

The November 2024 Chippewa Valley Astronomy Update



Photo caption:

The moon appears much smaller in the sky than in kids' books and is often visible in the daytime sky.

Image credit: John A. Peterson

What every seven-year-old should know about the moon

By John A. Peterson and Joseph Peterson

Children's books usually show a moon rising at night, but the moon rises in the sky at night only half of the time. The rest of the time, it rises during the day. Moonrise, like sunrise, is caused by the Earth's rotation (spin) about its axis like a top. The moon (like the sun, planets, and most stars) rises in the east and sets in the west and spends half the day hidden by the ground (under the horizon) and the other half in the sky (above the horizon). Because the moon orbits the Earth, it moves during each day enough that the time it rises and sets changes, on average, by a little less than one hour each day, and phases repeat after 29.5 days.

When the moon is a new moon, it rises at about the same time as the sun in the morning, sets around sunset, and we cannot see it (and usually a few days before and after new moon). When the moon is in first quarter (when the west side is lit), it will rise around noon and set around midnight. The full moon phase always rises around sunset, and it is an all-night moon that will set around sunrise. When the moon is at third quarter (when the east side is lit), it will rise around midnight and set around noon. The crescent moons have rise and set times nearer the new moon and the gibbous moons have rise and set times nearer the full moon.

Children's books also tend to show the moon as very large in the sky, but it is smaller than the pinky finger stretched out, and almost the same size as the sun in the sky. Finding it in the sky, especially during the daytime, can be tricky. The side of the moon that is lit is always closest to

the sun, and the more of the moon is lit, the farther in the sky it is from the sun. Knowing when to look, and knowing that it will rise in the east, set in the west, and be in the southern half of the sky here in Wisconsin can help you find it – both in the night and during the day.

You might notice you always see the same side.

Because the time it takes for the moon to rotate (spin) on its axis and the time it takes for the moon to revolve (circle) the earth are the same, you can only see one side of the moon (nearside). You cannot see the other side (farside). The moon's diameter (2160 miles) is almost one-quarter that of the earth's diameter (7920 miles) and orbits at about 30 earth diameters away (about a quarter of a million miles). We hope you will enjoy looking for the moon when it is in the sky, day or night.

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