Name: _____ Date: _____

Lunar Cycle

Science Literacy Article

Have you ever looked into the sky at night and wondered why the amount of light from the moon seems to change? This changing amount of light is due to **the lunar cycle** and the relative positions of the Sun, Earth, and Moon. Since the moon does not give off any light of its own, the light we see is actually a reflection of the Sun's light bouncing off of the moon's surface. In space, exactly one half of the moon is *always* illuminated by the Sun. However, the moon appears to change shape because *only certain portions of its illuminated side are seen* as it revolves around Earth. These illuminated portions of the moon that we view from Earth are known as **moon phases**. During the lunar cycle, it takes 29.5 days, or about 1 month, to observe all phases of the moon here on Earth.

During the first half of the lunar cycle, the light reflected off of the moon's surface appears to increase. This "growing" light is referred to as **waxing**. However, during the second half of the lunar cycle, the light reflected off of the moon's surface appears to decrease. This "shrinking" light is referred to as **waning**. No matter where you are located on Earth, the *same moon phase is seen by everyone over the globe each night*.

There are eight phases of the moon that occur in the following order:

1. **New Moon** – This stage is not visible because no reflected light from the Sun is visible here on Earth during a new moon. As the moon revolves around Earth, the right side of the moon will begin to appear to have "growing" light.
2. **Waxing Crescent** - During a waxing crescent, less than the right half of the moon is visible from Earth.
3. **First Quarter** – This stage marks ¼ of the way through the lunar cycle and appears to show the right half of the moon. It takes approximately *7 days or 1 week* for the moon to change from a new moon to a first quarter.
4. **Waxing Gibbous** – Now, more than half of the right side of the moon is visible.
5. **Full Moon** - A few days later, the moon is fully illuminated as viewed from Earth. This marks the half way point in the lunar cycle. It takes approximately *14 days or 2 weeks* to change from a *new moon to a full moon*.
6. **Waning Gibbous** - After a full moon, the amount of reflected light seen on Earth begins to decrease. A waning gibbous occurs directly after a full moon. More than half of the moon is visible from Earth, but the right side of the moon now appears shaded in due to the decreasing or "shrinking" light.

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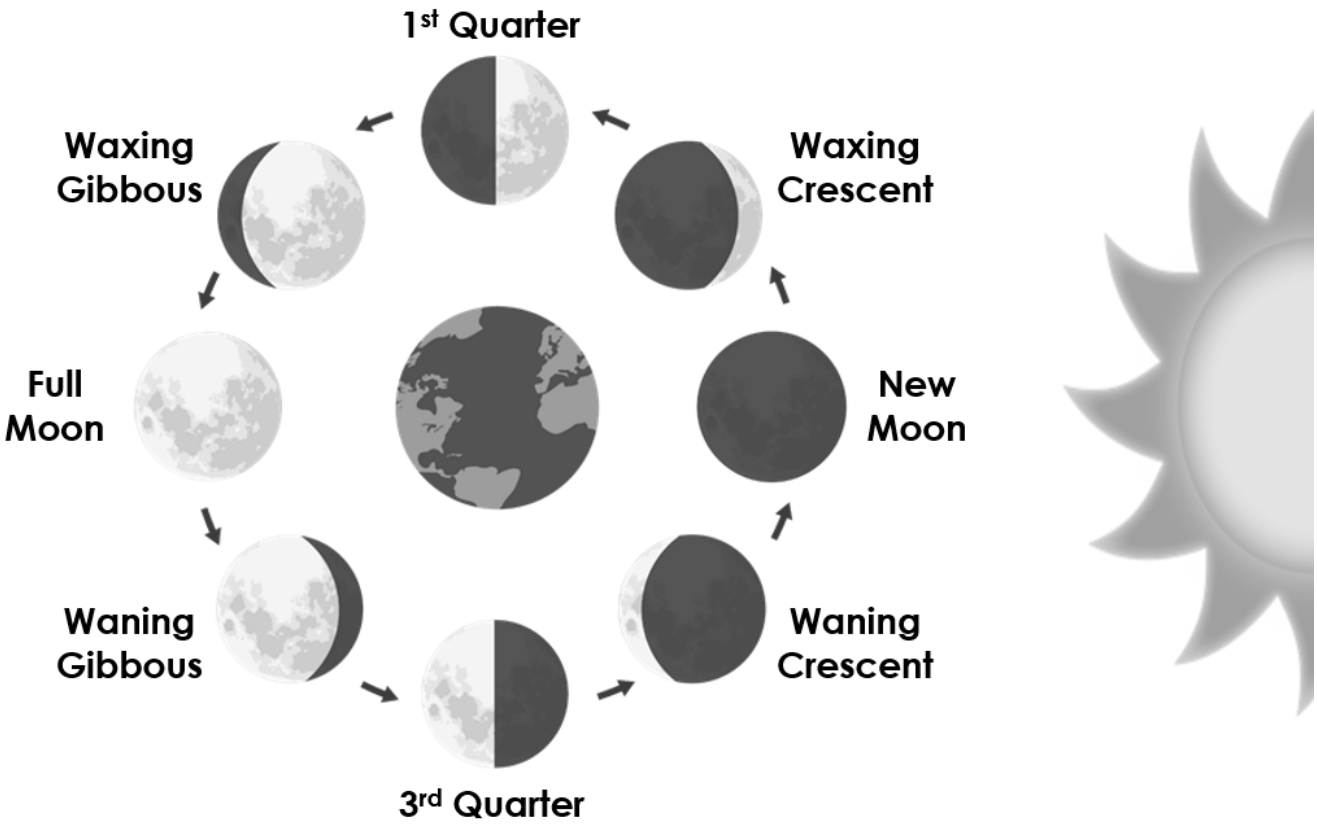
7. **Third Quarter** - The light continues to decrease from the right until <u>only the left half of the moon is visible.</u> It marks ¾ of the way through the lunar cycle. It takes approximately *21 days or 3 weeks* for the moon to change from a new moon to a third quarter.
8. **Waning Crescent** - This is the last observed phase as the light continues to decrease. During a waning crescent, <u>less than half of the moon is visible on the left side</u>. Just a few days later, and approximately *28 days or 4 weeks* after a new moon, *another new moon is observed once again and the lunar cycle starts over*.

A diagram of the entire process can be seen below.



During the lunar cycle, the *actual shape of the moon does not change*. Instead, <u>moon phases are a result of changes in the amount of reflected light</u> we can view from Earth. So the next time you look up at night, you'll know exactly why the moon looks the way it does!

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