogued along with many others in [Ptolemy's](/wiki/Ptolemy) [*Almagest*](/wiki/Almagest), but not historically referred to as a zodiac constellation.[[29]](#cite_note-29)[[30]](#cite_note-30) The inaccurate description of Ophiuchus as a [*sign* of the zodiac](/wiki/Astrological_sign) drew media attention in 1995, when the [*BBC Nine O'Clock News*](/wiki/BBC_Nine_O'Clock_News) reported that "an extra sign of the zodiac has been announced by the [Royal Astronomical Society](/wiki/Royal_Astronomical_Society)".[[31]](#cite_note-31) There had been no such announcement, and the report had merely sensationalized the 67-year-old 'news' of the IAU's decision to alter the number of designated ecliptic constellations.[[32]](#cite_note-32)[[33]](#cite_note-33)

## Table of dates[[edit](/index.php?title=(none)&action=edit&section=11)]

[thumb|290px|Sculpture showing](/wiki/File:Grupo_de_San_Ildefonso_(Museo_del_Prado)_03.jpg) [Castor and Pollux](/wiki/Castor_and_Pollux), the legend behind the third [astrological sign](/wiki/Astrological_sign) in the Zodiac and the [constellation of Gemini](/wiki/Gemini_(constellation)) [thumb|290px|Southern hemisphere](/wiki/File:F3.v._Southern_hemisphere_constellations_-_NLW_MS_735C.png) [constellations](/wiki/Constellations) from a western scientific manuscript c.1000

The following table compares the [Gregorian](/wiki/Gregorian_calendar) dates on which the Sun enters

* a sign in the Ptolemaic [tropical](/wiki/Tropical_astrology) zodiac
* a sign in the [Hindu](/wiki/Jyotisha) [sidereal](/wiki/Sidereal_astrology) system
* the astronomical constellation of the same name as the sign, with constellation boundaries as defined in 1930 by the [International Astronomical Union](/wiki/International_Astronomical_Union).

The theoretical beginning of Aries is the moment of [vernal equinox](/wiki/Vernal_equinox), and all other dates shift accordingly.

The precise Gregorian times and dates vary slightly from year to year as the [Gregorian calendar](/wiki/Gregorian_calendar) shifts relative to the [tropical year](/wiki/Tropical_year).[[34]](#cite_note-34) These variations remain within less than two days' difference in the recent past and the near-future, vernal equinox in [UT](/wiki/Universal_Time) always falling either on 20 or 21 March in the period of 1797 to 2043, falling on 19 March in 1796 the last time and in 2044 the next.[[35]](#cite_note-35)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| [**Sign**](/wiki/Astrological_sign)**<ref name=tropicalsidereal>**[**Template:Cite web**](/wiki/Template:Cite_web)**</ref>** | | | | [**Constellation**](/wiki/Constellation) | | | |
| **Name** | **Symbol** | **Tropical zodiac** | **Sidereal zodiac** | **Name** | [**IAU**](/wiki/International_Astronomical_Union) **boundaries<ref name=Shapiro>**[**The Real Constellations of the Zodiac.**](http://www.ips-planetarium.org/?page=a_shapiro1977) **Dr. Lee T. Shapiro, director of Morehead Planetarium University of North Carolina (Spring 1977)</ref>** | **Solar stay<ref name=Shapiro/>** | **Brightest star** |
| [Aries](/wiki/Aries_(astrology)) | [20px|Aries](/wiki/File:Aries.svg) | 21 March –  20 April | 15 April –  15 May | [Aries](/wiki/Aries_(constellation)) | [Template:Zodiac date IAU](/wiki/Template:Zodiac_date_IAU) | 25 days | [Hamal](/wiki/Alpha_Arietis) |
| [Taurus](/wiki/Taurus_(astrology)) | [20px|Taurus](/wiki/File:Taurus.svg) | 21 April –  21 May | 16 May –  15 June | [Taurus](/wiki/Taurus_(constellation)) | [Template:Zodiac date IAU](/wiki/Template:Zodiac_date_IAU) | 37 days | [Aldebaran](/wiki/Aldebaran) |
| [Gemini](/wiki/Gemini_(astrology)) | [20px|Gemini](/wiki/File:Gemini.svg) | 22 May –  21 June | 16 June –  15 July | [Gemini](/wiki/Gemini_(constellation)) | [Template:Zodiac date IAU](/wiki/Template:Zodiac_date_IAU) | 31 days | [Pollux](/wiki/Pollux_(star)) |
| [Cancer](/wiki/Cancer_(astrology)) | [20px|Cancer](/wiki/File:Cancer.svg) | 22 June –  22 July | 16 July –  15 August | [Cancer](/wiki/Cancer_(constellation)) | [Template:Zodiac date IAU](/wiki/Template:Zodiac_date_IAU) | 20 days | [Al Tarf](/wiki/Beta_Cancri) |
| [Leo](/wiki/Leo_(astrology)) | [20px|Leo](/wiki/File:Leo.svg) | 23 July –  22 August | 16 August –  15 September | [Leo](/wiki/Leo_(constellation)) | [Template:Zodiac date IAU](/wiki/Template:Zodiac_date_IAU) | 37 days | [Regulus](/wiki/Regulus) |
| [Virgo](/wiki/Virgo_(astrology)) | [20px|Virgo](/wiki/File:Virgo.svg) | 23 August –  23 September | 16 September –  15 October | [Virgo](/wiki/Virgo_(constellation)) | [Template:Zodiac date IAU](/wiki/Template:Zodiac_date_IAU) | 45 days | [Spica](/wiki/Spica) |
| [Libra](/wiki/Libra_(astrology)) | [20px|Libra](/wiki/File:Libra.svg) | 24 September –  23 October | 16 October –  15 November | [Libra](/wiki/Libra_(constellation)) | [Template:Zodiac date IAU](/wiki/Template:Zodiac_date_IAU) | 23 days | [Zubeneschamali](/wiki/Beta_Librae) |
| [Scorpio](/wiki/Scorpio_(astrology)) | [20px|Scorpio](/wiki/File:Scorpio.svg) | 24 October –  22 November | 16 November –  15 December | [Scorpius](/wiki/Scorpius_(constellation)) | [Template:Zodiac date IAU](/wiki/Template:Zodiac_date_IAU) | 7 days | [Antares](/wiki/Antares) |
| [Ophiuchus](/wiki/Ophiuchus_(astrology)) | [20px|Ophiuchus](/wiki/File:Ophiuchus_zodiac.svg) | *n/a* | | [Ophiuchus](/wiki/Ophiuchus_(constellation)) | [Template:Zodiac date IAU](/wiki/Template:Zodiac_date_IAU) | 18 days | [Rasalhague](/wiki/Alpha_Ophiuchi) |
| [Sagittarius](/wiki/Sagittarius_(astrology)) | [20px|Sagittarius](/wiki/File:Sagittarius.svg) | 23 November –  21 December | 16 December –  14 January | [Sagittarius](/wiki/Sagittarius_(constellation)) | [Template:Zodiac date IAU](/wiki/Template:Zodiac_date_IAU) | 32 days | [Kaus Australis](/wiki/Epsilon_Sagittarii) |
| [Capricorn](/wiki/Capricorn_(astrology)) | [20px|Capricornus](/wiki/File:Capricorn.svg) | 22 December –  20 January | 15 January –  14 February | [Capricornus](/wiki/Capricornus_(constellation)) | [Template:Zodiac date IAU](/wiki/Template:Zodiac_date_IAU) | 28 days | [Deneb Algedi](/wiki/Delta_Capricorni) |
| [Aquarius](/wiki/Aquarius_(astrology)) | [20px|Aquarius](/wiki/File:Aquarius.svg) | 21 January –  19 February | 15 February –  14 March | [Aquarius](/wiki/Aquarius_(constellation)) | [Template:Zodiac date IAU](/wiki/Template:Zodiac_date_IAU) | 24 days | [Sadalsuud](/wiki/Beta_Aquarii) |
| [Pisces](/wiki/Pisces_(astrology)) | [20px|Pisces](/wiki/File:Pisces.svg) | 20 February –  20 March | 15 March –  14 April | [Pisces](/wiki/Pisces_(constellation)) | [Template:Zodiac date IAU](/wiki/Template:Zodiac_date_IAU) | 38 days | [Eta Piscium](/wiki/Eta_Piscium) |

Because the Earth's axis is at an angle, some signs take longer to rise than others, and the farther away from the [equator](/wiki/Equator) the observer is situated, the greater the difference. Thus, signs are spoken of as "long" or "short" ascension.[[36]](#cite_note-36)

## Precession of the equinoxes[[edit](/index.php?title=(none)&action=edit&section=12)]

[Template:Further](/wiki/Template:Further) [thumb|300px|Path taken by the point of](/wiki/File:Equinox_path.png) [vernal equinox](/wiki/Vernal_equinox) along the ecliptic over the past 6000 years

The zodiac system was developed in [Babylonia](/wiki/Neo-Babylonian), some 2,500 years ago, during the "[Age of Aries](/wiki/Age_of_Aries)".[[37]](#cite_note-37) At the time, it is assumed, the [precession of the equinoxes](/wiki/Precession_of_the_equinoxes) was unknown, as the system made no allowance for it. Contemporary use of the coordinate system is presented with the choice of interpreting the system either as [sidereal](/wiki/Sidereal_astrology), with the signs fixed to the [stellar background](/wiki/Fixed_stars), or as [tropical](/wiki/Tropical_astrology), with the signs fixed to the point of [vernal equinox](/wiki/Vernal_equinox).[[38]](#cite_note-38) [Western astrology](/wiki/Western_astrology) takes the tropical approach, whereas [Hindu astrology](/wiki/Hindu_astrology) takes the sidereal one. This results in the originally unified zodiacal coordinate system drifting apart gradually, with a clockwise(westward) precession of 1.4 degrees per century.

For the tropical zodiac used in Western astronomy and astrology, this means that the tropical *sign* of Aries currently lies somewhere within the *constellation* Pisces ("[Age of Pisces](/wiki/Age_of_Pisces)").

The sidereal coordinate system takes into account the [ayanamsa](/wiki/Ayanamsa), *ayan* meaning *transit* or *movement*, and *amsa* meaning *small part*, i.e. movement of equinoxes in small parts. It is unclear when Indians became aware of the precession of the equinoxes, but [Bhaskar II's](/wiki/Bhaskar_II) 12th-century treatise [*Siddhanta Shiromani*](/wiki/Siddhanta_Shiromani) gives equations for measurement of precession of equinoxes, and says his equations are based on some lost equations of [*Suryasiddhanta*](/wiki/Suryasiddhanta) plus the equation of Munjaala.

The discovery of precession is attributed to [Hipparchus](/wiki/Hipparchus) around 130 BC. [Ptolemy](/wiki/Ptolemy) quotes from Hipparchus’ now lost work entitled “On the Displacement of the Solstitial and Equinoctial Points” in the seventh book of his 2nd century astronomical text, [*Almagest*](/wiki/Almagest), where he describes the phenomenon of precession and estimates its value.[[22]](#cite_note-22) Ptolemy clarified that the convention of Greek mathematical astronomy was to commence the zodiac from the point of the vernal equinox and to always refer to this point as “the first degree” of Aries.<ref name=Geminos2>[Template:Cite book](/wiki/Template:Cite_book)</ref> This is known as the “tropical zodiac” (from the Greek word trópos, turn)[[39]](#cite_note-39) because its starting point revolves through the circle of background constellations over time.

The principle of the vernal point acting as the first degree of the zodiac for Greek astronomers is also described in the 1st century BC astronomical text of [Geminus](/wiki/Geminus) of Rhodes. Geminus explains that Greek astronomers of his era associate the first degrees of the zodiac signs with the two solstices and the two equinoxes, in contrast to the older Chaldean (Babylonian) system, which placed these points within the zodiac signs.<ref name=Geminos2/> This illustrates that Ptolemy merely clarified the convention of Greek astronomers and did not originate the principle of the tropical zodiac, as is sometimes assumed.

Ptolemy also demonstrates that the principle of the tropical zodiac was well known to his predecessors within his astrological text, the [*Tetrabiblos*](/wiki/Tetrabiblos), where he explains why it would be an error to associate the regularly spaced signs of the seasonally aligned zodiac with the irregular boundaries of the visible constellations:

The beginnings of the signs, and likewise those of the terms, are to be taken from the equinoctial and tropical points. This rule is not only clearly stated by writers on the subject, but is also especially evident by the demonstration constantly afforded, that their natures, influences and familiarities have no other origin than from the tropics and equinoxes, as has been already plainly shown. And, if other beginnings were allowed, it would either be necessary to exclude the natures of the signs from the theory of prognostication, or impossible to avoid error in then retaining and making use of them; as the regularity of their spaces and distances, upon which their influence depends, would then be invaded and broken in upon.[[23]](#cite_note-23)

## In modern astronomy[[edit](/index.php?title=(none)&action=edit&section=13)]

Astronomically, the zodiac defines a belt of space extending 9° either side of the [ecliptic](/wiki/Ecliptic), within which the orbits of the Moon and the principal planets remain.[[40]](#cite_note-40) It is a feature of a [celestial coordinate system](/wiki/Celestial_coordinate_system) centered upon the [ecliptic](/wiki/Ecliptic), (the plane of the Earth's orbit and the Sun's apparent path), by which [celestial longitude](/wiki/Celestial_longitude) is measured in degrees east of the [vernal equinox](/wiki/Vernal_equinox) (the ascending intersection of the ecliptic and [equator](/wiki/Equator)).[[41]](#cite_note-41) The Sun's placement upon the vernal equinox, which occurs annually around 21 March, defines the starting point for measurement, the first degree of which is historically known as the "[first point of Aries](/wiki/First_Point_of_Aries)". The first 30° along the ecliptic is nominally designated as the zodiac sign Aries, which no longer falls within the proximity of the constellation Aries since the effect of [precession](/wiki/Precession) is to move the vernal point through the backdrop of visible constellations (it is currently located near the end of the constellation Pisces, having been within that constellation since the 2nd century AD).[[42]](#cite_note-42) The subsequent 30° of the ecliptic is nominally designated the zodiac sign Taurus, and so on through the twelve signs of the zodiac so that each occupies 1/12th (30°) of the zodiac's great circle. Zodiac signs have never been used to determine the boundaries of astronomical constellations that lie in the vicinity of the zodiac, which are, and always have been, irregular in their size and shape.[[40]](#cite_note-40) The convention of measuring celestial longitude within individual signs was still being used in the mid-19th century,[[43]](#cite_note-43) but modern astronomy now numbers degrees of celestial longitude from 0° to 360°, rather than 0° to 30° within each sign.

The use of the zodiac as a means to determine astronomical measurement remained the main method for defining celestial positions by Western astronomers until the Renaissance, at which time preference moved to the [equatorial coordinate system](/wiki/Equatorial_coordinate_system), which measures astronomical positions by [right ascension](/wiki/Right_ascension) and [declination](/wiki/Declination) rather than the ecliptic-based definitions of [celestial longitude](/wiki/Celestial_longitude) and [celestial latitude](/wiki/Celestial_latitude).[[42]](#cite_note-42) The word "zodiac" is also used in reference to the [zodiacal cloud](/wiki/Zodiacal_cloud) of dust grains that move among the planets, and the [zodiacal light](/wiki/Zodiacal_light) that originates from their scattering of sunlight.

## Mnemonics[[edit](/index.php?title=(none)&action=edit&section=14)]

There are many [mnemonics](/wiki/Mnemonic) for remembering the 12 signs of the zodiac in order. A traditional mnemonic:[[44]](#cite_note-44)<poem>The ram, the bull, the heavenly twins, And next the crab, the lion shines, The virgin and the scales, The scorpion, archer, and the goat, The man who holds the watering-pot, And fish with glittering scales.</poem>

A less poetic, but succinct mnemonic is the following:[[45]](#cite_note-45)<poem>The Ramble Twins Crab Liverish; Scaly Scorpions Are Good Water Fish.</poem>

Mnemonics in which the initials of the words correspond to the initials of the star signs (Latin, English, or mixed): <poem>All The Great Constellations Live Very Long Since Stars Can't Alter Physics.[[46]](#cite_note-46)</poem> <poem>As The Great Cook Likes Very Little Salt, She Compensates Adding Pepper.</poem> <poem>All That Gold Can Load Very Lazy Students Since Children Are at Play</poem>

Modern mnemonics which use calendar order (January to December order) are arbitrary. For example,

"Capped aqueous poisons are tainting good crab legs vaguely like scorched sage" corresponds to Capricorn, Aquarius, Pisces, Aries, Taurus, Gemini, Cancer, Leo, Virgo, Libra, Scorpio, Sagittarius.

Or, for astronomical IAU boundaries, "Sadly, capsized, aqueous pollutants are tainting good crabs leaving via liberally scorched Oregon" starts with Sagittarius in January and includes Ophiuchus in December.

## Unicode characters[[edit](/index.php?title=(none)&action=edit&section=15)]

In Unicode, the symbols of zodiac signs are encoded in block Miscellaneous Symbols:[[47]](#cite_note-47)#[Template:Unichar](/wiki/Template:Unichar)

1. [Template:Unichar](/wiki/Template:Unichar)
2. [Template:Unichar](/wiki/Template:Unichar)
3. [Template:Unichar](/wiki/Template:Unichar)
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7. [Template:Unichar](/wiki/Template:Unichar)
8. [Template:Unichar](/wiki/Template:Unichar)
9. [Template:Unichar](/wiki/Template:Unichar)
10. [Template:Unichar](/wiki/Template:Unichar)
11. [Template:Unichar](/wiki/Template:Unichar)

In Unicode 6.0 the sign for Ophiuchus has been added, too:

[Template:Unichar](/wiki/Template:Unichar)

## See also[[edit](/index.php?title=(none)&action=edit&section=16)]

[Template:Portal](/wiki/Template:Portal) [Template:Div col](/wiki/Template:Div_col)

* [Astronomical symbols](/wiki/Astronomical_symbols)
* [Chinese Zodiac](/wiki/Chinese_Zodiac)
* [Circle of stars](/wiki/Circle_of_stars)
* [Cusp (astrology)](/wiki/Cusp_(astrology))
* [Elements of the zodiac](/wiki/Elements_of_the_zodiac)

[Template:Div col end](/wiki/Template:Div_col_end)

## References[[edit](/index.php?title=(none)&action=edit&section=17)]

[Template:Reflist](/wiki/Template:Reflist)

## External links[[edit](/index.php?title=(none)&action=edit&section=18)]

[Template:Commons+cat](/wiki/Template:Commons+cat)

* ["A Treatise on Zodiacal Signs and Constallations: Unique Jewels on the Benefits of Keeping Time"](http://www.wdl.org/en/item/3204) is a manuscript that dates back to 1831 with a focus on Arabic, Coptic and Syriac calendars.
* [Zodiac Constellations at Constellation Guide](http://www.constellation-guide.com/constellation-map/zodiac-constellations/)
* [Zodiac Signs](http://madamastrology.com/zodiac-signs/)

[Template:Zodiac](/wiki/Template:Zodiac) [Template:Greek astronomy](/wiki/Template:Greek_astronomy) [Template:Astrology-footer](/wiki/Template:Astrology-footer) [Template:Use dmy dates](/wiki/Template:Use_dmy_dates)

[Template:Authority control](/wiki/Template:Authority_control)

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