

# Space



**Celestial bodies:** Anything in space (sun, moon, stars, planets)

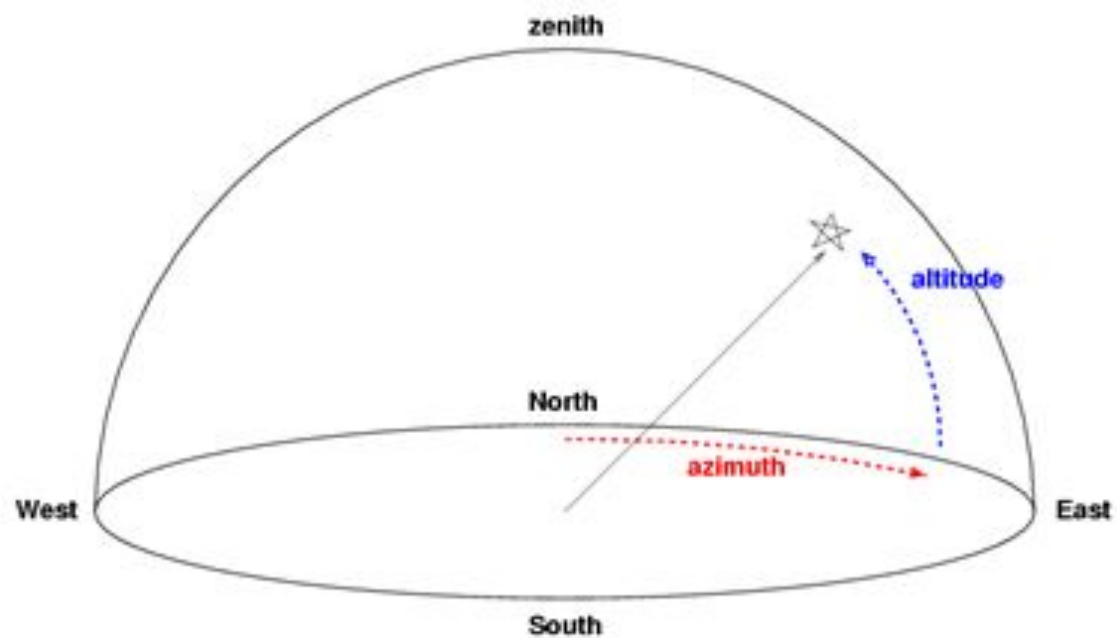
**Constellations:** groupings of stars form shapes. Depending on your **Frame of Reference** (where you are observing them from) they may be facing different directions.



Terrestrial (inner planets)	Jovian (outer planets)
Mercury, Venus, Earth, Mars	Jupiter, Saturn, Uranus, Neptune
Rocky	Gaseous
Small, dense, few moons	Large, many moons
Shorter revolutions around sun	Long revolutions around sun

**Azimuth** - How far it is from North. Put first, Measured with a compass

**Altitude** - How high in the sky it is. Put second. Measured with an astrolabe



**Earth – Centered** Geocentric. Earth as centre of universe (old model)

**Sun- Centered** Heliocentric. Sun as centre of universe (current model )



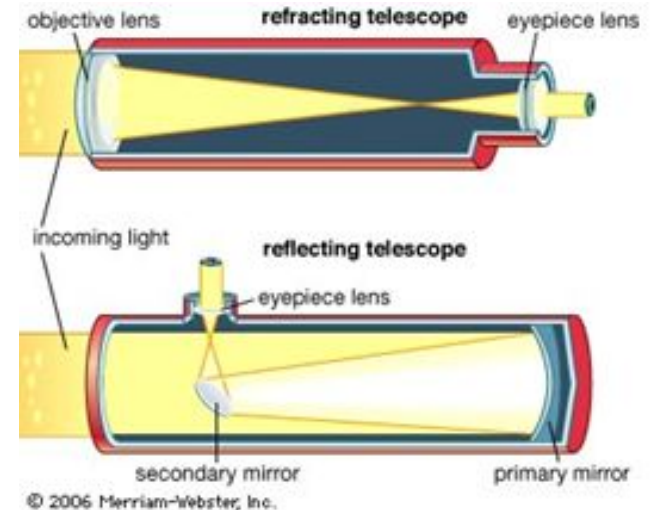
**Telescopes:** used to magnify objects at great distance.

Objective lens- closer to the object

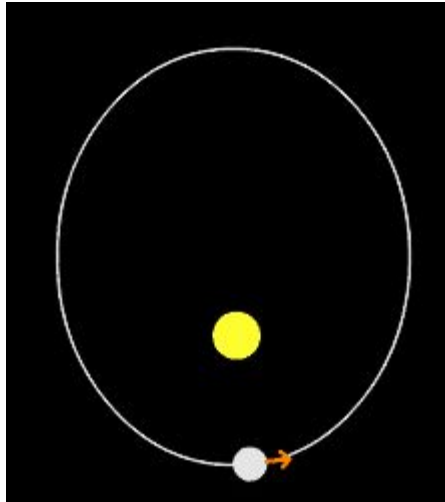
Ocular lens- (aka eyepiece) the lens you look through.

Refractor: have a lens for objective

Reflecting- have objective mirrors.

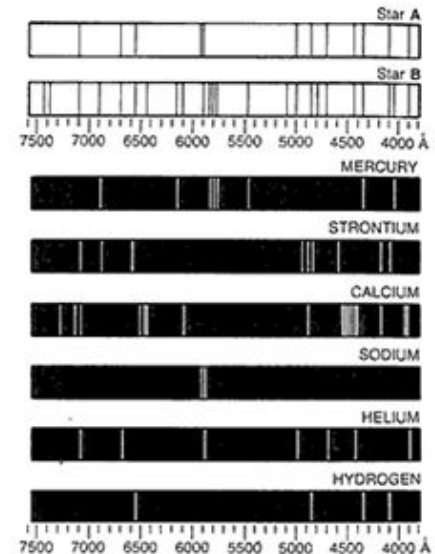


**Universal gravitation:** explains planets elliptical orbits. (planets want to move in a straight line)





**Spectral lines:** when you pass light through a prism, it breaks into a spectrum of colours. A **Spectroscope** is a device that can help you view this spectrum and decipher what element the light is made up of.



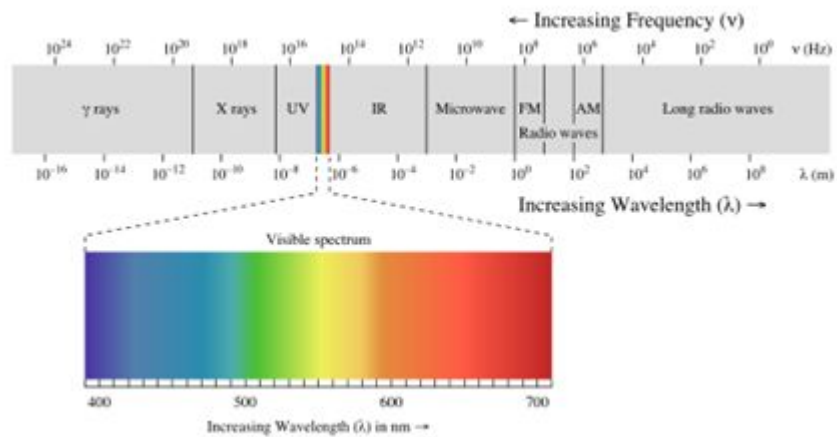
**Doppler effect:** Sound waves, and light waves are compressed or elongated as you move towards, or away from something.

**Red shift** - elongated. Moving away towards

**Blue shift** - compressed. Moving

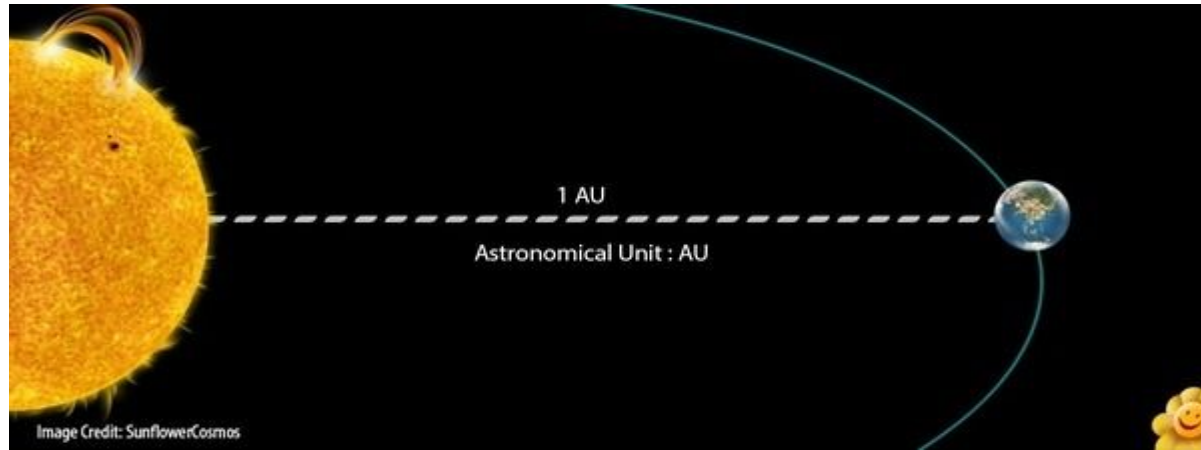


**Interferometry**- combining telescopes to create an equivalent telescope the size of the distance between the two allows you to see in more detail.



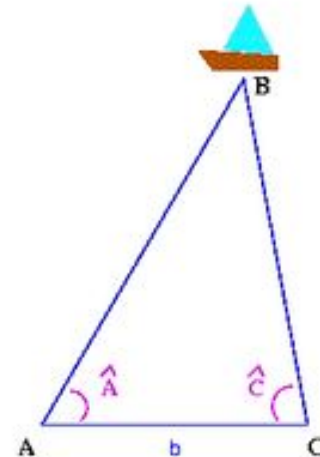
**Adaptive optics:** technology compensating for fuzzy effect of Earth's atmosphere, could also send up a space telescope.


**Astronomical unit=** distance from Earth to the Sun (150 million km).



**Triangulation**- (aka parallax technique) method to measure the distance to something. You need a scale, longer the baseline= more exact measurements

Use similar triangles!





**Rockets:** All contain combustible material, a payload (what it is carrying), and a tube (holds the combustible material)

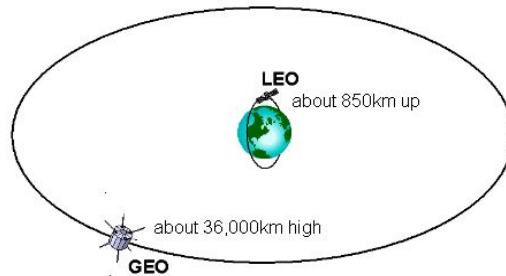
**Staged rockets:** rockets that can come apart in pieces. Useful for getting rid of extra weight once the fuel it was holding is used up

**Hubble:** a space telescope. It's an artificial satellite (man-made). On the other hand, a natural satellite would be the moon.

**Low Earth orbit** – placed 200-800 km high. They can complete an orbit of Earth in 1.5h. Good for telephone calls- less lag in conversation as it doesn't have to travel as far.

**Geosynchronous orbit** – placed 36 000km above Earth's orbit. They move with the Earth (remain stationary over one place). Good for TV networks.

LEO and GEO orbit elevations



## Space Effects

Bones: Weakened gravity causes bones to lengthen. Astronauts will usually “grow” a few inches taller and shows signs of bone weakening

Heart: Blood will pool in the extremities and the heart does not have to work as hard to pump it

Muscles: Do not get used as often and will weaken/shrink

Brain: Astronauts may shows struggle with isolation

Eyes: Weak gravity cause the eyes to bulge and put pressure on the optic nerve, weakening the eyes

