



Space: Notes

In this lesson...

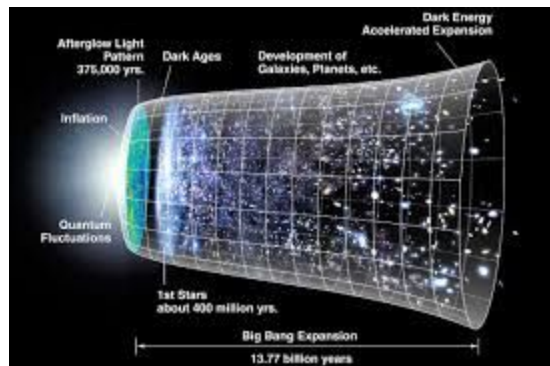
- Space
- Big Bang Theory
- Solar System
- Eclipses
- Tides
- Comets/Asteroids

Space:

- **Outer Space**
- The **world that exists beyond the one we live in (Earth)**
- Consists of **low density, particles, radiation, magnetic fields, and cosmic rays**

Big Bang Theory:

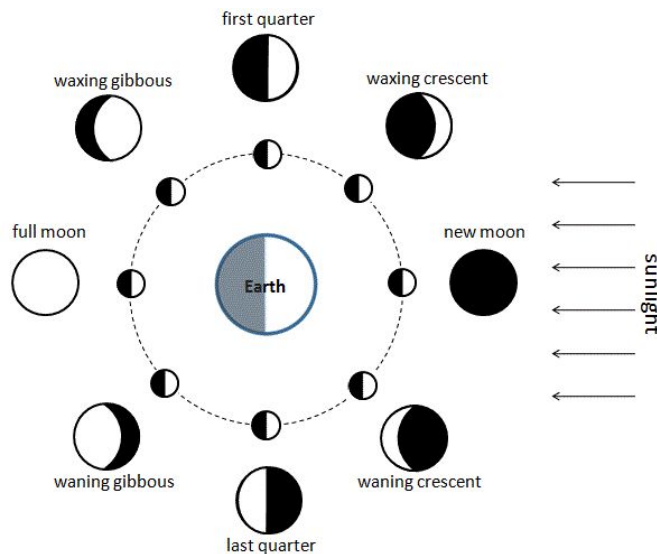
- The leading explanation of **how the universe came to be**
- Everything **started out small and then expanded to almost what it is today in a fraction of a second**
- This all began around **13.8 billion years ago**



Big Bang Theory (Derived from Pixabay)

Solar System:

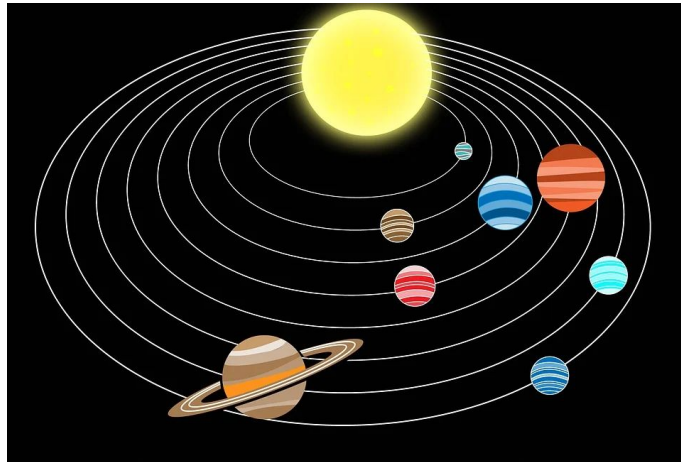
- System in which **objects in space orbit around the sun**
- **We are on Earth, which is a planet, which is part of a galaxy (Milky Way), which is part of a universe, which is part of etc.**
- Sun:
 - The star at the **center of our solar system**
 - It is an almost **perfect sphere of hot plasma**
 - It has a **magnetic field around it**
 - It is the **most important energy source in the solar system**
- Moon:
 - The moon is a **natural satellite to the earth**
 - Many **other planets besides earth have moons**
 - The moon is **made of oxygen, silicon, magnesium, iron, calcium, and aluminum**
 - You can see the moon glowing almost every night (not when there is a “new moon”). The moon does not actually provide light itself, the glow of the moon is the sun shining through.
 - Humans have visited the moon, the first one to successfully reach the moon was Neil Armstrong in 1969
 - The moon has phases:



Moon phases (Derived from Wikipedia)

- Planets:

- Our solar system has planets: **a large object in the solar system, possibly with life on it (Like Earth!)**
- There are **8 planets that orbit around the sun.**
- A mnemonic you can use to remember the planet's names and their order from closest to farthest from the sun is:
 - **My Very Educated Mother Just Served Us Nine Pizzas**
- The order of the planets closest to the Sun to farthest is: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and finally Neptune.
- The largest planet in the solar system is Jupiter, then Saturn, Uranus, Neptune, Earth, Venus, Mars with the smallest being Mercury.
- **Pluto used to be the farthest and most smallest planet in our solar system, but then it was disregarded as a planet later by scientists**



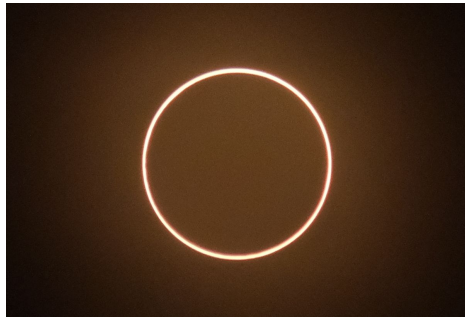
Planets (Derived from Pixabay)

- Stars:

- **Object in space that is a luminous spheroid held together by gravity**
- Shines because of thermonuclear (hot nuclear) fusion of hydrogen and its helium center
- Stars are a **part of a constellation** (group of stars)
- There are about 1,000,000,000,000,000,000 stars in space!

Eclipses:

- **Solar Eclipse:**
 - **When part of the Earth has a shadow of the moon in front of the sun cast upon it**
 - Everything on earth is dark
 - Sun, Moon, and Earth align together



Solar Eclipse (Derived from Wikimedia Commons)

- **Lunar Eclipse:**
 - **When the moon appears orange from Earth**
 - The sun's light through the Earth reaches the moon, causing it to have an orange color as the moon moves closer to the Earth's shadow



Lunar Eclipse (Derived from wikimedia commons)

Tides:

- The **rise and fall of sea levels**
- Tides happen because of gravitational pull from the moon and sun, and the rotation of the earth
- They can be **high and low**
- When you go to the beach you can see this in action. You might arrive at the beach during low tide, but if you look at the sand, you can see the mark where the high tide ended.



Low tide (Derived from national park service)

Comets/Asteroids:

- **Comets are made of frozen gasses, rocks, and dust**
- When frozen, they are the size of small towns
- They orbit the sun
- When comets come close to the sun, they heat up and start producing dust and gasses that form a glowing head that is larger than most planets
- Most comets can only be seen with a telescope



Halley's Comet (Derived from NASA on flickr)

- **Asteroids are minor planets of the solar system**
- Rocky, airless remnants of the early formation of the solar system nearly 4.6 billion years ago
- Orbit the sun between Mars and Jupiter: Asteroid Belt



Asteroid (Derived from NASA Jet Propulsion Laboratory)