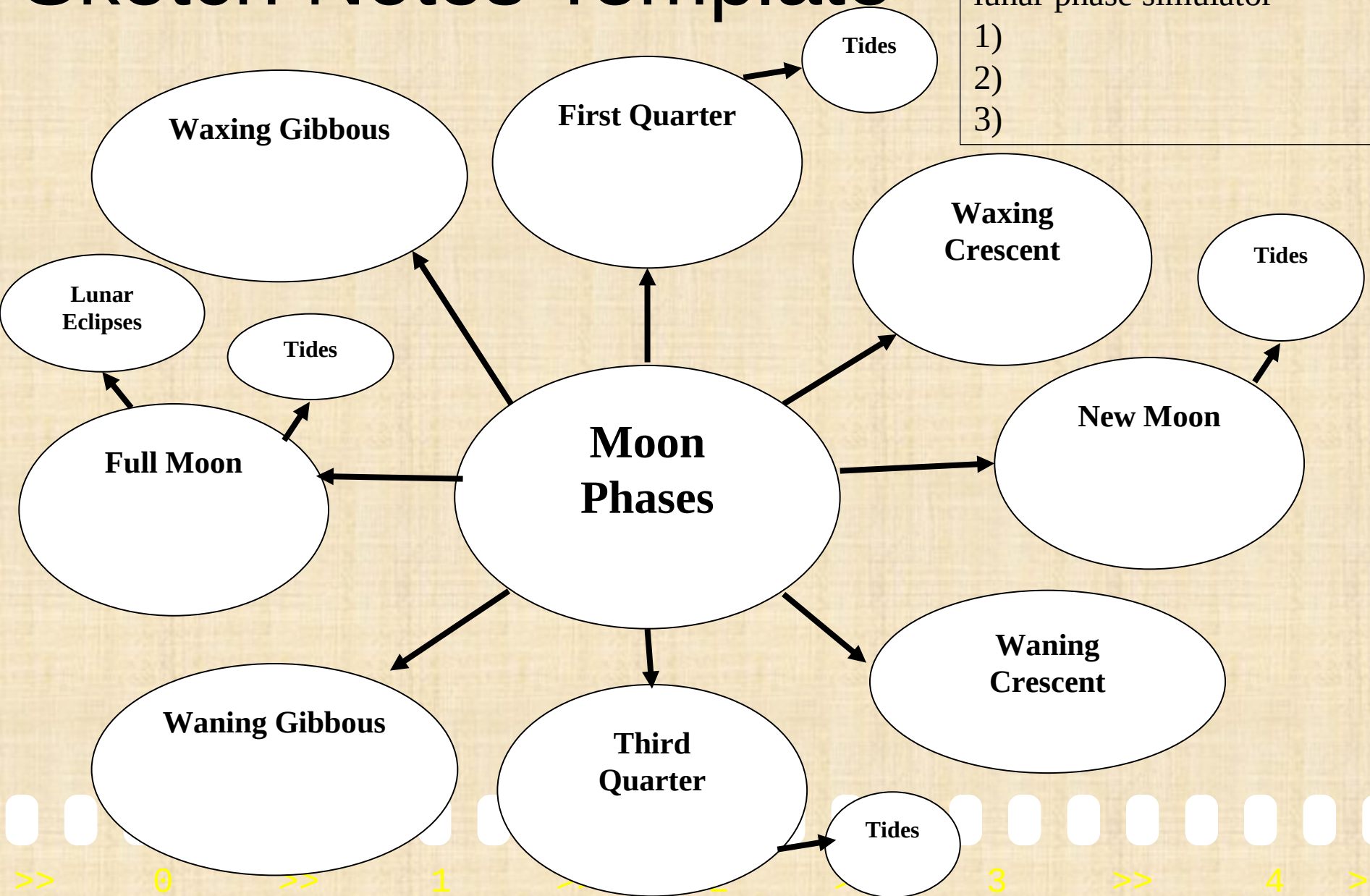
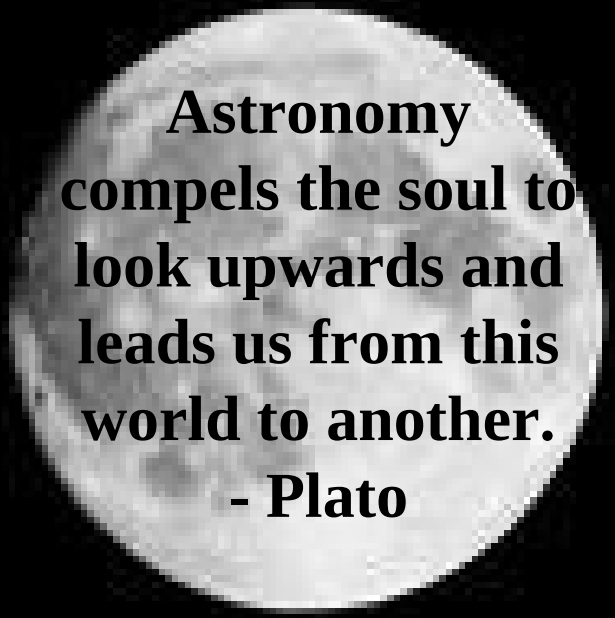
Sketch Notes Template

3 observations based on the lunar phase simulator
1)
2)
3)



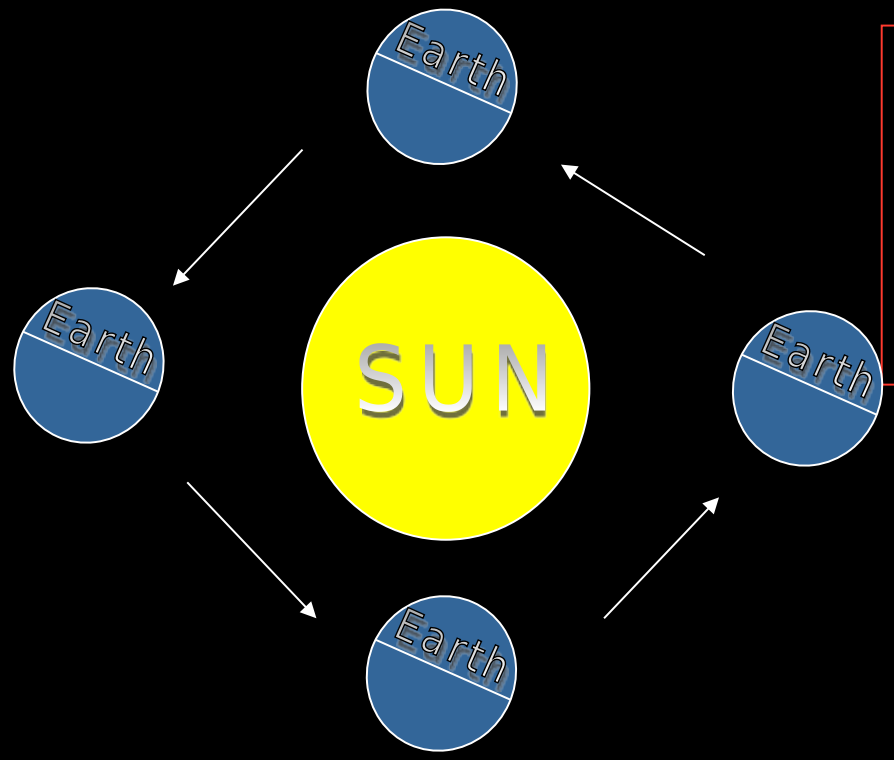
Phases of the Moon

Video: Moon Phases:
https://www.youtube.com/watch?v=f4ZHdzl6ZWg

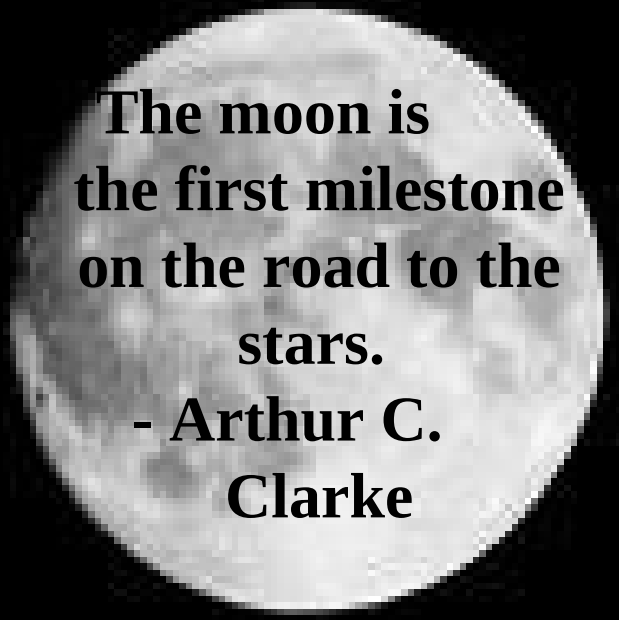


Since humans have walked the earth, we have stared at the changing moon with wonder. But what really causes the appearance of the moon to change so drastically ?

The answer has to do with the position of not just moon but the sun and the earth as well. This is also what causes eclipses and tides.

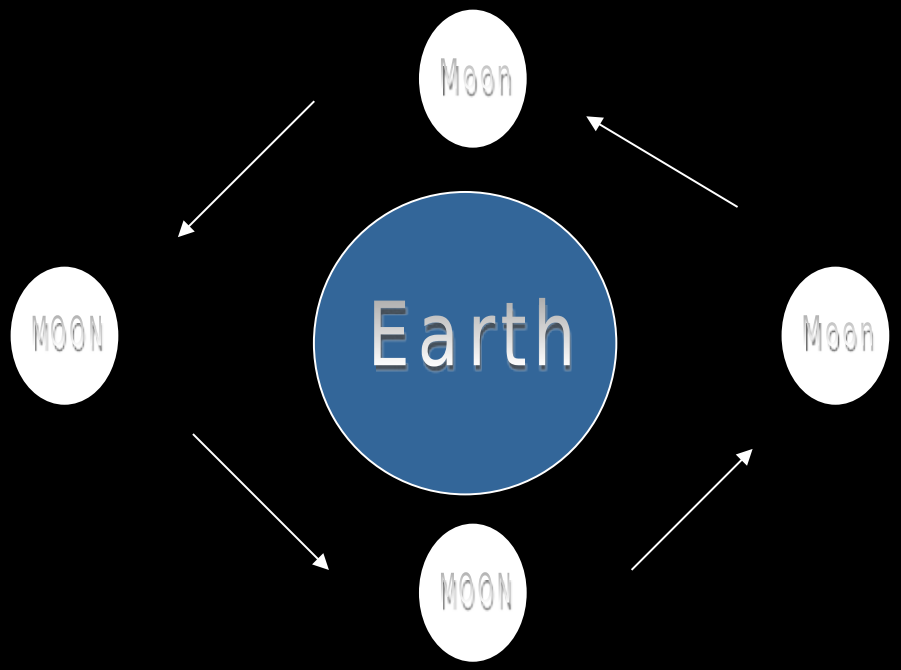


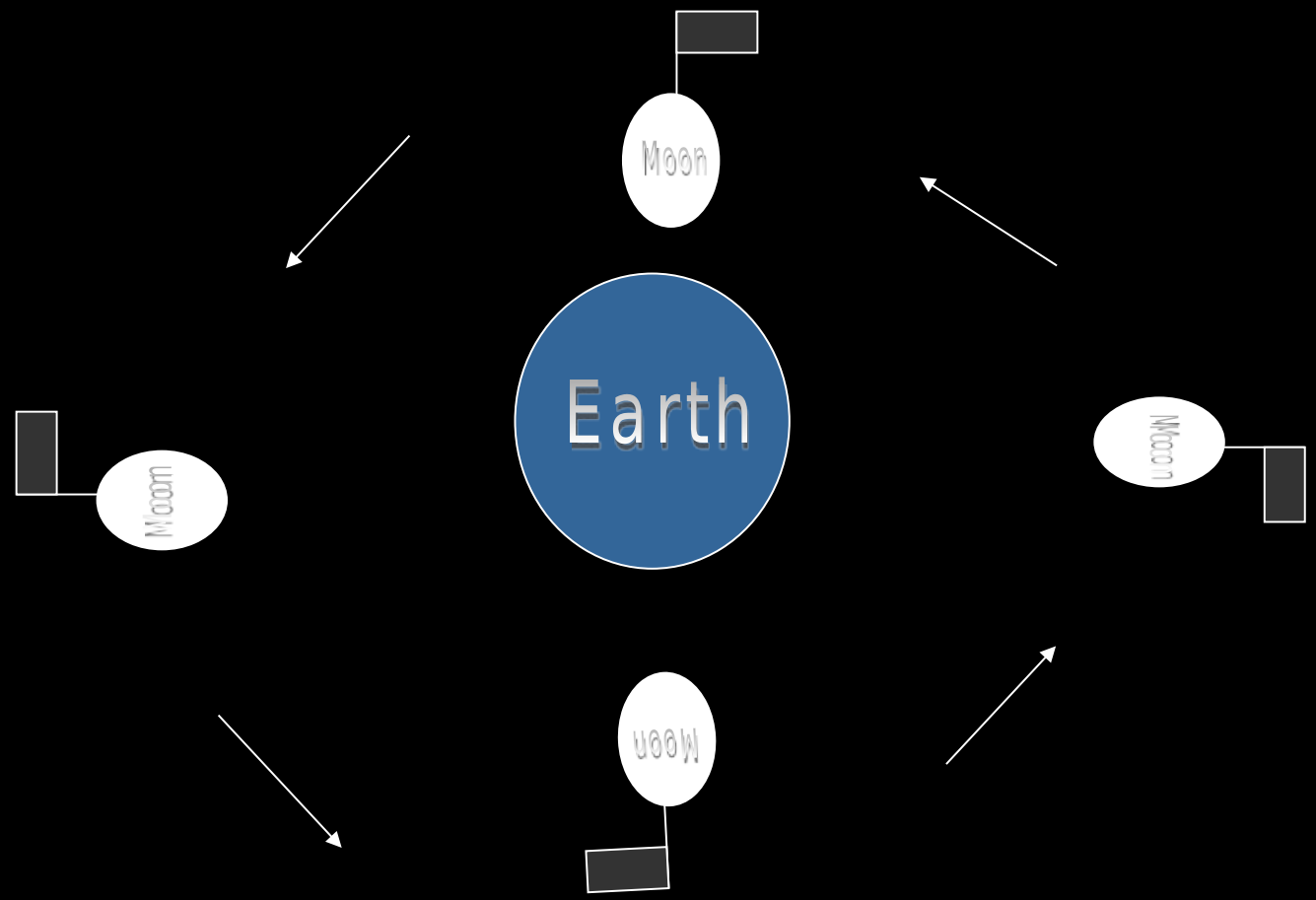
Remember that the sun is the center of our solar system and the Earth is revolving around the sun as the year goes by and rotating on its axis.



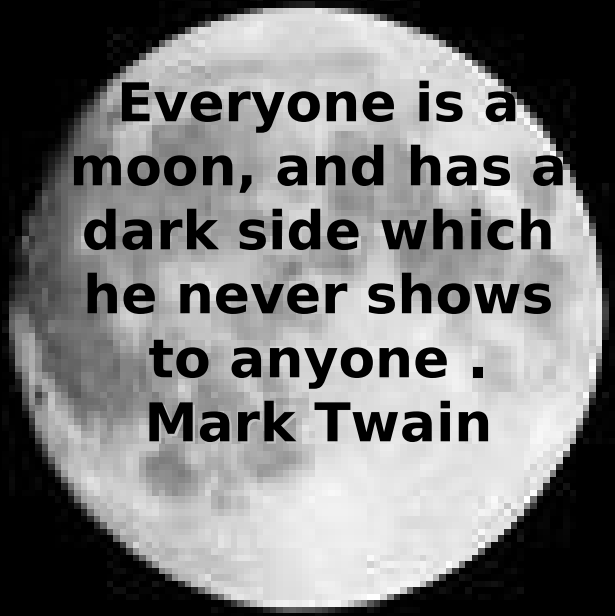
The moon is the first milestone on the road to the stars.
- Arthur C. Clarke

But at the same time, the moon is revolving around the earth and rotating on its own axis.



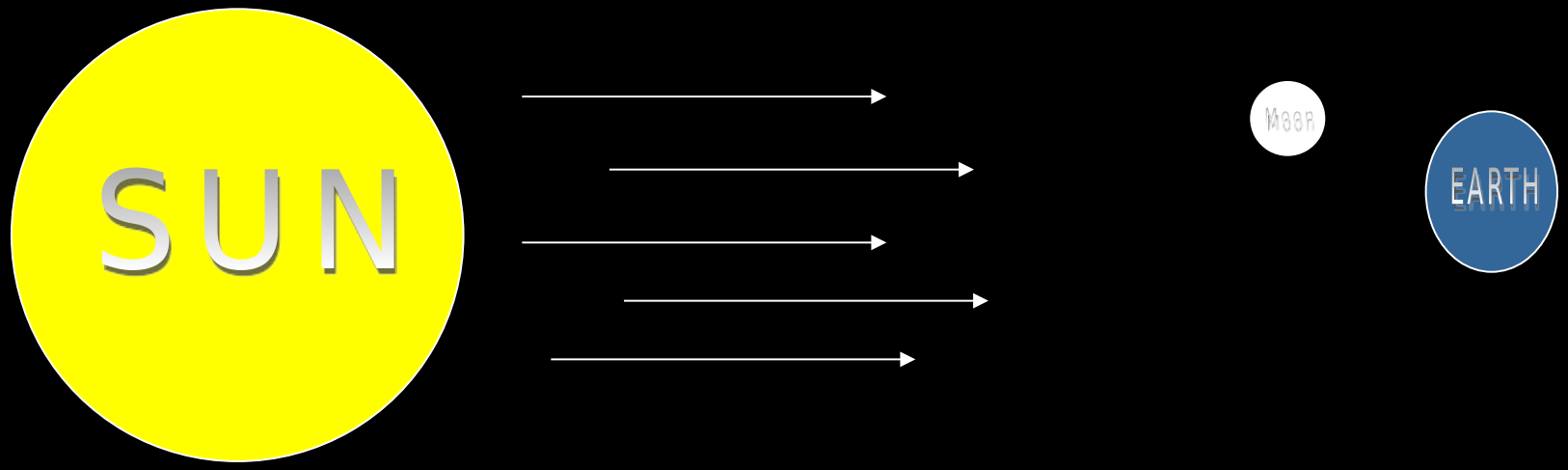


The moon revolves around the earth approximately every 28 days. Its rotation is also approximately 28 days. So the same side of the moon is always facing the earth.

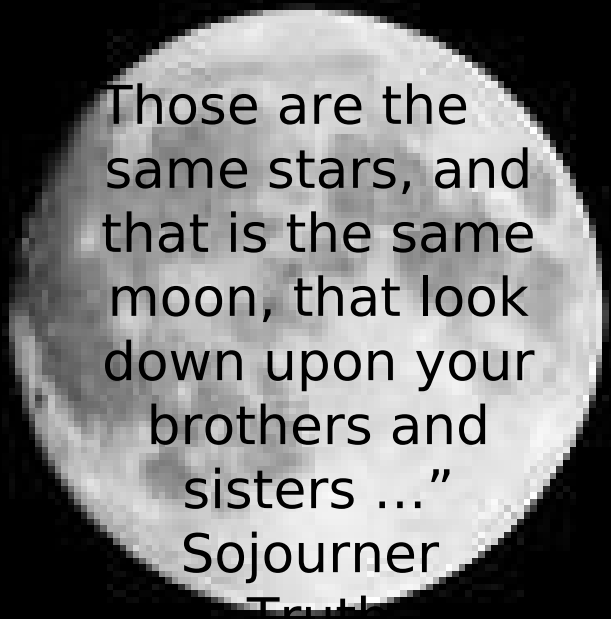


Everyone is a moon, and has a dark side which he never shows to anyone .
Mark Twain

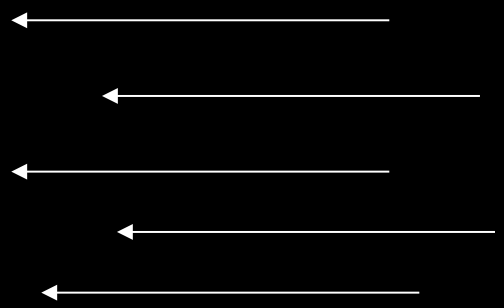
The Moon does not give off its own light but reflects light from the sun. Half of the moon that faces the earth is not always the half that is being lit by the sun.



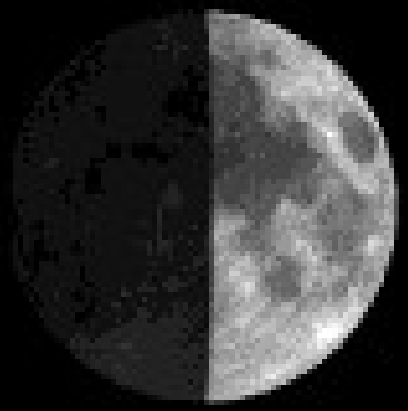
NEW MOON



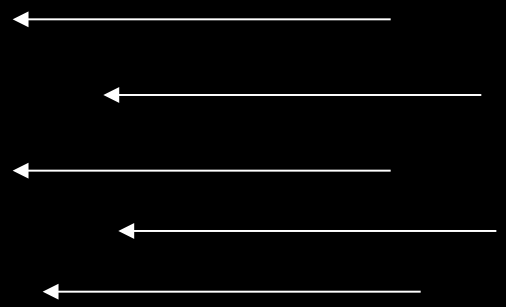
The light from the sun is hitting the side of the moon facing away from the Earth.



FIRST QUARTER MOON

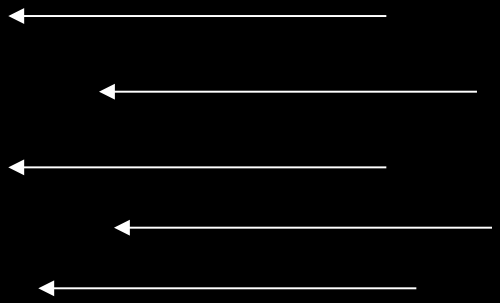


Approximately one week later, we see half of the lighted side of the moon. This is called a first quarter moon.



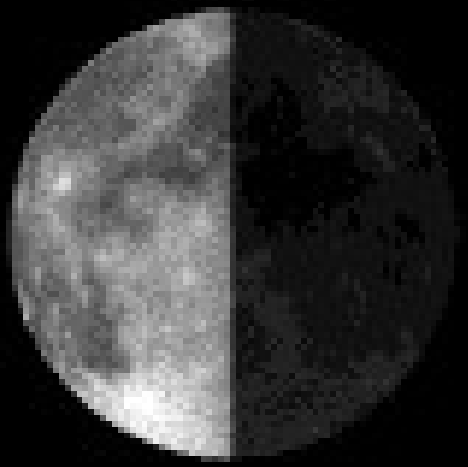
FULL MOON

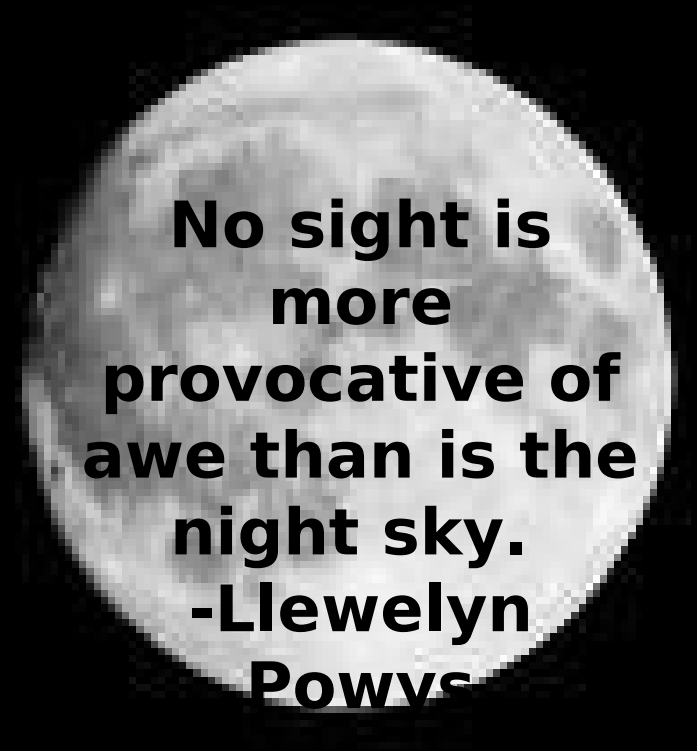
Two weeks after the new moon, a full moon appears. The entire lighted side of the moon is facing earth.



THIRD QUARTER MOON

Three weeks after the new moon, a third quarter moon appears. We can see half of the lighted surface of the moon from earth.





Four weeks after the new moon, another new moon appears and the cycle starts again.

Gibbous means to be humpbacked

First Quarter Moon

Waxing means to grow

Waxing Gibbeous

Waxing Crescent

In between each of the quarter phases are other distinct phases.

Full Moon

New Moon

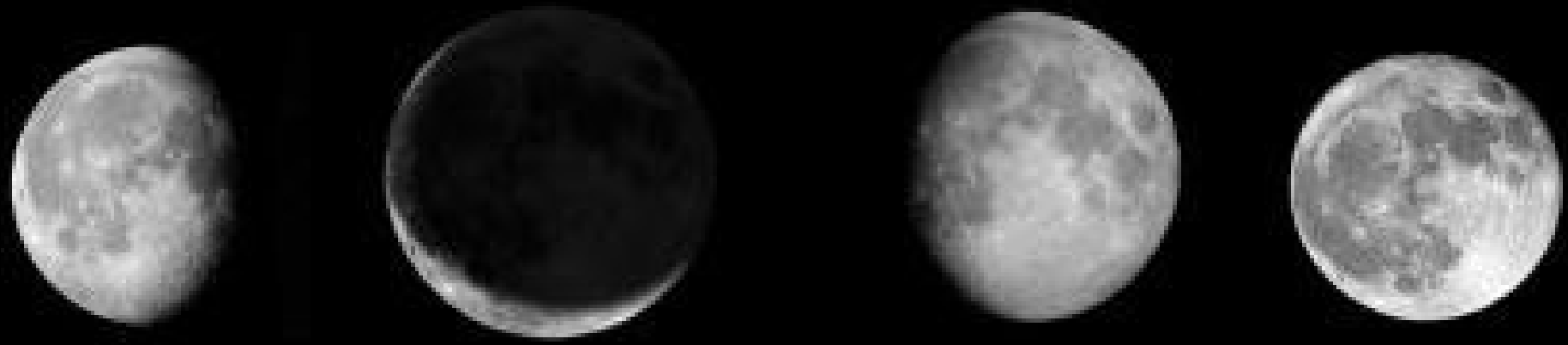
Waning Gibbous

Waning Crescent

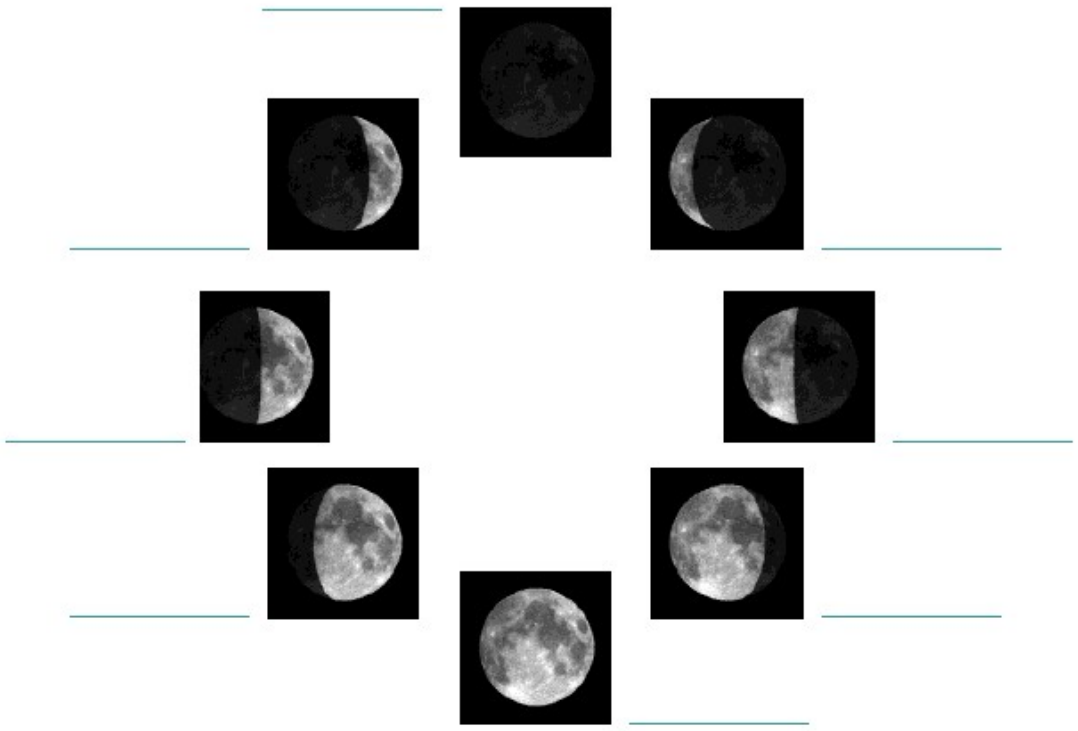
Third Quarter Moon

Waning means to decrease

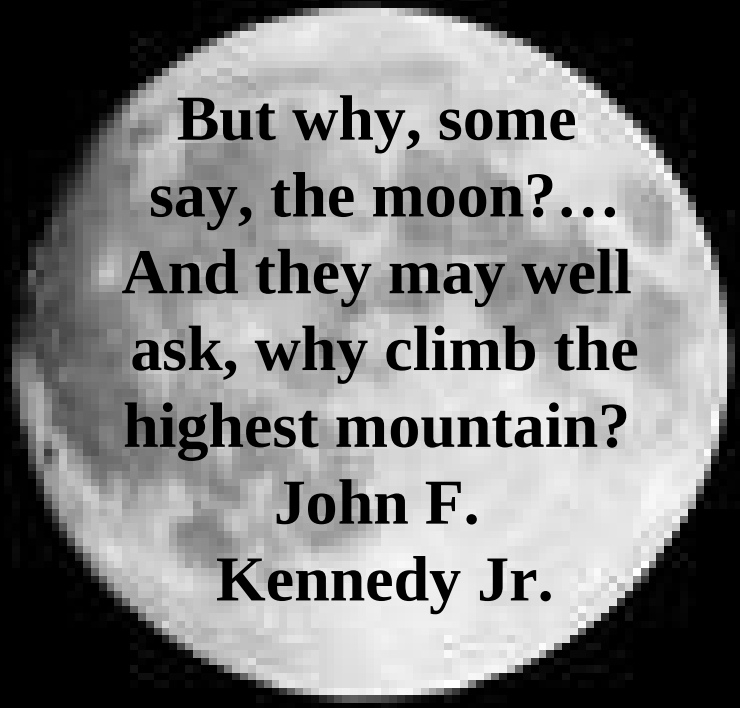
Can you name each phase when they aren't in order?



Can you name each phase when they are in order?



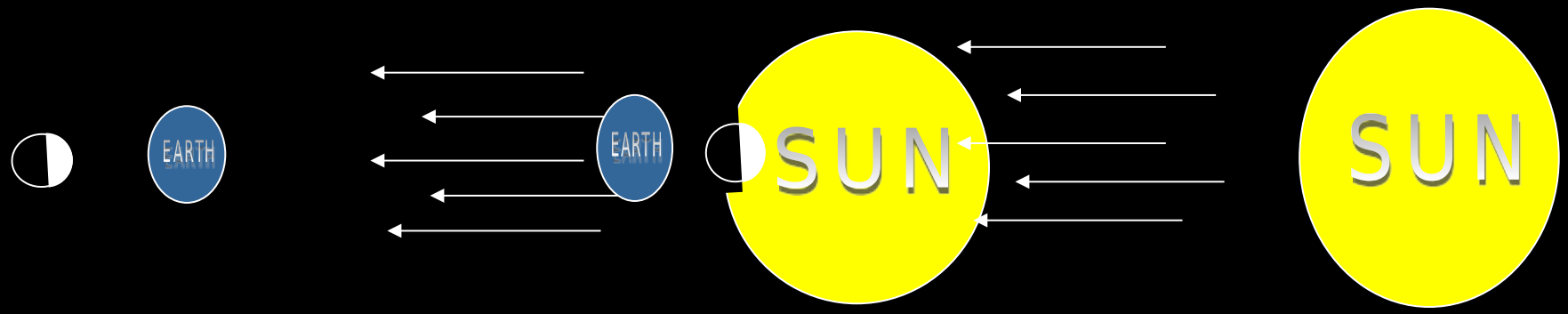
Moon Phases and Tides



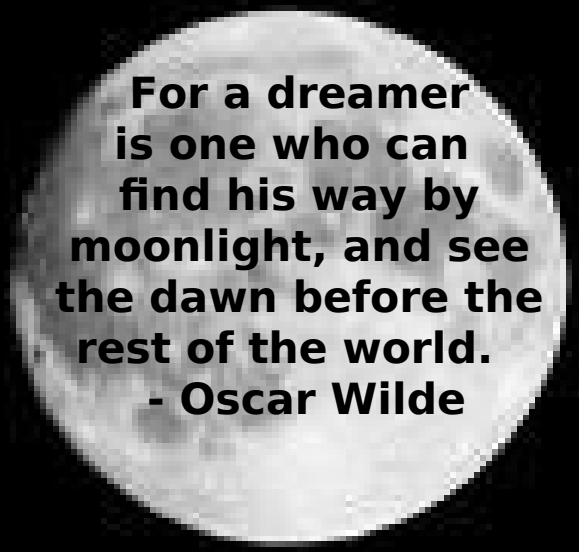
- **There are two high tides and two low tides each day.**
- **Tides are caused by the pull of both the sun and the moon on the Earth.**
- **Changes in the positions of the Earth, sun, and moon affect the height of the tides throughout the month.**

SPRING TIDE

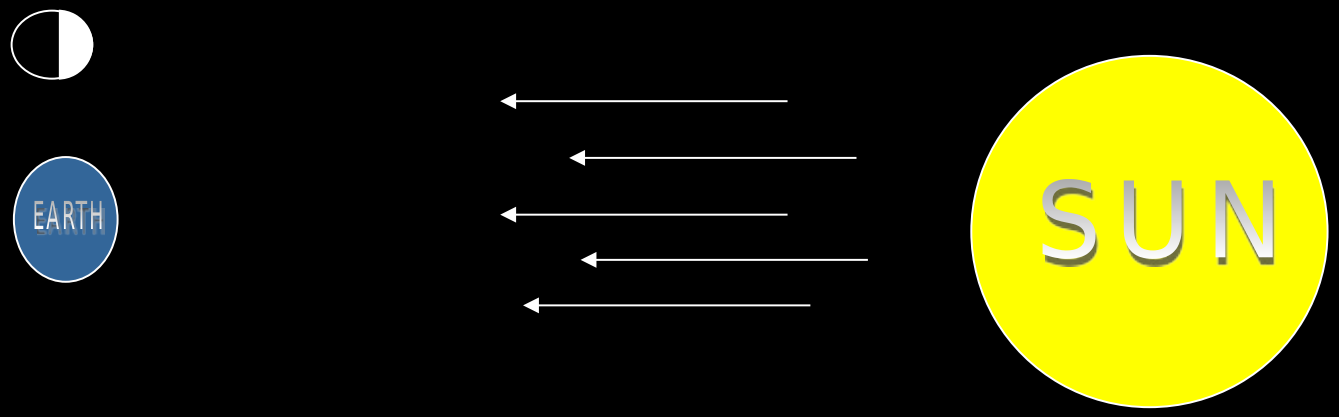
- Caused when the earth, moon, and sun are in a straight line
- The combination of the gravitational pull of the sun and moon cause the ocean of the Earth to Bulge.
- Spring tides occur during new and full moons.
- Spring tides have the greatest range between high and low tides. Really high, high tides and really low, low tides.
- Named from an Old English term meaning to jump -- NOT FROM THE SEASON



NEAP TIDE



- When the earth, moon, and sun are at a right angle
- Occur during first and third quarter moons.
- Produce the least range between high and low tide.



Video on tides

https://youtu.be/tcGEjzt_4is

ECLIPSES

- A **solar eclipse** is when an object in space casts a shadow from the sun on another object in space.
- A **lunar eclipse** occurs when the Earth blocks the sunlight from reaching the moon.

Question: Why do lunar eclipses occur only during full moons?

Answer: That is the only time that the earth comes between the moon and sun.

Question: Why don't we have a lunar eclipse every full moon?

Answer: The tilt of the moon's orbit is 5° different than the earth

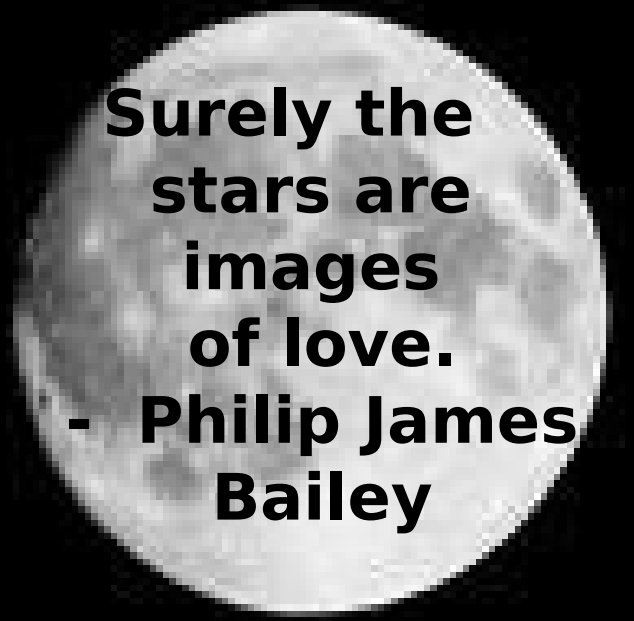
Question: Why does the full moon appear to be red during certain times of the year?

Answer: The light from the sun gets bent as it passes through our atmosphere causing it to appear red.

SOLAR ECLIPSES

Occurs when the moon passes between the Earth and sun, blocking the sunlight from reaching Earth.

Total solar eclipses are visible on Earth for only a few hundred miles wide. A lunar eclipse visible for at least half the earth.



VIDEO on Eclipses

https://
www.youtube.com/watch?
v=rVE8PFYlwSM

THE END!!!!