



CALENDAR EXPLANATION

वरिष्ठा॥ यस्मिन् पक्षे चत्र काले येन दृग्गणितैक्यम्। दृश्यते तेन पक्षेण कुर्यात्तिथ्यादिनिर्णयम्॥

Bigest misconception is “Indian Hindu festivals observance date in the Indian calendar / panchang is applicable for all location in world”. We use our favorite Panchangam from India to find an observance date for an Indian festival. Observance dates from Indian Panchangam is valid only in India and is not transferrable to other locations. Another misconception arises due to the time zones/differences is as USA/Canada and Europe is behind in time then Festival will come a day later in USA/Canada and Europe. This is incorrect. If Seattle/Vancouver/California is 13 hours 30 minutes behind Indian Standard Time and say an event is happening in India at 8 AM then will it be the previous day in USA/Canada. You'll subtract 13 hours 30 minutes from 8 AM. Which gives 6 hours 30 PM the previous day in USA/Canada Pacific Time Zone. **Tithis, Nakshatras, Yoga and Karana are such events, as they end at the same instance all over the world.**

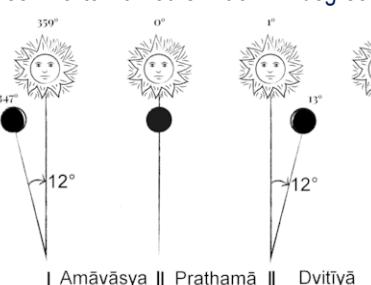
After calculating tithi and nakshatra endtimes per local timezone, the rules used to determine festivals. The local factors like like Sunrise, Sunset, Moonrise, and Moonset are used along with Tithi to determine festivals. Hence, sometimes festivals may appear on the same day as India or a day before in the countries west of India. The countries east of India the festival may appear on the same date as India or a day later.

Hindu day changes at the sunrise (not midnight), a Hindu day (Vaar) is from one sunrise to another. The Hindu date or tithi doesn't change at the midnight, and it is not always fixed 24 hours long it can be anything between 19 to 26 hours. Each 12 degrees distance between the Sun and the Moon is Tithi. Panchangam

contains two types of calculations: **Local coordinates like longitude and latitude:** Sunrise, Sunset, Moonrise, Moonset depends on this set. **The Geocentric astronomical positions for the Sun and the Moon.**

The tithi, nakshatra, yoga and karana are based on this set of calculations. This astronomical phenomenon happens instantly at the same moment on the earth everywhere, and hence thithis, nakshatra will begin and end at the same time / instance all over the world and we must convert them to our standard time. Indian panchang makers convert this ending times to Indian time. Likewise, we need to covert it to our time zone for America/Canada or other country for that matter.

For example: October 17th 2008 the Ashwayuja (Ashwin) Krishna Paksha / Poornimant Kartik Krishna paksha tithi Tritiya ends at 16:39:21 Indian Standard Time, and chaturthi starts. That means at 16:39 hours there is tritiya still prevailing in India. Now on October 17th 2008 in Seattle, WA at the 16:39 hours we won't have tritiya at that time. We already have chaturthi started because Planets keep on moving. 13 hours have passed and the position of sun and moon have changed. So what time Tritiya will end in Seattle? The time difference is 13 hours 30 minutes (with one our day light saving time it gives the difference of 12 hours 30 minutes from IST). So, let's subtract 12 hours 30 minutes from the 16:39:21. That gives us 04:09:21 AM on October 17th. So on October 17th after that time we'll have chaturthi tithi and before we have tritiya. The same way if tithi ends at 8:39 AM on Sept 12 in India it will end at 20:09 PM on Sept 11th in Seattle. The same way Western Australia is 8 hours ahead of GMT and hence the chaturthi will end there at 12:09 PM on Sept 12th. The arth keeps moving. It doesn't wait for tithi or festivals to arrive in your timezone. The sun doesn't rise instantly at the same time all over the world. Hence we need to convert the panchanga times to local standard time. After knowing tithi ending times, it's a time to decide festival dates for each region.



How festivals are determined? The sankathara chaturthi the chaturthi tithi must be prevailing during the moonrise time. Sankathara Chaturthi/Karwa Chauth is celebrated when Chaturthi prevails during moon rise time Moonrise in New Delhi on a given date is at 19:36 and in West Bengal, Kolkatta is at 19:25 PM. Now tritiya ends at 19:32 PM IST. So Kolkatta will celebrate karwa chauth/sankathara chaturthi on the next day where as people in New Delhi will celebrate on the same day.

Timings in this calendar are end timings of the Tithi and Nakshatra and for Sun/Moon entering time when it enters a new rashgi. If the hour number is greater than 12 it means PM. When the hour number is greater than 23 then it ends on the next English date before sunrise, that means subtract 24 hours from hour to get exact time and take next English date. For example, tithi Amavasya ends at 26:36 on 19th March 2015 it means it ends at 2:36 AM on 20th March.

Uttarayana/Dakshinayana: The season occur based on earth's position around the Sun. This is due to Earth's tilt of 23.45 degrees. The Earth orbits around Sun with this tilt. When the tilt is facing the Sun, we get summer and when the tilt is away from the Sun we get winter. This tilt it creates a phenomenon like the Sun travels north and south of the equator. The Uttarayana (Winter Solstice) is the Sun appearing to move north. The Dakshinayana (Summer Solstice) is the Sun appearing to move towards South. This causes seasons, equinoxes and solstices. There is a common misconception that Makara Samkranti is the Uttarayana. This is because at one point in time Sayana and Nirayana Zodiac were same. Every year equinoxes slides by 50 seconds due to precision of equinoxes, giving birth to Ayanamsa and causing Makara Samkranti to slide further. If you think Makara Samkranti is uttarayana then as it is sliding it will come in June after 9000 years. All Drigganitha Panchanga makers like mypanchang, Rastriya Panchang, Janmabhumi Panchang, will use the position of the tropical Sun to determine Uttarayana and Dakshinayana. Hence January 14th isn't Uttarayana. Actual Uttarayana occurs on December 21st/22nd of every year. The same for Rutu. Rutus are always observed based on Tropical position of Sun.

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2020 Calendar Acknowledgements

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