**Astronomy chapter 2 test bank**

**Multiple Choice**

*Identify the letter of the choice that best completes the statement or answers the question.*

\_\_\_\_ 1. Impacts in the early solar system

|  |  |  |  |
| --- | --- | --- | --- |
| a. | brought new materials to the planets. | c. | dug craters |
| b. | released energy. | d. | All of the above |

\_\_\_\_ 2. Which type of planet will have a higher overall density?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | one that forms close to the sun | b. | one that forms far from the sun |

\_\_\_\_ 3. Which process releases the most energy?

|  |  |
| --- | --- |
| a. | nuclear fusion |
| b. | burning |
| c. | shrinking due to gravity |

\_\_\_\_ 4. Which of the following planets has the shortest period of revolution?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Pluto | c. | Mercury |
| b. | Earth | d. | Jupiter |

\_\_\_\_ 5. Which gas in Earth’s atmosphere tells us that there is life on Earth?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | hydrogen | c. | carbon dioxide |
| b. | oxygen | d. | nitrogen |

\_\_\_\_ 6. Which layer of the Earth has the lowest density?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | the core | c. | the crust |
| b. | the mantle |

\_\_\_\_ 7. What is the term for the speed of gas molecules?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | temperature | c. | gravity |
| b. | pressure | d. | force |

\_\_\_\_ 8. Which of the following objects is LEAST likely to have a spherical shape?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | a comet | c. | the sun |
| b. | Venus | d. | Jupiter |

\_\_\_\_ 9. Which of the following is most likely to cause a nebula to begin collapsing?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | convection within the nebula | c. | energy radiated from planetesimals |
| b. | the explosion of a nearby star | d. | loss of gravity |

\_\_\_\_ 10. A planet with a large \_\_\_\_ has a long period of revolution.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | mass | c. | orbit |
| b. | Kepler factor | d. | surface area |

\_\_\_\_ 11. In a young solar system, new materials are added to planets by

|  |  |  |  |
| --- | --- | --- | --- |
| a. | nuclear fusion. | c. | impacts of smaller objects. |
| b. | primitive life-forms. | d. | convection in planet layers. |

\_\_\_\_ 12. Much of the ocean water present on the early Earth may have been

|  |  |
| --- | --- |
| a. | condensed from volcanic gases. |
| b. | created by the reaction of hydrogen gas with iron. |
| c. | created by the interaction of UV light and oxygen. |
| d. | created deep within the Earth's core. |

\_\_\_\_ 13. Objects in space are most likely to have an irregular shape if they

|  |  |  |  |
| --- | --- | --- | --- |
| a. | are very dense. | c. | are moving slowly. |
| b. | have little mass. | d. | have collapsed due to gravity. |

\_\_\_\_ 14. The region between the stars

|  |  |  |  |
| --- | --- | --- | --- |
| a. | is empty space. | c. | contains dust particles. |
| b. | contains gases. | d. | Both (b) and (c) |

\_\_\_\_ 15. Which of the following does NOT correctly describe nebulas?

|  |  |
| --- | --- |
| a. | Nebulas are huge interstellar clouds of dust and gas. |
| b. | Nebulas give off intense heat similar to the sun. |
| c. | Nebulas are so big that it takes light many years to cross them. |
| d. | Nebulas are the first ingredients of a new planetary system. |

\_\_\_\_ 16. Which of the following helps form a nebula?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | volume | c. | gravity |
| b. | pressure | d. | temperature |

\_\_\_\_ 17. Which of the following keeps a nebula from collapsing in on itself?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | volume | c. | gravity |
| b. | pressure | d. | temperature |

\_\_\_\_ 18. As a nebula cloud collapses in on itself, dust and gas particles move at a \_\_\_\_ the temperature at the center of the cloud.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | faster rate, increasing | c. | slower rate, decreasing |
| b. | faster rate, decreasing | d. | slower rate, increasing |

\_\_\_\_ 19. Which statement best describes gravity?

|  |  |
| --- | --- |
| a. | Gravity is weaker when objects are close together. |
| b. | Gravity is stronger when objects are far apart. |
| c. | Gravity is stronger when objects are close together. |
| d. | Distance between objects does not affect the force of gravity. |

\_\_\_\_ 20. Eventually a collapsing nebula will become a rotating solar nebula in the shape of a

|  |  |  |  |
| --- | --- | --- | --- |
| a. | sphere. | c. | square. |
| b. | disk. | d. | rectangle. |

\_\_\_\_ 21. Which of the following is NOT a gas giant planet?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Earth | c. | Saturn |
| b. | Jupiter | d. | Uranus |

\_\_\_\_ 22. It took nearly \_\_\_\_ years for the solar system to form.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 100 | c. | 10 million |
| b. | 1 million | d. | 100 million |

\_\_\_\_ 23. Which of the following planets collects ice in addition to gases?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Earth | c. | Venus |
| b. | Mercury | d. | Neptune |

\_\_\_\_ 24. Which of the following is TRUE?

|  |  |
| --- | --- |
| a. | All planets revolve around the sun in a clockwise direction. |
| b. | Not all planets rotate in the same direction. |
| c. | One revolution causes Earth's days and nights. |
| d. | none of the above |

\_\_\_\_ 25. The spinning of a planet on its axis is called

|  |  |  |  |
| --- | --- | --- | --- |
| a. | an orbit. | c. | a rotation. |
| b. | a revolution. | d. | circling. |

\_\_\_\_ 26. The path that a planet takes while traveling around the sun is called

|  |  |  |  |
| --- | --- | --- | --- |
| a. | an orbit. | c. | a revolution. |
| b. | a rotation. | d. | circling. |

\_\_\_\_ 27. The motion of a planet traveling around the sun is called

|  |  |  |  |
| --- | --- | --- | --- |
| a. | an orbit. | c. | a rotation. |
| b. | a revolution. | d. | circling. |

\_\_\_\_ 28. One astronomical unit is equivalent to the \_\_\_\_ of the orbital ellipse of Earth.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | focus | c. | semimajor axis |
| b. | major axis | d. | circumference |

\_\_\_\_ 29. The semimajor axis of Earth's orbit is 150 million kilometers. What is the length of the major axis?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 75 million kilometers | c. | 300 million kilometers |
| b. | 150 million kilometers | d. | 600 million kilometers |

\_\_\_\_ 30. One astronomical unit (AU) is

|  |  |
| --- | --- |
| a. | 150 million kilometers. |
| b. | the average distance between the Earth and the sun. |
| c. | the semimajor axis of any ellipse. |
| d. | Both (a) and (b) |

\_\_\_\_ 31. Kepler's second law of motion states that planets travel

|  |  |  |  |
| --- | --- | --- | --- |
| a. | in an ellipse around the sun. | c. | slower when they are close to the sun. |
| b. | at the same speed around the sun. | d. | faster when they are close to the sun. |

\_\_\_\_ 32. Kepler's third law of motion states that by knowing a planet's \_\_\_\_, the planet's distance from the sun can be calculated.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | time of rotation | c. | elliptical focus |
| b. | period of revolution | d. | orbital path |

\_\_\_\_ 33. Using Newton's law of universal gravitation, calculate the change in gravitational attraction between two objects which are moved 5 times as far apart.

|  |  |
| --- | --- |
| a. | Gravitational attraction between the objects will decrease by a factor of 5. |
| b. | Gravitational attraction between the objects will increase by a factor of 10. |
| c. | Gravitational attraction between the objects will decrease by a factor of 25. |
| d. | Gravitational attraction between the objects will increase by a factor of 100. |

\_\_\_\_ 34. The \_\_\_\_ is a region of the sun where hot and cooler gases circulate in convection currents.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | chromosphere | c. | corona |
| b. | photosphere | d. | convective zone |

\_\_\_\_ 35. The \_\_\_\_ is a thin, red region of the sun just below the corona which is too faint to see unless there is a total solar eclipse.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | chromosphere | c. | radiative zone |
| b. | corona | d. | convective zone |

\_\_\_\_ 36. The \_\_\_\_ forms the sun's outer atmosphere where the gases are so thin that this layer is visible only during a total solar eclipse.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | chromosphere | c. | corona |
| b. | photosphere | d. | convective zone |

\_\_\_\_ 37. The \_\_\_\_ is where the gases get thick enough to see and is what we know as the visible surface of the sun.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | corona | c. | radiative zone |
| b. | photosphere | d. | convective zone |

\_\_\_\_ 38. The sun's energy is produced in the

|  |  |  |  |
| --- | --- | --- | --- |
| a. | radiative zone. | c. | corona. |
| b. | convective zone. | d. | core. |

\_\_\_\_ 39. The number of \_\_\_\_ are what give an atom its chemical identity.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | nuclei | c. | nuclei and neutrons |
| b. | neutrons | d. | protons and electrons |

\_\_\_\_ 40. Fusion of hydrogen in the sun results in two \_\_\_\_ atoms combining to form ordinary helium-4.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | hydrogen | c. | helium-3 |
| b. | deuterium | d. | helium-2 |

\_\_\_\_ 41. The speed of light is about 3108 m/s and the sun is about 1.51011 m from Earth. When energy leaves the sun as light, it takes \_\_\_\_ minutes to reach the Earth.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 4.6 | c. | 12.6 |
| b. | 8.3 | d. | 16.5 |

\_\_\_\_ 42. The circulation of the gases within the sun and the sun's own rotation produce magnetic fields. These magnetic fields

|  |  |
| --- | --- |
| a. | cause sunspots. |
| b. | slow down activity in the convective zone. |
| c. | cause solar flares. |
| d. | All of the above |

\_\_\_\_ 43. The \_\_\_\_ is the outermost layer of the Earth.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | crust | c. | skin |
| b. | mantle | d. | core |

\_\_\_\_ 44. The \_\_\_\_ is the center layer of the Earth.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | mantle | c. | skin |
| b. | crust | d. | core |

\_\_\_\_ 45. The \_\_\_\_ is the middle layer of the Earth.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | crust | c. | skin |
| b. | mantle | d. | core |

\_\_\_\_ 46. Today, Earth's atmosphere is composed mostly of

|  |  |  |  |
| --- | --- | --- | --- |
| a. | hydrogen. | c. | nitrogen. |
| b. | oxygen. | d. | argon. |

\_\_\_\_ 47. Scientists once thought that Earth's first atmosphere was composed of

|  |  |  |  |
| --- | --- | --- | --- |
| a. | hydrogen compounds. | c. | ammonia. |
| b. | methane. | d. | All of the above |

\_\_\_\_ 48. Today, scientists believe that Earth's first atmosphere was composed of

|  |  |  |  |
| --- | --- | --- | --- |
| a. | hydrogen compounds. | c. | nitrogen. |
| b. | water vapor and carbon dioxide. | d. | All of the above |

\_\_\_\_ 49. Scientists believe that the surface of the Earth was \_\_\_\_ when it first formed.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | molten rock | c. | oceans of water |
| b. | solid rock | d. | solid ice |

\_\_\_\_ 50. After the Earth cooled off and the core formed, scientists believe that Earth's second atmosphere was much warmer than it is today due to the large amounts of

|  |  |  |  |
| --- | --- | --- | --- |
| a. | chlorine. | c. | sulfur. |
| b. | nitrogen. | d. | carbon dioxide. |

\_\_\_\_ 51. Earth's early atmosphere changed to the atmosphere that we know today with the help of

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Earth's magnetic poles. | c. | gravity. |
| b. | solar ultraviolet radiation. | d. | Earth's rotation. |

\_\_\_\_ 52. Which statement best describes solar UV light?

|  |  |
| --- | --- |
| a. | It breaks apart molecules. |
| b. | It decreases the speed of molecules. |
| c. | It is absorbed harmlessly by the ground. |
| d. | It causes molecules to glow. |

\_\_\_\_ 53. Which of the following provided Earth with the majority of oxygen that we now have in our atmosphere?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | comets | c. | planetesimals |
| b. | meteorites | d. | plants |

\_\_\_\_ 54. Which property of the different types of rock forming the Earth allowed for the continents to form?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | mass | c. | density |
| b. | volume | d. | temperature |

\_\_\_\_ 55. The sun is millions of kilometers away from Earth. Why do its solar flares cause concern for us on Earth?

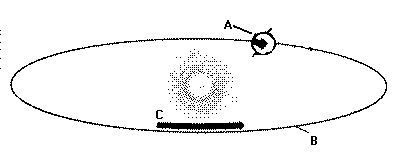
|  |  |
| --- | --- |
| a. | They can cause electronic circuits to fail. |
| b. | They can interrupt radio communications. |
| c. | They can affect satellites in orbit. |
| d. | all of the above |

\_\_\_\_ 56. How many planets can be in the same orbit around the sun?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | one | c. | three |
| b. | two | d. | four |

\_\_\_\_ 57. Which of the following is oldest?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | breathable atmosphere | c. | ocean |
| b. | continents | d. | plants |



\_\_\_\_ 58. Which of the following is illustrated by arrow **A**?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | orbit | c. | rotation |
| b. | revolution | d. | period of rotation |

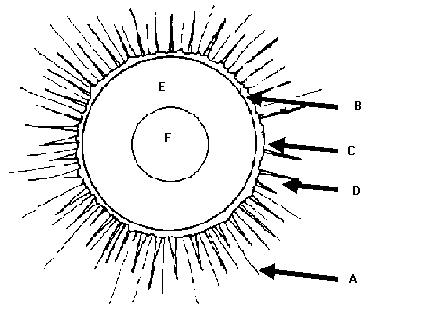
\_\_\_\_ 59. Which of the following is illustrated by arrow **C**?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | orbit | c. | rotation |
| b. | revolution | d. | period of rotation |

\_\_\_\_ 60. Which of the following is illustrated by line **B**?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | orbit | c. | rotation |
| b. | revolution | d. | period of rotation |

Below is a cutaway view of the sun. Examine the diagram and answer the questions that follow.

****

\_\_\_\_ 61. Which of the following is indicated by **A**?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | photosphere | c. | corona |
| b. | chromosphere | d. | convective zone |

\_\_\_\_ 62. Which of the following is indicated by **B**?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | photosphere | c. | corona |
| b. | chromosphere | d. | convective zone |

\_\_\_\_ 63. Which of the following is indicated by **C**?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | photosphere | c. | corona |
| b. | chromosphere | d. | convective zone |

\_\_\_\_ 64. Which of the following is indicated by **D**?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | photosphere | c. | core |
| b. | chromosphere | d. | convective zone |

\_\_\_\_ 65. Which of the following is indicated by **E**?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | photosphere | c. | core |
| b. | radiative zone | d. | convective zone |

\_\_\_\_ 66. Which of the following is indicated by **F**?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | photosphere | c. | core |
| b. | radiative zone | d. | convective zone |

\_\_\_\_ 67. Einstein developed an equation that changed ideas about the sun's energy source by equating

|  |  |  |  |
| --- | --- | --- | --- |
| a. | mass and energy. | c. | mass and weight. |
| b. | gravity and mass. | d. | gravity and weight. |

**Completion**

*Complete each sentence or statement.*

68. It takes millions of years for light energy to travel through the sun’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. (radiative zone or convective zone)

69. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the Earth causes night and day. (Rotation or Revolution)

70. Convection in Earth’s mantle causes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. (plate tectonics or nuclear fusion)

71. The part of the sun where energy is produced is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. (corona or core)

72. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are huge clouds of dust and gas found in space. (Protospheres or Nebulae)

73. Energy from the sun's center requires a long time to escape because it must pass through the thick \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. (radiative zone or chromosphere)

74. The sun is powered by nuclear \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. (mantle or fusion)

75. The Earth completes one \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ each day. (revolution or rotation)

76. A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is composed of a star and the planets and other bodies that travel around the star.

77. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which is a measure of the amount of matter in an object, is affected by the force of gravity.

78. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ nebula is the name of the nebula that formed into our own solar system.

79. As dust particles begin to stick together and grow in size within a collapsing nebula, they form the tiny building blocks of the planets, called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

80. An icy planetesimal which journeys toward the sun is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

81. The amount of time it takes for a single trip around the sun is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

82. A planet travels around the sun in an elongated circle called an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

83. The maximum length of an ellipse is called its \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

84. Half the maximum length of an ellipse is called its \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

85. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ fusion is the process of combining the nuclei of hydrogen atoms to form helium.

86. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are the smallest particles of matter that keep their chemical identity.

87. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are the negatively charged particles found in all atoms.

88. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are the positively charged particles in the nucleus of all atoms.

89. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are the particles without a charge in the nucleus of all atoms.

90. When two hydrogen nuclei collide, they combine to produce a heavy form of hydrogen called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

91. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are cooler, dark spots on the sun.

92. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are giant storms on the surface of the sun.

93. Particles sent out from solar flares interact with Earth's upper atmosphere, causing spectacular light shows called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

94. Planetesimals made of rock are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

95. Planetesimals made of ice are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

96. The opposing forces of gravity and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ reach a balance in a nebula.

**Short Answer**

For each pair of terms, explain the difference in their meanings.

97. temperature/pressure

98. planetesimal/planet

99. solar system/solar nebula

100. ellipse/circle

101. rotation/revolution

102. photosphere/corona

103. What two forces balance each other to keep a nebula of dust and gas from collapsing or flying apart?

104. Why does the composition of the giant gas planets differ from that of the rocky inner planets?

105. Explain why there is only one planet in each orbit around the sun.

106. Why do all the planets go around the sun in the same direction, and why do the planets all lie in a flat plane?

107. On what properties does the force of gravity between two objects depend?

108. Will a planet or comet be moving faster in its orbit when it is farther from or closer to the sun? Explain.

109. How does gravity keep a planet moving in an orbit around the sun?

110. Suppose a certain planet had two moons, one of which was twice as far from the planet as the other. Which moon would complete one revolution of the planet first? Explain.

111. According to modern understanding, what is the source of the sun's energy?

112. If nuclear fusion in the sun's core suddenly stopped today, would the sky be dark in the daytime tomorrow? Why?

113. Why did the Earth separate into distinct layers?

114. How did the Earth's atmosphere change composition to become today's nitrogen and oxygen atmosphere?

115. Which are older, oceans or continents? Explain.

116. If the Earth were not hot inside, would we have moving continents (plate tectonics)? Explain.

117. Explain the imbalance that creates a solar nebula.

118. Why does the center of a collapsing nebula form a star?

119. How do planets form?

120. How do you know that gravity does not produce the sun's energy?

121. What happens during nuclear fusion?

122. How does energy produced by nuclear fusion move from the sun's core to space?

123. Why was there a large amount of water vapor in Earth's second atmosphere?

124. How and when did oxygen become abundant in Earth's atmosphere?

125. How has the relationship between ozone and life on Earth changed since the time of Earth's early atmosphere?

126. Why did the solar nebula begin to collapse to form the sun and planets if the forces of pressure and gravity were balanced?

127. a. How is the period of revolution related to the semimajor axis of an orbit?

b. Draw an ellipse and label the semimajor axis.

128. How did our understanding of the sun’s energy change over time?

129. Use the following terms to create a concept map: *solar nebula, solar system, planetesimals, sun, photosphere, core, nuclear fusion, planets, Earth.*

130. Explain why nuclear fusion works inside the sun but not inside Jupiter, which is also made mostly of hydrogen and helium.

131. Why is it less expensive to launch an interplanetary spacecraft from the international space station in Earth’s orbit than from Earth itself?

132. Soon after the formation of the universe, there was only hydrogen and helium. Heavier elements, such as carbon, oxygen, silicon, and all the matter that makes up the heavier minerals and rocks in the solar system, were made inside an earlier generation of stars. Do you think the first generation of stars had any planets like Earth, Venus, Mercury, and Mars? Explain.

133. Suppose astronomers discover a new planet orbiting our sun. The orbit has a semimajor axis of 2.52 AU. What is the planet’s period of revolution?

134. If the planet in the previous question is twice as massive as the Earth but is the same size, how much would a person who weighs 100 lb on Earth weigh on this planet?

135. Briefly state Kepler's three laws of planetary motion.

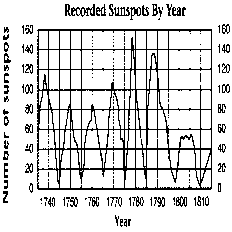
136. How did the interior of the Earth separate into layers?

137. Draw an ellipse and label the two foci, the major axis, and the semimajor axis.

138. Why are relatively massive celestial bodies, such as stars and planets, shaped like spheres?

139. Saturn is about 95.2 times as massive as the Earth. Jupiter is about 317.8 times as massive as the Earth. How many times more massive than Saturn is Jupiter? Round your answer to the nearest tenth. Show your work.

140. The graph below shows the number of recorded sunspots each year from 1735 to 1815.



About how much time passes between the year with the most sunspots and the year with the fewest sunspots? Explain your answer.

141. Use the following terms to complete the concept map below: *planetesimals, gas, nebula, solar system, gravity, solar nebula, planets, rock.*

