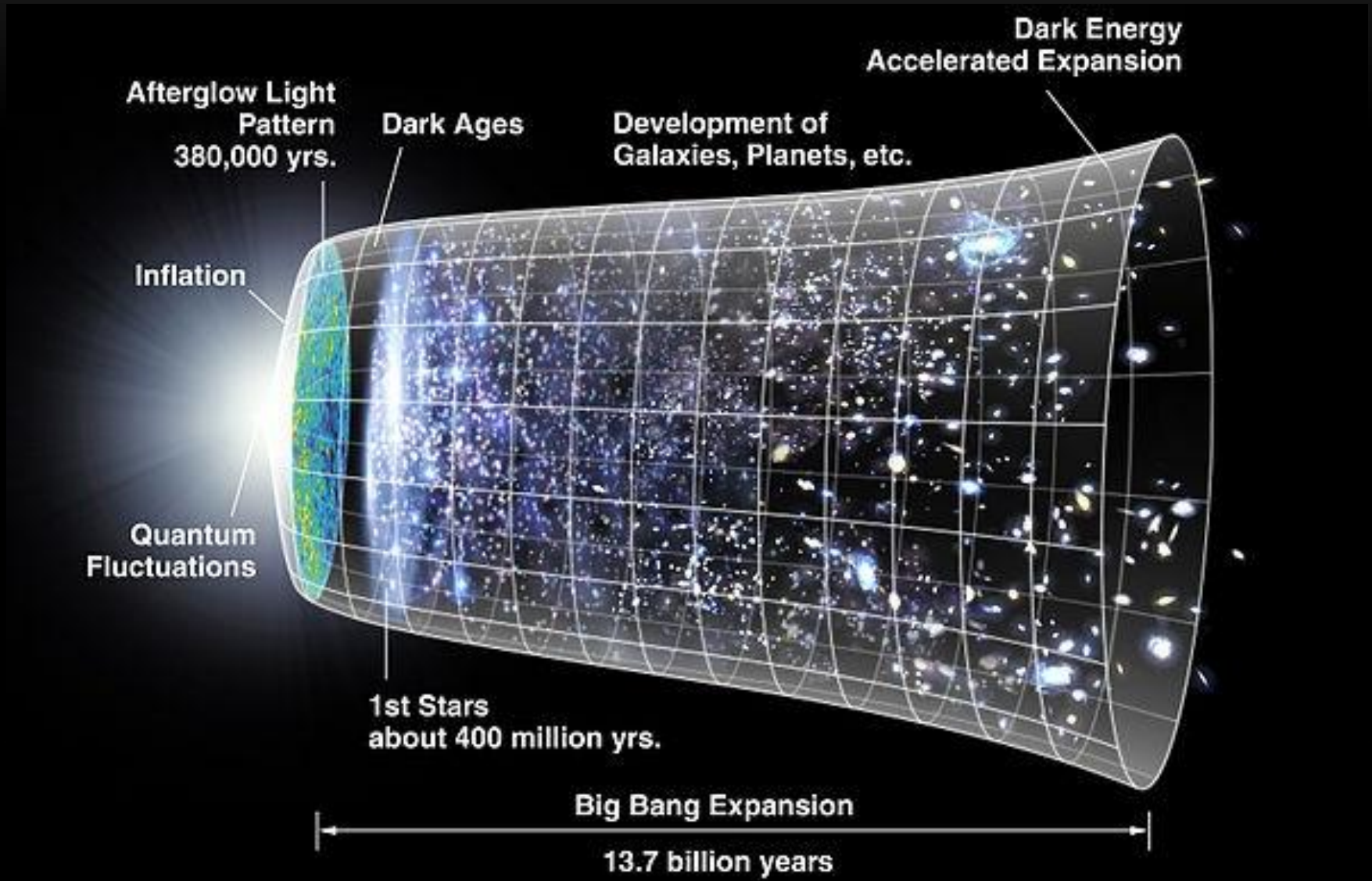
ASTRONOMY

S6E1 a, b, c, d, e, f

S6E2 a, b, c,

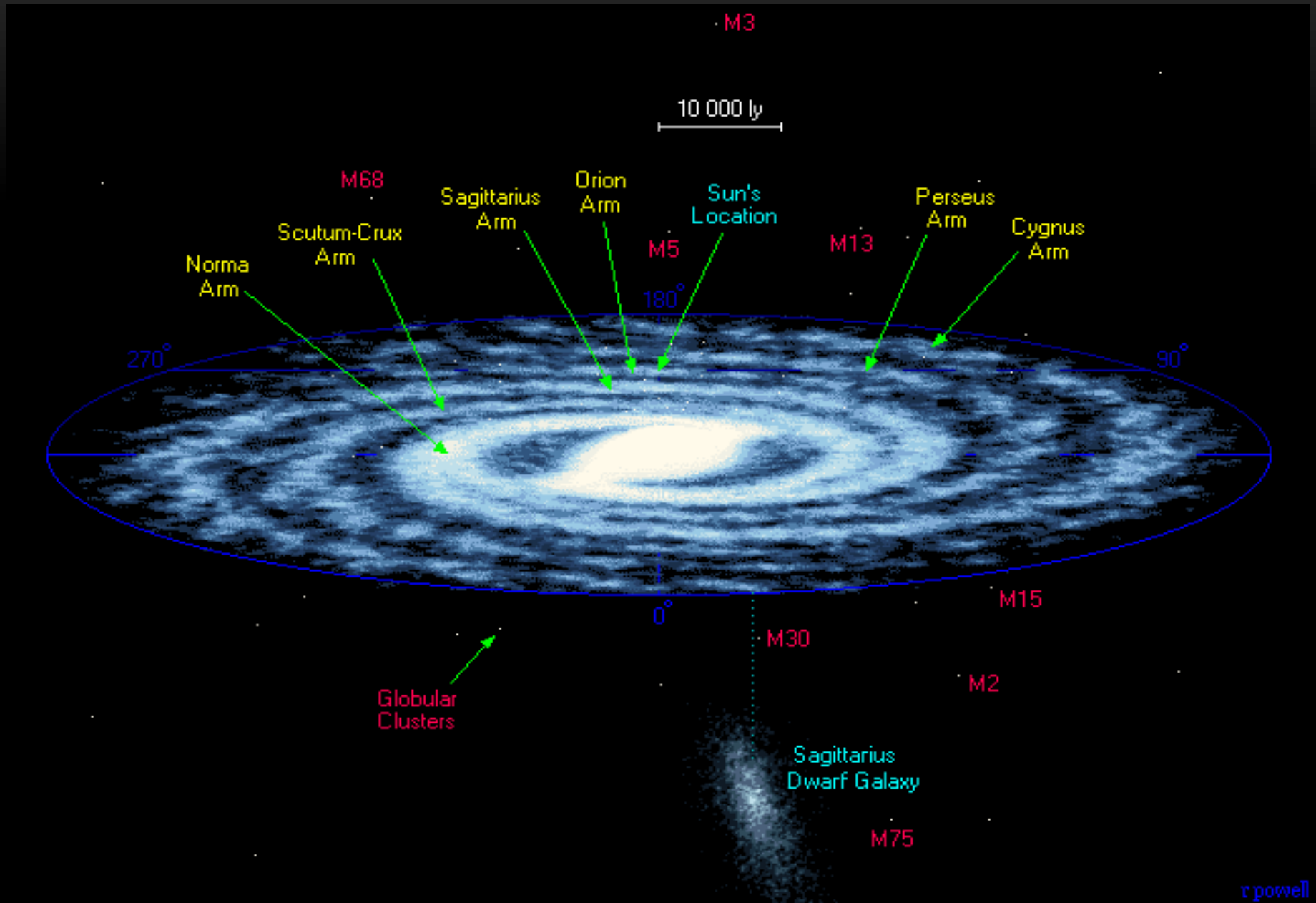
UNIVERSE


Dark Energy
Accelerated Expansion
Afterglow Light
Pattern
380,000 yrs.
Dark Ages
Development of
Galaxies, Planets, etc.
Inflation
Quantum
Fluctuations
1st Stars
about 400 million yrs.
Big Bang Expansion
13.7 billion years

- Age – 13.7 billion years old
- The Big Bang Theory
- Protons and Neutrons formed hydrogen and helium. This created heat that formed the stars.
- Other elements began to form through fusion and heat which led to the galaxies being formed.
- Gas and dust due to heat became luminous (light producing) and formed stars.

- Early philosophers thought our universe was earth centered or geocentric.
- Copernicus theorized that our universe was sun centered or heliocentric.
- Both were incorrect because we know the planets in our solar system revolve around the Sun, but the whole universe does not.

MILKY WAY GALAXY

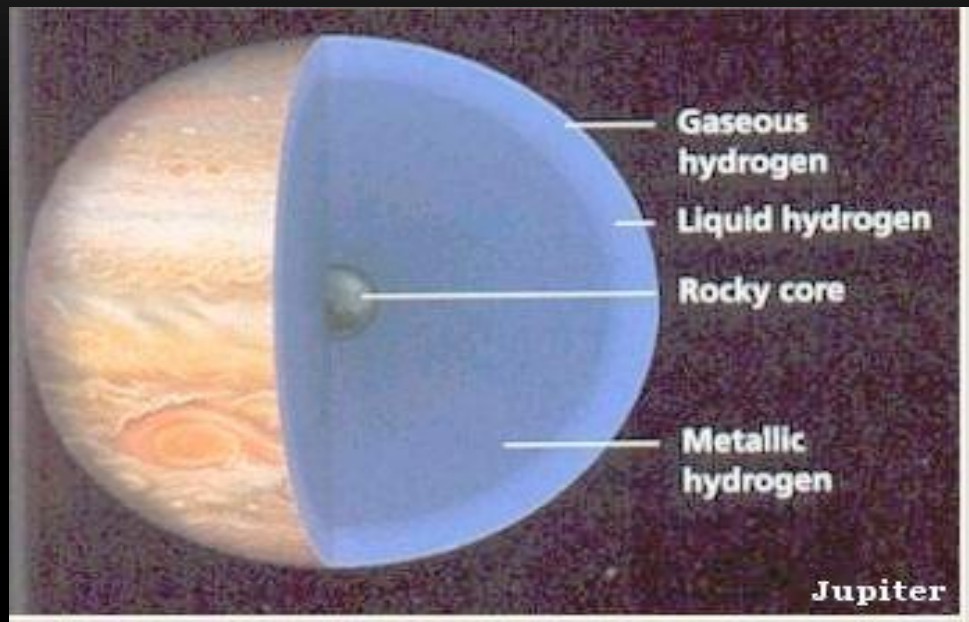


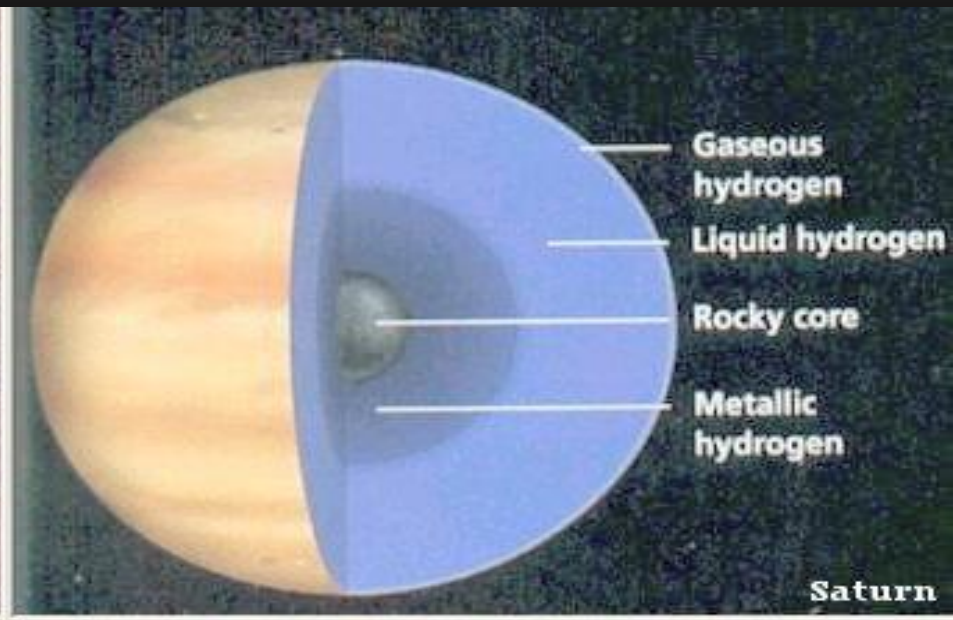
- The Milky Way was believed to be formed by a cloud of hydrogen, helium, and a small amount of heavier elements.
- 5 billion years ago a cloud of dust and gases formed a solar nebula which began to contract and rotate creating a disk shape cloud.
- Gravity forced the heavier elements to the center creating a bulge.
- This bulge became a protosun or pre-sun)

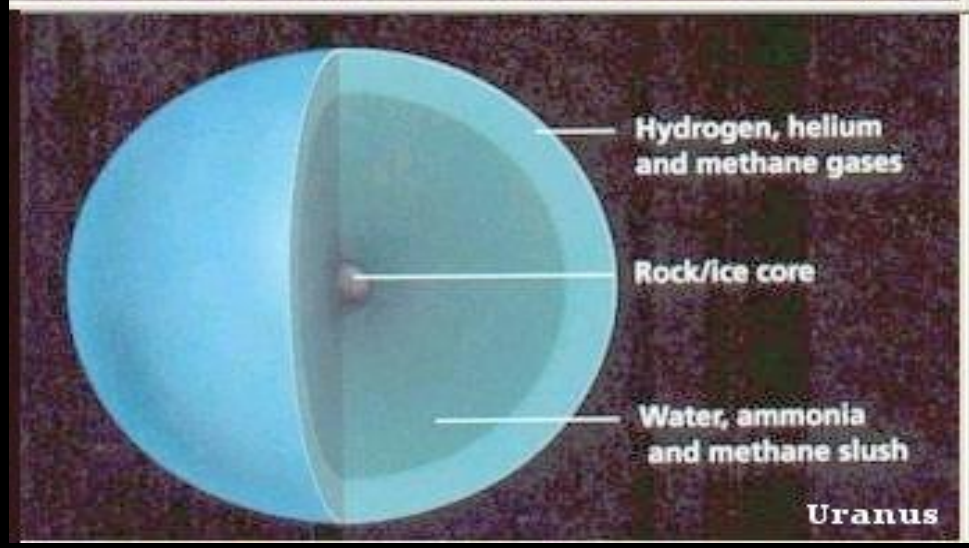
- Once the protosun, which became our sun, stabilized it began to cool and form hard rock type minerals which flew off of the protosun and formed asteroids which eventually formed the inner planets.
- Once the asteroids fused and created the planets this allowed solar radiation to heat the planets.
- The lighter gases that were left (hydrogen, ammonia, methane, etc…) were moved by solar winds out of the inner solar system.

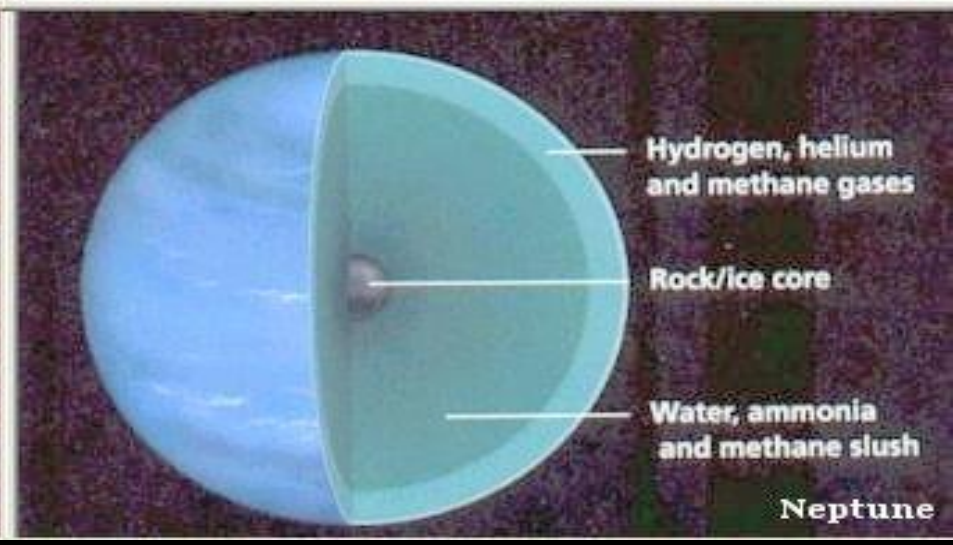
OUTER PLANETS/GAS GIANTS/JOVIAN PLANETS

- Made of water, carbon dioxide, ammonia and methane.









- Jovian planets have much thicker atmospheres than the terrestrial planets.
- However, Venus also has a very thick atmosphere with a high percentage of carbon dioxide which makes it the planet with the highest mean temperature.

COMETS, ASTEROIDS AND METEORS

- Where did all of the left over debris that did not become a Terrestrial of Jovian planet go?
- What can you tell me about comets?
- What is the name of the most famous comet that passes Earth every 75-76 years and will be seen again in 2061?

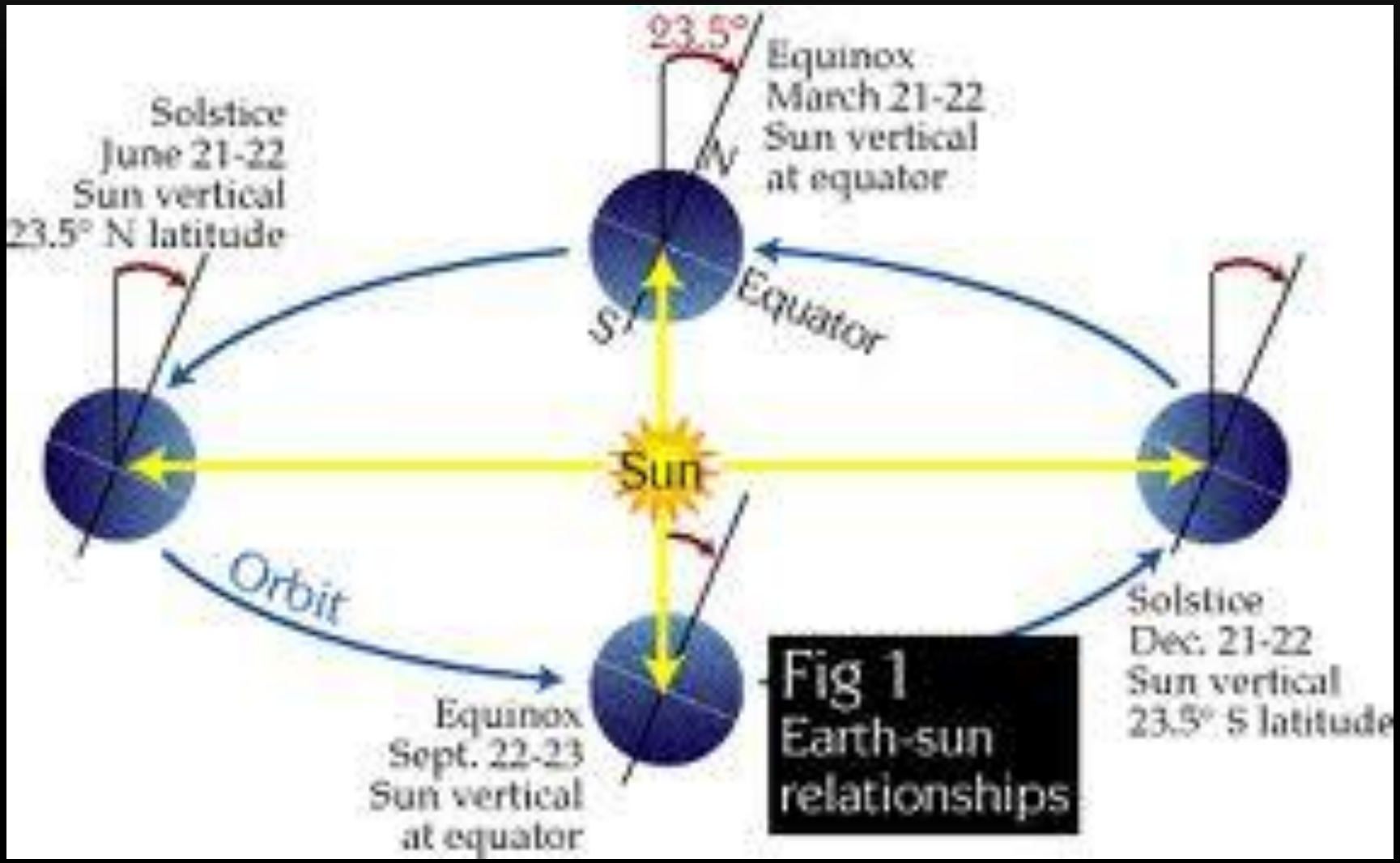
ASTEROIDS AND METEOROIDS

- What is the name of the largest asteroid?
- Ceres
- What is the region called between Mars and Jupiter where asteroids are found?
- Asteroid Belt
- What is a meteoroid? Are they smaller or larger than an asteroid?
- What happens to a meteroid when it enters the Earth's atmosphere?
- Develops a tail
- What is it called after it enters the atmosphere?
- Meteor or Shooting Star

ROTATION AND REVOLUTION

- The Earth rotates on it's axis every ____ hours.
- What is an axis?
- The Earth revolves around the Sun every _____ days.
- What is an orbital plane?

SEASONS – WHICH IS THE LONGEST DAY OF THE YEAR?



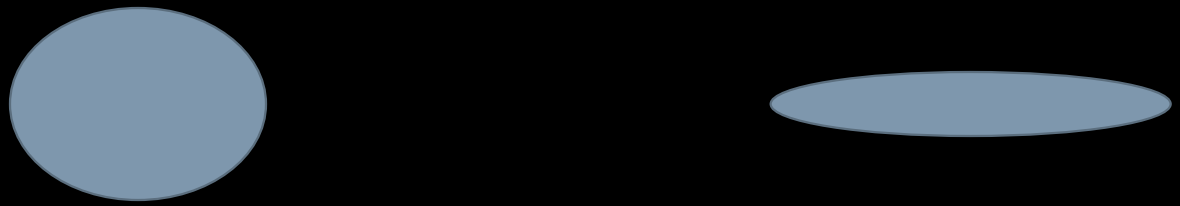
GRAVITY AND ORBIT

- What is gravity?
- The force that attracts objects to one another.
- Which object has more gravity? Why?

- The Sun (1.99 x 10^{30} kilogram mass) has enough gravitational force to attract our entire solar system toward it.
- Why don't the planets fall into the Sun?
- The planets are moving in a certain direction, at a certain speed, until something changes that motion. The movement of the planets is called inertia and the <u>something</u> is gravity.
- A planets orbit is the result of inertial movement of a huge object (a planet), balanced with the gravitational pull of an even bigger object.(The Sun)
- This theory was discovered by who and is called what?
- Sir Isaac Newton – Newton's First Law of Motion

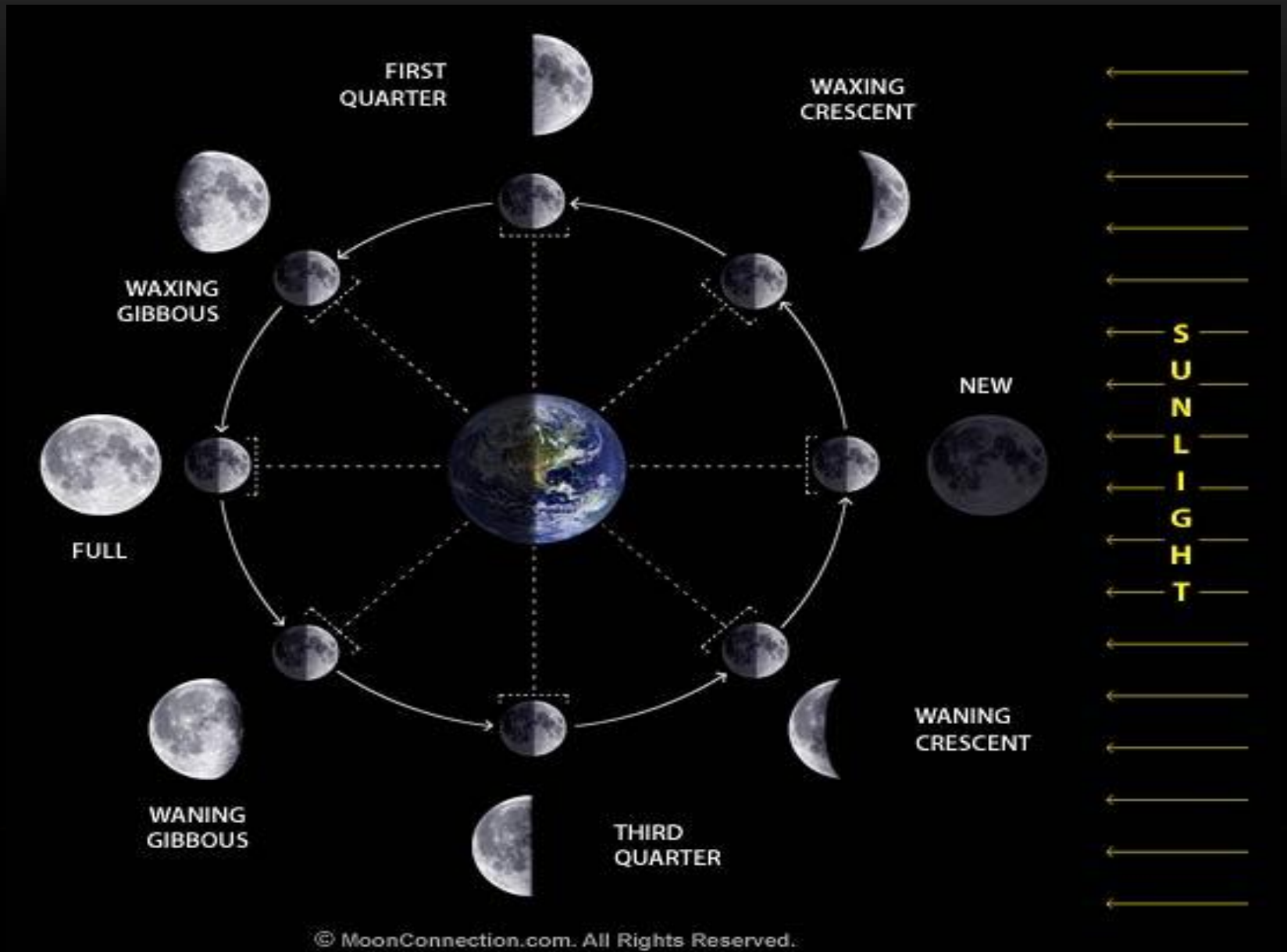
ELLIPTICAL ORBIT

- What is the shape of an ellipse?



- Which one of the above shapes are more eccentric?
- Which planet has the most eccentric orbit?
- Mercury
- Which planets have the least eccentric orbit?
- Venus and Neptune

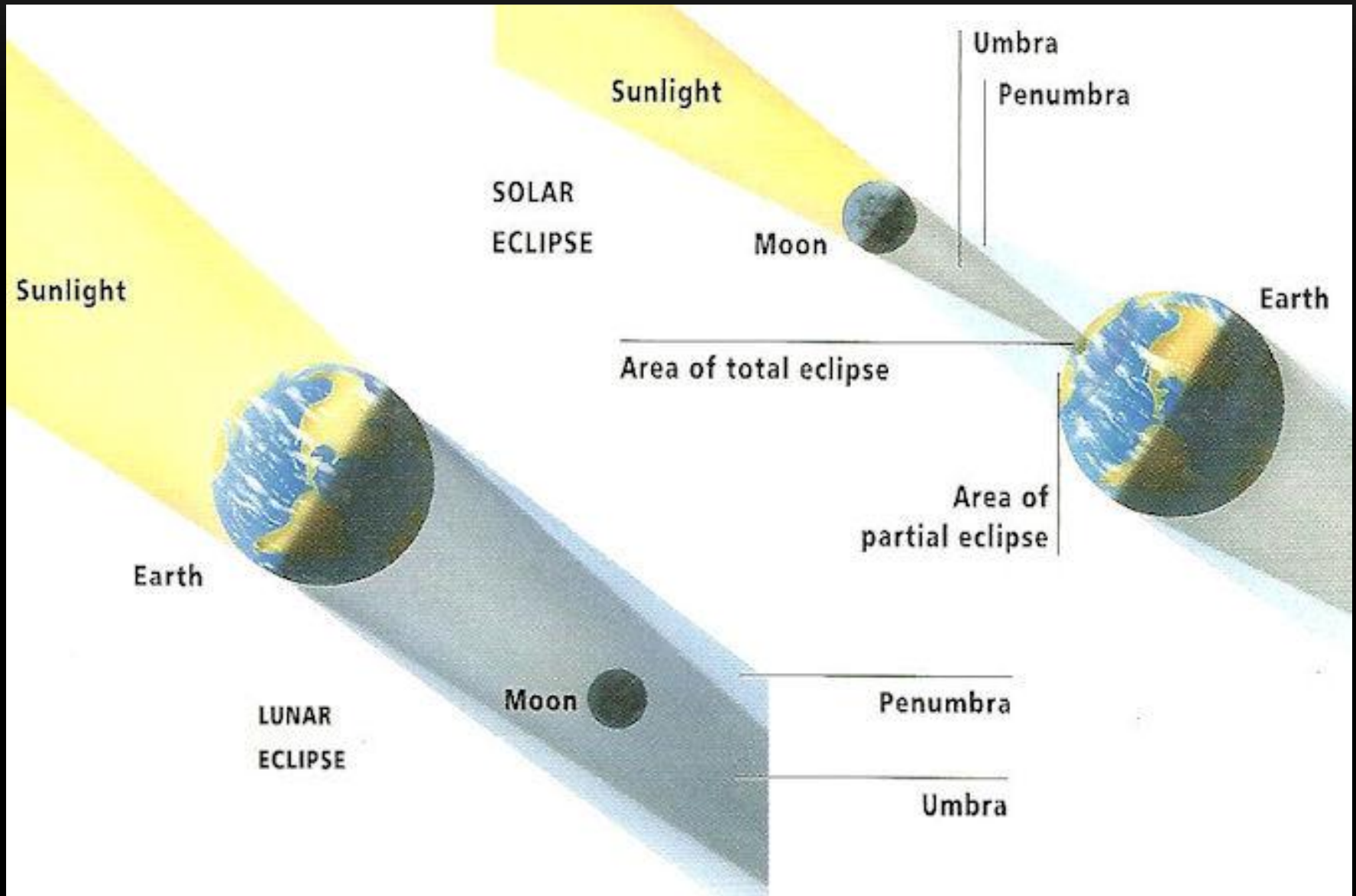
PHASES OF THE MOON



- New Moon – angle between Sun and Moon is small.
- 1st quarter – Moon is half full and the Moon lies 90 degrees EAST from the Sun.
- Full Moon – the Moon is 180 degrees from the Sun.
- Last quarter – Moon lies 90 degrees WEST from the Sun.
- When the Moon moves from New to Full it is called “Waxing” or the light is increasing.
- When the Moon moves from Full to Dark it is “Waning” or the light is decreasing.

- What is the size of a gibbous moon?
- Bigger than a half moon, but less than a full moon.
- When do you see a waxing moon?
- Proceeding from New to Full.
- What causes the phases of the Moon?
- The alignment of the Sun and Moon.

LUNAR AND SOLAR ECLIPSES



- When can a solar eclipse only happen?
- During a New Moon
- When can a lunar eclipse only happen?
- During a Full Moon
- Which type of eclipse is most common?
- Partial Lunar
- Why are solar eclipses only visible to a small portion of the Earth?
- The shadow cast by the Moon is small.