

Review Questions For Introductory Astronomy (Ast 180)

1. What is the order of planets as we move away from the Sun?
2. What is the distance between the Sun and Mercury in AU?
3. What is the distance between the Sun and Earth in AU?
4. What is the distance between the Sun and Jupiter in AU?
5. What is the distance between the Sun and Neptune in AU?
6. What is the average distance between the Sun and Pluto in AU?
7. What is the distance to the nearest star in ly? In pc?
8. What is the diameter of the Milky Way in ly? In pc?
9. What is the distance to the Andromeda Galaxy in ly? In pc?
10. How long has the Sun been burning H into He and energy?
11. How long will the Sun burn H into He and energy (from start to finish)?
12. How old is the Universe?
13. What is the apparent magnitude of the Sun?
14. What is the apparent magnitude of the faintest object observed by our best research telescopes and detectors?
15. What is the faintest apparent magnitude visible with the unaided human eye?
16. What is the angular diameter of the Moon in degrees?
17. What is the angular diameter of the Sun in degrees?
18. Be able to work with the small angle formula (see page 34 in our textbook).
19. Be able to work with angles in arc sec, arc min, and degrees.
20. What causes the seasons on Earth?
21. What causes celestial objects to rise in the east and set in the west?
22. What causes the Moon to move through the constellations of the zodiac?
23. What is special about the constellations of the zodiac?
24. What is the altitude of the North Star in Flagstaff? On the Equator? At the North Pole?
25. What is special about the North Star?
26. What is the celestial equator?
27. What is the meridian?
28. What are circumpolar constellations?
29. What are intermediate zone constellations?
30. Describe the daily motion of the sky at the equator, Flagstaff, North Pole.
31. Be able to work with an equatorial star chart.
32. What is the ecliptic?
33. Know the phases of the Moon.
34. What causes the Moon to go through phases?
35. When do different phases of the Moon rise? Set?
36. When does a total lunar eclipse occur?
37. What happens during a total lunar eclipse?
38. When does a total solar eclipse occur?
39. What happens during a total solar eclipse?

40. Why does the same hemisphere of the Moon always face the Earth?
41. What is Kepler's First Law? Second Law? Third Law?
42. Be able to numerically work with Kepler's Third Law.
43. What were the important contributions of Brahe? Kepler, Copernicus? Galileo? Halley? Newton?
44. What is the primary purpose of a telescope?
45. What is light gathering power of a telescope? Why is it important to astronomers?
46. Know how to work with the formula for light gathering power?
47. What is the resolution of a telescope? Why is it important to astronomers?
48. Know how to work with the formula for resolution of a telescope.
49. What is seeing? What is diffraction?
50. Why is Hubble Space Telescope an important telescope?
51. What is the magnification of a telescope? What does it depend on?
52. What is a spectrum?
53. How do you produce a spectrum of a celestial object?
54. What kind of information can you get out of a spectrum of an astronomical object?
55. What distinguishes one type of light (e.g. ultraviolet light) from another type of light (e.g. infrared light)?
56. Know how to work with Wien's Law (see page 105 of our textbook).
57. Know how to work with the Stefan-Boltzmann Law (see page 105 of our textbook).
58. How are continuous spectra, absorption spectra, and emission spectra produced by astronomical objects (see page 108 and 109 of our textbook)?
59. What is the Doppler Effect?
60. Know how to work with the Doppler Equation.
61. What is parallax?
62. How do astronomers use parallax to find distances to the nearest stars?
63. Be able to work with the parallax formula, $d = 1/p$ (see page 145 of our text book).
64. What is absolute magnitude, M , and how is it different from apparent magnitude, m ?
65. Know how to work with the relationship between m and M , i.e. $m - M = 5 \log(d) - 5$.
66. What is a star's luminosity?
67. What does luminosity depend on? Know how to relate luminosity of a star to its temperature and radius.
68. What is the H-R diagram? Why is it important in astronomy?
69. Be able to locate red dwarfs, main sequence stars, giants, supergiants, white dwarfs on an H-R diagram.
70. What defines a main sequence star?
71. What are the properties of red dwarfs? Giant stars? Supergiant stars? White Dwarfs?
72. What is a neutron star? What are the properties of neutron stars?
73. What is a blackhole? What are the properties of blackholes?
74. What one intrinsic property of a star determines its final fate?
75. What are the three final fates of stars?
76. What is spectroscopic parallax?

77. What kind of star dominates the stars near the Sun in space?
78. What kind of star dominates the brightest stars we can see in the night sky?
79. What are emission nebulae? Reflection nebula? Dark Nebula?
80. Where do we observe stars being born?
81. What is hydrostatic equilibrium?
82. What defines a main sequence star?
83. What determines how long a star stays on the main sequence?
84. Be able to calculate how long in years a 60 solar mass star stay on the main sequence?
85. Be able to calculate how long in years a 0.5 solar mass star stay on the main sequence?
86. How will the Sun evolve after it leaves the main sequence?
87. What is a planetary nebula?
88. What is a supernova?
89. What kinds of objects make the elements of the periodic table more complex than H and He?
90. Why is it said we are made of "star stuff"?
91. What is the major evidence that our stellar evolution theory is on the right track?
92. Who was able to show the Sun is not at the center of the Milky Way? How did he do it?
93. What are the major components of the Milky Way Galaxy?
94. What are the properties of the major components of the Milky Way?
95. Where is the Sun located in the Milky Way?
96. What are open clusters? Where are they found in the Milky Way?
97. What are globular clusters? Where are they found in the Milky Way?
98. What are Population I stars? Where are they located in the Milky Way?
99. What are Population II stars? Where are they located in the Milky Way?
100. What are the oldest objects in the Milky Way? How do we know their age?
101. What evidence suggests there is a massive blackhole at the center of the Milky Way?
102. What is dark matter?
103. What evidence suggests there is dark matter in the Milky Way?
104. What is a galaxy?
105. What are the three types of galaxies?
106. What are the properties of the three types of galaxies?
107. What is Hubble's Law?
108. Why is Hubble's Law important?
109. What evidence is there that massive blackholes are common at the center of galaxies?
110. What evidence is there that dark matter is common in galaxies?
111. What is the Local Group?
112. What are the properties of the Local Group?
113. What is look back time?
114. What are active galactic nuclei (AGN)?
115. Why are Seyfert galaxies important?
116. What is a quasar?
117. Describe the engine of a quasar?
118. What is the Big Bang?

119. What evidence is there the Big Bang exists?
120. What is the Universe? What is the observable Universe?
121. What is the cosmic background radiation? Why is it important?
122. What is the most distant thing astronomers will ever see in the Universe?
123. What is Olber's Paradox? Why is it important to our study of the Universe?
124. Briefly, describe the evolution of the observable Universe over the last 15 billion years
125. Describe the origin and evolution of the Solar System.
126. What evidence supports our ideas for the origin and evolution of the Solar System?
127. What are the terrestrial planets? What are their main properties?
128. What are the jovian planets? What are their main properties?
129. Why do the planets revolve about the Sun in the same sense?
130. Why are small rocky planets close to the Sun and large hydrogen rich planets farther from the Sun?
131. What are asteroids? What are their properties? Where are they located in the Solar System? Why are they important to life on Earth?
132. What are comets? What are their properties? Where are they located in the Solar System? Why are they important to life on Earth?
133. What is the best theory for the origin of the Moon?