

Note: This test was from a TrTh class where we had 1.5 hrs for the test. So is longer than your 1hr. old one test will be.

Write the color of your test booklet on the top of your bubble sheet!

Be sure to fill in your name and ID#

Also, please follow the standard bubble-sheet drill:

- use a #2 pencil
- completely fill in the circles
- If you want to change an answer, be sure to completely erase the old one

Write the color of your test booklet on the top of your bubble sheet!

Be sure to fill in your name and ID#

Also, please follow the standard bubble-sheet drill:

- use a #2 pencil
- completely fill in the circles
- If you want to change an answer, be sure to completely erase the old one

1. Which of the following waves is fundamentally different from the others?  
A) microwave B) infrared C) visible light D) ultraviolet E) sound
2. The projections of the Earth's axis on the sky is/are the  
A) ecliptic. B) celestial poles. C) zenith. D) celestial equator.
3. If the filament of an incandescent lamp is cooled, the light will appear  
A) more red. B) the same color. C) more blue. D) brighter. E) more green.
4. The Moon is growing more full each night. This is called \_\_\_\_\_.  
A) phases B) waxing C) gibbous D) waning
5. Suppose intelligent life existed on Mars, and beings there tried to use Kepler's third law. As their unit of time, they would use one Martian year, and for distance they would use the average distance of Mars from the Sun. Would the law be valid for Martians?  
A) The answer would also depend on the length of a day on Mars. B) no C) yes
6. Stellar parallax  
A) is the apparent shift in star positions due to atmospheric effects.  
B) is the apparent shift in star positions due to the Earth's motion.  
C) is the cause for the Sun's apparent motion among the stars.  
D) was not observed before the invention of the telescope.  
E) Both B and D above.
7. Aristotle and Ptolemy held that the center of the universe is  
A) the Milky Way. B) Earth. C) Venus. D) the Sun. E) None of the above.
8. During the night, as viewed from the central US, most stars  
A) rise in the east and set in the west. D) No general statement can be made.  
B) rise in the north and set in the south. E) move in retrograde motion across the sky.  
C) rise in the west and set in the east.

Answers at the end so you can check your work.

9. Niels Bohr developed
- A) the explanation for the Doppler effect.
  - B) a model of the atom.
  - C) a more powerful telescope.
  - D) the Kelvin temperature scale.
  - E) the laws now known as Kirchoff's laws.
10. According to the Stefan-Boltzmann law, if an object's Kelvin temperature is doubled, the object emits
- A) sixteen times as much energy.
  - B) thirty-two times as much energy.
  - C) four times as much energy.
  - D) twice as much energy.
  - E) eight times as much energy.
11. Which of the following is produced by a very hot solid?
- A) A continuous spectrum
  - B) An emission spectrum
  - C) An absorption spectrum
  - D) All of the above.
  - E) None of the above.
12. Which model predicted that Venus would exhibit nearly all phases (like the Moon)?
- A) The geocentric model
  - B) Neither the geocentric nor the heliocentric model
  - C) The heliocentric model
  - D) Both the geocentric and the heliocentric models
13. Which of the following part(s) of the electromagnetic spectrum penetrate the atmosphere well?
- A) Visible light
  - B) Infrared waves
  - C) Ultraviolet waves
  - D) Radio waves
  - E) Both A and D above.
14. The wavelength where the peak of the spectrum of a star is located tells us
- A) the velocity of the star towards Earth.
  - B) the velocity of the star away from Earth.
  - C) the temperature of the star.
  - D) the chemical composition of the star.
  - E) Two of the above.
15. Why do objects weigh less on the Moon than on Earth?
- A) The Moon is smaller than the Earth.
  - B) The Moon is larger than the Earth.
  - C) The Moon's mass is less than Earth's.
  - D) The Moon's mass is greater than Earth's.
  - E) Both B and C above.
16. Which waves below have the longest wavelength?
- A) Infrared
  - B) X-rays
  - C) Ultraviolet
  - D) Radio
  - E) Yellow light
17. Which of the following regions of the spectrum is emitted by celestial objects?
- A) radio
  - B) ultraviolet
  - C) infrared
  - D) All of the above are from celestial objects.
  - E) Celestial objects emit none of the above.

18. At the same time an astronaut on the Moon sees a solar eclipse, observers on Earth can
- A) see a lunar eclipse.
  - B) also see a solar eclipse.
  - C) see either a solar or a lunar eclipse, depending on Earth's orientation.
19. Using today's criteria for deciding between competing theories, we could argue that the Copernican explanation for retrograde motion of planets was better than the Ptolemaic explanation because Copernicus's model
- A) was more accurate than Ptolemy's model.
  - B) had predictive power, while Ptolemy's model didn't.
  - C) was simpler than Ptolemy's model.
  - D) is true.
  - E) was more modern than Ptolemy's model.
20. Which of the following can be seen from the United States?
- A) Stars near the celestial equator
  - B) Stars near the north celestial pole
  - C) Stars near the ecliptic
  - D) All of the above can be seen from the United States.
  - E) None of the above can be seen from the United States.
21. If light of all visible wavelengths is combined, the result appears
- A) bright blue. B) faint red. C) bright red. D) white. E) black.
22. At the time of Copernicus, the fact that parallactic shifts of the brighter stars could NOT be detected was considered evidence for which model?
- A) The geocentric model. B) Neither model could explain this fact. C) The heliocentric model.
23. The Copernican explanation for retrograde motion of planets requires that
- A) planets farther from the Sun have longer periods of revolution than planets closer to the Sun.
  - B) planets closer to the Sun have longer periods of rotation than planets farther from the Sun.
  - C) planets closer to the Sun have longer periods of revolution than planets farther from the Sun.
  - D) planets farther from the Sun have longer periods of rotation than planets closer to the Sun.
  - E) None of the above.
24. Which of the following is most similar to "theory" in the way that scientists use the words?
- A) verification B) experiment C) model D) hypothesis E) guess
25. The four seasons-fall, winter, spring, and summer-are due primarily to
- A) changing temperatures of the Sun.
  - B) the same side of the Moon being always turned toward Earth.
  - C) retrograde motion of the Sun.
  - D) the varying distance from the Earth to the Sun.
  - E) the tilt of the equatorial plane of the Earth with respect to the plane of the ecliptic.

26. Lexington, Kentucky, is at about the same longitude as Sault Ste. Marie, Michigan. (That is, Sault Ste. Marie is directly north of Lexington.) Assume that they are both in the same time zone. At which location does Sunset occur earlier in January?  
A) Lexington B) It occurs at the same time at both locations. C) Sault Ste. Marie
27. According to Kepler's laws, the path of a planet around the Sun is a(n)  
A) circle. B) hyperbola. C) parabola. D) eclipse. E) ellipse.
28. The centripetal force that makes the Moon travel in a circle around the Earth (instead of continuing in a straight line) is  
A) the Earth's gravitational attraction for the Moon.  
B) friction with the Earth's atmosphere.  
C) calculus.  
D) inertia.
29. The Sun crosses the celestial equator going north on or about March 21. This is known as the spring  
A) Stonehenge. B) crossing. C) zodiac. D) equinox. E) solstice.
30. According to Kepler's laws, a planet moves most slowly when  
A) it is farthest from the Sun.  
B) it is closest to the Sun.  
C) it is midway between closest to the Sun and farthest.  
D) None of the above.
31. The force of gravity is responsible for  
A) the tides. D) Two of the above.  
B) holding the planets near the Sun. E) All of the above.  
C) holding the Moon near the Earth.
32. Which of the following types of visible light has the highest energy?  
A) red B) blue C) green D) yellow E) orange
33. In a vacuum, a light wave of a longer wavelength has  
A) the same frequency as one with a shorter wavelength.  
B) a greater frequency than one with a shorter wavelength.  
C) a lesser frequency than one with a shorter wavelength.  
D) Any of the above, depending on other factors.
34. According to Kepler, the Sun's apparent motion through the constellations of the zodiac is caused by  
A) the motion of the Earth around the Sun.  
B) the motion of the constellations around the Earth.  
C) the motion of the constellations around the Earth, along with the Sun's motion.  
D) its motion around the Earth.  
E) the spinning of the Earth on its axis.
35. In South Africa the shortest daylight period occurs in late  
A) September. B) June. C) December. D) March.

36. Who was the first person to use a telescope for astronomy?  
A) Brahe. B) Newton. C) Copernicus. D) Galileo. E) Kepler.
37. According to Newton, the natural motion of an object is  
A) an ellipse. B) a circle. C) rotational. D) a straight line. E) retrograde motion.
38. In the United States, the Sun rises and sets farthest north in  
A) late March.  
B) The answer depends on where on Earth the observer is.  
C) late December.  
D) late June.  
E) late September.
39. The ecliptic is  
A) the path of the Moon across the sky from rising to setting.  
B) the path of the Sun across the sky from rising to setting.  
C) the path of the Sun among the stars through the year.  
D) a line in the sky that is straight above Earth's equator.  
E) a line that runs across the sky from the north pole to the south pole.
40. Retrograde motion is  
A) motion of a planet that is "backwards" from the normal direction of motion.  
B) changing of the apparent speed of the Sun across the sky during the year.  
C) motion of a planet as it approaches the north celestial sphere.  
D) the changing of the Earth's speed as the Earth moves around the Sun.  
E) Two of the above.
41. Polaris is about how many degrees above the horizon from Paris (49 degrees north latitude)?  
A) 0 B) 41. degrees C) 90. degrees D) 49. degrees
42. From Earth, the Milky Way appears as  
A) a bright spot in the southern sky. D) a bright spot in the northern sky.  
B) a hazy area stretching across the sky. E) a bright spot above the equator.  
C) a hazy spot above the equator.
43. At about what time of night would you expect to see a full Moon highest in the sky?  
A) 12 midnight B) 3 AM C) 9 PM D) 6 AM E) 6 PM
44. Which of the following properties is constant for all types electromagnetic waves in a vacuum?  
A) speed B) frequency C) color D) energy E) wavelength
45. In July, the Sun rises  
A) directly east.  
B) north of east.  
C) south of east.  
D) Any of the above, depending upon your location on Earth.

46. The discovery of the moons of Jupiter lent support to
- A) the geocentric system.
  - B) neither the geocentric nor the heliocentric system.
  - C) the heliocentric system.
47. Suppose that you live in the eastern US and that you are speaking by phone with a friend on the west coast. You observe a total lunar eclipse occurring. If the Moon is visible to your friend, he/she will
- A) not be able to see the eclipse as you speak, and may not be able to see at all.
  - B) be able to see the eclipse as you speak.
  - C) see the eclipse in about another three hours.
  - D) have missed the eclipse, for it will have occurred about three hours before.
48. Galileo observed all of the following except
- A) moons of Jupiter.
  - B) stellar parallax.
  - C) sunspots.
  - D) phases of Venus.
  - E) Galileo observed all of the above, so none is the answer.
49. The principle tides on Earth are caused by
- A) the gravitational force of the Moon.
  - B) the fact that the Earth is revolving around the Sun.
  - C) the gravitational force of the Sun.
  - D) waves on the ocean.
  - E) reactions with other planets as they move through retrograde motion.
50. Craters are visible on the Moon
- A) even in small telescopes and binoculars.
  - B) only in photographs using large telescopes.
  - C) using large telescopes, either by direct viewing or in photographs.
51. The true size and shape of the Earth:
- A) Was never even approximated until relatively recent times.
  - B) Was first measured by Kepler.
  - C) Still isn't known very accurately.
  - D) Was known with fair accuracy to certain early Greek thinkers.
52. Kepler's laws apply to
- A) all of the planets except Pluto.
  - B) all of the planets.
  - C) all of the planets discovered up to the time of Kepler, but not planets discovered later.
  - D) Earth only.
  - E) Mercury and Venus only.

53. The wavelengths of light from a star moving toward the Earth are  
A) redshifted.  
B) blueshifted.  
C) greenshifted.  
D) Any of the above, depending on the speed of the star.
54. What are Right Ascension and Declination?  
A) Analogs of latitude and longitude on the Earth's surface.  
B) A means of specifying stars' locations on the celestial sphere.  
C) All of the above.  
D) None of the above.
55. The force of gravity between two objects:  
A) Decreases with the mass of the objects and the distance between them.  
B) Increases with the mass of the objects and decreases with the distance between them.  
C) Decreases with the mass of the objects and increases with the distance between them.  
D) Increases with the mass of the objects and the distance between them.
56. Which of the following is NOT a criterion for a good scientific theory?  
A) A theory should be aesthetically pleasing.  
B) A theory should be agreed upon by all knowledgeable scientists.  
C) It should be possible to prove the theory wrong.  
D) A theory should fit present data.  
E) None of the above is correct. All are criteria for a good theory.
57. If you apply equal forces to a cement truck and a compact car  
A) the cement truck will accelerate more.                      C) neither will accelerate.  
B) the compact car will accelerate more.                      D) they will accelerate equally.
58. During the night, as viewed from the North Pole, most stars  
A) rise in the east and set in the west.                      D) circle a point near Polaris.  
B) rise in the north and set in the south.                      E) rise in the west and set in the east.  
C) No general statement can be made.
59. What was one of the contributions made to astronomy by Johannes Kepler?  
A) He made extensive and detailed observations of the positions of planets.  
B) He used a telescope to observe the heavens, thereby reinforcing the notion of heliocentricity.  
C) He said that the Earth is not at the center of the universe.  
D) He developed a theory of gravity that could explain orbital motion.  
E) He discovered that the planets move around the Sun in elliptical orbits.
60. The distance between two massive objects quadruples. By what factor is the gravitational force between them changed?  
A) one half   B) one fourth   C) one sixteenth   D) one eighth

61. Inertia is the tendency of an object to
- A) have weight.
  - B) come to a stop at a rate that depends upon the nature of the object.
  - C) fall to a location as close to the center of Earth as possible.
  - D) continue at the same velocity.
  - E) come to a stop as soon as possible.
62. "The number of repetitions per unit time" describes
- A) frequency. B) wavelength. C) one nanometer. D) temperature. E) the nucleus of an atom.
63. If you quadruple the distance between two objects, how will the gravitational force exerted by one on the other be changed?
- A) It would be reduced to 1/16 as much. C) It would be reduced to 1/4 as much.
  - B) It would be reduced to 1/9 as much. D) It would be reduced to 1/2 as much.
64. The number one million can be expressed in scientific notation as
- A)  $10^6$  B)  $10^{10}$  C)  $10^{15}$  D)  $10^3$
65. If a certain star emits the greatest intensity at 400. nm wavelength, another star emitting greatest intensity at 1200. nm has a temperature:
- A) twice as large B) half as large C) one third as large D) three times as large
66. What was one of Newton's contributions to astronomy?
- A) He developed a theory of gravity that could explain orbital motion.
  - B) He said that the Earth is not at the center of the universe.
  - C) He used a telescope to observe the heavens, thereby reinforcing the notion of heliocentricity.
  - D) He made extensive and detailed observations of the positions of planets.
  - E) He discovered that the planets move around the Sun in elliptical orbits.
67. When light having a continuous spectrum passes through a cool gas, what kind of spectrum is observed?
- A) a continuous spectrum
  - B) an absorption spectrum
  - C) an emission spectrum
  - D) Any of the above, depending on the speed of the light.
68. An observable consequence of the monthly lunar revolution around the Earth is:
- A) The Moon's orbit around the Earth.
  - B) The rising and setting of the Sun, Moon, and stars.
  - C) The changes in the visible constellations: seasonal changes.
  - D) The changing position and phases of the Moon.
69. The "Elongation" of a planet is the angle between the Sun and the planet, viewed from Earth. Which of the following planets can have an elongation greater than 90 degrees?
- A) Mars B) Venus C) Mercury D) More than one of the above. E) None of the above.

70. When viewed from two different places on Earth, which of these objects exhibits the greatest parallax angle against the distant stars?  
A) the Sun. B) the Moon. C) Mars. D) All of the above. E) None of the above.
71. The Bohr model of the atom predicts that light is emitted when an electron  
A) jumps from an inner orbit to an outer orbit. C) is heated in a fire.  
B) orbits the nucleus. D) falls from an outer to an inner orbit.
72. What are constellations?  
A) Groups of stars that make an apparent pattern on the night sky.  
B) Groups of stars that are gravitationally bound to each other.  
C) Relics of the past, unrelated to modern astronomy.  
D) Groups of galaxies seen clustered in the night sky.
73. Polaris, the North Star, does not appear to move because:  
A) It lies approximately above the northern axis of the Earth.  
B) The stars are fixed relative to each other.  
C) It is located directly above for everyone on Earth.  
D) It is too nearby for its motion to be discernable.
74. If the Sun were less massive than it is, the force of gravitational force that the Earth exerts on the Sun would be  
A) weaker.  
B) The item is misleading; the Earth does not exert a gravitational force on the Sun.  
C) zero.  
D) unchanged.  
E) stronger.
75. There is a force of gravitation between  
A) two objects only when one of them is very massive.  
B) two objects only when both of them are very massive.  
C) two objects only when one of them is a planet.  
D) any two objects.  
E) Answers A, B and C only, for they are equivalent.
76. The light-year is a unit of  
A) mass or weight. B) time. C) speed. D) age. E) distance.
77. During the course of the night, a star's celestial coordinates:  
A) increase B) remain constant C) decrease D) none of the above
78. The Ptolemaic model could not explain  
A) gibbous phases of Venus.  
B) crescent phases of Venus.  
C) None of the above, for it could explain both of these.

79. Newton's 300-year old laws are now considered by scientists to be
- A) old-fashioned and useless.
  - B) replaced-when maximum accuracy is needed-by Kepler's laws.
  - C) out-of-date and inadequate for serious work.
  - D) imperfect, but very useful for everyday events.
80. Which of the following features of Copernicus's model reveals his hesitation in breaking with the conventional way of thinking?
- A) He refused to believe that other planets may have natural satellites.
  - B) He continued to use ellipses as planetary paths.
  - C) He retained the Sun as the center of the solar system.
  - D) He continued to use circles as planetary paths.
  - E) He continued to consider Earth the largest of the planets.
81. During the year, the Sun appears to move alternately northward and southward on the celestial sphere. What do we call the extreme northern and southern points of its motion?
- A) equinoxes. B) solstices. C) ecliptics. D) zodiacs. E) zeniths.
82. Tycho Brahe followed modern scientific method in that he
- A) determined and recorded the accuracy of each measurement he made.
  - B) used telescopes with multiple lenses.
  - C) worked with a team of scientists.
  - D) repeated his measurements with different type telescopes.
  - E) Both C and D above.
83. Which of the following describes parallax?
- A) It is inversely proportional to an object's distance.
  - B) It is proportional to an object's distance.
  - C) It is a method of measuring the length of small objects, such as pencils.
  - D) It is an ancient method of finding distances, no longer useful today.
84. An observable consequence of the 24 hour rotation of the Earth is:
- A) The changing position and phases of the Moon.
  - B) The rising and setting of the Sun, Moon, and stars.
  - C) The Moon's orbit around the Earth.
  - D) The changes in the visible constellations: seasonal changes.
85. "The average distance from the Earth to the Sun" is the definition of the
- A) nebular unit. B) light-year. C) parsec. D) Earth-year. E) Astronomical Unit.
86. In appearance, an emission spectrum is
- A) similar to a continuous spectrum.
  - B) a number of distinct lines.
  - C) a continuous spectrum disrupted by dark lines.
  - D) Any of the above, depending on the temperature of the emitting object.

87. If a given light is moved three times as far from the observer, its intensity will change by a factor of  
A) 1/3. B) 1/9. C) 1/2. D) 1/27. E) 1/6.
88. Two forms of electromagnetic radiation that penetrate Earth's atmosphere are:  
A) Gamma rays and X-rays. C) Visible light and radio waves.  
B) Gamma rays and radio waves. D) X-rays and visible light.
89. "One of the negatively charged particles that orbit the nucleus of an atom" describes  
A) an electron. B) one hertz. C) a wavelength. D) a photon. E) a proton.
90. Which of the planets have a period of revolution around the Sun of less than 1 year?  
A) Mars, Jupiter, Saturn, Uranus, Neptune, and Pluto only  
B) Mars, Venus, and Mercury only  
C) Mercury and Venus only  
D) Mars and Venus only  
E) Neptune and Pluto only

**Answer Key -- Fall'03 Test #1**

1. E sound  
Origin: Chapter 4....76
2. B celestial poles.  
Origin: Chapter 1....84
3. A more red.  
Origin: Chapter 4....108
4. B waxing  
Origin: Chapter 2....106
5. C yes  
Origin: Chapter 2....85
6. E Both B and D above.  
Origin: Chapter 2....48
7. B Earth.  
Origin: Chapter 1....89
8. A rise in the east and set in the west.  
Origin: Chapter 1....73
9. B a model of the atom.  
Origin: Chapter 4....95
10. A sixteen times as much energy.  
Origin: Chapter 4....75
11. A A continuous spectrum  
Origin: Chapter 4....69
12. C The heliocentric model  
Origin: Chapter 2....49
13. E Both A and D above.  
Origin: Chapter 4....67
14. C the temperature of the star.  
Origin: Chapter 4....107
15. C The Moon's mass is less than Earth's.  
Origin: Chapter 3....72
16. D Radio  
Origin: Chapter 4....70
17. D All of the above are from celestial objects.  
Origin: Chapter 4....87
18. A see a lunar eclipse.  
Origin: Chapter 6....67
19. C was simpler than Ptolemy's model.  
Origin: Chapter 2....66
20. D All of the above can be seen from the United States.  
Origin: Chapter 1....51
21. D white.  
Origin: Chapter 4....79
22. A The geocentric model.  
Origin: Chapter 2....59
23. A planets farther from the Sun have longer periods of revolution than planets closer to the Sun.

Note that these references  
"Origin" ... will be useless  
to you, this test refers  
to a textbook with  
different chapters + page #'s.

- Origin: Chapter 2....65
24. C model  
Origin: Chapter 1....104
25. E the tilt of the equatorial plane of the Earth with respect to the plane of the ecliptic.  
Origin: Chapter 1....52
26. C Sault Ste. Marie  
Origin: Chapter 1....80
27. E ellipse.  
Origin: Chapter 2....71
28. A the Earth's gravitational attraction for the Moon.  
Origin: Chapter 3....89
29. D equinox.  
Origin: Chapter 1....49
30. A it is farthest from the Sun.  
Origin: Chapter 2....72
31. E All of the above.  
Origin: Chapter 6....62
32. B blue  
Origin: Chapter 4....122
33. C a lesser frequency than one with a shorter wavelength.  
Origin: Chapter 4....73
34. A the motion of the Earth around the Sun.  
Origin: Chapter 2....95
35. B June.  
Origin: Chapter 1....95
36. D Galileo.  
Origin: Chapter 3....80
37. D a straight line.  
Origin: Chapter 3....85
38. D late June.  
Origin: Chapter 1....100
39. C the path of the Sun among the stars through the year.  
Origin: Chapter 1....82
40. A motion of a planet that is "backwards" from the normal direction of motion.  
Origin: Chapter 1....97
41. D 49. degrees  
Origin: Chapter 1....113
42. B a hazy area stretching across the sky.  
Origin: Chapter 1....48
43. A 12 midnight  
Origin: Chapter 6....71
44. A speed  
Origin: Chapter 4....121
45. B north of east.  
Origin: Chapter 1....83
46. C the heliocentric system.  
Origin: Chapter 3....78

47. B be able to see the eclipse as you speak.  
Origin: Chapter 6....103
48. B stellar parallax.  
Origin: Chapter 3....93
49. A the gravitational force of the Moon.  
Origin: Chapter 3....92
50. A even in small telescopes and binoculars.  
Origin: Chapter 3....113
51. D Was known with fair accuracy to certain early Greek thinkers.  
Origin: Chapter 2....102
52. B all of the planets.  
Origin: Chapter 2....74
53. B blueshifted.  
Origin: Chapter 4....102
54. C All of the above.  
Origin: Chapter 1....110
55. B Increases with the mass of the objects and decreases with the distance between them.  
Origin: Chapter 2....105
56. B A theory should be agreed upon by all knowledgeable scientists.  
Origin: Chapter 1....56
57. B the compact car will accelerate more.  
Origin: Chapter 3....88
58. D circle a point near Polaris.  
Origin: Chapter 1....74
59. E He discovered that the planets move around the Sun in elliptical orbits.  
Origin: Chapter 2....103
60. C one sixteenth  
Origin: Chapter 2....107
61. D continue at the same velocity.  
Origin: Chapter 3....62
62. A frequency.  
Origin: Chapter 4....112
63. A It would be reduced to 1/16 as much.  
Origin: Chapter 3....66
64. A  $10^6$   
Origin: Chapter 1....108
65. C one third as large  
Origin: Chapter 4....123
66. A He developed a theory of gravity that could explain orbital motion.  
Origin: Chapter 2....104
67. B an absorption spectrum  
Origin: Chapter 4....94
68. D The changing position and phases of the Moon.  
Origin: Chapter 2....111
69. A Mars  
Origin: Chapter 2....69
70. B the Moon.

- Origin: Chapter 6....77
71. D falls from an outer to an inner orbit.  
Origin: Chapter 4....91
72. A Groups of stars that make an apparent pattern on the night sky.  
Origin: Chapter 1....109
73. A It lies approximately above the northern axis of the Earth.  
Origin: Chapter 1....111
74. A weaker.  
Origin: Chapter 3....90
75. D any two objects.  
Origin: Chapter 3....69
76. E distance.  
Origin: Chapter 1....65
77. B remain constant  
Origin: Chapter 1....114
78. A gibbous phases of Venus.  
Origin: Chapter 3....81
79. D imperfect, but very useful for everyday events.  
Origin: Chapter 3....86
80. D He continued to use circles as planetary paths.  
Origin: Chapter 2....89
81. B solstices.  
Origin: Chapter 1....92
82. A determined and recorded the accuracy of each measurement he made.  
Origin: Chapter 2....81
83. A It is inversely proportional to an object's distance.  
Origin: Chapter 1....112
84. B The rising and setting of the Sun, Moon, and stars.  
Origin: Chapter 2....109
85. E Astronomical Unit.  
Origin: Chapter 1....61
86. B a number of distinct lines.  
Origin: Chapter 4....96
87. B  $1/9$ .  
Origin: Chapter 4....117
88. C Visible light and radio waves.  
Origin: Chapter 4....120
89. A an electron.  
Origin: Chapter 4....111
90. C Mercury and Venus only  
Origin: Chapter 2....50