

3.6: The Moon in our Skies

It is the very error of the Moon; She comes more near the Earth than she wont, And makes men mad

Shakespeare – Othello

On one side lay the ocean, and on one Lay a great water, and the Moon was full.

Alfred, Lord Tennyson – Morte d'Arthur (1842)

Consider these Moon Facts...

It takes 27 $\frac{1}{3}$ days for the Moon to go around Earth one time; called the Sidereal Month. From new Moon to the next new Moon takes 29 $\frac{1}{2}$ days; called the Synodic Month. Why this amount of time? Earth has also moved through space and the Moon has to catch up with that starting position. Think of our word month – from the term Moonth.

As the Moon orbits Earth, roughly the same side of the Moon faces Earth. This means that one (1) lunar rotation equals one (1) lunar revolution. Like Earth, one half ($\frac{1}{2}$ or 50%) of the Moon is always illuminated by the Sun

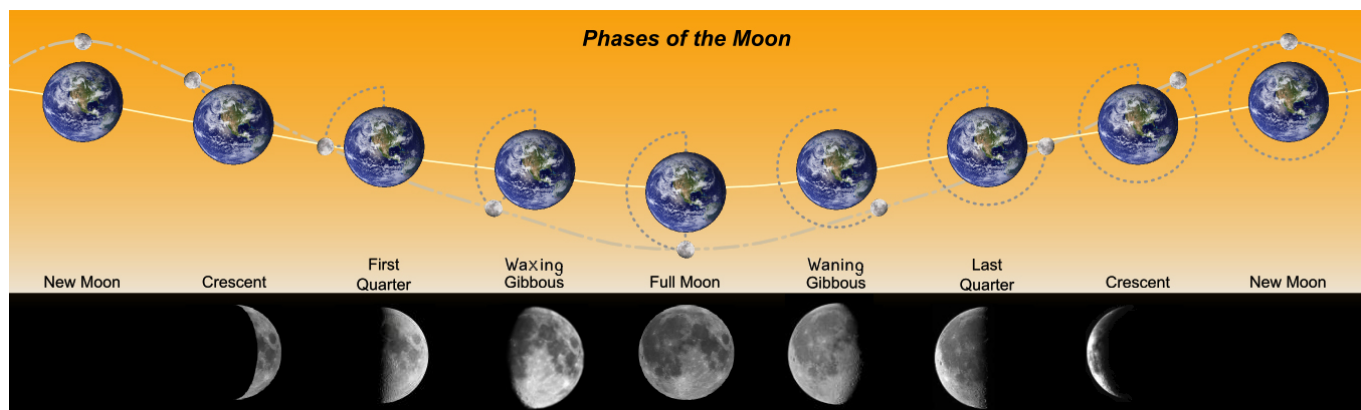
Phases of the Moon

We see the Moon go through its phases due to the position of the Earth, Moon, and Sun relative to each other, NOT due to Clouds, the Moon moving closer or the Sun farther away, or some reflection in the heavens.

Moon Phase Terminology

The descriptions are as the Moon is seen from Earth:

- **Crescent Moon** – Less than 50% illuminated
- **Gibbous Moon** – More than 50% but less than 100%
- **Waxing Moon** – “Growing” larger; New Moon up to Full Moon
- **Waning Moon** – “Growing” smaller; right past Full Moon to New Moon
- **Full Moon** – 100% illuminated- full moons rise at sunset because the Moon and Sun are on opposite sides of Earth
- **New Moon** – 0% illuminated; “no” Moon



Phases of the MoonCC BY-SA 3.0 | Image courtesy of Wikimedia Author: Fresheneesz~commonswiki

More about the Moon...

Can we see the Moon in the daytime? Yes!

Are there times when we cannot see the Moon at all? Yes, at New Moon and sometimes right before and right after the New Moon because the thin crescent is so difficult to see.

Is there a Young Moon or an Old Moon? These are terms used to describe the Moon's phase right before (old) or after new moon (young). These are very thin crescent phases and can be difficult to see.

Does the Moon keep a constant distance from Earth? No, it varies from a Perigee of about 225,000 miles to an Apogee of about 243,000 miles. Perigee is when the Moon is closest to the Earth and Apogee is when the Moon is farthest from Earth.



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Thy shadow, Earth, from Pole to Central Sea, Now steals along upon the Moon's meek shine In even monochrome and curving line Of imperturbable serenity. *Thomas Hardy – At a Lunar Eclipse, 1926*

And it shall come to pass in that day, Saith the Lord God, That I will cause the Sun to go down at noon, And I will darken the Earth in a clear day. *Amos 8:9 – The Bible*

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