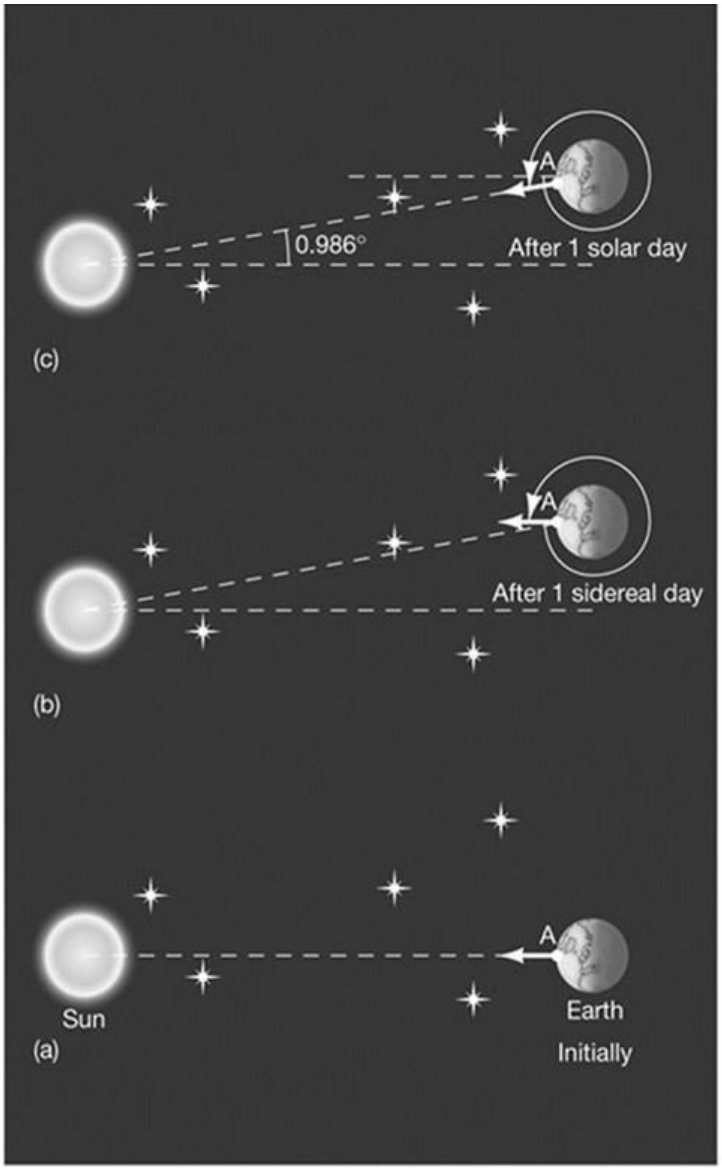
Lecture 5 - Our planetary system

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) Which of the following statements about sidereal and solar days is *not* true? 1) _____
   A) The time it takes for the Sun to make one circuit of our sky is one solar day.
   B) A solar day represents more than 360° of rotation for Earth.
   C) The time it takes for the Moon to make one circuit of our sky is one solar day.
   D) The time it takes for a star to make one circuit of our sky is one sidereal day.
   E) A solar day is 4 minutes longer than a sidereal day.

2) Which of the following is the reason for the solar day being longer than a sidereal day? 2) _____
   A) Earth year being a non–integer number of Earth days
   B) precession of Earth's axis
   C) the tilt of Earth's axis
   D) the non–circular orbit of Earth around the Sun
   E) the combined effect of the rotation of Earth and its orbit about the Sun

3) This diagram explains 3) _____



A) the solar day's relation to the Moon.
B) the sidereal day's relation to the seasons.
C) the reason for the solstices.
D) precession.
E) the difference between solar time and sidereal time.

4) The average length of a solar day is 4) _____
A) 365.25 days.
B) 12 years.
C) 26,000 years.
D) 23 hours 56 minutes.
E) 24 hours.

5) The lunar month is longer than the sidereal month because 5) _____
A) the Moon orbits Earth faster than Earth orbits the Sun.
B) the Moon has to complete more than one full orbit around Earth to complete the cycle of lunar phases.
C) the Moon orbits Earth faster than Earth rotates.
D) the Moon completes the cycle of lunar phases before it completes a full orbit around Earth.
E) the lunar month is based on the Moon's orbit, while the sidereal month is based on Earth's orbit.

6) How does the Sun's mass compare with that of the planets? 6) _____
A) It is about as massive as all the planets combined.
B) It is a hundred times more massive than all the planets combined.
C) It is a hundred times more massive than Earth.
D) It is a thousand times more massive than Earth.
E) It is a thousand times more massive than all the planets combined.

7) Which of the following is farthest from the Sun? 7) _____
A) Neptune
B) a comet in the Oort cloud
C) an asteroid in the asteroid belt
D) a comet in the Kuiper belt
E) Pluto

8) Which of the following is *not* a characteristic of the inner planets? 8) _____
A) They all have solid, rocky surfaces.
B) They have very few, if any, satellites.
C) Their orbits are relatively closely spaced.
D) They all have substantial atmospheres.
E) They are relatively smaller than the outer planets.

9) Which of the following is *not* a characteristic of the outer planets? 9) _____
A) They all have rings.
B) They have very few, if any, satellites.
C) They are primarily made of hydrogen and helium.
D) Their orbits are separated by relatively large distances.
E) They are all large balls of gas.

10) What are the main constituents of the jovian planets? 10) _____
A) ammonia and water
B) nitrogen and methane
C) hydrogen and helium
D) rocky minerals and water, as on Earth
E) ammonia and methane

11) Where are most of the known asteroids found? 11) _____
A) between the orbits of the jovian planets
B) in the Oort cloud
C) between the orbits of Mars and Jupiter
D) in the Kuiper belt
E) between the orbits of the terrestrial planets

12) How do asteroids differ from comets? 12) _____
A) Asteroids are made of icy material and are less dense than the comets, which are rockier.
B) Asteroids are rocky bodies and are denser than the comets, which are made of icy material.
C) Asteroids are rocky bodies and are less dense than the comets, which are made of icy material.
D) Asteroids and comets are both made of rocky and icy material, but asteroids are smaller in size than comets.
E) Asteroids are made of icy material and are denser than the comets, which are more rocky.

13) Which of the following statements about the asteroid belt is *not* true? 13) _____
A) It is located between the orbits of Mars and Jupiter.
B) Asteroids in the asteroid belt are made mostly of rock.
C) The combined mass of all the asteroids is roughly the same as the mass of Earth.
D) Asteroids in the asteroid belt orbit the Sun in the same direction that planets orbit the Sun.

14) What is the *Kuiper* belt? 14) _____
A) a technical name for the asteroid belt
B) a region of the solar system beginning just beyond the orbit of Neptune that contains many icy bodies, including Pluto
C) the most prominent ring of Saturn that is visible in photographs
D) a region of the solar system that extends almost a fourth of the way to the nearest stars and contains a trillion comets with orbits going in all directions around the Sun

15) What is the *Oort cloud*? 15) _____
A) It is the spherical distribution of the trillion or so comets thought to orbit the Sun at great distances.
B) It is another name for the cloud of gas from which our solar system was born.
C) It is a giant storm in the atmosphere of Saturn.
D) It is a great cloud of gas that resides far beyond the orbit of Pluto.

16) Which of the following statements about our Sun is *not* true? 16) _____
A) The Sun contains more than 99% of all the mass in our solar system.
B) The Sun is a star.
C) The Sun's diameter is about 5 times that of Earth.
D) The Sun is made mostly of hydrogen and helium.