

How does the Subsolar Point Change Throughout the Year? Name: _____

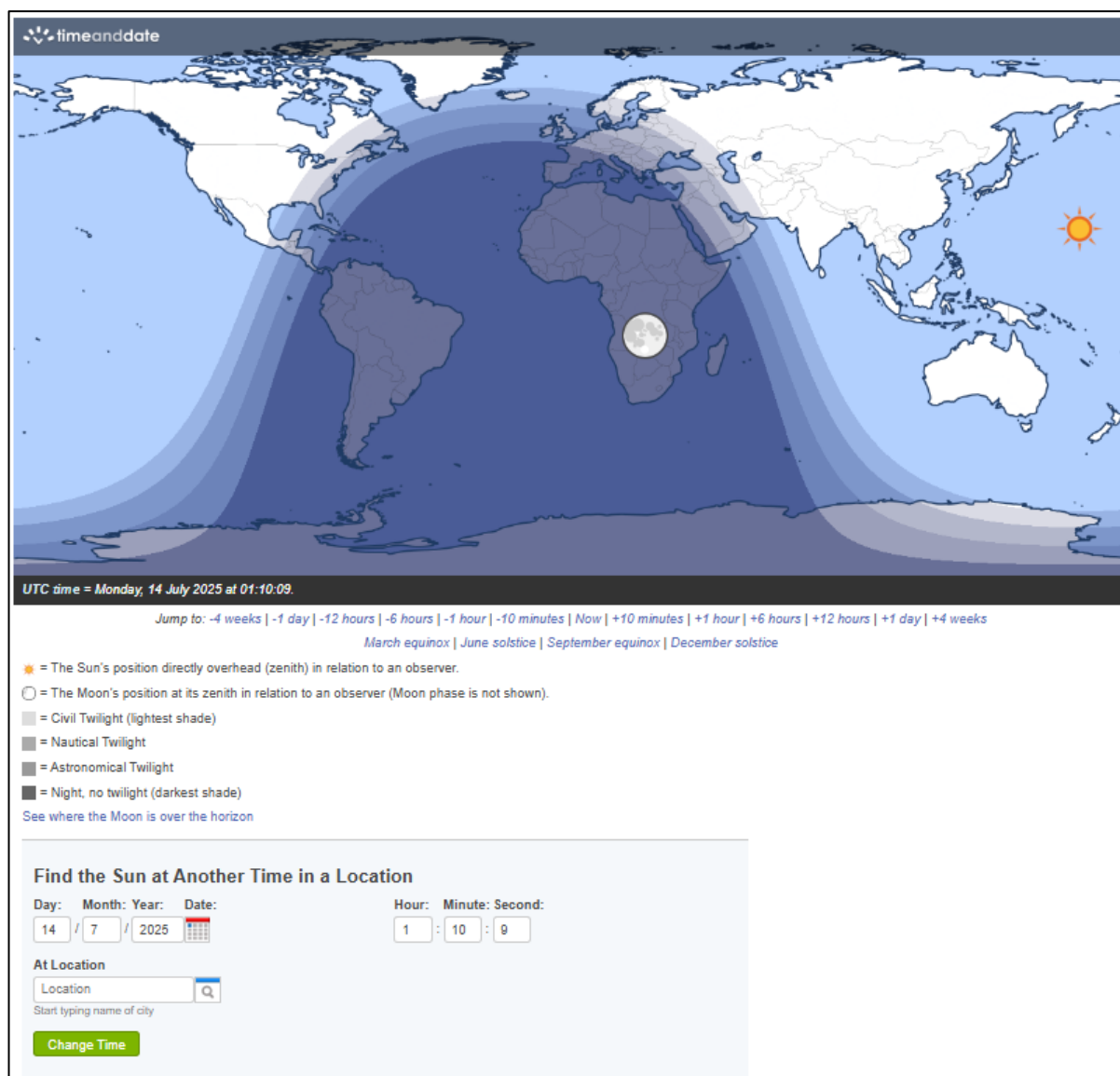
At any given moment, the Sun is directly above a specific point on Earth called the **subsolar point**. The subsolar point is constantly moving since the Earth is spinning.

Throughout the day, the subsolar point moves from east to west since the Earth is spinning from west to east. It also moves north and south throughout the year since the Earth's axis is tilted at an angle of 23.4° to the plane of its orbit.

In this activity you will use the timeanddate website to find the subsolar times at different times of the year.

Step 1: Go directly to <https://www.timeanddate.com/worldclock/sunearth.html> or go to <https://www.timeanddate.com/>, hover over the Sun, Moon & Space tab, and then click Day and Night Map.

It will look something like this.



Step 2: In the Find the Sun at Another Time in a Location box, type in your city or town, find the the subsolar point (to the nearest degree) at the dates and times shown on Page 3, and fill in the table. (You have to click **Change Time** each time).

For example, when I changed...

the date to 1/08/2025,

the time to 12:00:00, and

the At Location to Melbourne,

it looked like this.

The screenshot shows the 'timeanddate' website interface. At the top, a world map displays various twilight zones in shades of blue and grey, with a sun icon in the Pacific and a moon icon in the Atlantic. Below the map, a black bar contains the text: "UTC time = Friday, 1 August 2025 at 02:00:00. Melbourne local time = Friday, 1 August 2025 at 12:00:00 noon." This text is circled in orange. Below this bar is a navigation menu with options like "Jump to: -4 weeks | -1 day | -12 hours | -6 hours | -1 hour | -10 minutes | Now | +10 minutes | +1 hour | +6 hours | +12 hours | +1 day | +4 weeks" and "March equinox | June solstice | September equinox | December solstice". A legend explains the symbols: a star for the Sun's position, a circle for the Moon's position, and different shades of grey for Civil, Nautical, and Astronomical twilight, and black for night. Below the legend is a search form titled "Find the Sun at Another Time in a Location". The form has fields for "Day: 1 / Month: 8 / Year: 2025" and "Date:" with a calendar icon, and "Hour: 12 : Minute: 0 : Second: 0". The "At Location" field contains "Melbourne" and has a search icon. A green "Change Time" button is at the bottom of the form. Below the form, the text "Position of the Sun: Subsolar Point" is circled in orange, followed by "On Friday, 1 August 2025 at 02:00:00 UTC the Sun is at its zenith at Latitude: 17° 59' North, Longitude: 151° 38' East".

Note that the map now gives UTC time (which stands for Universal Co-ordinated Time and which is the international standard time) AND Melbourne time.

It also states the latitude and the longitude of the subsolar point (but it writes UTC time, not your local time). (See the two ovals.) The sun is at its **Zenith** when it is directly overhead. The word zenith applies to any star or planet; it is at zenith if it is directly above your location.

Step 3: Mark the position of the subsolar point on the map and label it.

Subsolar Point on...

Date	Time (in your location)	Latitude (don't forget to write N or S)	Longitude (don't forget to write E or W)	Label (for map)
March 21	12 pm (midday)			A
March 21	2 pm			B
March 21	4 pm			C
March 21	6 pm			D
April 21	12 pm (midday)			E
June 21	12 pm (midday)			F
September 23	12 pm (midday)			G
October 22	12 pm (midday)			H
December 21	12 pm (midday)			J

Question 1: What happens to the subsolar point on any given day?

Question 2: What happens to the subsolar point throughout the year?

