

# WHEN IS NOON?

Can you tell when noon is? Maybe you've heard that noon is when the sun is at its highest point in the sky. Is the sun highest at 12 PM IST (see Box 1) for you?

## Box 1. Indian Standard Time (IST):

This is calculated at a central place in India, 82.5°E, close to Prayagraj (Uttar Pradesh). This is the time we set all your clocks and watches and phones to. Generally, the closer you are to 82.5°E, the closer your local noon will be to 12 PM IST.

Generally, the sun is highest at your location before 12 PM IST if you are in the eastern part of India, and after 12 PM IST if you are in the western part of India. So 12 PM IST may not be your local noon.

But how do you know how high the sun is? You can't just look at it and tell, because you should NEVER EVER look at the sun directly!! But you can always look at your shadow to know how high the sun is. The higher the sun is, the shorter your shadow will be. In other words, local noon at your location on a particular date is the time of the day when the sun is highest in the sky and your shadow is the shortest. How do you find out when is local noon for you?

## (A) Measure your shadow

Measure your shadow regularly between 10:30 AM IST and 1:30 PM IST. Your local noon is when your shadow is the shortest. (Note: the length of your shortest shadow may not be zero!) Your shortest shadow may be before or after 12 PM IST!

Shadows are the shortest first in Aizawl (Mizoram), then in Jabalpur (Madhya Pradesh), and then in Bhuj (Gujarat). But shadows are shortest around the same time for Nainital (Uttarakhand), Jabalpur (Madhya Pradesh), and Puducherry (see Fig. 1)! Can you tell how local noon changes from East to West and North to South?

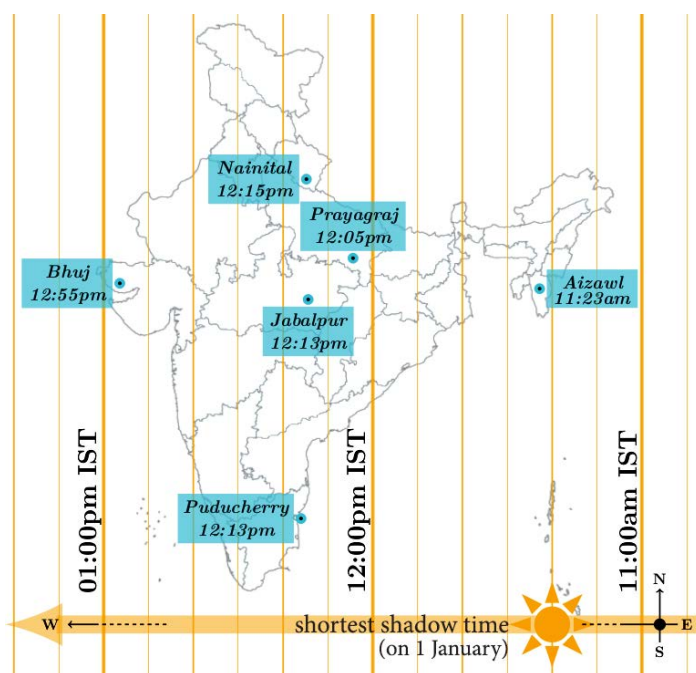


Fig. 1. You can find your location on this map (\*approximate map/locations) showing the time of shortest shadow in different places in India.

Since the sun rises towards the East, places towards the East (like Aizawl) will see the sun rise before places towards the West (like Bhuj). Similarly, places on Eastern longitudes will also have the sun highest in the sky before places on Western longitudes (see Box 2). So local noon is earlier in eastern parts of India and later in western parts of India. For places on the same longitude (like Nainital, Jabalpur, and Puducherry), the sun will be highest in the sky at around the same time. So these places will have local noon at around the same time.

## Box 2. Longitude:

This is how far East or West a location is from the Prime Meridian (at Greenwich, England). India starts at 68°E in Gujarat and goes to 97°E in Arunachal Pradesh.

## (B) Local noon is midday

Every day begins at sunrise and ends at sunset. After sunrise, the sun goes higher and higher in the sky and then comes back lower and lower to sunset. So another way to think about local noon is the middle of the day. That is, exactly between sunrise and sunset.

Find today's sunset and sunrise time at your location (in your newspaper or online). The time between these is the length of your day. And the time exactly in the middle of your day is midday. This is when the sun is highest in the sky, so this is your local noon.

Was this the same time at which your shadow was shortest?

## (C) When *exactly* is local noon?

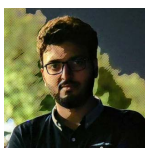
You can also use an app to look up the exact time for local noon on any day and for any location: [alokm.com/zsdapp](http://alokm.com/zsdapp) (see **Box 3**).

### Box 3. 'Zero Shadow Day' app:

This is an Android smartphone app that contains a number of interactive visualisations to understand how shadows cast by the sun change over the course of a year at different places. It also provides data for users to examine. The app was commissioned by the Astronomical Society of India – Public Outreach and Education Committee (ASI-POEC). You can find the app here: <https://play.google.com/store/apps/details?id=com.alokm.zsd>.

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