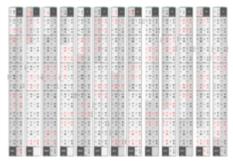
# Chinese calendar

The traditional **Chinese calendar** (also known as the Agricultural Calendar [ 農曆;农历; *Nónglì*; 'farming calendar'], Former Calendar [舊曆; 旧历; *Jiùlì*], Traditional Calendar [老曆;老历; *Lǎolì*]), is a <u>lunisolar calendar</u> which identifies years, months, and days according to astronomical phenomena. In China, it is defined by the <u>Chinese national standard</u> GB/T 33661–2017, "Calculation and Promulgation of the Chinese Calendar", issued by the Standardization Administration of China on May 12, 2017.

Although modern-day China uses the <u>Gregorian calendar</u>, the traditional Chinese calendar governs holidays, such as the <u>Chinese New Year</u> and <u>Lantern Festival</u>, in both China and <u>overseas Chinese</u> communities. It also provides the traditional Chinese nomenclature of dates within a year which people use to select auspicious days for <u>weddings</u>, funerals, moving or starting a business. The evening state-run news program <u>Xinwen Lianbo</u> in the P.R.C. continues to announce the months and dates in both the Gregorian and the traditional lunisolar calendar.

Like Chinese characters, variants of Chinese calendar were used in different parts of the Sinosphere throughout history. Korea, Vietnam, and the Ryukyu Islands adopted the Chinese calendar, and evolved it into Korean, Vietnamese, and Ryukyuan calendars, with the main difference from the Chinese calendar being the use of different meridians due to geography, which leads to some astronomical events — and calendar events based on them — falling on different dates. The traditional Japanese calendar was also derived from the Chinese calendar (based on a Japanese meridian), but its official use in Japan was abolished in 1873 due to reforms after the Meiji Restoration. Calendars in Mongolia and Tibet have absorbed elements of the traditional Chinese calendar but are not direct descendants of it.



2017 Chinese calendar



Page of a Chinese calendar

Days begin and end at midnight, and months begin on the day of the <u>new moon</u>. Years start on the second (or third) new moon after the <u>winter solstice</u>. <u>Solar terms</u> govern the beginning, middle, and end of each month. A <u>sexagenary cycle</u>, comprising stems ( $\mp$ ,  $g\bar{a}n$ ) and branches ( $\pm$ ,  $zh\bar{\imath}$ ), is used as identification alongside each year and month; including <u>intercalary months</u> or leap months. The length of a month is also annotated as either long ( $\pm$ , literally "big" for months with 30 days) or short ( $\pm$ ), literally "small" for months with 29 days).

# **Contents**

**History** 

Solar calendars

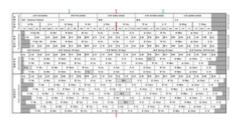
```
Lunisolar calendars
        Qin and early Han dynasties
        Han-Ming dynasties and Taichu calendar
    Modern calendars
        Shíxiàn calendar
        Proposals
    Outlying areas
Structure
    Elements
   Features
   Codes
   Day
   Week
    Month
        Names of months
        Chinese lunar date conventions
    Solar term
    Solar year
   Lunisolar year
        Age reckoning
        Year-numbering systems
            Eras
            Stem-branches
            Continuous numbering
    Chinese New Year
    Phenology
Common holidays based on the Chinese (lunisolar) calendar
    Holidays with the same day and same month
   Full moon holidays (holidays on the fifteenth day)
    Celebrations of the twelfth month
    Celebrations of solar-term holidays
    Religious holidays based on the lunar calendar
    Celebrations in Japan
    Double celebrations due to intercalary months
See also
Notes
References
Further reading
External links
```

# **History**

### Solar calendars

The traditional Chinese calendar was developed between 771 and 476 BCE, during the <u>Spring and Autumn period</u> of the <u>Eastern Zhou</u> dynasty. Solar calendars were used before the <u>Zhou dynasty period</u>.

One version of the solar calendar is the five-elements calendar (五 行曆; 五行历), which derives from the Wu Xing. A 365-day year was divided into five phases of 73 days, with each phase corresponding to a Day 1 Wu Xing element. A phase began with a governing-element day (行御), followed by six 12-day weeks.



Five-phase and four-quarter calendars

Each phase consisted of two three-week months, making each year ten months long. Years began on a  $ji\check{a}z\check{l}$  (甲子) day (and a 72-day wood phase), followed by a  $b\check{l}ngz\check{l}$  day (丙子) and a 72-day fire phase; a  $wuz\check{l}$  (戊子) day and a 72-day earth phase; a  $g\bar{e}ngz\check{l}$  (庚子) day and a 72-day metal phase, and a  $r\acute{e}nz\check{l}$  day (壬子) followed by a water phase. Other days were tracked using the Yellow River Map (He Tu).

Another version is a four-quarters calendar (四時八節曆; 四时八节历; 'four sections, eight seasons calendar', or 四分曆; 四分历). The weeks were ten days long, with one month consisting of three weeks. A year had 12 months, with a ten-day week <u>intercalated</u> in summer as needed to keep up with the tropical year. The 10 <u>Heavenly Stems</u> and 12 <u>Earthly Branches</u> were used to mark days. [2]

A third version is the balanced calendar (調曆; 调历). A year was 365.25 days, and a month was 29.5 days. After every 16th month, a half-month was intercalated. According to <u>oracle bone</u> records, the <u>Shang dynasty</u> calendar ( $\underline{c}$ , 1600 - c. 1046 BCE) was a balanced calendar with 12 to 14 months in a year; the month after the winter solstice was  $Zh\bar{e}ngyu\dot{e}$ . [3]

### Lunisolar calendars

The first <u>lunisolar</u> calendar was the Zhou calendar (周曆; 周历), introduced under the Zhou dynasty. This calendar sets the beginning of the year at the day of the new moon before the winter solstice.

Several competing <u>lunisolar</u> calendars were also introduced, especially by states fighting Zhou control during the <u>Warring States period</u>. The state of <u>Lu</u> issued its own Lu calendar(魯曆; 鲁历). <u>Jin</u> issued the <u>Xia</u> calendar (夏曆; 夏历) in AD 102, with a year beginning on the day of the new moon nearest the <u>March equinox</u>. <u>Qin</u> issued the <u>Zhuanxu</u> calendar (顓頊曆; 颛顼历), with a year beginning on the day of the new moon nearest the <u>winter solstice</u>. <u>Song's Yin</u> calendar (殷曆; 殷历) began its year on the day of the new moon after the winter solstice.

These calendars are known as the six ancient calendars (古六曆; 古六历), or quarter-remainder calendars, (四分曆; 四分历; sìfēnlì), since all calculate a year as  $365^{1}/_{4}$  days long. Months begin on the day of the new moon, and a year has 12 or 13 months. Intercalary months (a 13th month) are added to the end of the year. The Qiang and Dai calendars are modern versions of the Zhuanxu calendar, used by mountain peoples.

### Qin and early Han dynasties

After Qin Shi Huang unified China under the Qin dynasty in 221 BCE, the Qin calendar (秦曆; 秦历) was introduced. It followed most of the rules governing the Zhuanxu calendar, but the month order was that of the Xia calendar; the year began with month 10 and ended with month 9, analogous to a Gregorian

calendar beginning in October and ending in September. The intercalary month, known as the second  $Ji\check{U}yu\grave{e}$  (後九月; 后九月; 'later  $Ji\check{U}yu\grave{e}$ '), was placed at the end of the year. The Qin calendar was used going into the Han dynasty.

### Han-Ming dynasties and Taichu calendar

Emperor Wu of Han r. 141 – 87 BCE introduced reforms halfway through his reign. His Taichu Calendar (太初曆; 太初历; 'grand beginning calendar') defined a solar year as  $365^{385}/_{1539}$  days, and the lunar month had  $29^{43}/_{81}$  days. Since  $\left(365 + \frac{385}{1539}\right) \times 19 = \left(29 + \frac{43}{81}\right) \times (19 \times 12 + 7)$  the 19 years cycle used for the 7 additional months was taken as an exact one, and not as an approximation.

This calendar introduced the 24 solar terms, dividing the year into 24 equal parts. Solar terms were paired, with the 12 combined periods known as climate terms. The first solar term of the period was known as a pre-climate (节气), and the second was a mid-climate (中气). Months were named for the mid-climate to which they were closest, and a month without a mid-climate was an intercalary month.

The Taichu calendar established a framework for traditional calendars, with later calendars adding to the basic formula. The Dàmíng Calendar (大明曆; 大明历; 'brightest calendar'), created in the Liang dynasty by Zu Chongzhi, introduced the equinoxes. The use of a syzygy to determine the lunar month was first described in the Tang dynasty Wùyín Yuán Calendar (戊寅元曆; 戊寅元历; 'earth tiger epoch calendar'). The Yuan dynasty Shòushí calendar (授時曆; 授时历; 'season granting calendar') used spherical trigonometry to find the length of the tropical year. The calendar had a 365.2425-day year, identical to the Gregorian calendar.

### Modern calendars

Although the Chinese calendar lost its place as the country's official calendar at the beginning of the 20th century, [9] its use has continued. Some calendars followed the last calendar of the Qing dynasty, published in 1908. This caused confusion regarding the date of the 1978 Mid-Autumn Festival, and those areas then switched to the UTC+8-based calendar. [10]

#### Shíxiàn calendar

During the late <u>Ming dynasty</u>, <u>Xu Guangqi</u> and his colleagues worked out a new calendar based on Western astronomical arithmetic; however, the new calendar was not released before the end of the dynasty. In the early <u>Qing dynasty</u>, <u>Johann Adam Schall von Bell</u> submitted the calendar to the <u>Shunzhi Emperor</u>. The Qing government issued it as the Shíxiàn (seasonal) calendar.

In this calendar, the <u>solar terms</u> are 15° each along the <u>ecliptic</u> and it can be used as a <u>solar calendar</u>. However, the length of the climate term near the <u>perihelion</u> is less than 30 days and there may be two midclimate terms. The Shíxiàn calendar changed the mid-climate-term rule to "decide the month in sequence, except the intercalary month." The present traditional calendar follows the Shíxiàn calendar, except:

- 1. The baseline is Chinese Standard Time, rather than Beijing local time.
- 2. Astronomical data, rather than mathematical calculations, is used.

### **Proposals**

To optimize the Chinese calendar, astronomers have proposed a number of changes. Gao Pingzi (高平子; 1888-1970), a Chinese astronomer who co-founded the <u>Purple Mountain Observatory</u>, proposed that month numbers be calculated before the new moon and solar terms to be rounded to the day. Since the intercalary month is determined by the first month without a <u>mid-climate</u> and the mid-climate time varies by time zone, countries that adopted the calendar but calculate with their own time could vary from the time in China. [11]

# **Outlying areas**

Calendars of ethnic groups in the mountains and plateaus of southwestern China and the grasslands of northern China are based on their <u>phenology</u> and algorithms of traditional calendars of different periods, particularly the Tang and pre-Qin dynasties.

### Structure

#### **Elements**

Elements of the traditional Chinese calendar are:

- Day, from one midnight to the next
- *Month*, the time from one <u>new moon</u> to the next. These <u>synodic months</u> are about  $29^{17}/_{32}$  days long.
- Date, when a day occurs in the month. Days are numbered in sequence from 1 to 29 (or 30).
- Year, the time of one revolution of the earth around the sun. It is measured from the first day of spring (lunisolar year) or the winter solstice (solar year). A year is about  $365^{31}/_{128}$  days.
- Zodiac,  $\frac{1}{12}$  year, or 30° on the <u>ecliptic</u>. A zodiac is about  $30\frac{7}{16}$  days.
- Solar term,  $\frac{1}{24}$  year, or 15° on the ecliptic. A solar term is about  $15\frac{7}{32}$  days.
- *Calendar month*, when a month occurs within a year. Some months may be repeated.
- Calendar year, when it is agreed that one year ends and another begins. The year begins on the first day of spring, defined as the second (sometimes third) new moon after the winter solstice. A calendar year is 353–355 or 383–385 days long.

The Chinese calendar is lunisolar, similar to the Hindu, Hebrew and ancient Babylonian calendars.

### **Features**

The movement of the sun, moon, <u>Mercury</u>, <u>Venus</u>, <u>Mars</u>, <u>Jupiter</u> and <u>Saturn</u> (known as the seven luminaries) are the references for calendar calculations.

- The distance between Mercury and the sun is less than 30° (the sun's height at *chénshí*:辰時, 8:00 to 10:00 am), so Mercury was sometimes called the "chen star" (辰星); it is more commonly known as the "water star" (水星).
- Venus appears at dawn and dusk and is known as the "bright star" (<u>啟明星</u>; <u>启明星</u>) or "long star" (長庚星; 长庚星).
- Mars looks like fire and occurs irregularly, and is known as the "fire star" (<u>熒惑星</u>; <u>荧惑星</u> or <u>火星</u>). Mars is the punisher in Chinese mythology. When Mars is near <u>Antares</u> (心宿二), it is a

bad omen and can forecast the death of an emperor or removal of a chancellor (荧惑守心).

- The period of Jupiter's revolution is 11.86 years, so Jupiter is called the "age star" (歲星; 岁星); 30° of Jupiter's revolution is about a year on earth.
- The period of Saturn's revolution is about 28 years. Known as the "guard star" (鎮星), Saturn guards one of the 28 Mansions every year.

The <u>Big Dipper</u> is the celestial compass, and its handle's direction determines the season and month. The stars are divided into <u>Three Enclosures</u> and <u>28 Mansions</u> according to their location in the sky relative to <u>Ursa Minor</u>, at the center. Each mansion is named with a character describing the shape of its principal asterism. The Three Enclosures are <u>Purple Forbidden</u>, (紫微), <u>Supreme Palace</u> (太微), and <u>Heavenly Market</u>. (天市) The eastern mansions are 角, 亢, 氐, 房, 心, 尾, 箕. Southern mansions are 井, 鬼, 柳, 星, 張, 翼, 轸. Western mansions are 奎, 婁, 胃, 昴, 畢, 參, 觜. Northern mansions are 斗, 牛, 女, 虚, 危, 室, 壁. The moon moves through about one <u>lunar mansion</u> per day, so the 28 mansions were also used to count days. In the <u>Tang dynasty</u>, <u>Yuan Tiangang</u> (袁天罡) matched the 28 mansions, seven luminaries and yearly animal signs to yield combinations such as "horn-wood-flood dragon" (角木蛟).

### Codes

Several coding systems are used to avoid ambiguity. The <u>Heavenly Stems</u> is a <u>decimal</u> system. The <u>Earthly Branches</u>, a <u>duodecimal</u> system, mark dual hours (*shí*, <u>時</u>; <u>时</u> or *shíchen* (時辰; 时辰)) and climatic terms. The 12 characters progress from the first day with the same branch as the month (first *Yín* day (寅日) of *Zhēngyuè*; first *Mǎo* day (卯日) of *Èryuè*), and count the days of the month.

The <u>stem-branches</u> is a <u>sexagesimal</u> system. The Heavenly Stems and Earthly Branches make up <u>60 stem-branches</u>. The stem branches mark days and years. The five elements of the <u>Wu Xing</u> are assigned to each of the stems, branches, and stem branches.

# Day

China has used the Western hour-minute-second system to divide the day since the Qing dynasty. [12] Several era-dependent systems had been in use; systems using multiples of twelve and ten were popular, since they could be easily counted and aligned with the Heavenly Stems and Earthly Branches.



Explanatory chart for traditional Chinese time

### Week

The structure of  $x\acute{u}n$  led to public holidays every five or ten days. During the <u>Han dynasty</u>, officials were legally required to rest every five days (twice a  $x\acute{u}n$ , or 5–6 times a month). The name of these breaks became huan (澣; 浣, "wash").

Grouping days into sets of ten is still used today in referring to specific natural events. "Three Fu" ( $\equiv \mathcal{K}$ ), a 29–30-day period which is the hottest of the year, reflects its three-xu length. After the winter solstice, nine sets of nine days were counted to calculate the end of winter.

The seven-day week was adopted from the Hellenistic system by the 4th century CE, although its source is unclear. It was again transmitted to China in the 8th century by Manichaeans via Kangju (a Central Asian kingdom near Samarkand), and is the most-used system in modern China.

### Month

Months are defined by the time between <u>new moons</u>, which averages approximately  $29^{17}/_{32}$  days. There is no specified length of any particular Chinese month, so the first month could have 29 days (short month, <u>力</u>) in some years and 30 days (long month, <u>大月</u>) in other years.

A 12-month-year using this system has 354 days, which would drift significantly from the  $\underline{\text{tropical year}}$ . To fix this, traditional Chinese years have a 13-month year approximately once every three years. The 13-month version has the same alternation of long and short months, but adds a 30-day leap month (閏月;  $rùnyu\grave{e}$ ) at the end of the year. Years with 12 months are called common years, and 13-month years are known as long years.

Although most of the above rules were used until the  $\underline{\text{Tang dynasty}}$ , different eras used different systems to keep lunar and solar years aligned. The  $\underline{\text{synodic month}}$  of the Taichu calendar was  $29^{43}/_{81}$  days long. The 7th-century, Tang-dynasty Wùyín Yuán Calendar was the first to determine month length by synodic month instead of the cycling method. Since then, month lengths have primarily been determined by observation and prediction.

The days of the month are always written with two characters and numbered beginning with 1. Days one to 10 are written with the day's <u>numeral</u>, preceded by the character  $Ch\bar{u}$  (初);  $Ch\bar{u}y\bar{\iota}$  (初一) is the first day of the month, and  $Ch\bar{u}sh\acute{\iota}$  (初十) the 10th. Days 11 to 20 are written as regular Chinese numerals;  $Sh\acute{\iota}w\check{\iota}$  (十五) is the 15th day of the month, and  $Ersh\acute{\iota}$  (二十) the 20th. Days 21 to 29 are written with the character Nian (廿) before the characters one through nine;  $Nians\bar{u}$  (廿三), for example, is the 23rd day of the month. Day 30 (when applicable) is written as the numeral  $S\bar{u}$  (三十).

History books use days of the month numbered with the 60 stem-branches:

天聖元年....<u>二月</u>....<u>丁巳</u>, 奉安太祖、太宗御容于南京鴻慶宮. <u>Tiānshèng</u> 1st year....<u>Èryuè</u>....*Dīngs*ì, the emperor's funeral was at his temple, and the imperial portrait was installed in Nanjing's *Hongqing Palace*.

— <u>History of Song Dynasty, Part 9, Volume 9: Renzong part 1 (https://zh.wikisource.org/wiki/</u>宋史/卷009) (in Chinese)

Because astronomical observation determines month length, dates on the calendar correspond to moon phases. The first day of each month is the new moon. On the seventh or eighth day of each month, the first-quarter moon is visible in the afternoon and early evening. On the 15th or 16th day of each month, the full moon is visible all night. On the 22nd or 23rd day of each month, the last-quarter moon is visible late at night and in the morning.

Since the beginning of the month is determined by when the new moon occurs, other countries using this calendar use their own time standards to calculate it; this results in deviations. The first new moon in 1968 was at 16:29 UTC on 29 January. Since North Vietnam used UTC+07:00 to calculate their Vietnamese

<u>calendar</u> and <u>South Vietnam</u> used <u>UTC+08:00</u> (Beijing time) to calculate theirs, North Vietnam began the <u>Tết</u> holiday at 29 January at 23:29 while South Vietnam began it on 30 January at 00:15. The time difference allowed asynchronous attacks in the Tet Offensive. [10]

### Names of months

Lunar months were originally named according to natural phenomena. Current naming conventions use numbers as the month names. Every month is also associated with one of the twelve Earthly Branches.

Month number	Starts on Gregorian date	Phenological name	Earthly Branch name	Modern name
1	between 21 January – 20 February *	<u>陬月</u> ; <i>zōuyuè</i> ; 'corner month'. square of <u>Pegasus</u> month	寅月; <i>yínyu</i> è; 'tiger month'	正月; <i>zhēngyu</i> è; 'first month'
2	between 20 February – 21 March *	<u>杏月</u> ; <i>xìngyu</i> è; ' <u>apricot</u> month'	<u> </u>	<u>二月</u> ; <i>èryuè</i> ; 'second month'
3	between 21 March – 20 April *	桃月; táoyuè; ' <u>peach</u> month'	辰月; <i>chényu</i> è; 'dragon month'	三月; s <i>ānyu</i> è; 'third month'
4	between 20 April – 21 May *	梅月; <i>méiyu</i> è; ' <u>plum</u> month'	<u>巳月</u> ; sìyuè; 'snake month'	四月; sì <i>yuè</i> ; 'fourth month'
5	between 21 May – 21 June *	榴月; liúyuè; 'pomegranate month'	午月; wǔyuè; 'horse month'	五月; wǔyuè; 'fifth month'
6	between 21 June – 23 July *	荷月; héyuè; ' <u>lotus</u> month'	未月; wèiyuè; 'goat month'	六月; <i>liùyuè</i> ; 'sixth month'
7	between 23 July – 23 August *	<u>蘭月; 兰月; lányuè; 'orchid</u> month'	<u>申月</u> ; <i>shēnyu</i> è; 'monkey month'	七月; qīyuè; 'seventh month'
8	between 23 August – 23 September *	<u>桂月; guìyuè; 'osmanthus</u> month'	<u>酉月</u> ; <i>yǒuyu</i> è; 'rooster month'	八月; <i>bāyu</i> è; 'eighth month'
9	between 23 September – 23 October *	菊月; júyuè; 'chrysanthemum month'	<u>戌月</u> ; <i>xūyuè</i> ; 'dog month'	九月; ji ǔyuè; 'ninth month'
10	between 23 October – 22 November *	露月; <i>lùyuè</i> ; ' <u>dew</u> month'	<u>亥月</u> ; <i>hàiyu</i> è; 'pig month'	<u>十月</u> ; s <i>híyu</i> è; 'tenth month'
11	between 22 November – 22 December *	<u>冬月</u> ; <i>dōngyuè</i> ; 'winter month'; <u>葭月</u> ; <i>jiāyuè</i> ; ' <u>reed</u> month'	<u>子月;</u> <i>zǐyu</i> è; 'rat month'	<u>冬月</u> ; <i>dōngyuè</i> ; 'eleventh month'
12	between 22 December – 21 January *	<u>冰月; bīngyu</u> è; 'ice month'	<u>丑月</u> ; <i>chǒuyu</i> è; 'ox month'	臘月; 腊月; <i>làyuè</i> ; 'end-of-year month'

 Gregorian dates are approximate and should be used with caution. Many years have intercalary months.

### Chinese lunar date conventions

Though the numbered month names are often used for the corresponding month number in the Gregorian calendar, it is important to realize that the numbered month names are not interchangeable with the Gregorian months when talking about lunar dates.

- Incorrect: The <u>Dragon Boat Festival</u> falls on 5 May in the <u>Lunar Calendar</u>, whereas the <u>Double Ninth Festival</u>, <u>Lantern Festival</u>, and <u>Qixi Festival</u> fall on 9 September, 15 January, and 7 July in the Lunar Calendar, respectively.
- Correct: The <u>Dragon Boat Festival</u> falls on Wǔyuè 5th (or, 5th day of the fifth month) in the <u>Lunar Calendar</u>, whereas the <u>Double Ninth Festival</u>, <u>Lantern Festival</u> and <u>Qixi Festival</u> fall on Jiǔyuè 9th (or, 9th day of the ninth month), Zhēngyuè 15th (or, 15th day of the first month) and Qīyuè 7th (or, 7th day of the seventh month) in the <u>Lunar Calendar</u>, respectively.
- Alternate Chinese Zodiac correction: The Dragon Boat Festival falls on Horse Month 5th in the Lunar Calendar, whereas the Double Ninth Festival, Lantern Festival and Qixi Festival fall on Dog Month 9th, Tiger Month 15th and Monkey Month 7th in the Lunar Calendar, respectively.

One may identify the <a href="heavenly stem">heavenly stem</a> and <a href="earthly branch">earthly branch</a> corresponding to a particular day in the month, and those corresponding to its month, and those to its year, to determine the <a href="Four Pillars of Destiny">Four Pillars of Destiny</a> associated with it, for which the <a href="Tung Shing">Tung Shing</a>, also referred to as the <a href="Chinese Almanac">Chinese Almanac</a> of the year, or the <a href="Huangli">Huangli</a>, and containing the essential information concerning <a href="Chinese astrology">Chinese astrology</a>, is the most convenient publication to consult. Days rotate through a <a href="sexagenary cycle">sexagenary cycle</a> marked by coordination between <a href="heavenly stems">heavenly stems</a> and <a href="earthly branches">earthly branches</a>, hence the referral to the <a href="Four Pillars of Destiny">Four Pillars of Destiny</a> as, "Bazi", or "Birth Time Eight <a href="Chinese Lina">Chinese Lina</a>, with each pillar consisting of a character for its corresponding heavenly stem, and another for its earthly branch. Since <a href="Huangli">Huangli</a> days are <a href="sexagenaric">sexagenaric</a>, their order is quite independent of their numeric order in each month, and of their numeric order within a week (referred to as <a href="array Animals">True Animals</a> in relation to the <a href="Chinese zodiac">Chinese zodiac</a>). Therefore, it does require painstaking calculation for one to arrive at the <a href="Four Pillars of Destiny">Four Pillars of Destiny</a> of a particular given date, which rarely outpaces the convenience of simply consulting the <a href="Huangli">Huangli</a> by looking up its <a href="Gregorian">Gregorian</a> date.

### Solar term

The <u>solar year</u> (歲; 岁; *Suì*), the time between <u>winter solstices</u>, is divided into 24 <u>solar terms</u> known as jié qì (節氣). Each term is a 15° portion of the ecliptic. These solar terms mark both Western and Chinese seasons, as well as equinoxes, solstices, and other Chinese events. The even solar terms (marked with "Z", for <u>Chinese</u>: 中氣) are considered the major terms, while the odd solar terms (marked with "J", for <u>Chinese</u>: 節氣) are deemed minor. The solar terms q̄ng míng (清明) on 5 April and d̄ng zhì (冬至) on 22 December are both celebrated events in China. [16]

Number	Name	Chinese marker	Event	Approximate Date
J1	Lì chūn	立春	Beginning of spring	4 February
Z1	Yǔ shuǐ	雨水	Rain water	19 February
J2	Jīng zhé	驚蟄;惊蛰	Waking of insects	6 March
Z2	Chūn fēn	春分	March equinox	21 March
J3	Qīng míng	清明	Pure brightness	5 April
Z3	Gǔ yǔ	穀雨;谷雨	Grain rain	20 April
J4	Lì xià	立夏	Beginning of summer	6 May
Z4	Xiǎo mǎn	小滿;小满	Grain full	21 May
J5	Máng zhòng	芒種;芒种	Grain in ear	6 June
Z5	Xià zhì	夏至	June solstice	22 June
J6	Xiǎo shǔ	小暑	Slight heat	7 July
Z6	Dà shǔ	大暑	Great heat	23 July
J7	Lì qiū	立秋	Beginning of autumn	8 August
Z7	Chǔ shǔ	處暑;处署	Limit of heat	23 August
Ј8	Bái lù	白露	White dew	8 September
Z8	Qiū fēn	秋分	September equinox	23 September
J9	Hán lù	寒露	Cold dew	8 October
<b>Z</b> 9	Shuāng jiàng	霜降	Descent of frost	24 October
J10	Lì dōng	立冬	Beginning of winter	8 November
Z10	Xiǎo xuě	小雪	Slight snow	22 November
J11	Dà xuě	大雪	Great snow	7 December
Z11	Dōng zhì	冬至	December solstice	22 December
J12	Xiǎo hán	小寒	Slight cold	6 January
Z12	Dà hán	大寒	Great cold	20 January

# Solar year

The calendar solar year, known as the suì, (歲; 岁) begins on the December solstice and proceeds through the 24 solar terms. [16] Since the speed of the Sun's apparent motion in the elliptical is variable, the time between major solar terms is not fixed. This variation in time between major solar terms results in different solar year lengths. There are generally 11 or 12 complete months, plus two incomplete months around the

winter solstice, in a solar year. The complete months are numbered from 0 to 10, and the incomplete months are considered the 11th month. If there are 12 complete months in the solar year, it is known as a leap solar year, or leap  $sul_{16}$ .

Due to the inconsistencies in the length of the solar year, different versions of the traditional calendar might have different average solar year lengths. For example, one solar year of the 1st century BCE Tàichū calendar is  $365^{385}/_{1539}$  (365.25016) days. A solar year of the 13th-century Shòushí calendar is  $365^{97}/_{400}$  (365.2425) days, identical to the Gregorian calendar. The additional .00766 day from the Tàichū calendar leads to a one-day shift every 130.5 years.

Pairs of solar terms are climate terms, or solar months. The first solar term is "pre-climate" (節氣; 节气; *Jiéqì*), and the second is "mid-climate" (中氣; 中气; *Zhōngqì*).

If there are 12 complete months within a solar year, [17] the first month without a mid-climate is the  $\underline{leap}$ , or intercalary, month. In other words, the first month that does not include a major solar term is the leap month. [16] Leap months are numbered with  $\hat{run}$  閏, the character for "intercalary", plus the name of the month they follow. In 2017, the intercalary month after month six was called  $\hat{Run}$   $\hat{Liuyue}$ , or "intercalary sixth month" (閏六月) and written as  $\hat{6i}$  or  $\hat{6}$ +. The next intercalary month (in 2020, after month four) will be called  $\hat{Run}$   $\hat{Siyue}$  (閏四月) and written  $\hat{4i}$  or  $\hat{4}$ +.

# Lunisolar year

The lunisolar year begins with the first spring month, *Zhēngyuè* (正月; 'capital month'), and ends with the last winter month, *Làyuè* (臘月; 腊月; 'sacrificial month'). All other months are named for their number in the month order.

Years were traditionally numbered by the reign in ancient China, but this was abolished after the founding of the People's Republic of China in 1949. For example, the year from 8 February 2016 to 27 January 2017 was a *Bǐngshēn* year (丙申年) of 12 months or 355 days.

During the <u>Tang dynasty</u>, the Earthly Branches were used to mark the months from December 761 to May 762. Over this period, the year began with the winter solstice.

### Age reckoning

In China, a person's official age is based on the Gregorian calendar. For traditional use, age is based on the Chinese *Sui* calendar. A child is considered one year old a hundred days after birth (9 months gestation plus 3 months). After each Chinese New Year, one year is added to their traditional age. Their age therefore is the number of Chinese years which have passed. Due to the potential for confusion, the age of infants is often given in months instead of years.

After the Gregorian calendar's introduction in China, the Chinese traditional-age was referred to as the "nominal age" (虛歲; 虚岁; xūsuì; 'incomplete age') and the Gregorian age was known as the "real age" (實歲; 实岁; shísùi; 'whole age').

# Year-numbering systems

#### **Eras**

In ancient China, years were numbered from a new emperor's assumption of the throne or an existing emperor's announcement of a new era name. The first recorded reign title was *Jiànyuán* (建元), from 140 BCE; the last reign title was *Xuāntǒng* (宣統; 宣统), from 1908 CE. The era system was abolished in 1912, after which the current or Republican era was used.

#### Stem-branches

The 60 stem-branches have been used to mark the date since the <u>Shang dynasty</u> (1600–1046 BC). Astrologers knew that the orbital period of <u>Jupiter</u> is about 4,332 days. Since 4332 is  $12 \times 361$ , Jupiter's orbital period was divided into 12 years (歲; 岁; sui) of 361 days each. The stem-branches system solved the era system's problem of unequal reign lengths.

# **Continuous numbering**

Nomenclature similar to that of the Christian era has occasionally been used: [19]

- Huángdì year (黄帝紀年), starting at the beginning of the reign of the <u>Yellow Emperor</u> (year 1 at 2697 BCE or 2698 BCE; year 4720 or 4721 at 2023 CE)
- Yáo year (唐堯紀年), starting at the beginning of the reign of Emperor Yao (year 1 at 2156 BCE; year 4179 at 2023 CE)
- Gònghé year (共和紀年), starting at the beginning of the <u>Gonghe Regency</u> (year 1 at 841 BCE; year 2864 at 2023 CE)
- Confucius year (孔子紀年), starting at the birth year of <u>Confucius</u> (year 1 at 551 BCE; year 2574 at 2023 CE)
- Unity year (統一紀年), starting at the beginning of the reign of Qin Shi Huang (year 1 at 221 BCE; year 2244 at 2023 CE)

No reference date is universally accepted. The most popular is the Gregorian calendar ( $\underline{\Delta M}$ ;  $\underline{\Delta G}$ ;  $\underline{J}$ ;  $\underline{J}$ ; common calendar).

On 2 January 1912, <u>Sun Yat-sen</u> announced changes to the official calendar and era. 1 January was 14 Shíyīyuè 4609 Huángdì year, assuming a year 1 of 2698 BCE, which makes 4721 at 2023 CE. The change was adopted by many overseas Chinese communities, such as San Francisco's Chinatown. [10]

During the 17th century, the <u>Jesuits</u> tried to determine the <u>epochal year</u> of the Han calendar. In his *Sinicae historiae decas prima* (published in <u>Munich</u> in 1658), <u>Martino Martini</u> (1614–1661) dated the ascension of the <u>Yellow Emperor</u> to 2697 BCE and began the Chinese calendar with the reign of <u>Fuxi</u> (which, according to Martini, began in 2952 BCE. <u>Philippe Couplet</u>'s 1686 *Chronological table of Chinese monarchs* (*Tabula chronologica monarchiae sinicae*) gave the same date for the Yellow Emperor. The Jesuits' dates provoked interest in Europe, where they were used for comparison with Biblical chronology. Modern Chinese chronology has generally accepted Martini's dates, except that it usually places the reign of the Yellow Emperor at 2698 BCE and omits his predecessors Fuxi and <u>Shennong</u> as "too legendary to include".

Publications began using the estimated birth date of the <u>Yellow Emperor</u> as the first year of the Han calendar in 1903, with newspapers and magazines proposing different dates. The province of <u>Jiangsu</u> counted 1905 as the year 4396 (using a year 1 of 2491 BCE, and implying that 4514 is 2023 CE), and the newspaper <u>Ming Pao</u> (明報) reckoned 1905 as 4603 (using a year 1 of 2698 BCE, and implying that 4721 is 2023 CE). <u>Liu Shipei</u> (劉師培, 1884–1919) created the Yellow Emperor Calendar, with year 1 as the birth of the emperor (which he determined as 2711 BCE, implying that 4734 is 2023 CE). There is no

evidence that this calendar was used before the 20th century. Liu calculated that the 1900 international expedition sent by the <u>Eight-Nation Alliance</u> to suppress the <u>Boxer Rebellion</u> entered Beijing in the 4611th year of the Yellow Emperor.

### **Chinese New Year**

The date of the Chinese New Year accords with the patterns of the lunisolar calendar and hence is variable from year to year. However, two general rules govern the date. Firstly, Chinese New Year transpires on the second new moon following the December solstice. If there is a leap month after the eleventh or twelfth month, then Chinese New Year falls on the third new moon after the December solstice. Alternately, Chinese New Year will fall on the new moon that is closest to  $li\ ch\bar{u}n$ , or the solar term that begins spring (typically falls on 4 February). However, this rule is not as reliable since it can be difficult to determine which new moon is the closest in the case of an early or late Chinese New Year. [16]

It has been found that Chinese New Year moves back by either 10, 11, or 12 days in some years. If it falls before 21 January, then it moves forward in the next year by either 18, 19, or 20 days. [16]

# Phenology

The <u>plum-rains season</u> (梅雨), the rainy season in late spring and early summer, begins on the first <u>bǐng</u> day after <u>Mangzhong</u> (芒種) and ends on the first <u>wèi</u> day after <u>Xiaoshu</u> (小暑). The <u>Three Fu</u> (三伏; sānfú) are three periods of hot weather, counted from the first <u>gēng</u> day after the summer solstice. The first <u>fu</u> (初伏; <u>chūfú</u>) is 10 days long. The mid-fu (中伏; <u>zhōngfú</u>) is 10 or 20 days long. The last <u>fu</u> (末伏; <u>mòfú</u>) is 10 days from the first <u>gēng</u> day after the beginning of autumn. The Shujiu cold days (數九; <u>shǔjǔ</u>; 'counting to nine') are the 81 days after the winter solstice (divided into nine sets of nine days), and are considered the coldest days of the year. Each nine-day unit is known by its order in the set, followed by "nine" (九).

# Common holidays based on the Chinese (lunisolar) calendar

There are several traditional and religious holidays shared by communities throughout the world that use the Chinese (Lunisolar) calendar:

# Holidays with the same day and same month

The <u>Chinese New Year</u> (known as the Spring Festival/春節 in China) is on the first day of the first month and was traditionally called the Yuan Dan (元旦) or Zheng Ri (正日). In Vietnam, it is known as Tết Nguyên Đán (節元旦) and in Korea, it is known as 설날. Traditionally it was the most important holiday of the year. It is an official holiday in China, Hong Kong, Macau, Taiwan, Vietnam, Korea, the Philippines, Malaysia, Singapore, and Indonesia. It is also a public holiday in Thailand's <u>Narathiwat</u>, <u>Pattani</u>, <u>Yala</u>, and Satun provinces and is an official public school holiday in New York City.

The <u>Double Third Festival</u> is on the third day of the third month and in Korea is known as 삼짇날 (samjinnal).

The <u>Dragon Boat Festival</u>, or the <u>Duanwu Festival</u> (端午節), is on the fifth day of the fifth month and is an official holiday in China, Hong Kong, Macau, and Taiwan. It is also celebrated in Vietnam where it is known as Tết Đoan Ngọ (節端午) and in Korea where it is known as 단오 (端午) (Dano) or 수릿날 (戌 衣日/水瀬日) (surinal) (both Hanja are used as they are homonyms).

The <u>Qixi Festival</u> (七夕節) is celebrated in the evening of the seventh day of the seventh month. It is also celebrated in Vietnam where it is known as Thất tịch (七夕) and in Korea where is known as 칠석 (七夕) (chilseok).

The <u>Double Ninth Festival</u> (重陽節) is celebrated on the ninth day of the ninth month. It is also celebrated in Vietnam where it is known as Tết Trùng Cửu (節重九) and in Korea where it is known as 중양절 (jungyangjeol).

# Full moon holidays (holidays on the fifteenth day)

The <u>Lantern Festival</u> is celebrated on the fifteenth day of the first month and was traditionally called the Yuan Xiao (元宵) or Shang Yuan Festival (上元節). In Vietnam, it is known as Tết Thượng Nguyên (節上元) and in Korea, it is known as 대보름 (大보름) Daeboreum (or the Great Full Month).

The Zhong Yuan Festival is celebrated on the fifteenth day of the seventh month. In Vietnam, it is celebrated as Tết Trung Nguyên (中元節) or Lễ Vu Lan (禮孟蘭) and in Korea it is known as 백중 (百中/百種) Baekjong or 망혼일 (亡魂日) Manghongil (Deceased Spirit Day) or 중원 (中元) Jungwon.

The <u>Mid-Autumn Festival</u> is celebrated on the fifteenth day of the eighth month. In Vietnam, it is celebrated as Tết Trung Thu (節中秋) and in Korea it is known as 추석 (秋夕) Chuseok.

The Xia Yuan Festival is celebrated on the fifteenth day of the tenth month. In Vietnam, it is celebrated as Tết Hạ Nguyên (節下元).

### Celebrations of the twelfth month

The <u>Laba Festival</u> is on the eighth day of the twelfth month. It is the enlightenment day of Sakyamuni Buddha and is celebrated in Korea as 성도재일 (seongdojaeil) and in Vietnam is known as Lễ Vía Phật Thích Ca Thành Đạo.

The <u>Kitchen God Festival</u> is celebrated on the twenty-third day of the twelfth month in northern regions of China and on the twenty-fourth day of the twelfth month in southern regions of China. In Vietnam it is known as Tết Táo Quân (節電君).

<u>Chinese New Year's Eve</u> is also known as the Chuxi Festival and is celebrated on the evening of the last day of the lunar calendar. It is celebrated wherever the lunar calendar is observed.

# Celebrations of solar-term holidays

The <u>Qingming Festival</u> (清明节) is celebrated on the fifteenth day after the Spring Equinox. It is celebrated in Vietnam as Tết Thanh Minh (節清明).

The <u>Dongzhi Festival</u> (冬至) or the Winter Solstice is celebrated as Lễ hội Đông Chí (禮會冬至) in Vietnam and as 동지 (冬至) in Korea.

# Religious holidays based on the lunar calendar

East Asian Mahayana, Daoist, and some Cao Dai holidays and/or vegetarian observances are based on the Lunar Calendar. [21][22][23]

# **Celebrations in Japan**

Many of the above holidays were celebrated in pre-Meiji Japan based on the lunar calendar, but are now celebrated based on the Gregorian calendar.

# Double celebrations due to intercalary months

In the case when there is a corresponding intercalary month, the holidays may be celebrated twice. For example, in the hypothetical situation in which there is an additional intercalary seventh month, the Zhong Yuan Festival will be celebrated in the seventh month followed by another celebration in the intercalary seventh month.

# See also



- Chinese calendar correspondence table
- Chinese culture
- Chinese numerals
- East Asian age reckoning
- Guo Shoujing, an astronomer tasked with calendar reform during the 13th century
- Horology
- List of festivals in China
- List of festivals in Asia
- Public holidays in China
- Traditional Chinese timekeeping
- Chinese era name

### **Notes**

- a. The 4th-century date, according to the *Cihai* encyclopedia, is due to a reference to Fan Ning (範寧; 范宁), an astrologer of the **Jin dynasty**.
- b. The renewed adoption from Manichaeans by the 8th century (Tang dynasty) is documented by the writings of the Chinese Buddhist monk Yi Jing and the Ceylonese Buddhist monk <u>Bu</u> <u>Kong</u>.

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- 17. In the modern calendar where the solar terms are defined using astronomical calculation, it is possible to have only 11 complete months but with a month without a mid-climate, as in year 2033.
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# **Further reading**

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Verlag: 57–69. The Political Power and the Mongolian Translation of the Chinese Calendar During the Yuan Dynasty (https://www.jstor.org/stable/41928409).

## **External links**

#### **Calendars**

- Chinese months (http://www.chinesetools.eu/tools/chinesecalendar)
- Gregorian-Lunar calendar years (http://www.hko.gov.hk/en/gts/time/conversion.htm) (1901–2100)
- Chinese calendar and holidays (https://web.archive.org/web/20131004223339/http://china-c alendar.com/en calendar/)
- Chinese calendar with Auspicious Events (http://www.yourchineseastrology.com/calendar/)
- Chinese Calendar Online (http://www.chinesecalendaronline.com)

#### Calendar conversion

- 2000-year Chinese-Western calendar converter (http://sinocal.sinica.edu.tw) From 1 CE to 2100 CE. Useful for historical studies. To use, put the western year 年 month 月day 日in the bottom row and click on 執行.
- Western-Chinese calendar converter (http://lunarcalendar.bitsoftidbits.com/)

#### Rules

- Mathematics of the Chinese Calendar (https://web.archive.org/web/20090712043248/http://www.math.nus.edu.sg/aslaksen/calendar/chinese.html)
- The Structure of the Chinese Calendar (http://www.hermetic.ch/cal\_stud/chinese\_cal.htm)

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