

THE GRAPHIC TIMETABLE OF THE HEAVENS

Every year the publishers of *Sky and Telescope Magazine* produce the *Sky Gazer's Almanac*. The center page of the *Sky Gazer's Almanac* is a graphic timetable giving the (predictable) nighttime astronomical events throughout the year. Using the small timetable on your table, the instruction on the cover, the legend at the bottom, and the information on the sides, answer the following.

- 1.³ Why is the chart shaped the way it is? Why are the North American, European and Southern Hemisphere charts shaped differently?

The chart shows the events of the night and the night at 40° N is shortest in June, July and August. In Europe the night is longer in the winter and shorter in the summer. In the southern hemisphere, the night is longest in June, July and August so it's wide in the middle.

- 2.⁴ Why are all the white lines parallel and why do they slant upward to the right?

The stars all rise 4 minutes earlier each night so the white lines show this. The planets move with respect to the stars so their rising times vary less regularly.

- 3.² Why do the lines for Mercury and Venus not cross the chart, but only appear along the sides?

Since Mercury and Venus are closer to the Sun than Earth, they are always close to the Sun in our sky. The objects in the middle of the chart are opposite the Sun at midnight ... neither Mercury nor Venus ever gets there!

- 4.³ On what days do the latest sunrise and earliest sunset occur? Why don't they occur on the same day?

The latest onset of morning twilight occurred on January 5 and the earliest sunset is on December 7. They don't occur on the same day due to the fact that clock midnight occurs after solar midnight in early December.

- 5.² When in September was or will the moon be at perigee? Apogee?

The moon was at apogee on the night of 9/5/24. It will be at perigee on 9/18/24

- 6.² When was Earth at Perihelion (time and date)? How far from the Sun was it?

At 7:39 pm EST on January 2, Earth was at perihelion, 91,404,095 miles from the Sun.

- 7.² What event marked with a special symbol occurs at solar midnight Friday night (9/20/24)?

Neptune was at opposition ... Crossing meridian at solar midnight!

- 8.² When will official (Gregorian) fall arrive this year?

Official fall will arrive with the Autumnal equinox at 4:20 am EST (5:20 AM EDT), on September 22, 2024.

THE EVENTS OF A SINGLE NIGHT

For next Sunday night (September 22 - September 23), use the *Sky Gazer's Almanac* to determine the events that will occur and their Local Mean Time (LMT) time to within 1 or 2 minutes.¹⁹

EVENTS FOR SUNDAY NIGHT, SEPTEMBER 22 - SEPTEMBER 23, 2024			
	Local Time (EST)	Local Time (EDT)	Event
1	5:52 PM	6:52 PM	Sunset
2	7:06 PM	6:06 PM	Venus Sets
3	7:26 PM	8:26 PM	End of Evening Twilight
4	8:18 PM	9:18 PM	Uranus Rises
5	8:33 PM	9:33 PM	Deneb Transits
6	8:40 PM	9:40 PM	Waning Gibbous Moon Rises
7	9:46 PM	10:46 PM	Jupiter Rises
8	10:57 PM	11:57 PM	Saturn Transits
Not on Almanac	11:00 PM	12:00 AM	Clock Midnight EDT (not on chart!!)
9	11:08 PM	12:08 PM	Mars Rises
10	11:18 PM	12:18 AM	Betelgeuse Rises
11	11:46 PM	12:46 AM	Neptune Transits
12	11:53 PM	12:53 AM	Solar Midnight
13	12:00 AM	1:00 AM	Clock Midnight EST
14	1:31 AM	2:31 AM	Sirius Rises
15	2:54 AM	3:54 AM	Upper Culmination of Polaris
16	3:29 AM	4:29 AM	Uranus Transits
17	3:36 AM	4:36 AM	Pleiades Transit
18	4:19 AM	5:19 AM	Start of Morning Twilight
19	4:33 AM	5:33 AM	Saturn Sets
20	5:10 AM	6:10 AM	Jupiter Transits
21	5:17 AM	6:17 AM	Mercury Rises
22	5:24 am	5:24 am	Orion Nebula Transits
23	5:42 am	6:42 am	Neptune Sets
24	5:50 AM	6:50 AM	Sunrise

