



Hindu calendar

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The **Hindu calendar** used in ancient times has undergone many changes in the process of regionalization, and today there are several regional Indian calendars, as well as an Indian national calendar.

Most of these calendars are inherited from a system first enunciated in *Vedanga Jyotisha* of Lagadha, a late BCE adjunct to the Vedas, standardized in the *Surya Siddhanta* (3rd century CE) and subsequently reformed by astronomers such as Aryabhata (499 CE), Varahamihira (6th c. CE), and Bhaskara (12th c. CE). There are differences and regional variations abound in these computations, but the following is a general overview of Hindu lunisolar calendar.

Day

In the Hindu calendar, the day starts with local sunrise. It is allotted five "properties", called *angas*. They are:

- 1. the *tithi* (one of 30 divisions of a synodic month) active at sunrise
- 2. the *vaasara* or weekday
- 3. the *nakshatra* (one of 27 divisions of the celestial ecliptic) in which the moon resides at sunrise
- 4. the *yoga* (one of 27 divisions based on the ecliptic longitude of the sun and moon) active at sunrise
- 5. the *karana* (divisions based on tithis) active at sunrise.

Together these are called the *pañchāngas* (Sanskrit: *pancha* = five). An explanation of the terms follows.



A page from the Hindu calendar
1871-72.

Vaasara

Vaasara refers to the days of the week and bear striking similarities with the names in many cultures, especially western (Hindi and English analogues in parentheses):

No.	Sanskrit name of the weekday	English name of the weekday	Celestial object
1	Ravi vāsara रविवारः	Sunday	Ravi = Sun
2	Soma vāsara सोमवारः	Monday	Soma = Moon
3	Mangala vāsara मंगलवारः	Tuesday	Mangala = Mars
4	Budha vāsara दा	Wednesday	Budha = Mercury
5	Guru vāsara गुरुवारः or Bruhaspati vāsara बृहस्पतिवारः	Thursday	Guru (Brihaspati) = Jupiter
6	Shukra vāsara शुक्रवारः	Friday	Shukra = Venus
7	Shani vāsara शनिवारः	Saturday	Shani = Saturn

The term **-vaasara** is often abbreviated as *vaara* or **vaar** in Sanskrit-derived languages. There are many variations of the names in the regional languages, mostly using alternate names of the celestial bodies involved.

Nakshatra

The ecliptic is divided into 27 nakshatras, which are variously called lunar houses or asterisms. These reflect the moon's cycle against the fixed stars, 27 days and $7\frac{3}{4}$ hours, the fractional part being compensated by an intercalary 28th *nakshatra*. Nakshatra computation appears to have been well known at the time of the Rig Veda (2nd–1st millennium BCE).

The ecliptic is divided into the *nakshatras* eastwards starting from a reference point which is traditionally a point on the ecliptic directly opposite the star Spica called *Chitrā* in Sanskrit. (Other slightly-different definitions exist.) It is called **Meshādi** or the "start of Aries"; this is when the equinox — where the ecliptic meets the equator — was in Aries (today it is in Pisces, 28 degrees before Aries starts). The difference between Meshādi and the present equinox is known as *ayanāngsha* or fraction of ecliptic. Given the 25,800 year cycle for the precession of the equinoxes, the equinox was directly opposite Spica in 285 CE, around the date of the Surya Siddhanta^{[1] [2]}.

The *nakshatras* with their corresponding regions of sky are given below, following Basham^[3]. As always, there are many versions with minor differences. The names on the right-hand column give roughly the correspondence of the *nakshatras* to modern names of stars. Note that *nakshatras* are (in this context) not just single stars but are segments on the ecliptic characterised by one or more stars. Hence there are more than one star mentioned for each *nakshatra*.

#	Sanskrit name संस्कृतम्	Malayalam name മലയാളം	Tamil name தமிழ்	Western star name
1	Ashvinī अश्विनी	Ashvati അശ്വതി	Aswini அஸ்வினி	β and γ Arietis
2	Bharanī भरणी	Bharanī ഭരണി	Baranī பரணி	35, 39, and 41 Arietis
3	Krittikā कृत्तिका	Kārttika കാർത്തിക	Kārthikai கார்த்திகை	Pleiades
4	Rohini रोहिणी	Rōhiṇi രോഹിണി	Rōhiṇi ரோகிணி	Aldebaran
5	Mrigashīrsha मृगशीर्षा	Makayiram മകയിരം	Mirugasīridam மிருகசீரிடம்	λ , φ Orionis
6	Ārdrā आर्द्रा	Ātira or Tiruvātira ആതിര (തിരുവാതിര)	Thiruvādhirai திருவாதிரை	Betelgeuse
7	Punarvasu पुनर्वसु	Punartam പുണരതം	Punarpoosam புனர் பசம்	Castor and Pollux
8	Pushya पुष्य	Pūyam പൂയം	Poosam பசம்	γ , δ and θ Cancrī
9	Āshleshā आश्लेषा / आश्लेषा	Āyilyam ആയില്യം	Ayilyam ஆயில் யம்	δ , ϵ , η , ρ , and σ Hydrae
10	Maghā मघा	Makam മകം	Magam மகம்	Regulus
11	Pūrva or Pūrva Phalgunī पूर्व फाल्गुनी	Pūram പൂരം	Pooram பூரம்	δ and θ Leonis
12	Uttara or Uttara Phalgunī उत्तर फाल्गुनी	Utram ഉത്രം	Uthiram உத்திரம்	Denebola
13	Hasta हस्त	Attam അതം	Astham அஸ்தம்	α , β , γ , δ and ϵ Corvi
14	Chitrā चित्रा	Chittira ചിത്തിര (ചിത്ത്)	Chithirai சித்திரை	Spica
15	Svātī स्वाती	Chōti ചോതി	Swathi சுவாதி	Arcturus
16	Vishākhā वशिखा	Vishākhām വിശാഖം	Visakam விசாகம்	α , β , γ and ι Librae
17	Anurādhā अनुराधा	Anizham അനീഴം	Anusham அனுஷம்	β , δ and π Scorpionis
18	Jyeshtha ज्येष्ठा	Kēṭṭa (Trikkēṭṭa) കേട് (തൃക്കേട്)	Kettai கேட்டை	α , σ , and τ Scorpionis
19	Mūla मूल	Mūlam മൂലം	Mūlam மூலம்	ϵ , ζ , η , θ , ι , κ , λ , μ and ν Scorpionis
20	Pūrva Ashādhā पूर्वाषाढा	Pūrāṭam പൂരാടം	Pūradam பூராடம்	δ and ϵ Sagittarii
21	Uttara Ashādhā उत्तराषाढा	Utrāṭam ഉത്രാടം	Uthirādam உத்திராடம்	ζ and σ Sagittarii
22	Shravana श्रवण	Tiruvōnam ഓണം (തിരുവോണം)	Tiruvōnam திருவோணம்	α , β and γ Aquilae

23	Shravishtā or Dhanishta श्रवषिठा or धनिष्ठा	Avittam അവിടം	Avittam அவிட்டம்	α to δ Delphinus
24	Shatabhishā or Shatataraka शतभिषिक् / शततारका	Chatayam ചതയം	Sadayam சதயம்	γ Aquarii
25	Pūrva Bhādrapadā पूर्वभाद्रपदा / पूर्वपौषपदा	Pūruṭṭāti പൂരുരുടാതി	Pūruṭṭādhi பூரட்டாதி	α and β Pegasi
26	Uttara Bhādrapadā उत्तरभाद्रपदा / उत्तरपौषपदा	Uttṛṭṭāti ഉത്രുടാതി	Uttṛṭṭādhi உத்திரட்டாதி	γ Pegasi and α Andromedae
27	Revati रेवती	Rēvati രേവതി	Rēvathi ரேவதி	ζ Piscium

An additional 28th intercalary nakshatra, Abhijit (अभिजित्)(α , ϵ and ζ Lyrae - Vega - between Uttarasharha and Sravana. Last two (third and fourth) Padas of Uttrashada and first two (first and second) Padas of Sravana are considered to be Abhijit. Unless specifically mentioned it is not included in the list of the 27 constellations.

The *nakshatra* in which the moon lies at the time of sunrise of a day is the *nakshatra* for the day.

Yoga

First one computes the angular distance along the ecliptic of each object, taking the ecliptic to start at *Mesha* or Aries (*Meshādi*, as defined above): this is called the longitude of that object. The longitude of the sun and the longitude of the moon are added, and normalized to a value ranging between 0° to 360° (if greater than 360 , one subtracts 360). This sum is divided into 27 parts. Each part will now equal $800'$ (where $'$ is the symbol of the arcminute which means $1/60$ of a degree). These parts are called the *yogas*. They are labeled:

1. Vishkumbha
2. Prīti
3. Āyushmān
4. Saubhāgya
5. Shobhana
6. Atiganda
7. Sukarman
8. Dhriti
9. Shūla
10. Ganda
11. Vridhhi
12. Dhruva
13. Vyāghāta
14. Harshana
15. Vajra
16. Siddhi
17. Vyatīpāta
18. Varigha
19. Parigha
20. Shiva
21. Siddha
22. Sādhyā
23. Shubha
24. Shukla

25. Brāhma
26. Māhendra
27. Vaidhriti

Again, minor variations may exist. The *yoga* that is active during sunrise of a day is the *yoga* for the day.

Karana

A *karana* is half of a *tithi*. To be precise, a *karana* is the time required for the angular distance between the sun and the moon to increase in steps of 6° starting from 0° . (Compare with the definition of a *tithi* above.)

Since the *tithis* are thirty in number, one would expect there to be sixty *karanas*. But there are only eleven. There are four "fixed" *karanas* and seven "repeating" *karanas*. The four "fixed" *karanas* are:

1. Kimstughna
2. Shakuni
3. Chatushpād
4. Nāgava

The seven "repeating" *karanas* are:

1. Bava
2. Bālava
3. Kaulava
4. Taitula
5. Garajā
6. Vanijā
7. Vishti (Bhadrā)

- Now the first half of the first *tithi* (of the bright fortnight) is always *Kimstughna karana*. Hence this *karana* is "fixed".
- Next, the seven repeating *karanas* repeat eight times to cover the next 56 half-*tithis*. Thus these are the "repeating" *karanas*.
- The three remaining half-*tithis* take the remaining "fixed" *karanas* in order. Thus these are also "fixed".
- Thus one gets sixty *karanas* from eleven.

The *karana* active during sunrise of a day is the *karana* for the day.

(Rashi) Saur Maas (solar months)	Ritu (season)	Gregorian months	Zodiac
Mesh	Vasant (spring)	March/April	Aries
Vrishabh	April/May	Taurus	
Mithun	Grishma (summer)	May/June	Gemini
Karkat	June/July	Cancer	
Simha	Varsha (monsoon)	July/Aug	Leo
Kanya	Aug/Sept	Virgo	
Tula	Sharad (autumn)	Sept/Oct	Libra
Vrishchik	Oct/Nov	Scorpius	

Dhanu	Hemant (autumn-winter)	Nov/Dec.	Sagittarius
Makar	Dec/Jan	Capricornus	
Kumbha	Shishir (Winter-Spring)	Jan/Feb	Aquarius
Meen	Feb/Mar	Pisces	

Months of the lunisolar calendar

When a new moon occurs before sunrise on a day, that day is said to be the first day of the lunar month. So it is evident that the end of the lunar month will coincide with a new moon. A lunar month has 29 or 30 days (according to the movement of the moon).

The *tithi* at sunrise of a day is the only label of the day. There is no running day number from the first day to the last day of the month. This has some unique results, as explained below:

Sometimes two successive days have the same *tithi*. In such a case, the latter is called an *adhika tithi* where *adhika* means "extra". Sometimes, one *tithi* may never touch a sunrise, and hence no day will be labeled by that *tithi*. It is then said to be a *tithi kshaya* where *kshaya* means "loss".

Naming lunar months

There are twelve lunar month names:

1. Chaitra
2. Vaishākh
3. Jyāishtha
4. Āshādhā
5. Shrāvana
6. Bhaadra or, Bhādrapad
7. Āshwin
8. Kārtik
9. Agrahayana or, Mārgashīrsha
10. Paush
11. Māgh
12. Phālgun

Determining which name a lunar month takes is somewhat indirect. It is based on the *rāshi* into which the **sun** transits within a lunar month, i.e. before the new moon ending the month.

There are twelve *rāshi* names, there are twelve lunar month names. When the sun transits into the *Mesha rāshi* in a lunar month, then the name of the lunar month is *Chaitra*. When the sun transits into *Vrishabha*, then the lunar month is *Vaishākh*. So on.

The Sanskrit grammatical derivation of the lunar month names *Chaitra* etc., is: the (lunar) month which has its central full moon occurring at or near the *nakshatra Chitrā* is called *Chaitra*. Similarly, for the *nakshatras Vishākhā*, *Jyeshthā*, (*Pūrva*) *Ashādhā*, *Shravan*, *Bhādrapad*, *Ashvinī* (old name *Ashvayuj*), *Krittikā*, *Mṛigashīrsha*, *Pushya*, *Meghā* and (*Pūrva/Uttara*) *Phalgunī* the names *Vaishākh* etc. are derived.

The lunar months are split into two pakshas of 15 days. The waxing paksha is called *shuklapaksha*, *light half*, and the waning paksha the *krishnapaksha*, *dark half*. There are two different systems for making the lunar calendar:

- *amavasyanta* or *mukhya mana system* - a month begins with a new moon, mostly followed in the southern states
- *purnimanta* or *gauna mana system* - a month begins with a full moon, followed more in the North.

Extra months

When the sun does not at all transit into any *rāshi* but simply keeps moving within a *rāshi* in a lunar month (i.e. before a new moon), then that lunar month will be named according to the first upcoming transit. It will also take the epithet of *adhik* or "extra". For example, if a lunar month elapsed without a solar transit and the next transit is into *Mesha*, then this month without transit is labeled *adhik Chaitra*. The next month will be labeled according to its transit as usual and will get the epithet *nija* ("original") or *shuddha* ("clean"). [Note that an *adhik māsa* (month) is the first of two whereas an *adhika tithi* is the second of two.]

Extra Month, or *adhik mas māsa* (mas = lunar month) falls every 32.5 months. It is also known as *purushottam mas*, so as to give it a devotional name. Thus 12 Hindu mas (*māsa*) is equal to approximate 356 days, while solar year have 365 or 366 (in leap year) which create difference of 9 to 10 days, which is offset every 3rd year. No *adhik mas* falls during Kartik to Magh.

A month long fair is celebrated in Machhegaun during *adhik māsa*. It is general belief that one can wash away all one's sins by taking a bath in the Machhenarayan's pond.

Lost months

If the sun transits into **two** *rāshis* within a lunar month, then the month will have to be labeled by both transits and will take the epithet *kshaya* or "loss". There is considered to be a "loss" because in this case, there is only one month labeled by both transits. If the sun had transited into only one *raashi* in a lunar month as is usual, there would have been two separate months labeled by the two transits in question.

For example, if the sun transits into *Mesh* and *Vrishabh* in a lunar month, then it will be called *Chaitra-Vaishaakh kshaya*. There will be no separate months labeled *Chaitra* and *Vaishākh*.

A *kshaya māsa* occurs very rarely. Known gaps between occurrence of *kshaya māsas* are 19 and 141 years. The last was in 1983. January 15 through February 12 were *Pausha-Māgha kshaya*. February 13 onwards was (*adhik*) *Phālguna*.

Special Case:

If there is no solar transit in one lunar month but there are two transits in the next lunar month,

- the first month will be labeled by the first transit of the second month and take the epithet *adhik* and
- the next month will be labeled by both its transits as is usual for a *kshaya māsa*

This is a very very rare occurrence. The last was in 1315. October 8 to November 5 were *adhik Kārtik*. November 6 to December 5 were *Kārtik-Mārgashīrsh kshaya*. December 6 onwards was *Paush*.

Religious observances in case of extra and lost months

Among normal months, *adhika* months, and *kshaya* months, the earlier are considered "better" for religious purposes. That means, if a festival should fall on the 10th *tithi* of the *Āshvayuja* month (this is called *Vijayadashamī*) and there are two *Āshvayuja* months caused by the existence of an *adhika Āshvayuja*, the first *adhika* month will not see the festival, and the festival will be observed only in the second *nija* month. However, if the second month is *āshvayuja kshaya* then the festival will be observed in the first *adhika* month itself.

When two months are rolled into one in the case of a *kshaya māsa*, the festivals of both months will also be rolled into this *kshaya māsa*. For example, the festival of *Mahāshivarātri* which is to be observed on the fourteenth *tithi* of the *Māgha krishna paksha* was, in 1983, observed on the corresponding *tithi* of *Pausha-Māgha kshaya krishna paksha*, since in that year, *Pausha* and *Māgha* were rolled into one, as mentioned above. When two months are rolled into one in the case of a *kshaya māsa*, the festivals of both months will also be rolled into this *kshaya māsa*.

Year of the lunisolar calendar

The new year day is the first day of the *shukla paksha* of *Chaitra*. In the case of *adhika* or *kshaya* months relating to *Chaitra*, the aforementioned religious rules apply giving rise to the following results:

- If an *adhika Chaitra* is followed by a *nija Chaitra*, the new year starts with the *nija Chaitra*.
- If an *adhika Chaitra* is followed by a *Chaitra-Vaishākha kshaya*, the new year starts with the *adhika Chaitra*.
- If a *Chaitra-Vaishākha kshaya* occurs with no *adhika Chaitra* before it, then it starts the new year.
- If a *Phālguna-Chaitra kshaya* occurs, it starts the new year.

Another kind of lunisolar calendar

There is another kind of lunisolar calendar which differs from the former in the way the months are named. When a full moon (instead of new moon) occurs before sunrise on a day, that day is said to be the first day of the lunar month. In this case, the end of the lunar month will coincide with a full moon. This is called the *pūrnimānta māna* or "full-moon-ending reckoning", as against the *amānta māna* or "new-moon-ending reckoning" used before.

This definition leads to a lot of complications:

- The first *paksha* of the month will be *krishna* and the second will be *shukla*.
- The new year is still on the first day of the *Chaitra shukla paksha*. The next *paksha*-s will be the *Vaishākha krishna*, *Vaishākha shukla*, *Jyāishtha krishna* and so on, till *Phālguna krishna*, *Phālguna shukla* and *Chaitra krishna*, which is now the last *paksha* of the year.
- The *shukla paksha* of a given month, say *Chaitra*, comprises the same actual days in both systems, as can be deduced from a careful analysis of the rules. However, the *Chaitra krishna paksha*-s defined by the two systems will be on different days, since the *Chaitra krishna paksha* precedes the *Chaitra shukla paksha* in the *pūrnimānta* system but follows it in the *amānta* system.
- Though the regular months are defined by the full moon, the *adhika* and *kshaya* lunar months are still defined by the new moon. That is, even if the *pūrnimānta* system is followed, *adhika* or *kshaya* months will start with the first sunrise after the new moon, and end with the new moon.
- The *adhika* month will therefore get sandwiched between the two *paksha*-s of the *nija* months. For example, a *Shrāvana adhika māsa* will be inserted as follows:
 1. *nija Shrāvana krishna paksha*
 2. *adhika Shrāvana shukla paksha*
 3. *adhika Shrāvana krishna paksha* and
 4. *nija Shrāvana shukla paksha*
 after which *Bhādrapada krishna paksha* will come as usual.
- If there is an *adhika Chaitra*, then it will follow the (*nija*) *Chaitra krishna paksha* at the end of the year. Only with the *nija Chaitra shukla paksha* will the new year start. The only exception is when it is followed by a *kshaya*, and that will be mentioned later.
- The *kshaya* month is more complicated. If in the *amānta* system there is a *Pausha-Māgha kshaya*, then in the *pūrnimānta* system there will be the following *paksha*-s:
 1. *Pausha krishna paksha*
 2. *Pausha-Māgha kshaya shukla paksha*
 3. *Māgha-Phālguna kshaya krishna paksha* and a
 4. *Phālguna shukla paksha*.
- The special *kshaya* case where an *adhika māsa* precedes a *kshaya māsa* gets even more convoluted. First, we should remember that the *Āshvayuja shukla paksha* is the same in both the systems. After this come the following *paksha*-s:
 1. *nija Kārtika krishna paksha*

2. *adhika Kārtika shukla paksha*
3. *adhika Kārtika krishna paksha*
4. *Kārtika-Māgashīrsha kshaya shukla paksha*
5. *Māgashīrsha-Pausha kshaya krishna paksha*
6. *Pausha shukla paksha*

followed by the *Māgha krishna paksha* etc., as usual.

- The considerations for the new year are:
 1. If there is a *Chaitra-Vaishākha kshaya shukla paksha*:
 1. if an *adhika Chaitra* precedes it, then the *adhika Chaitra shukla paksha* starts the new year
 2. if not, the *kshaya shukla paksha* starts the new year
 2. If there is a *Phālguna-Chaitra kshaya shukla paksha* then it starts the new year

It must be noted, however, that none of these above complications cause a change in the day of religious observances. Since only the name of the *krishna paksha*-s of the months will change in the two systems, festivals which fall on the *krishna paksha* will be defined by the appropriate changed name. That is, the Mahāshivarātri, defined in the *amānta māna* to be observed on the fourteenth of the *Māgha krishna paksha* will now (in the *pūrnimānta māna*) be defined by the *Phālguna krishna paksha*.

Correspondence of the lunisolar calendar to the solar calendar

A lunisolar calendar is always a calendar based on the moon's celestial motion, which in a way keeps itself close to a solar calendar based on the sun's (apparent) celestial motion. That is, the lunisolar calendar's new year is to kept always close (within certain limits) to a solar calendar's new year.

Since the Hindu lunar month names are based on solar transits, and the month of *Chaitra* will, as defined above, always be close to the solar month of *Mesha*, the Hindu lunisolar calendar will always keep in track with the Hindu solar calendar.

The Hindu solar calendar by contrast starts on April 14–15 each year. This signifies the sun's "entry" into Mesha rashi and is celebrated as the New Year in Assam, Bengal, Orissa, Manipur, Kerala, Punjab, Tamil Nadu and Tripura. The first month of the year is called "Chitterai" in Tamil, "Medam" in Malayalam and Bohag in Assamese, Baisakh in Bengali/Punjabi. This solar new year is celebrated on the same day in Myanmar, Cambodia, Laos, Nepal and Thailand due to Hindu influence on those countries.

Year numbering

The epoch (starting point or first day of the zeroth year) of the current era of Hindu calendar (both solar and lunisolar) is February 18, 3102 BCE in the proleptic Julian calendar or January 23, 3102 BCE in the proleptic Gregorian calendar. Both the solar and lunisolar calendars started on this date. After that, each year is labeled by the number of years **elapsed** since the epoch.

This is a unique feature of the Hindu calendar. All other systems use the current ordinal number of the year as the year label. But just as a person's true age is measured by the number of years that have elapsed starting from the date of the person's birth, the Hindu calendar measures the number of years elapsed. As of May 18, 2005, 5106 years had elapsed in the Hindu calendar. However, the lunisolar calendar year usually starts earlier than the solar calendar year, so the exact year will not begin on the same day every year.

Year names

Apart from the numbering system outlined above, there is also a cycle of 60 calendar year names, called Samvatsaras, which started at the first year (at elapsed years zero) and runs continuously:

1. Prabhava	21. Sarvajeeth (2007-08)	41. Plavanga
2. Vibhava	22. Sarvadhāri	42. Kīlaka
3. Shukla	(2008-09)	43. Saumya
4. Pramoda	23. Virodhi (2009-10)	44. Sādhārana
5. Prajāpati	24. Vikrita (2010-11)	45. Virodhikruthi
6. Āngirasa	25. Khara (2011-12)	46. Paridhāvi
7. Shrīmukha	26. Nandana (2012-13)	47. Pramādiccha
8. Bhāva	27. Vijaya	48. Ānanda
9. Yuva	28. Jaya	49. Rākshasa
10. Dhātri	29. Manmadha	50. Anala
11. Īshvara	30. Durmukhi	51. Pingala
12. Bahudhānya	31. Hevilambi	52. Kālayukthi
13. Pramādhi	32. Vilambi	53. Siddhārthi
14. Vikrama (2000-2001)	33. Vikāri	54. Raudra
15. Vrisha (2001-02)	34. Shārvari	55. Durmathi
16. Chitrabhānu	35. Plava	56. Dundubhi
(2002-03)	36. Shubhakruti	57. Rudhirodgāri
17. Svabhānu (2003-04)	37. Sobhakruthi	58. Raktākshi
18. Tārana (2004-05)	38. Krodhi	59. Krodhana
19. Pārthiva (2005-06)	39. Vishvāvasu	60. Akshaya
20. Vyaya (2006-2007)	40. Parābhava	

Eras

Hinduism has of four eras or ages, of which we are currently in the last. The four are:

1. Krita Yuga or Satya Yuga
2. Treta Yuga
3. Dvāpara Yuga
4. Kali Yuga

They are often translated into English as the golden, silver, bronze and Iron Ages. (Yuga means era or age.) The ages see a gradual decline of dharma, wisdom, knowledge, intellectual capability, life span and emotional and physical strength. The epoch provided above is the start of the *Kali Yuga*. The *Kali Yuga* is 432,000 years long. The *Dvāpara*, *Tretā* and *Krita (Satya) Yuga*-s are two, three and four times the length of the *Kali Yuga* respectively. Thus they together constitute 4,320,000 years. This is called a *Chaturyuga*.

A thousand and a thousand (i.e. two thousand) *chaturyuga*-s are said to be one day and night of the creator Brahmā. He (the creator) lives for 100 years of 360 such days and at the end, he is said to dissolve, along with his entire Creation, into the Eternal Soul or *Paramātmā*.

A samkhya view of the timespan of a yuga is given by Swami Sri Yukteswar Giri, the guru of Paramahansa Yogananda. This is detailed in his book, *The Holy Science*. According to this view, one complete yuga cycle is equal to one complete "precession of the equinox", a period of approximately 24,000 years. The ascending phase consists of a 1200 year Kali, 2400 year Dwapara, 3600 year Treta and 4800 year Krita (Satya) yuga. The descending phase reverses this order, thus both ascending and descending phases equal 24,000 years. According to calculations given in the book, the most recent yuga change was in 1699, when the Earth passed from Kali Yuga (the lowest material

age) to Dvāpara Yuga (the second age associated with electrical, atomic and finer forces). We are in an ascending spiral right now, and will pass into the Tretā Yuga in 4100 CE. According to the book, the motion of the stars moving across the sky (a.k.a. precession) is the observable of the Sun's motion around another star. The quality of human intellect depends on the distance of the Sun and Earth from a certain point in space known as the Grand Center, Magnetic Center or Vishṇunābhi Vishnu. The closer the Sun is to it, the more subtle energy the Solar System receives, and the greater is the level of human spiritual and overall development. As the Sun moves around its companion star, it brings us closer to or drives us farther away from Vishnunabi, resulting in the rising and falling ages here on Earth.

Yukteswar tells us that the calendars of the higher ages were based on the Yugas, with each era named after its Yuga. Hence, the year 3000 BCE was known as descending Dwapara 102 (because the last descending Dwapara yuga began 102 years earlier in 3102 BCE). He stated that this method was used up until the recent Dark Ages, when knowledge of the connection with the yugas and the precession cycle was lost; "The mistake crept into the almanacs for the first time during the reign of Raja Parikshit, just after the completion of the last descending Dwapara Yuga. At that time Maharaja Yudhishthira, noticing the appearance of the dark Kali Yuga, made over his throne to his grandson, the said Raja Parikshit. Maharaja Yudhishthira, together with all the wise men of his court, retired to the Himalaya Mountains... thus there was no one who could understand the principle of correctly calculating the ages of the several Yugas". Thus, Yukteswar assumed that Raja Parikshit was not trained in any vedic principles even though he alone ruled the world many year. Thus, he interpreted that Yugas are not calculated correctly. Consequently, he gave the theory that when the Dwapara was over and the Kali era began no one knew enough to restart the calendar count. They knew they were in a Kali Yuga (which is why the old Hindu calendar now begins with K.Y.) but the beginning of this calendar (which in 2006 stands at 5108) can still be traced to 3102 BCE, $(3102+2006=5108)$ the start of the last descending Dwapara Yuga. To this day there is still much confusion why the Kali starts at this date or what the correct length of the Yugas should be. Yukteswar suggests that a return to basing the Yuga calendar on the motion of the equinox would be a positive step.

History

The Hindu Calendar descends from the Vedic times. There are many references to calendrics in the Vedas. The Vedāṅga (adjunct to Veda) called Jyautisha (literally, "celestial body study") prescribed all the aspects of the Hindu calendars. After the Vedic period, there were many scholars such as Āryabhata (5th century CE), Varāhamihira (6th century) and Bhāskara (12th century) who were experts in Jyautisha and contributed to the development of the Hindu Calendar.

The most widely used authoritative text for the Hindu Calendars is the *Sūrya Siddhānta*, a text of uncertain age, though some place it at 10th century.

The traditional Vedic calendar used to start with the month of agraḥāyan (agra=first + ayan = travel of the sun, equinox) or Mārgashirsha. This is the month where the Sun crosses the equator, i.e. the vernal equinox. This month was called mārgashirsha after the fifth nakshatra (around lambda orionis). Due to the precession of the Earth's axis, the vernal equinox is now in Pisces, and corresponds to the month of chaitra. This shift over the years is what has led to various calendar reforms in different regions to assert different months as the start month for the year. Thus, some calendars (e.g. Vikram) start with Chaitra, which is the present-day month of the vernal equinox, as the first month. Others may start with Vaisakha (e.g. Bangabda). The shift in the vernal equinox by nearly four months from agraḥāyana to chaitra in sidereal terms seems to indicate that the original naming conventions may date to the fourth or fifth millennium BCE, since the period of precession in the Earth's axis is about 25,800 years.

Regional variants

The Indian Calendar Reform Committee, appointed in 1952 (shortly after Indian independence), identified more than thirty well-developed calendars, all variants of the *Surya Siddhanta* calendar outlined here, in systematic use across different parts of India. These include the widespread *Vikrama* and *Shalivahana* calendars and regional variations thereof. The Tamil calendar, a solar calendar, is used in Tamil Nadu and Kollavarsham Calendar is used in Kerala.

Vikrama and Shalivahana calendars

The two calendars most widely used in India today are the *Vikrama* calendar followed in Western and Northern India and Nepal, and the *Shalivahana* or *Saka* calendar which is followed in South India, Maharashtra and Goa.

Both the *Vikrama* and the *Shalivahana* eras are lunisolar calendars, and feature annual cycles of twelve lunar months, each month divided into two phases: the 'bright half' (*shukla*) and the 'dark half' (*bahula*); these correspond respectively to the periods of the 'waxing' and the 'waning' of the moon. Thus, the period beginning from the first day after the new moon and ending on the full moon day constitutes the *shukla paksha* or 'bright half' of the month; the period beginning from the day after the full moon until and including the next new moon day constitutes the *bahula paksha* or 'dark half' of the month.

The names of the 12 months, as also their sequence, are the same in both calendars; however, the new year is celebrated at separate points during the year and the "year zero" for the two calendars is different. In the *Vikrama* calendar, the zero year corresponds to 58 BCE, while in the *Shalivahana* calendar, it corresponds to 78 CE. The *Vikrama* calendar begins with the month of *Baishakh* (April), or *Kartak* (October/November) in Gujarat. The *Shalivahana* calendar begins with the month of *Chaitra* (March) and the Ugadi/Gudi Padwa festivals mark the new year.

Another little-known difference between the two calendars exists: while each month in the *Shalivahana* calendar begins with the 'bright half' and is followed by the 'dark half', the opposite obtains in the *Vikrama* calendar. Thus, each month of the *Shalivahana* calendar ends with the no-moon day and the new month begins on the day after that, while the full-moon day brings each month of the *Vikrama* calendar to a close (This is an exception in Gujarati Calendar, its month (and hence new year) starts on a sunrise of the day after new moon, and ends on the new moon, though it follows Vikram Samvat).

In Gujarat, Diwali is held on the final day of the Vikram Calendar and the next day marks the beginning of the New Year and is also referred as 'Annakut' or Nutan Varsh or Bestu Varash. In the Hindu calendar popularly used in North India the year begins with Chaitra Shukala Pratipadha (March – April).

National calendars in South and South East Asia

A variant of the *Shalivahana* Calendar was reformed and standardized as the Indian National calendar in 1957. This official calendar follows the *Shalivahan Shak* calendar in beginning from the month of *Chaitra* and counting years with 78 CE being year zero. It features a constant number of days in every month (with leap years).

The Bengali Calendar, or Bangla calendar (introduced 1584), is widely used in eastern India in the state of West Bengal, Tripura and Assam. A reformation of this calendar was introduced in present-day Bangladesh in 1966, with constant days in each month and a leap year system; this serves as the national calendar for Bangladesh. Nepal follows the Bikram Sambat. Parallel months and roughly the same periods apply to the Buddhist calendars used in Burma, Cambodia, Laos, Sri Lanka and Thailand.

Correspondence between calendars

As an indicator of this variation, Whitaker's Almanac reports that the Gregorian year 2000 CE corresponds, respectively with:

1. Year 5101 in the Kaliyuga calendar;
2. Year 2544 in the Buddha Nirvana calendar;
3. Year 2543 in the Buddhist Era (BE) of the Thai solar calendar
4. Year 2057 in the Bikram Samvat calendar;
5. Year 1922 in the Saka calendar;
6. Year 1921 (shown in terms of 5-yearly cycles) of the Vedanga Jyotisa calendar;
7. Year 1407 in the Bengali calendar;
8. Year 514 in the Gaurabda Gaudiya calendar;
9. Year 1176 in the Kolla Varsham calendar.

See also

- Hindu astrology
- Hindu chronology
- List of Hindu festivals
- Panchangam
- Panjika

Further reading

- Reingold and Dershowitz, *Calendrical Calculations, Millennium Edition*, Cambridge University Press, latest 2nd edition 3rd printing released November 2004. ISBN 0-521-77752-6
- S. Balachandra Rao, *Indian Astronomy: An Introduction*, Universities Press, Hyderabad, 2000.
- "Hindu Chronology ^[4]", Encyclopædia Britannica Eleventh Edition (1911)

External links

- Introduction to the Hindu Calendar (pdf) ^[5]
 - Comparing the Surya Siddhanta and the Astronomical Ephemeris by Daphne Chia ^[6] (pdf, 404KB)
 - ISKCON view on Hindu calendar ^[7]
 - Hindu Calendar / Panchang for the world. ^[8]
 - Panchangam for 1900-2006 107 years. ^[9]
 - Hindu Festival Calendar of Vrindavan. ^[10]
 - Calculator for Swami Sri Yukteswar's intrepration of Yugas ^[11]
 - Nepali Calendar is much similar to Hindi Calendar ^[12]
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