Discovering the Essential Universe
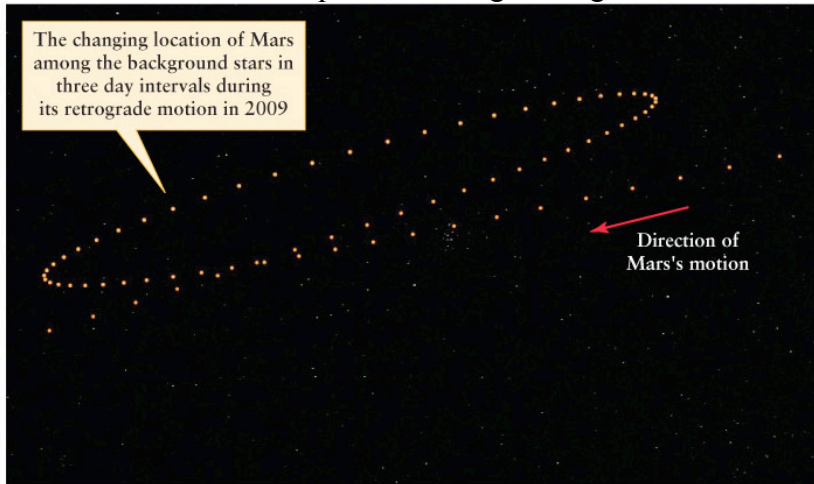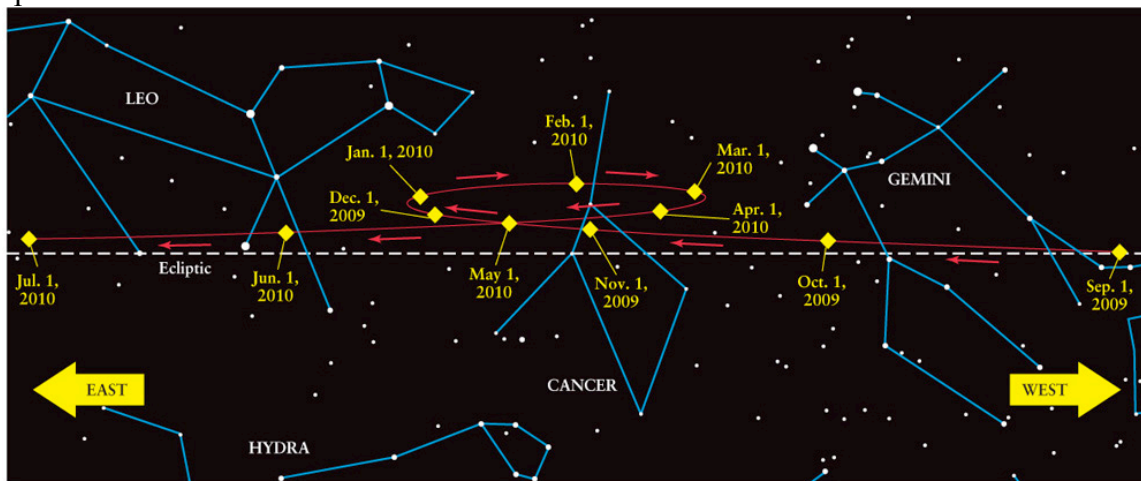Chapter 2, quiz.

2-1.   True of False: All planets undergo retrograde motion as seen from Earth.

The changing location of Mars among the background stars in three day intervals during its retrograde motion in 2009

Direction of Mars's motion

a

a.) True   X
b.) False

2-2.   The occasional westward (left to right) motion of planets across the celestial sphere is called:

b

a.) retrograde rotation
b.) retrograde revolution
c.) retrograde motion   X
d.) reverse motion

2-3.   The shape of a Mars's orbit around the Sun is best described as a(n):
a.) ellipse   X
b.) circle
c.) hyperbola
d.) parabola

2-4.   The configuration with Venus at the largest angle from the Sun is called?
a.) superior conjunction
b.) inferior conjunction
c.) greatest elongation   X
d.) opposition

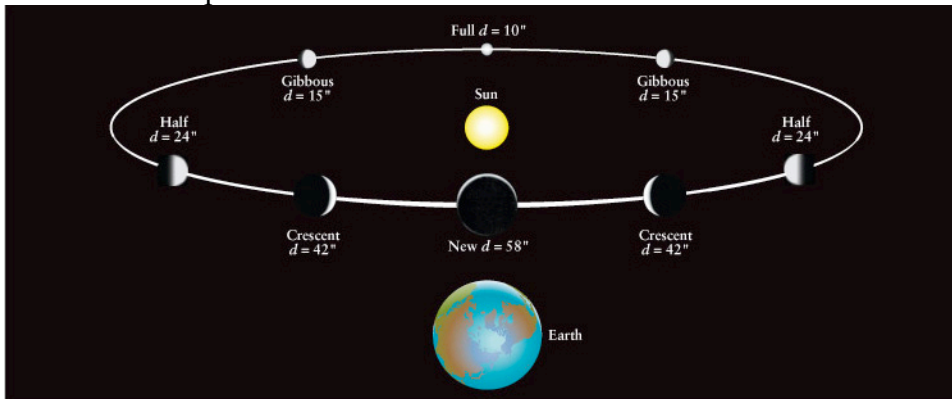2-5.   The Sun is at one focus of the Earth's elliptical orbit. What is at the other focus?

Foci

e = 0   e = 0.20   e = 0.50   e = 0.75   e = 0.95
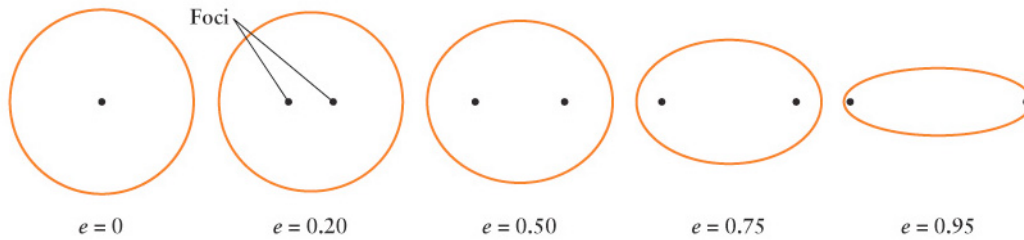
b

a.) our Moon
b.) Jupiter
c.) Venus
d.) nothing   X

2-6.   An orbit with which of the following eccentricities is most circular?
a.) 0.10   X
b.) 0.25
c.) 0.72
d.) 0.90

2-7.   In what phase is Venus closest to the Earth?

a.) new   X
b.) quarter phase
c.) full
d.) gibbous phase

2-8.   In what phase of Venus can we sometimes see that planet eclipsed by the Sun?
a.) new
b.) crescent phase

c.) quarter phase
d.) full   X

2-9.   When a planet is directly between the Earth and the Sun it is said to be in what configuration?
a.) Inferior conjunction   X
b.) Superior conjunction
c.) Elongation
d.) Opposition

2-10.   True or False: Parallax describes the variation in angle that occurs when viewing nearby objects from different places.
a.) True   X
b.) False

2-11.   What assumption made Copernicus' heliocentric cosmology no more accurate than geocentric cosmology?
a.) That the sidereal period is the true orbital period of any astronomical body.
b.) That the synodic period is the time that elapses between successive identical configurations.
c.) That Mars and Venus must be closer to the Sun than is the Earth.
d.) That planets orbit the Sun along circular paths.   X

2-12.   A planet closer to the Sun will have…
a.) …a longer year than a planet further from the Sun.
b.) …a shorter year than a planet further from the Sun.   X
c.) …the same length year as a planet further from the Sun.

2-13.   What two things about Venus couldn't be explained by a geocentric cosmology?
a.) That it changes apparent size and orbital speed.
b.) That it has phases and changes apparent size.   X
c.) That it has phases and moons.
d.) That it changes apparent size and has moons.

2-14.   How much force would you have to apply to an object to keep it moving at a constant speed, assuming the only force acting on the object is the one you apply?
a.) 0 Newtons   X
b.) It depends on the object's mass.
c.) It depends on the object's speed.
d.) 10 Newtons

2-15.   How would the mass of a brick change if it were placed on the Moon?
a.) It's mass would be less than it is here on Earth.
b.) It's mass would be more than it is here on Earth.
c.) It's mass would be the same as it is here on Earth.   X
d.) It's mass would be zero because there is no gravity on the Moon.

2-16.   Of the following planets, which takes longest to go around the Sun?
a.) Earth
b.) Mars
c.) Uranus   X
d.) Jupiter

2-17.   The space shuttle burns fuel as it departs from Earth. In doing so it decreases its mass. How does the gravitational force on the space shuttle change as it enters orbit?
a.) The gravitational force from the Earth decreases because the shuttle is getting further away from the Earth and reducing its mass.   X
b.) The gravitational force from the Earth increases because the shuttle is getting further away from the Earth and reducing its mass.
c.) The gravitational force from the Earth goes to zero because the shuttle is weightless in orbit.
d.) The gravitational force from the Earth remains the same because the effects of the decreasing mass and increasing distance will cancel each other out.

2-18.   A light-year is a measure of:
a.) time
b.) speed
c.) mass
d.) distance   X

2-19.   When Venus is in the position of greatest elongation, its phase is
a.) quarter   X
b.) gibbous.
c.) crescent.
d.) full.

2-20.   Epicycles are used in a geocentric model to explain the
a.) eastward motion of Mars.
b.) westward motion of Mars   X
c.) phases of Venus.
d.) appearance of Venus in the early morning or late evening sky.

2-21.   If the distance between the Earth and the Sun is suddenly doubled, how does the gravitational attraction between the two bodies change?
a.) It increases by a factor of 2.
b.) It increases by a factor of 4.
c.) It decreases by a factor of 2.
d.) It decreases by a factor of 4.   X
e.) Not enough information is provided.

Thought/Writing Questions

2-22. Explain how parallax is used to determine distances in astronomy

2-23. Explain why Mercury's maximum elongation is inconsistent with a geocentric cosmology.

Misconception-Based Question

2-24. What is the difference between mass and weight?