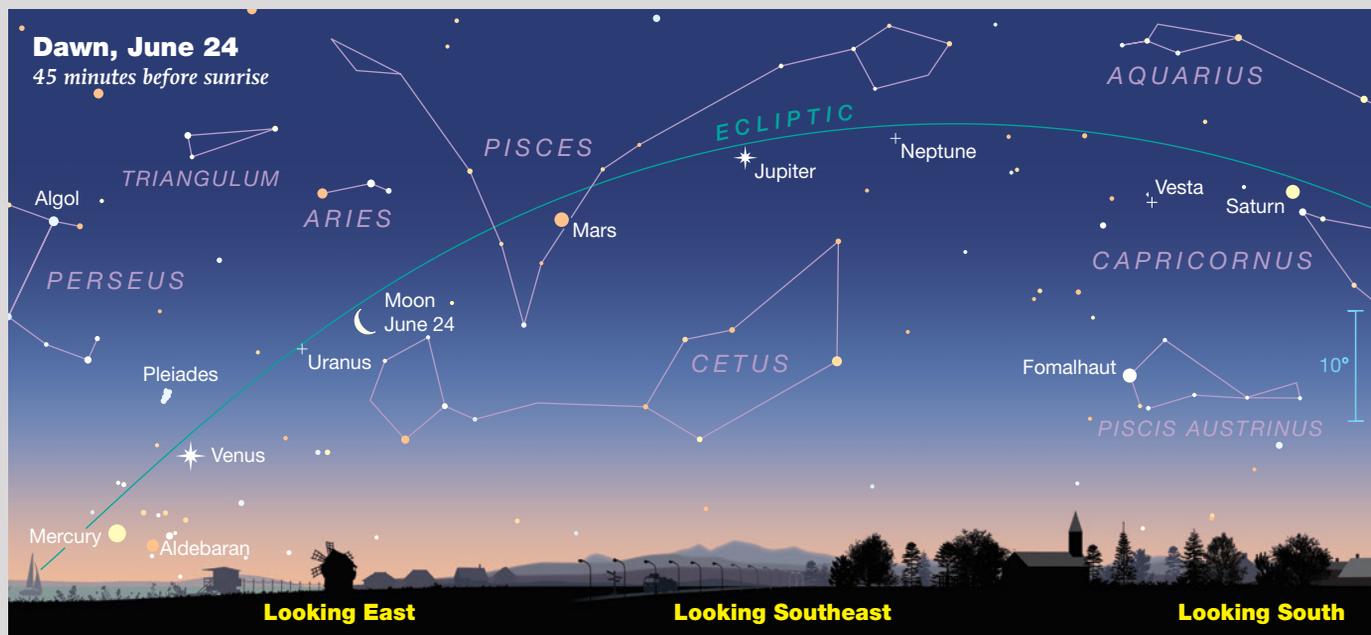


Article Courtesy of Sky & Telescope

A Rare Planetary Alignment

Grab your chance to see all eight planets, a bright asteroid, and the Moon — all at the same time.



In the early morning skies near the end of June, there will be a rare and striking alignment of naked-eye planets and the Moon. Here we'll focus on their telescopic appearance and expand the list to include Uranus, Neptune, and a representative from the asteroid belt, Vesta. While all three additions require binoculars or a small telescope to view, when you're done you can say you've seen the Moon, every planet in the solar system, plus an asteroid — all before the Sun comes up.

The planetary popcorn string will be in full view from **about June 16th through the 27th**. Before the 16th, Mercury and Uranus will be very low in twilight's glare, and after the 27th, the Moon departs the scene and turns new. For both practical and aesthetic reasons, **June 24th is the optimum date**. That morning, all nine bodies are pleasingly spaced across 107° of sky.

Find a location with an unobstructed horizon and start your survey with the two faintest targets, Neptune and Vesta. Neptune rises before 1 a.m. local daylight-saving time, while Vesta is up shortly after midnight. The best time to look is a little before 4 a.m., when both objects are high in the sky but before twilight sets in.

Although Vesta won't reach opposition until August 22nd, it's currently at magnitude 7.1, which is bright enough to pinpoint in a pair of binoculars. Neptune is nearly 4.5 billion kilometers (2.8 billion miles) distant and shines at magnitude 7.9, but it's an easy catch in a small telescope or even binoculars in a dark sky. Crank up the magnification to 100× and you should be able to discern its tiny, bluish disk.

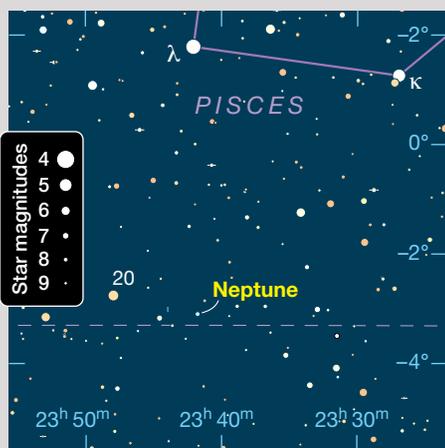
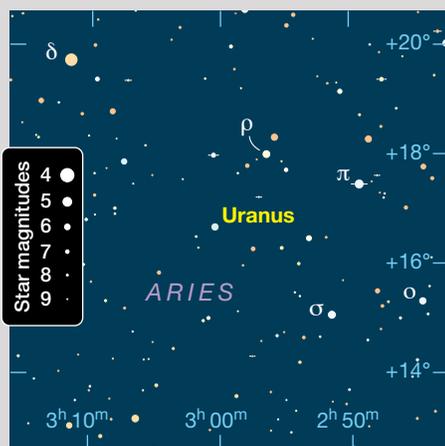
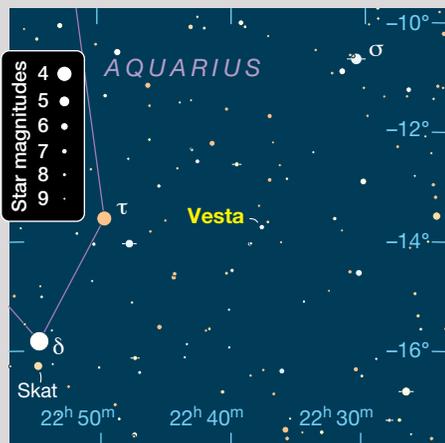
Next, take some time to admire Saturn. Given that it's finally rising before midnight, this might be your first

▲ *This month's planetary alignment reaches its peak on the morning of June 24th. Note that Uranus, Neptune, and Vesta (indicated with crosses) require optical aid to see. In the smaller charts presented on the next page, the objects are plotted for 0^h UT on June 24th.*

good look at it this apparition. On the 24th its glorious rings will be very close to their minimum inclination for 2022, tilted just 12.5° with the north face of the planet's globe in view.

Jupiter gleams at magnitude -2.4, bright enough to remain visible throughout twilight. Serendipitously, on the 24th its mini-solar system of four bright moons will line up in order of their physical distance from Jupiter. From west to east we see Io, Jupiter, Europa, Ganymede, and Callisto in a neat row.

Mars glows a respectable magnitude +0.5, but even with high magnification, discerning surface details will be a



challenge for visual observers. That said, the planet's south pole now tilts more than 21° in our direction, so the white gleam of the shrinking south polar cap should be apparent in 4-inch or larger scopes magnifying 150× or greater. The best is yet to come. The Red Planet will expand to a plump 17" when it reaches opposition on December 8th.

Continuing our sweep eastward, we find the waning crescent Moon. With its belly full of earthshine, it should be a spectacular sight in binoculars or with your unaided eyes. Telescopes will show fine detail in the prominent craters Gassendi, Kepler, and Aristarchus, all positioned along the encroaching arc of the sunset terminator.

The waning crescent Moon is about 6° upper right of Uranus on the 24th, making it a useful tool for finding the distant planet during twilight. Given Uranus's magnitude of 5.8, it's best to seek it before twilight interferes. Even a small telescope magnifying around 100× will clearly show its 3.4"-wide, blue-green disk.

At magnitude -3.9, Venus is obviously the brightest planet in the alignment, though its low altitude and encroaching twilight will temper its sheen somewhat. Binoculars should reveal the Pleiades some 6° above the planet, but can you see this lovely cluster without optics?

When you train your scope on Venus, you'll see a much brighter, silvery version of Mars. Both planets show nearly the same gibbous phase (Venus is 84% illuminated, compared with Mars at 86%) and similarly small disks (12" for Venus, 7" for Mars).

We reach the end of the planet parade with the innermost world, Mercury. Rarely an easy catch, from mid-northern latitudes Mercury climbs only about 4° above the east-northeastern horizon 45 minutes before sunrise this morning. It shines at magnitude -0.2, but even so, you may need binoculars to nail it down due to its low altitude and encroaching twilight.

A small telescope will show that Mercury looks similar to a half-moon, but like Mars sports a tiny disk just 6.9" across. You should use at least 75× to clearly discern its phase. If you need a hand finding Mercury, try again on the morning of the 27th when a super-skinny crescent Moon floats about 3.5° to Mercury's upper left.

The final member of this grand alignment is our blindingly bright home star. As the Sun rises, celebrate your solar system tour by treating yourself to a nice breakfast. You've earned it! ***