

A large, full moon dominates the upper two-thirds of the frame, appearing as a bright, textured sphere against a black sky. In the foreground, the dark silhouettes of several saguaro cacti are visible, their characteristic arms reaching upwards. The cacti are positioned along the bottom edge, with some appearing as simple vertical stems and others showing more complex branching. The overall scene is a classic desert night sky composition.

Moon Phases

6.E.1.1 Explain how the relative motion and relative position of the sun, Earth and moon affect the seasons, tides, phases of the moon, and eclipses.

Motions of the Moon



- Just as Earth rotates on its axis and revolves around the Sun, the Moon rotates on its axis and revolves around Earth. The Moon's revolution around Earth is responsible for the changes in its appearance. If the Moon rotates on its axis, why can't you see it spin around in space?

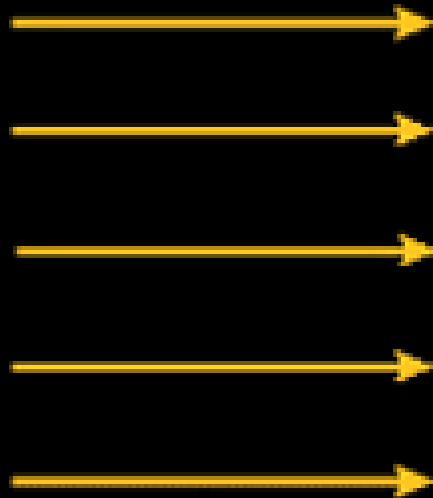
- The reason is that the Moon's rotation takes 27.3 days—the same amount of time it takes to revolve once around Earth. Because these two motions take the same amount of time, the same side of the Moon always faces Earth.



- Because the moon revolves around Earth and rotates at the same rate, this is why **we always see the same side of the moon.**
- The moon seems to shine because it reflects sunlight.



The sun's rays



The revolution of the Moon around the Earth makes the Moon look as if it is changing shape in the sky.

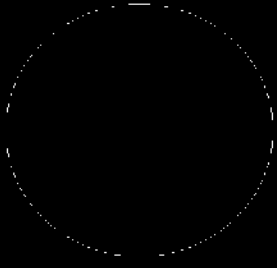


This is caused by
the different
angles from
which we see the
lighted part of
the Moon's
surface. These
are called
"phases" of the
Moon.

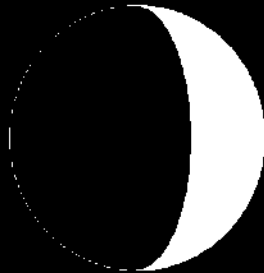


Earth's Satellite Moon Phases

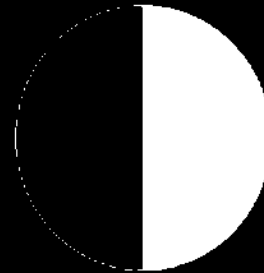
New Moon



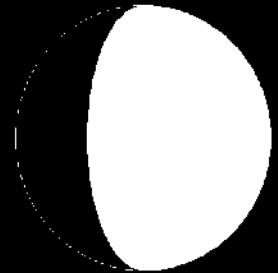
Waxing Crescent



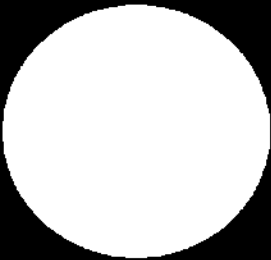
1st Quarter



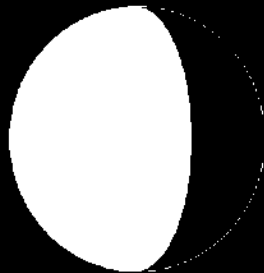
Waxing Gibbous



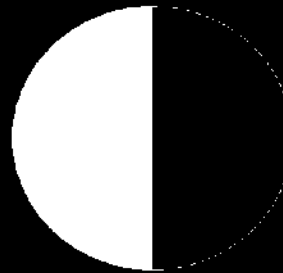
Full Moon



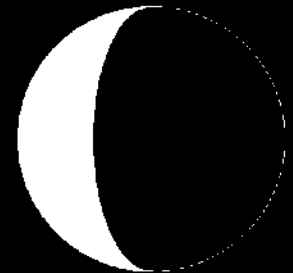
Waning Gibbous



3rd Quarter



Waning Crescent



A complete cycle of moon phases takes about 29.5 days, two days longer than it takes the Moon to circle Earth. The difference is related to Earth's movement. It takes about two days for Earth, Sun, and Moon to return to their same relative positions.

The phases always follow one another
in the same order:

New Moon

Waxing Crescent

First Quarter

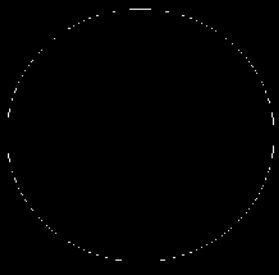
Waxing Gibbous

Full Moon

Waning Gibbous

Third Quarter

Waning Crescent

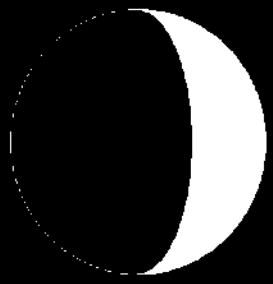


New Moon

The lighted side of the Moon faces away from the Earth. This means that the Sun, Earth, and Moon are almost in a straight line, with the Moon in between the Sun and the Earth. The Moon that we see looks very dark

New Moon





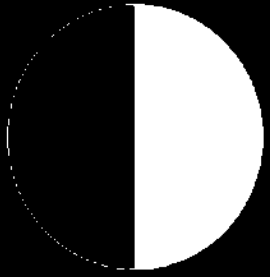
Waxing Crescent Moon

This Moon can be seen after the New Moon, but before the First Quarter Moon. The crescent will grow larger and larger every day, until the Moon looks like the First Quarter Moon.

("Waxing" means increasing, or growing larger.)

Waxing Crescent Moon



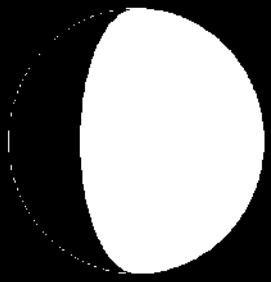


First Quarter Moon

The right half of the Moon appears lighted and the left side of the Moon appears dark. During the time between the New Moon and the First Quarter Moon, the part of the Moon that appears lighted gets larger and larger every day, and will continue to grow until the Full Moon.

First Quarter Moon





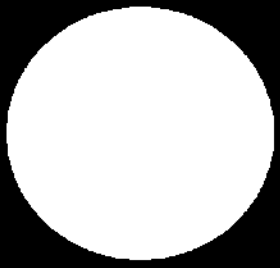
Waxing Gibbous Moon

This Moon can be seen after the First Quarter Moon, but before the Full Moon. The amount of the Moon that we can see will grow larger and larger every day.

("Waxing" means increasing, or growing larger.)

Waxing Gibbous Moon



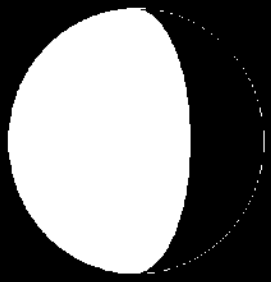


Full Moon

The lighted side of the Moon faces the Earth. This means that the Earth, Sun, and Moon are nearly in a straight line, with the Earth in the middle. The Moon that we see is very bright from the sunlight reflecting off it.

Full Moon





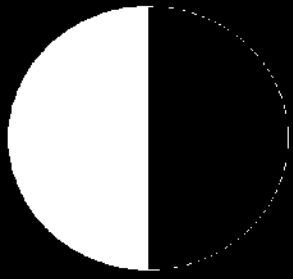
Waning Gibbous Moon

This Moon can be seen after the Full Moon, but before the Last Quarter Moon. The amount of the Moon that we can see will grow smaller and smaller every day.

("Waning" means decreasing, or growing smaller.)

Waning Gibbous Moon



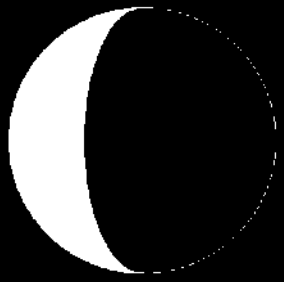


Third (Last) Quarter Moon

Sometimes called Third Quarter. The left half of the Moon appears lighted, and the right side of the Moon appears dark. During the time between the Full Moon and the Last Quarter Moon, the part of the Moon that appears lighted gets smaller and smaller every day. It will continue to shrink until the New Moon, when the cycle starts all over again.

Third Quarter Moon





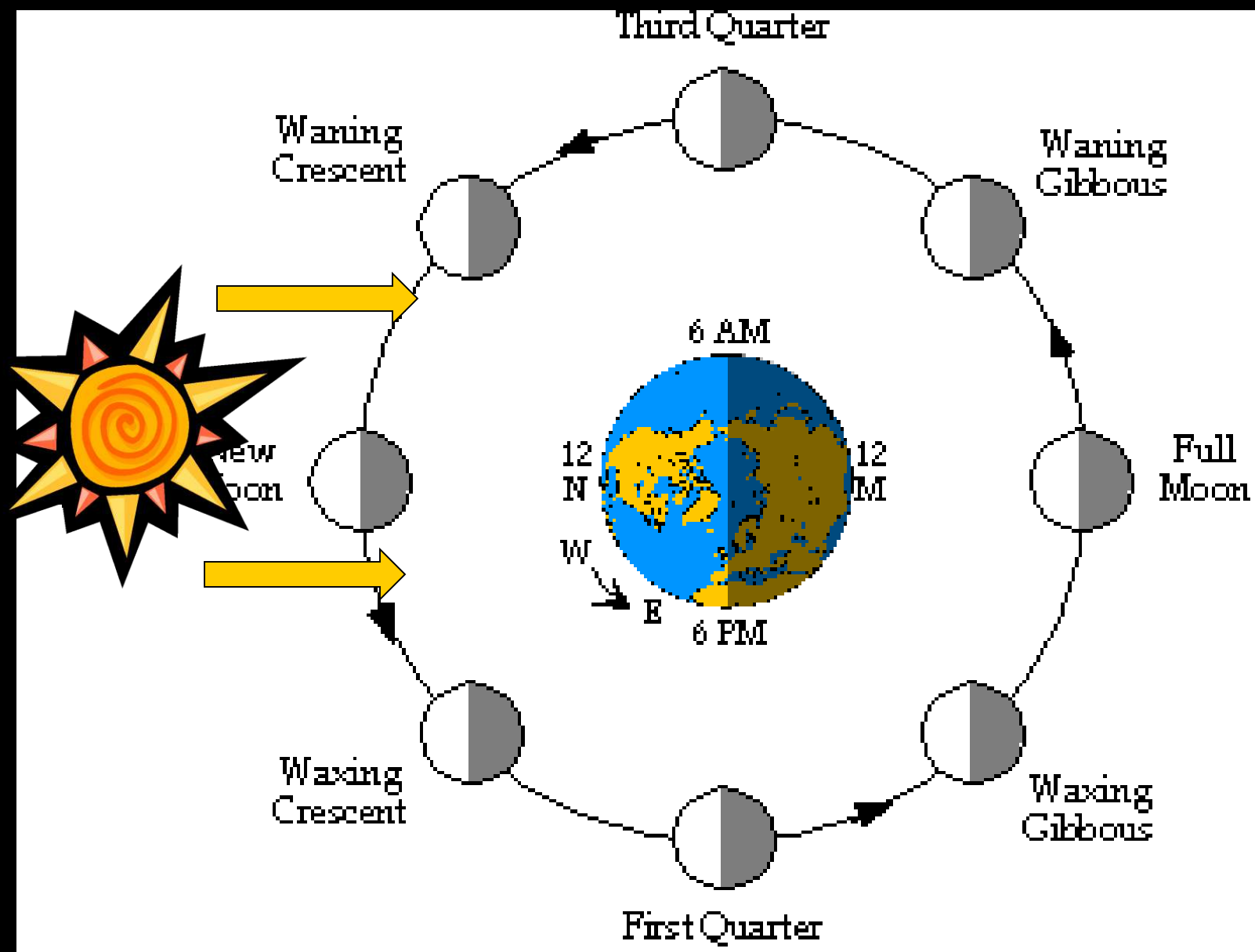
Waning Crescent Moon

This Moon can be seen after the Last Quarter Moon and before the New Moon. The crescent will grow smaller and smaller every day, until the Moon looks like the New Moon.

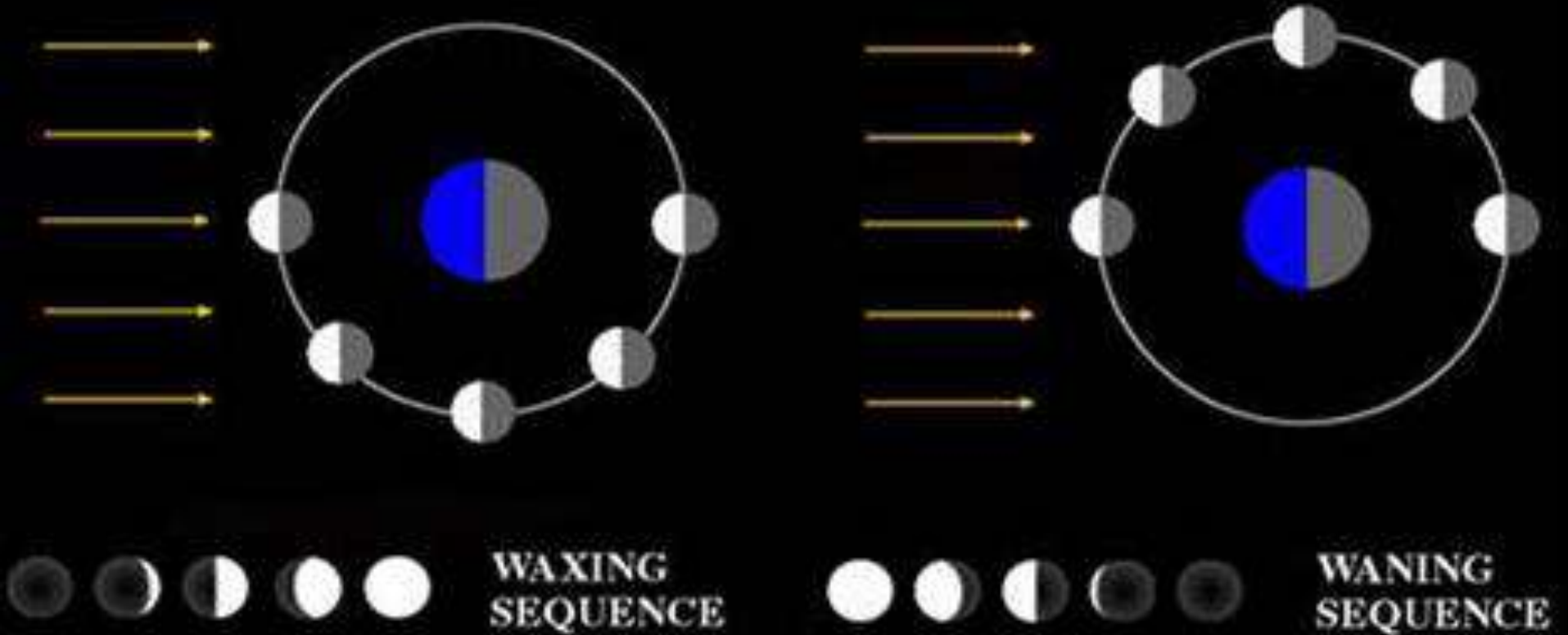
("Waning" means decreasing, or growing smaller.)

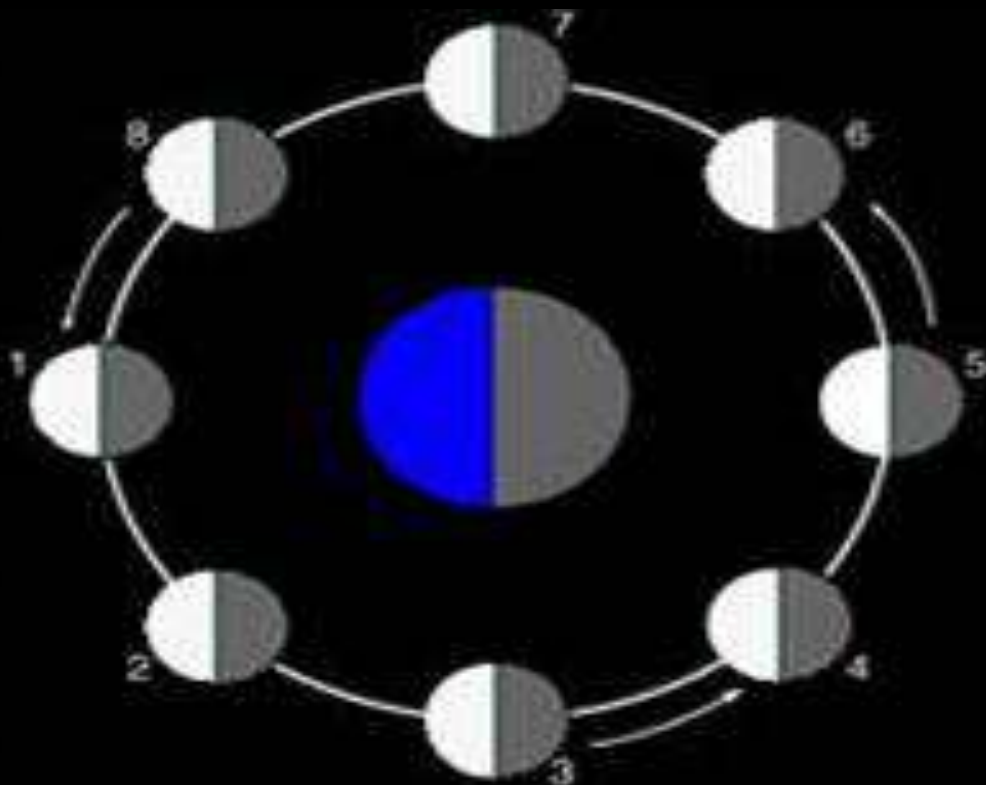
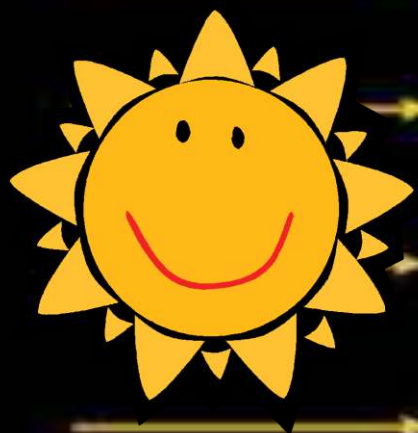
Waning Crescent Moon





Waxing & Waning





Moon

Questions

The phase of the moon you see depends on

- A. where you are on Earth's surface.
- B. how much of the sunlit side of the moon faces Earth.
- C. how much of the moon's surface is lit by the sun.
- D. whether or not an eclipse is occurring.

From new moon phase to full moon phase,
you see

- A. an increasing amount of the lighted side of the moon.
- B. a decreasing amount of the lighted side of the moon.
- C. the same amount of the lighted side of the moon.
- D. more of the lighted side, then less of the lighted side of the moon.

The amount of the lighted side of the moon you can see is the same during

- A. new moon and full moon phase.
- B. new moon and first quarter phase.
- C. first quarter and third quarter phase.
- D. full moon and third quarter phase.



The End!!!

