

## Division of Time In Jyotish

The study of Jyotish is dependent on study of movement of heavenly bodies and division of time. The division of time appears in all the ancient Hindu scriptures to its minutest factor, the science is certainly of an antiquity beyond human comprehension. Indian astronomers developed spherical geometry (called gola ganita) while others were struggling with arithmetic. Let us see the division of time that was visualized by the ancient sages and which finds mentions in many of the Puranas and other ancient texts, to get an idea of the depth of their understanding of the ever elusive dimension, time.

It might interest the readers to know that Hindus had 9 different methods of measuring times and out of these 5 different time measures of time are used for different purpose of daily life, even to this day. Narada Samhita describes these different years, as under:

नारद संहिता

nārada saṁhitā

ब्राह्मं दैवं च मानुषं पित्र्यं सौरं च सावनम् ।

चान्द्रमाक्षं गुरोर्मामिति मानानि वै नव ॥अध्याय ३।१॥

brāhmaṁ daivaṁ ca mānuṣaṁ pitryaṁ sauraṁ ca sāvanam ।

cāndramākṣaṁ gurormānamiti mānāni vai nava ।'dhyāya 3।1।।

एषां तु नवमानानां व्यवहारोऽत्र पंचभिः ।

तेषां पृथक्पृथक्कार्यं वक्ष्यते व्यवहारतः ॥अध्याय ३।२॥

eṣāṁ tu navamānānāṁ vyavahāro'tra pañcabhiḥ ।

teṣāṁ pṛthakpṛthakkāryaṁ vakṣyate vyavahārataḥ ।'dhyāya 3।2।।

There are nine measures of years belonging to Brahma (the creator), Deva (God), ManuSha (Human), Pitar (manes), Saura (Sun), Saavana (Sunrise to sunrise-called civil by some), Chandra (Moon), Nakshatra (constellation), and Guru (Jupiter). Out of these nine (different) years, five are in daily use (others are connected with measure of the time related to the creation and period of existence of the universe) called Vyavahar, are explained.

ग्रहणं निखिलं कार्यं गृह्यते सौरमानतः ।

विधेर्विधानं स्त्रीगर्भं सावनेनैव गृह्यते ॥अध्याय ३।३॥

grahaṇaṁ nikhilam kāryaṁ grhyate sauramānataḥ ।

vidhervidhānaṁ strīgarbhaṁ sāvanenaiva grhyate ।'dhyāya 3।3।।

Saura (solar ) year is accepted for rituals related to the eclipse whereas for prediction (writing of Brahma) and pregnancies (human birth related matters) Saavana year is accepted (used as parameter).

प्रवर्षणं मेघगर्भो नाक्षत्रेण प्रगृह्यते ।

यात्रोद्वाहव्रतक्षौरतिथिवर्षादिनिर्णयः ॥अध्याय ३।४॥

pravarṣaṇaṁ meghagarbho nākṣatreṇa pragrhyate ।

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yātrodvāhavratākṣauratithivarṣādinirṇayaḥ | 'dhyāya 3 | 4 | |

Nakshatra (constellation) based year is accepted for pregnancy of clouds (rain forecasts). For deciding (time of) when to travel, marriage, austirities, shaving of head, tithis, year etc.-

पर्व वास्तुपवासादि कृत्वं चान्द्रेण गृह्यते ।

गृह्यते गुरुमानेन प्रभवाद्यब्दलक्षणम् ॥ अध्याय ३ । ५ ॥

parva vāstupavāsādi kṛtvam cāndreṇa gr̥hyate |

gr̥hyate gurūmānena prabhavādyabdalakṣaṇam | 'dhyāya 3 | 5 | |

Parva (special occasions, specially full moon and dark moon nights), Vaastu ( rituals related to the place of new plot or house), fasts etc., Chandra year is accepted. In order to understand the order of Prabhava etc. Samvatsars Guru year is accpetd.

भचक्रगतिरार्क्षं स्यात्सावनं त्रिंशता दिनैः ।

सौरं संक्रमणं प्रोक्तं चांद्रं प्रतिपादिकम् ॥ अध्याय ३ । ६ ॥

bhacakraḡatirārṣam syātsāvanam trimśatā dinaiḥ |

sauram saṅkramaṇam proktaṁ cāndram pratipādikam | 'dhyāya 3 | 6 | |

That which is measured according to speed of Nakshtras (time taken to traverse Nakshatra) is called Aarksha (nakshatra month) and one which consists of thirty days is called Saavana month. The month measured by traversing of rasis by Sun is called Saura month and one which is measured as Pratipada etc. (tithis) is called the Chandra Month.

तत्तन्मासैर्द्वादशभिस्तत्तद्बदो भवेतत्तः ।

गुरुचारेण संभूताः षष्ट्यब्दाः प्रभवादयः ॥ अध्याय ३ । ७ ॥

tattanmāsairdvādaśabhistattadabdo bhavetattaḥ |

gurūcāreṇa sambhūtāḥ ṣaṣṭyabdāḥ prabhavādayaḥ | 'dhyāya 3 | 7 | |

The year consisting of such 12 months is called as a year by prefixing the name of the months concerned (like Saura year, Savana year etc.). Guru traversing rasis makes a year that are named from Prabhava etc. and number sixty.

In Jyotish, we are primarily concerned with the tithi based lunar time measure, the Jupiter based year called the Samvatsar, and the Savana system of measure of time. There are a lot of discussions about what should be the measure of year that is to be used for calculation of various dashas in Jyotish. The above shlokas should dispel any doubt that astrologers might have about what time measure should be used for calculation of dashas, 360 Savana day year being clearly indicated by Narada.

Let us see the parameters of time used to define a day, a month or a year in all of the 9 different years used by Hindus. In case of all the 9 years we must understand that 30 days makes a month and 12 months make a year. So a year is always of 360 days. Most of the years that are not in daily use are based on the multiples of Maanusha year parameters, so we begin from Maanusha year:

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### 1) Maanusha (human) Year:

1 Nimisha	= time taken for opening and closing of eyelid.
15 Nimisha	= 1 KashThaa
30 KashThaa	= 1 Kalaa
30 Kalaa	= 1 KshaNa
6 KshaNa	= 1 Ghati
2 Ghati	= 1 Muhurta
30 Muhurtas	= 1 Day = 1 Ahoratra (day and night)
30 Days	= 1 Month = 2 Pakshas
2 Months	= Ritu (season)
3 Ritu	= 6 Months = 1 Ayana
2 Ayanas	= 12 Months = 1 Maanusha year

### 2) Brahma (Of the creator) Year:

17, 28,000 years	= Satya Yuga (Also called Krita Yuga)
12, 96,000 years	= Treta Yuga
8, 64,000 years	= Dwaapaara Yuga
4, 32,000 years	= Kali Yuga
33, 20,000 Maanusha years	= 4 Maanusha Yugas (called Chaturyuga)
71 Chaturyuga + 1 Krita Yuga	= 1 Manvantar
14 Manvantar	= 1 Day of Brahma
14 Manvantar	= 1 Night of Brahma
28 Manvantars	= 1 Ahoratra of Brahma
30 Ahoratras of Brahma	= 1 Month of Brahma
12 Months of Brahma	= 1 Year of Brahma
100 years	= Total life span of Brahma.

### 3) Daiva (of Devas [gods]) Year:

1 Maanusha year	= 1 day – Ahoratra - of Devas
30 Ahoratra of Devas	= 1 Month of Devas
12 Months of Devas	= 1 Daiva year

Note: Uttaraayana is the day and Dakshinaayana is the night of the Devas.

### 4) Paitra (of Pitars or manes) Year:

1 day of Pitars	= 1 month of Maanusha
30 Pitar days	= 1 Month of Pitars
12 Months of Pitars	= 1 Year of Pitars

These 4 types of years are not used in day to day matters, as indicated by Narada as they are connected with the creation of universe, its existence and destruction.

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Now we shall look at the other five years mentioned by Narada that are in general use. These are, Saura (of Surya [Sun]), Savana (relating to or determining the three daily Soma libations, corresponding to the solar time i.e. the day, month, year), Chaandra (of Chandra [Moon]), Arksha or Naakshatra (of Nakshatra) and Guru or Samvatsar.

### 5) Saura Year:

This is used to define the times of eclipses and rituals related to it, as indicated by Sage Narada.

1 Saura day	= Time taken by Sun to traverse one degree of zodiac.
30 Saura days	= 1 Saura Month
12 Saura months	= 1 Saura Year

### 6) Saavana Year:

Then there is the Saavana day that is equivalent to the period of time from one day's sunrise to the next day's sunrise. The divisions of that day are based on the time taken for one long syllable called Gurvaakshara (Guru + Akshara), given as:

10 Gurvaaksharas	= 1 Prana (Time taken for one respiration)
6 Prana	= 1 Vinadi
60 Vinadi	= 1 Nadi
60 Nadi	= 1 Savana day
30 Saavana days	= 1 Month
12 Saavana months	= 1 Saavana year

It is this Savana measure of time that is to be used for calculation of Dashas in Jyotish.

### 7) Chaandra Year:

In Chaandra year a day is called a tithi and is based on the difference of degrees between Chandra (Moon) and Surya (Sun). This works out as below:

1 Tithi	= Time equivalent to a distance of 12 degrees between Surya (sun) and Chandra (moon).
15 Tithis	= 1 Lunar fortnight.
30 Tithis	= 2 Lunar fortnights = 1 Lunar month
12 Chaandra (Lunar) months	= One Chaandra Varsha (lunar year)

This Chaandra (lunar) Maasa (month) begins from the Shukla Pratipada (first day of bright fortnight) and ends with Amaavasya (dark moon that is the 30<sup>th</sup> tithi, and also 15<sup>th</sup> tithi of the dark fortnight).

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### 8) Naakshatra (of Nakshatra/constellation) Year:

1 Nakshatra day	= Time taken by Chandra (Moon) to traverse one nakshatra.
1 Naakshatra month	= Time taken by Chandra (Moon) to traverse all the 27 nakshatras, of about 27 days.
12 Naakshatra months	= 1 Naakshatra Year.

### 9) Samvatsar (Guru Year):

This year begins as Guru arises (appears as Morning star on eastern horizon) in a nakshatra whose name is given to that Year. This is approximately equal to the stay of Guru in one rasi but is actually till the next rise of Guru. This period is generally between 392 to 405 days. This Samvatsar is different than Vikram Samvatsar that begins with Chaitra Shuddha Pratipada (first day of the bright fortnight), though it too has same names as the Guru Samvatsara. The Prabhava Samvatsar is said to have begun when Guru rose in DhanishThaa nakshatra. This Samvatsar cycle of 60 years has five differently named Samvatsar that are repeated 5 times. These are Samvatsar, Parivatsara, Idavatsar, Anuvatsar and Idvatsar. There is another year of Guru which equals the stay of Guru in one rasi and is about 361.02 days.

There are other finer and larger measures of time involved in Hindu astronomy and it may not be out of place to look at them:

Krati	=34,000th of a second
Truti	=300th of a second
2 Truti	=1 Luv
2 Luv	= 1 Kshana
30 Kshana	=1 Vipal
60 Vipal	= 1 Pal
60 Pal	= 1 Ghati (24 Minutes)
2.5 Ghati	= 1 Hora (=1 Hour)
24 Hora	= 1 Divas (1 Day)
7 Divas	= 1 Saptah (1 Week)
4 Saptah	= 1 Maas (1 Month)
2 Maas	= 1 Ritu (1 Season)
6 Ritu	= 1 Varsha (1 Year)
100 Varsha	= 1 Shatabda (1 Century)
10 Shatabda	= 1 Sahasrabda
432 Sahasrabda	= 1Yuga (Kali Yuga))
2 Kali Yuga	= 1 Dwaapar Yuga
3 Kali Yuga	= 1 Treta Yuga
4 Kali Yuga	= Kruta Yuga
10 Kali Yuga	= 1 Maha Yuga (4,320,000)
1000 Maha Yuga	= 1 Kalpa
1 Kalpa	= 4.32 Billion Years