

Sky Science Study Guide

This is an amazing map of the galaxy!

http://joshworth.com/dev/pixelspace/pixelspace_solarsystem.html?a

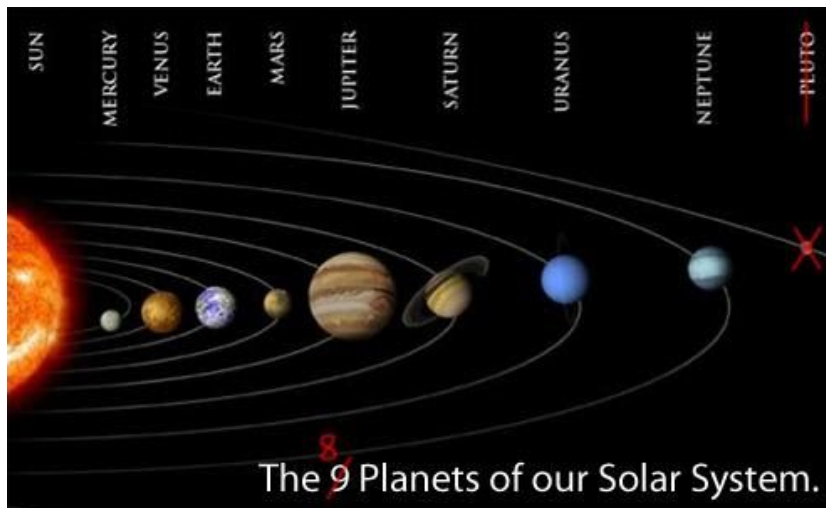
Things in space that **emit (give off) light** – sun and stars

Things in space that **reflect light** – moons, planets, comets, asteroids

The planets in our solar system are broken up into rock planets and gas planets (you will need to know the correct order as well!) My Very Educated Mother Just Served Us Nachos

Rock Planets – Mercury, Venus, Earth, Mars

Gas Planets – Jupiter, Saturn, Uranus, Neptune



What Is a Planet?

- Orbits the sun
- Is large enough to have become round due to the force of its own gravity
- It has to dominate the neighbourhood around its orbit (most gravity)

Our Solar System also contains asteroids, comets, moons, dust, gas and some minor planets.

They are [140 moons](#) that orbit the eight planets in the solar system. The moons rather than the planets don't orbit the sun they orbit the planet they are nearest too.

The planet that used to be considered a planet is **Pluto** which is now considered a **dwarf planet** because of its size and the fact that it doesn't have the most gravity in its orbit

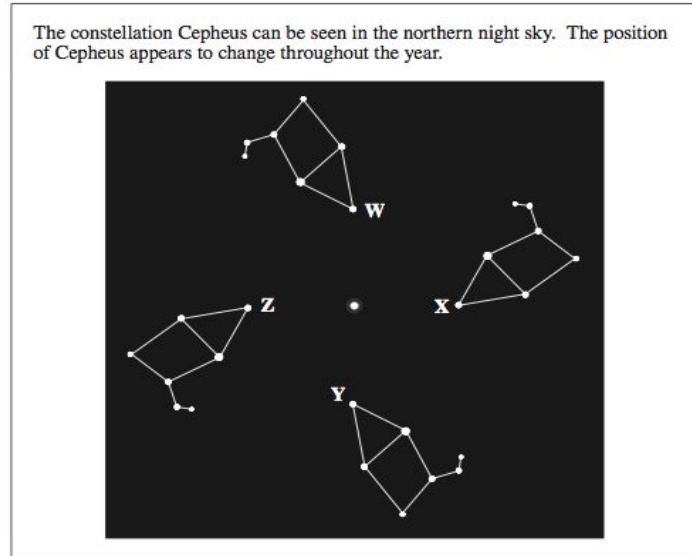
The only other planet that has seasons **LIKE Earth is MARS!** Why? Because it is tilted on an axis similar to Earth's

Constellations

Constellations seem to move across the sky because the earth rotates on its axis. The constellations appear to move from east to west, moving "backwards" from the real rotation of the earth.

- The Ancient Greeks used their imagination to name star patterns based on mythical beings and hero's
- Stars look different from season to season – what is the star that they seem to rotate around and acts as a 'pointer star' because we can see it all year round in the Northern Hemisphere?
 - o **Polaris (the North Star) Which means circumpolar!**

- Late summer or winter evenings may allow you to see the Milky Way—our galaxy of about 200 billion stars that looks like a “river” or “band” of stars in the night sky.
- **How well we can see stars depends on their magnitude or brightness**



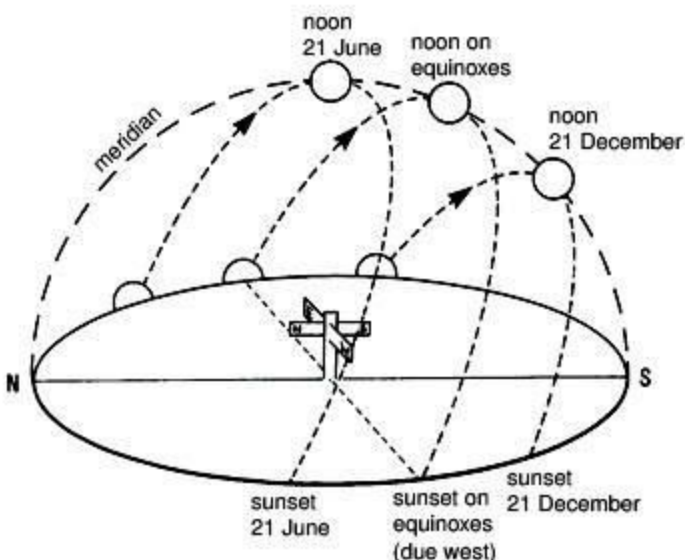
If the position marked W on the diagram above represents the constellation Cepheus in June, then the position marked Y represents the constellation Cepheus in

- A. March
- B. May
- C. September
- D. December

Sun Safety

Eye medical doctors (ophthalmologists) caution us that too much exposure to UV light raises the risks of eye diseases, including [cataract](#), [macular degeneration](#), [growths on the eye](#), and [cancer](#).

Reason for the seasons



The reason we have seasons is because of earth's tilt. In summer, the northern hemisphere is facing towards the sun. In winter the northern hemisphere is facing away from the sun.

The sun is the highest in the sky in June (longest day June 21) and lowest in the sky in December (shortest day December 21)

The sun rises in the East and sets in the West

The Sun's path changes with the seasons

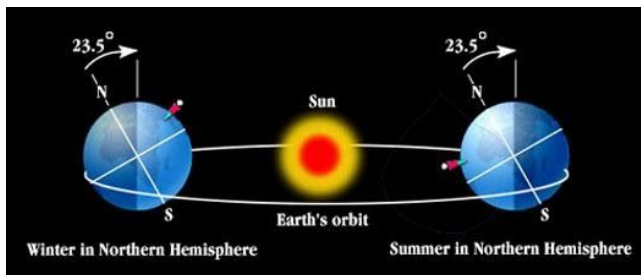
***Our shadows move from West to East (opposite from the sun) and grow from long in the morning to short in the afternoon.**

Shadow stick and sundials are also used to track the movements of the sun.

Equinoxes - March 21 and September 21 both have equal amount of daylight and night time

Solstice – June 21 and December 21 have the longest (June) and shortest (Dec) days and shortest (June) longest (Dec) nights

What other planet has seasons like earth? MARS! (because of its axis or tilt)



The Rotations

***It takes the Earth about 24 hours (every 6 hours the earth complete a ¼ turn) to finish one complete rotation.** The second important movement that affects the Earth is its revolution around the Sun. **One revolution takes 365 ¼ (365.25) days, or one year.** Acting together, these two movements create variations in temperature, weather, and in the seasons

Phases of the Moon



As shown, the **new moon** occurs when the moon is positioned *between* the earth and sun. At a **full moon**, the earth, moon, and sun are in approximate alignment, just as the new moon, but the moon is on the opposite side of the earth.

The **first quarter** and **third quarter** moons (both often called a "**half**

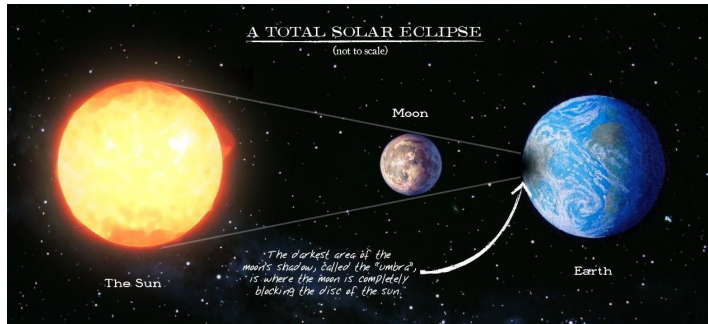
moon"), happen when the moon is at a 90 degree angle to the earth and sun.

Crescent refers to the phases where the moon is *less* than half illuminated. The word *gibbous* refers to phases where the moon is *more* than half illuminated. *Waxing* essentially means "growing" or expanding in illumination. *Waning* means "shrinking" or decreasing.

The moons cycle occurs approximately once every month (12 times a year)

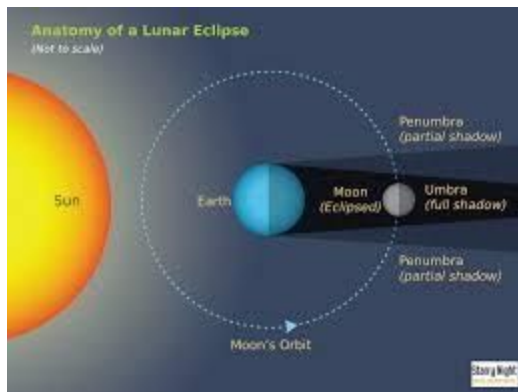
***Neil Armstrong walked on in the moon in 1969**

Solar Eclipse



The Moon is directly between the sun and earth and casts a shadow on the earth (moon appears black with a red ring or glow around it)

Lunar Eclipse



The bright full **moon** turn a reddish hue during a **total lunar eclipse**. Lunar eclipses are safe to watch with the naked eye and happen when the earth is directly between the sun and moon. The earth casts a shadow on the moon.

The **International Space Station (ISS)** is important because astronauts complete important scientific experiments in micro gravity. To complete experiments, scientists need to understand what **variables** need to be kept the same in order to produce accurate results.

Paul wanted to investigate the movement of the Sun over the course of a day. He used a sundial to measure the length of a shadow once every hour from sunrise to sunset.

Which of the following variables must be kept the same in order to obtain reliable data from this activity?

A Type of sundial and location of sundial