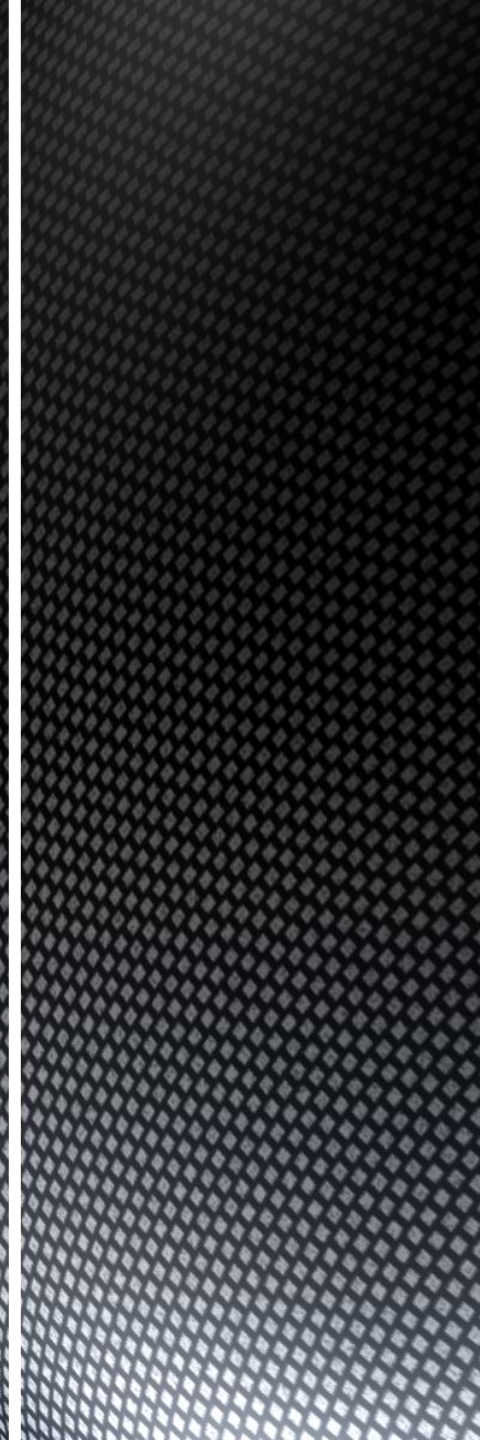


Moon's Orbit & Lunar Phases



Moon's Orbit

Introduction

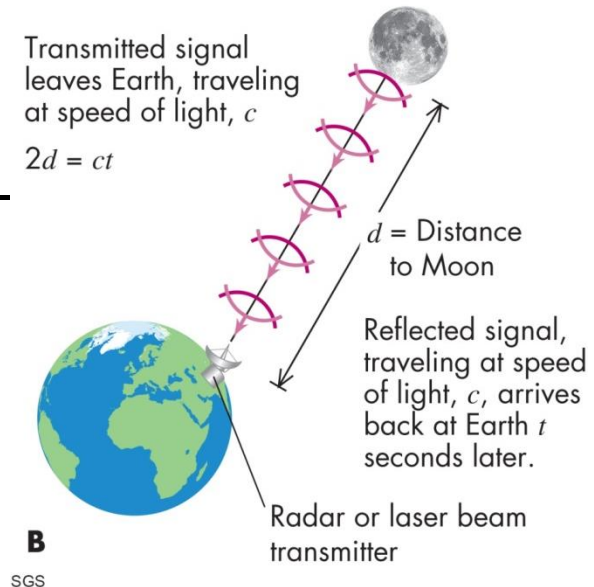
- The Moon can be measured using _____ *size*
- the _____ of an object in the sky by angle measurement
- The Moon can vary about _____ in angular size because of its elliptical orbit (oval)
- Averages about _____ km in distance from Earth
 - About _____ mi
 - Actually varies from 360,000 to 405,000 km during its orbital period



Moon's Orbit

Moon's Orbit

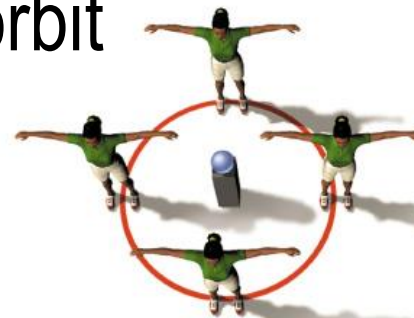
- The _____ to the Moon is measured very precisely using a _____ pulse or a laser beam and special reflectors
- They use the time it takes to travel and the speed of light to figure this out (_____)
- Accurate down to the _____



Moon's Orbit

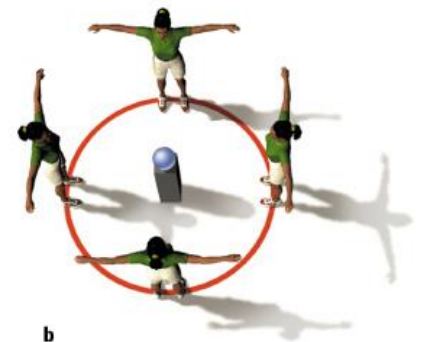
Moon's Rotation

- As it orbits, the Moon keeps the same _____ facing Earth
- It has to _____ rotate in order for the entire planet to see the same face
- _____ **Rotation** – when an object does turn on its _____ once for every _____ period
- 1 rotation = 1 full orbit



a

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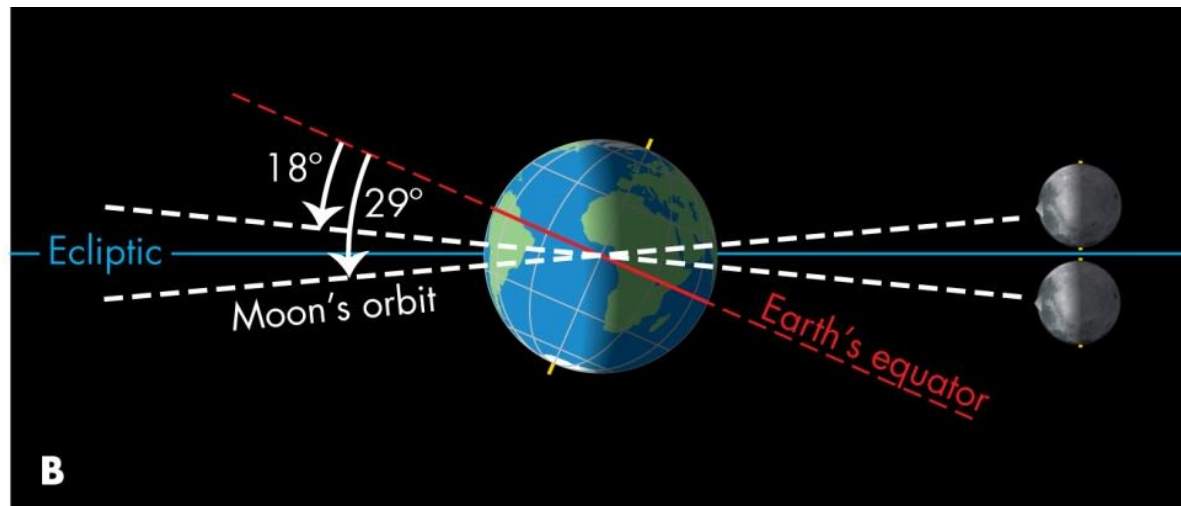


b

Moon's Orbit

Odd Features

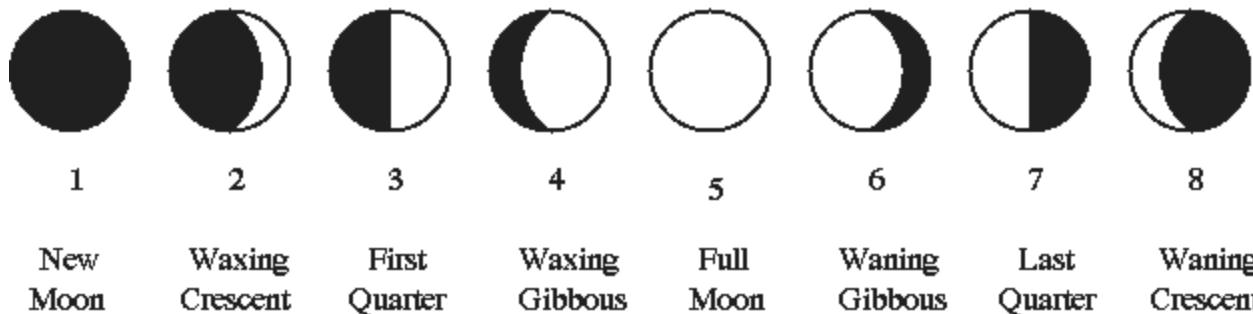
- Unlike other Moons, ours is _____ in respect to the Earth's _____
- _____ degree tilt
- It gradually wobbles over an _____ year time frame
- This results in a tilt anywhere from 18 to 29 degrees



Moon's Phases

Phase Period

- Moon rises in the _____ and sets in the _____
- The Moon's _____ will change throughout a month's time due to its orbit around Earth
- _____ **Period** – the cycle of lunar _____ from new Moon to full Moon and back to new Moon
- takes _____ days
- Fun Fact! This was the basis for the _____ time frame!



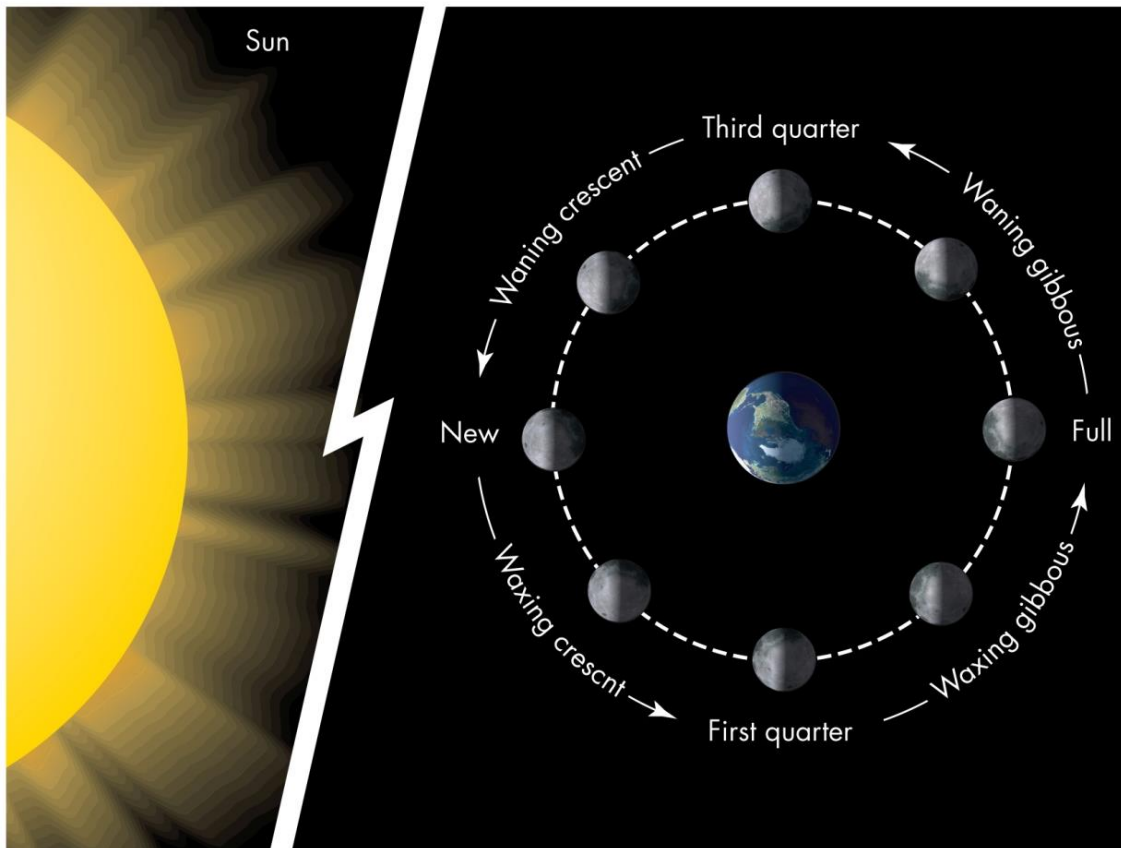
Moon's Phases

Phase Period

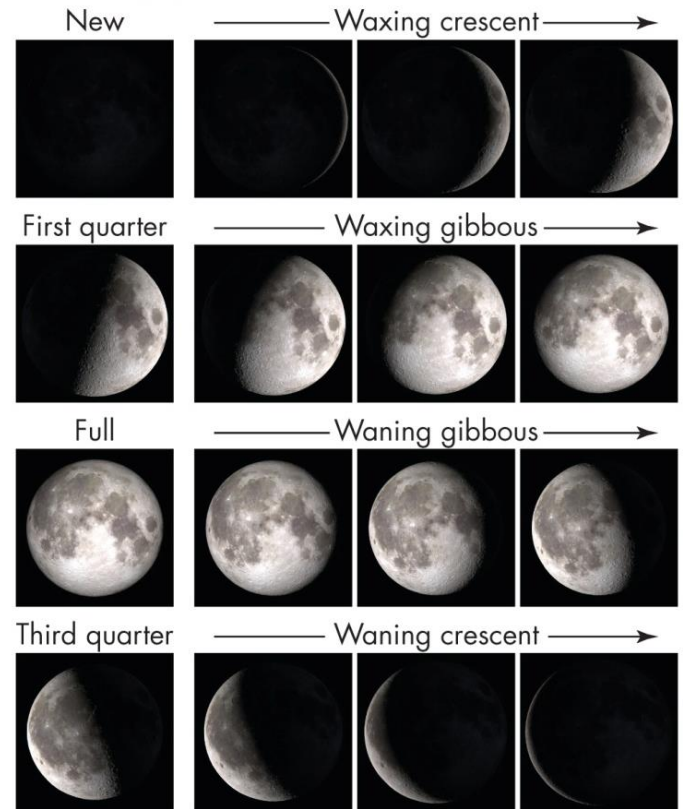
- The _____ moon changes due to changes in the way sunlight angles off of it
 - _____ – progressing towards a full moon
 - What we see gets larger
 - _____ – progressing towards a new moon
 - What we see gets smaller
 - _____ – more than $\frac{1}{2}$ of the moon is illuminated
 - _____ – less than $\frac{1}{2}$ of the moon is illuminated

Moon's Phases

Phase Period



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Appearance of the Moon from Earth

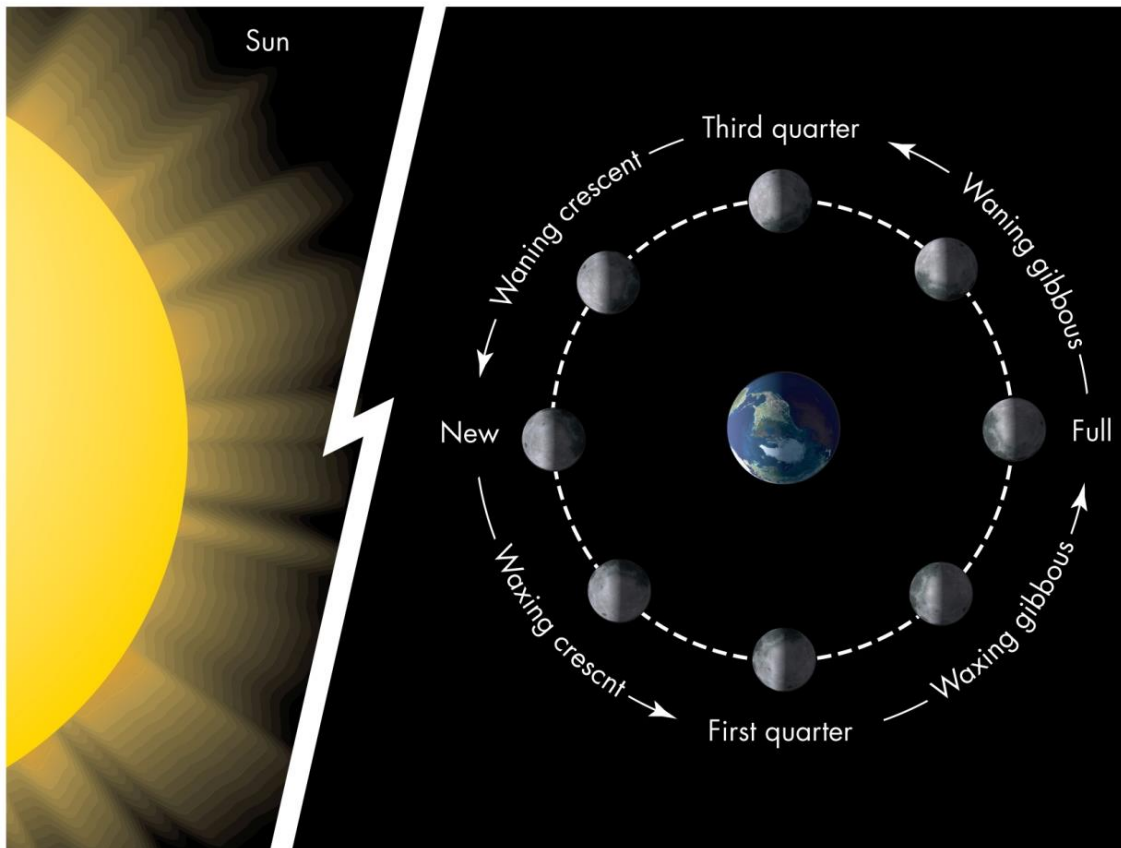
Moon's Phases

Phase Period

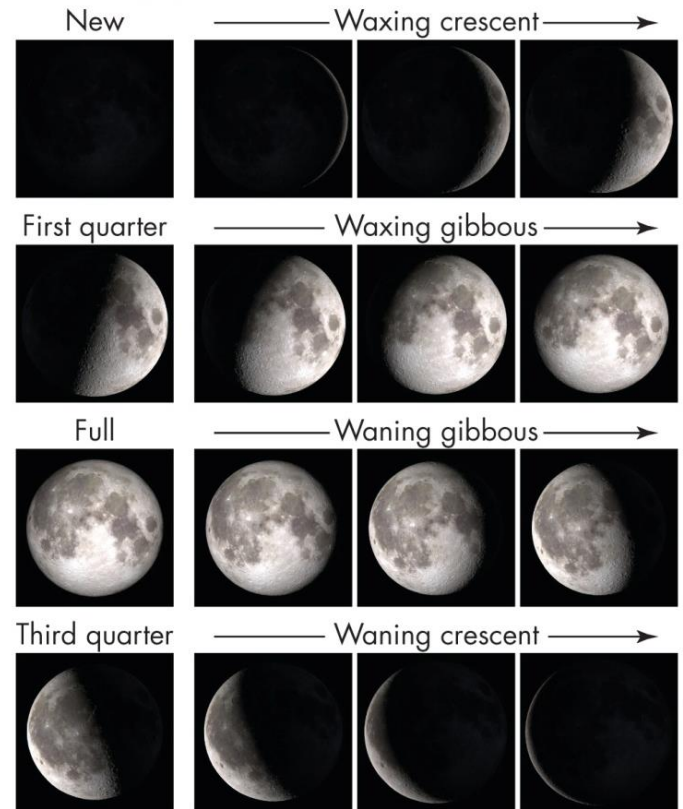
- Fact: _____ of the Moon is always lit by the Sun
- What we see depends on the Moon's _____ throughout its orbit around Earth
- Key points in orbit:
 1. _____ Moon: Moon is directly behind Earth
 2. _____ Moon: Moon is directly in front of Earth
 3. _____ Quarter Moon: the angle from the Sun to Earth to the Moon is 90 degrees

Moon's Phases

Phase Period



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Appearance of the Moon from Earth

Moon's Phases

Phase Period

- The Moon's _____ around Earth causes it to shift _____ against the stars
- This means the Moon will rise about _____ minutes later each day/night
 - Ex: day 1 = 8:00 PM rise, day 2 = 8:50 PM rise, etc.
- It is _____ always directly opposite of the Sun!
- The Moon and Sun will _____ shift from rising and setting at the same time to rising and setting at opposite times

Moon's Phases

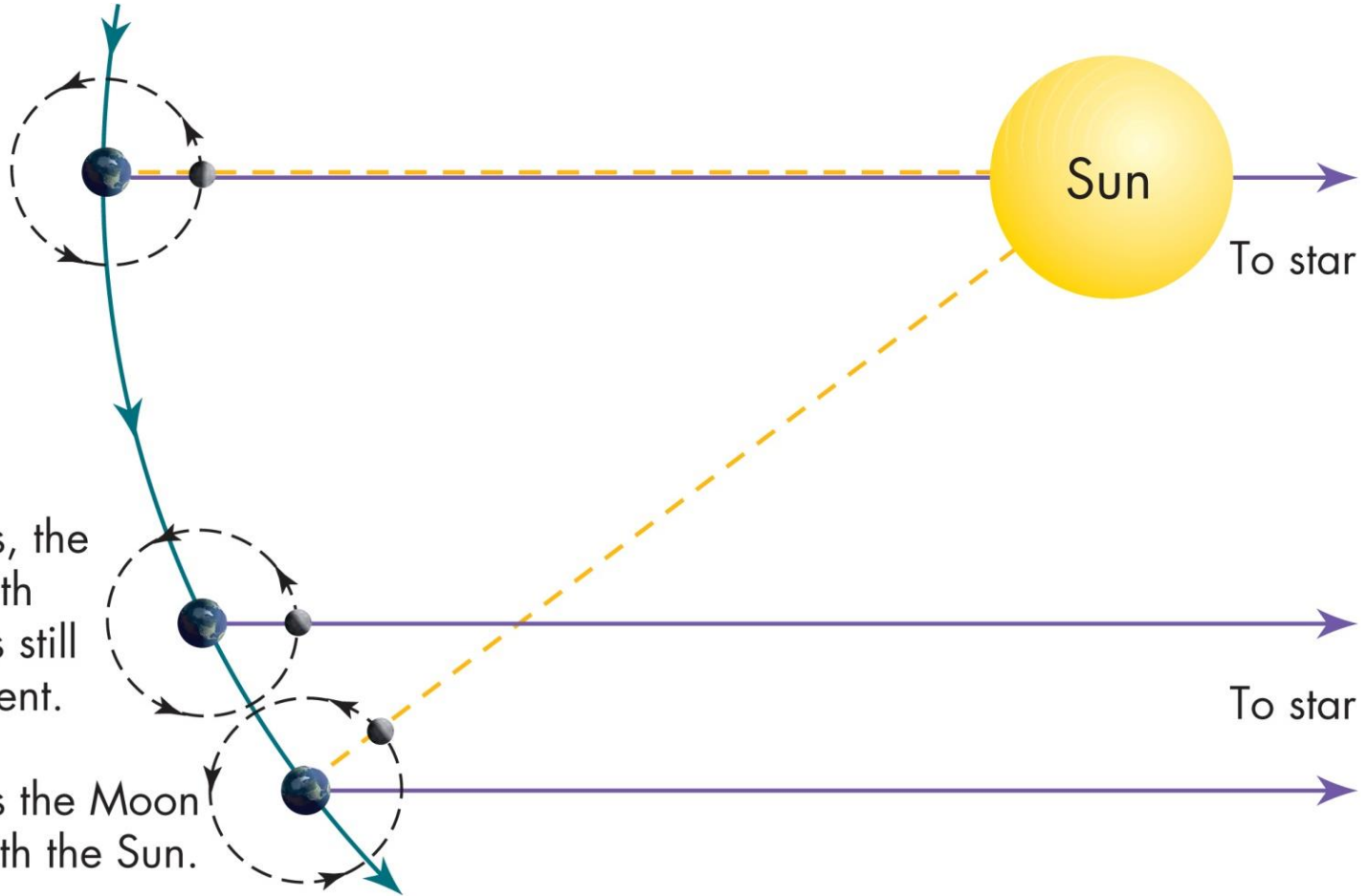
Phase Period

- The _____ it takes for the Moon to orbit Earth is _____ than the time it takes to get through all of the lunar phases
- _____ period = 29.5 days
- _____ **period** = 27.3 days
- The period of time for the Moon to revolve around Earth

Moon's Phases

Phase Period

New Moon is aligned with both the Sun and a star.



After 27.3 days, the Moon aligns with the star, but it is still a waning crescent.

After 29.5 days the Moon again aligns with the Sun.