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| 1. How many centimeters are there in one kilometer?   |  |  |  | | --- | --- | --- | |  | a. | 100 | |  | b. | 1,000 | |  | c. | 10,000 | |  | d. | 100,000 | |  | e. | 1×106 |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 8/1/2016 4:47 PM | |

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| 2. Scientific notation is used in science because   |  |  |  | | --- | --- | --- | |  | a. | it makes it easy to write big or small numbers. | |  | b. | all astronomical distances are expressed in metric units. | |  | c. | it makes conversions between units easy. | |  | d. | All of the other choices are correct. |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *REFERENCES:* | p. 3 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 3. The average distance from Earth to the Sun is   |  |  |  | | --- | --- | --- | |  | a. | 1 ly. | |  | b. | 1 million km. | |  | c. | 1 million miles. | |  | d. | 1 billion km. | |  | e. | 1 AU. |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *REFERENCES:* | Figure 1-6 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/21/2016 10:08 PM | |

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| 4. The Sun is   |  |  |  | | --- | --- | --- | |  | a. | a star which generates its own energy. | |  | b. | 1 AU from Earth. | |  | c. | visible by its own light emission. | |  | d. | All of the other choices are correct. |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *REFERENCES:* | p. 3 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/21/2016 10:09 PM | |

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| 5. The diameter of a typical star (the Sun) is approximately \_\_\_\_ times larger than the diameter of a typical planet (the Earth).   |  |  |  | | --- | --- | --- | |  | a. | 10 | |  | b. | 100 | |  | c. | 1000 | |  | d. | 10,000 | |  | e. | 100,000 |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *REFERENCES:* | p. 4 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/21/2016 10:11 PM | |

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| 6. A typical galaxy like our Milky Way galaxy contains   |  |  |  | | --- | --- | --- | |  | a. | primarily planets. | |  | b. | gas only. | |  | c. | stars (some with planets), gas, and dust. | |  | d. | a single star and planets. | |  | e. | thousands of superclusters. |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *REFERENCES:* | p. 6 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 7. The radius of the Moon's orbit is about \_\_\_\_ times larger than the radius of Earth.   |  |  |  | | --- | --- | --- | |  | a. | 0.6 | |  | b. | 6 | |  | c. | 60 | |  | d. | 600 | |  | e. | 6000 |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *REFERENCES:* | p. 3 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/21/2016 10:46 PM | |

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| 8. Choose the best answer. The Milky Way Galaxy   |  |  |  | | --- | --- | --- | |  | a. | is part of a cluster of a few dozen galaxies. | |  | b. | is about 200 light-years in diameter. | |  | c. | is the largest known object in the universe. | |  | d. | is part of a cluser of a few dozen galaxies, is about 200 ly in diameter, and is the largest known object in the universe | |  | e. | is part of a cluster of a few dozen galaxies and is the largest known object in the universe |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *REFERENCES:* | p. 6 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/21/2016 9:34 PM | |

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| 9. 2.9×107 is the same as   |  |  |  | | --- | --- | --- | |  | a. | 2.9 thousand. | |  | b. | 29 thousand. | |  | c. | 290 thousand. | |  | d. | 2.9 million. | |  | e. | 29 million. |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 10. 1.65 billion is the same as   |  |  |  | | --- | --- | --- | |  | a. | 1.65 × 1012. | |  | b. | 1.65 × 109. | |  | c. | 1.65 × 106. | |  | d. | 1.65 × 105. | |  | e. | 1.65 × 103. |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 11. Arrange the following distances in order from smallest to largest.  ​   |  |  | | --- | --- | | I. | kilometer | | II. | light-year | | III. | yard | | IV. | astronomical unit |  |  |  |  | | --- | --- | --- | |  | a. | I, II, III, IV | |  | b. | IV, III, II, I | |  | c. | III, I, IV, II | |  | d. | II, I, IV, III | |  | e. | III, I, II, IV |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/21/2016 9:35 PM | |

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| 12. If distance is speed × time and light takes 1.3 seconds to travel from the Moon to Earth and 8 minutes to travel from the Sun to Earth, which of the following statements is true?   |  |  |  | | --- | --- | --- | |  | a. | The Sun is 6.2 times further from Earth than the Moon. | |  | b. | The Sun is 10 times further from Earth than the Moon. | |  | c. | The Sun is 0.16 times further Earth than the Moon | |  | d. | The Sun is 0.10 times further from Earth that the Moon. | |  | e. | The Sun is 370 times further from Earth than the Moon. |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 3/13/2016 6:27 PM | |

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| 13. If distance is speed × time and light takes 8 minutes to travel from the Sun to Earth and over 4 hours to travel from the Sun to the planet Neptune, what is the distance from the Sun to Neptune?   |  |  |  | | --- | --- | --- | |  | a. | 5 AU | |  | b. | 30 AU | |  | c. | 30 ly | |  | d. | 5 ly | |  | e. | 0.6 ly |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/21/2016 10:55 PM | |

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| 14. Using the scale in the diagram below, what is the diameter of Mercury?   |  |  |  | | --- | --- | --- | |  | a. | about 240 km | |  | b. | about 2400 km | |  | c. | about 24,000 km | |  | d. | about 240,000 km | |  | e. | about 2.4 × 106 km |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *NOTES:* | Diameter is twice the radius. | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 15. Using the scale in the diagram below, what is the diameter of Jupiter?   |  |  |  | | --- | --- | --- | |  | a. | about 7.0 × 104 km | |  | b. | about 7.0 × 105 km | |  | c. | about 1.4 × 104 km | |  | d. | about 1.4 × 105 km | |  | e. | about 3.5 × 106 km |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *NOTES:* | Diameter is twice the radius. | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 16. Earth has a radius of about 6400 km, the Sun has a radius of about 7.0×105 km, and a rubber ball has a radius of 6.4 cm. If you were to construct a scale model of the solar system using the rubber ball to represent Earth, what is the radius of a ball needed to represent the Sun in your model?   |  |  |  | | --- | --- | --- | |  | a. | 7.0 × 105 cm | |  | b. | 7.0 cm | |  | c. | 700 cm | |  | d. | 70 cm | |  | e. | 7000 cm |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 3/13/2016 6:27 PM | |

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| 17. The speed of light is 3.0 × 105 km/s, and it takes 1.3 s for light to travel from the Moon to Earth. From this information, what is the distance to the Moon?   |  |  |  | | --- | --- | --- | |  | a. | 390,000 km | |  | b. | 230,000 km | |  | c. | 3.9 km | |  | d. | 2.3 km | |  | e. | 4.3 × 105 km |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/21/2016 11:28 PM | |

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| 18. If the distance to the nearest star is 4.2 light-years, then   |  |  |  | | --- | --- | --- | |  | a. | the star is 4.2 million AU away. | |  | b. | the light we see left the star 4.2 years ago. | |  | c. | the star must have formed 4.2 billion years ago. | |  | d. | the star must be very young. | |  | e. | the star must be very old. |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *REFERENCES:* | p. 4 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 19. The Milky Way Galaxy is   |  |  |  | | --- | --- | --- | |  | a. | a spiral galaxy. | |  | b. | part of a cluster of galaxies that contains a few dozen galaxies. | |  | c. | about 80,000 light years in diameter. | |  | d. | All of the other choices are correct. |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *REFERENCES:* | p. 5 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 20. If the Earth were represented as a basketball (˜10 in. in diameter) and the Moon as a baseball (˜3 in. in diameter) then, to order of magnitude, what size would best represent the diameter of the Sun?   |  |  |  | | --- | --- | --- | |  | a. | 10 ft | |  | b. | 100 ft | |  | c. | 1000 ft | |  | d. | 10000 ft |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/21/2016 11:29 PM | |

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| 21. Which sequence is correct when ordered by increasing size?   |  |  |  | | --- | --- | --- | |  | a. | Earth, Solar System, Milky Way Galaxy, clusters of galaxies | |  | b. | Solar System, Earth, galaxy clusters, Milky Way Galaxy | |  | c. | Earth, Milky Way Galaxy, Solar System, galaxy clusters | |  | d. | Galaxy clusters, Solar System, Milky Way Galaxy, Earth |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *REFERENCES:* | pp. 3-5 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 22. How is a planet different than a star?   |  |  |  | | --- | --- | --- | |  | a. | Planets are larger than stars. | |  | b. | Planets reflect light while stars produce their own light. | |  | c. | Stars move faster in the sky than planets. | |  | d. | Planets are brighter than stars. |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *REFERENCES:* | p. 3 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 23. If the distance from the Sun to the Earth is represented by roughly 15 meters, then the distance from Earth to the Moon on the same scale would be   |  |  |  | | --- | --- | --- | |  | a. | about 30 meters. | |  | b. | about 10 meters. | |  | c. | about 1 meter. | |  | d. | small than your hand. |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/21/2016 11:29 PM | |

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| 24. Assume the size of the Sun is represented by a baseball with the Earth is about 15 meters (150 million km or 8 light minutes) away. How far away, to scale, would the nearest stars to the Sun be? Choose the closest answer.   |  |  |  | | --- | --- | --- | |  | a. | about the distance between New York and Boston (330 km) | |  | b. | 100 meters away | |  | c. | about the distance across the United States from New York to Los Angeles (4300 km) | |  | d. | about the distance across 50 football fields (50 × 100 m) |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A, p. 5 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/21/2016 11:30 PM | |

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| 25. The average distance from Earth to the Sun is   |  |  |  | | --- | --- | --- | |  | a. | 1 ly. | |  | b. | 1 million km. | |  | c. | 1 million miles. | |  | d. | 1 billion km. | |  | e. | 150 million km. |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A, p. 3 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/21/2016 11:31 PM | |

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| 26. Assume a 100-yard football field represents the 14-billion-year history of the universe with one end as the origin and the other end representing the present. The existence of human beings will extend from \_\_\_\_ to the present “goal line.”   |  |  |  | | --- | --- | --- | |  | a. | the 50-yard line | |  | b. | the 5-yard line | |  | c. | the one-yard line | |  | d. | the one-inch line |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *REFERENCES:* | p. 7 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 27. Which of these is NOT a common misconception?   |  |  |  | | --- | --- | --- | |  | a. | A light year is a unit of time. | |  | b. | Stars look like disks when seen through a telescope | |  | c. | A galaxy is a star plus its planets. | |  | d. | All of the other choices are misconceptions. |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *REFERENCES:* | p. 4, 6 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 28. 64,200,000,000 is equal to   |  |  |  | | --- | --- | --- | |  | a. | 6.42 × 107. | |  | b. | 6.42 × 10−7. | |  | c. | 6.42 × 1010. | |  | d. | 6.42 × 10−10. | |  | e. | 1.0 × 1064.2. |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 29. A solar system contains   |  |  |  | | --- | --- | --- | |  | a. | primarily planets. | |  | b. | large amounts of gas and dust but very few stars. | |  | c. | large amounts of gas, dust, and stars. | |  | d. | a single star and planets. | |  | e. | thousands of superclusters. |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *REFERENCES:* | p. 3 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 30. 3.0 × 105 times 1.5 × 109 is equal to   |  |  |  | | --- | --- | --- | |  | a. | 4.5 × 1045. | |  | b. | 4.5 × 1014. | |  | c. | 2.0 × 104. | |  | d. | 2.0 × 1014. | |  | e. | 2.0 × 1045. |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 31. 4.4 × 106 divided by 8.8 × 1010 is equal to   |  |  |  | | --- | --- | --- | |  | a. | 5.0 × 10−5. | |  | b. | 5.0 × 10−4. | |  | c. | 5.0 × 104. | |  | d. | 3.9 × 1017. | |  | e. | 3.9 × 1016. |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 32. If the light takes 8 minutes to reach Earth from the Sun and the nearest star is 4.7 ly from the Sun, what is the distance from the Sun to the nearest star in astronomical units?   |  |  |  | | --- | --- | --- | |  | a. | 37.6 AU | |  | b. | 1.7 AU | |  | c. | 214 AU | |  | d. | 310,000 AU | |  | e. | 1.5 × 1011 AU |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/21/2016 11:32 PM | |

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| 33. Which of the following is the largest?   |  |  |  | | --- | --- | --- | |  | a. | the diameter of Earth | |  | b. | the diameter of the Moon | |  | c. | the diameter of the Sun | |  | d. | the diameter of Jupiter | |  | e. | the distance from Earth to the Sun |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/21/2016 11:34 PM | |

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| 34. In units of yards, how far from the Big Bang is the Recombination period, when the gas becomes transparent to light?   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | much, much less than a yard | b. | about a yard | |  | c. | about 5 yards | d. | about 10 yards |  |  |  | | --- | --- | | *ANSWER:* | a | | *RATIONALE:* | Refer to the inset in the Universe Bowl. | | *POINTS:* | 1 | | *REFERENCES:* | Universe Bowl | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 35. Order the following from most recent to least.  I. Big Bang  II. Age of quasars  III. First humans  IV. Cambrian explosion  V. Formation of the solar system  VI. First life  VII. Recombination Period   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | I, II, VII, IV, V, VI, III | b. | I, VI, VII, II, V, IV, III | |  | c. | I, VI, V, VII, III, II, IV | d. | I, VII, II, V, VI, IV, III |  |  |  | | --- | --- | | *ANSWER:* | d | | *RATIONALE:* | See the Universe Bowl and order from left to right starting with the Big Bang’s end zone. | | *POINTS:* | 1 | | *REFERENCES:* | Universe Bowl | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/21/2016 10:01 PM | |

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| 36. Which unit best represents a field of view?   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | seconds | b. | square centimeters | |  | c. | Celsius | d. | km |  |  |  | | --- | --- | | *ANSWER:* | d | | *RATIONALE:* | FOV is the diagonal of the image and in units of distance. | | *POINTS:* | 1 | | *REFERENCES:* | p. 2 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/21/2016 10:02 PM | |

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| 37. Which color best represents space as drawn in this chapters’ figures?   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | blue | b. | white | |  | c. | black | d. | red |  |  |  | | --- | --- | | *ANSWER:* | c | | *RATIONALE:* | Black is drawn as the color of space (or absence of color) and could represent a cool color. | | *POINTS:* | 1 | | *REFERENCES:* | Figure 1-6 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/21/2016 10:05 PM | |

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| 38. Which is the shorter time unit - a light-second, a light-minute, or a light-year?   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | light-second | b. | light-minute | |  | c. | light-year | d. | None of the other choices are correct. |  |  |  | | --- | --- | | *ANSWER:* | d | | *RATIONALE:* | The units given are distance units. | | *POINTS:* | 1 | | *REFERENCES:* | p. 4 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 39. If light travels 63,000 AU in 1 year at 3 × 108 m/s, which of these best represents the unit of a light-year?   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | 63,000 AU | b. | 3 × 108 m/s | |  | c. | 1 year | d. | All of the other choices are correct. |  |  |  | | --- | --- | | *ANSWER:* | a | | *RATIONALE:* | You are seeking a unit of distance as the unit for light-year is distance. | | *POINTS:* | 1 | | *REFERENCES:* | p. 4 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 40. How long does light take to reach us from Proxima Centuri?   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | 4.2 ly | b. | 4.2 years | |  | c. | 8.4 AU | d. | 8.4 km |  |  |  | | --- | --- | | *ANSWER:* | b | | *RATIONALE:* | How long refers to time not distance. | | *POINTS:* | 1 | | *REFERENCES:* | p. 5 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 5/6/2016 1:53 AM | |

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| 41. How fast does light travel from Proxima Centuri to Earth?   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | 4.2 ly | b. | 4.2 years | |  | c. | 3 × 108 m/s | d. | None of the other choices are correct. |  |  |  | | --- | --- | | *ANSWER:* | c | | *RATIONALE:* | Light travels at the speed of light c. | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 5/6/2016 1:54 AM | |

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| 42. Which shape best describes how stars look when seen through a telescope?   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | five-point star | b. | disk | |  | c. | point | d. | seven-point star |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *REFERENCES:* | p. 5 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 43. Earth is located about \_\_\_\_\_\_\_\_\_\_\_\_ of the way out from the center of the Milky Way Galaxy.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | 1/2 | b. | 1/3 | |  | c. | 2/3 | d. | 3/2 |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *REFERENCES:* | p. 6 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 44. Which of the following order from largest to smallest is incorrect?   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | void, supercluster, star | b. | filament, planet, asteroid | |  | c. | wall, star, planet | d. | void, solar system, cluster |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *REFERENCES:* | p. 6 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 45. Which is the correct order for the following steps used in the scientific method? I. Conclude II. Analyze III. Gather evidence IV. Test V. Hypothesize VI. Establish laws   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | VI, V, III, II, IV, I | b. | III, IV, II, V, VI, I | |  | c. | V, III, IV, II, I, VI | d. | III, V, IV, II, I, VI |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *REFERENCES:* | How Do We Know? 1-1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 46. If the field of view (FOV) in Figure 1-1 is 50 ft and the distance is widened by a factor of 100, how large is the FOV in Figure 1-2? Choose the best answer.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | 1 mile | b. | 5000 ft | |  | c. | 1 square mile | d. | 5000 square feet |  |  |  | | --- | --- | | *ANSWER:* | b | | *RATIONALE:* | Multiply by 100. | | *POINTS:* | 1 | | *REFERENCES:* | p. 2 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 47. By how much is the FOV (field of view) enlarged from Figure 1 to Figure 3?   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | 100 | b. | 1 × 105 | |  | c. | 1,000 | d. | 10,000 |  |  |  | | --- | --- | | *ANSWER:* | d | | *RATIONALE:* | 100x100 | | *POINTS:* | 1 | | *REFERENCES:* | p. 2 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 48. According to the text, the Sun is a very \_\_\_\_\_\_\_\_\_\_\_\_\_ star.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | typical | b. | atypical | |  | c. | unique | d. | abnormal |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *REFERENCES:* | p. 4 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/21/2016 11:43 PM | |

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| 49. Figure 1-11 is an example of a/an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Choose the best answer.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | image | b. | picture | |  | c. | artistic rendering | d. | line drawing |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *REFERENCES:* | Figure 1-11 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 50. Which of the following is an incorrect ordering of the planets' distances from the Sun, from nearest to furthest?   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | Mercury, Venus, Uranus, Neptune | b. | Earth, Mars, Jupiter, Saturn | |  | c. | Venus, Mars, Jupiter, Neptune | d. | Earth, Venus, Jupiter, Uranus |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *REFERENCES:* | Figures 1-6, 1-7. | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/21/2016 11:51 PM | |

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| 51. Which of the following is ordered correctly from largest to smallest planet?   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | Neptune, Saturn, Moon, Earth | b. | Venus, Mercury, Jupiter, Saturn | |  | c. | Mars, Earth, Saturn, Jupiter | d. | Uranus, Saturn, Venus, Earth |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/21/2016 11:53 PM | |

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| 52. The name of the average distance from Earth to the Sun is one \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.   |  |  | | --- | --- | | *ANSWER:* | astronomical unit | | *POINTS:* | 1 | | *REFERENCES:* | p. 4 | | *QUESTION TYPE:* | Completion | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/21/2016 11:55 PM | |

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| 53. Light takes about 8 minutes to travel from the Sun to Earth and about 40 minutes to travel from the Sun to Jupiter. Jupiter is about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ AU from the Sun.   |  |  | | --- | --- | | *ANSWER:* | five  5 | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A | | *QUESTION TYPE:* | Completion | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/21/2016 11:56 PM | |

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| 54. A(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the largest known structure in the universe.   |  |  | | --- | --- | | *ANSWER:* | filament  wall | | *POINTS:* | 1 | | *REFERENCES:* | p. 6 | | *QUESTION TYPE:* | Completion | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 55. A(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the distance that light would travel in one year.   |  |  | | --- | --- | | *ANSWER:* | light-year | | *POINTS:* | 1 | | *REFERENCES:* | p. 4 | | *QUESTION TYPE:* | Completion | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 56. The number 52,600,000,000 would be written in scientific notation as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.   |  |  | | --- | --- | | *ANSWER:* | 5.26 × 1010 | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A | | *QUESTION TYPE:* | Completion | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 57. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ contains a large amount of gas and dust and a great number of stars, and our Sun is one of those stars.   |  |  | | --- | --- | | *ANSWER:* | Milky Way Galaxy | | *POINTS:* | 1 | | *REFERENCES:* | p. 5 | | *QUESTION TYPE:* | Completion | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/21/2016 11:57 PM | |

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| 58. A(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a collection of billions of stars.   |  |  | | --- | --- | | *ANSWER:* | galaxy | | *POINTS:* | 1 | | *REFERENCES:* | p. 5 | | *QUESTION TYPE:* | Completion | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 59. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the closest star to Earth.   |  |  | | --- | --- | | *ANSWER:* | Sun | | *POINTS:* | 1 | | *REFERENCES:* | Figure 1-6 | | *QUESTION TYPE:* | Completion | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 60. The scientific method is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by which scientists form hypotheses and test them agains evidence gathered by observation or experiment.   |  |  | | --- | --- | | *ANSWER:* | process | | *POINTS:* | 1 | | *REFERENCES:* | How Do We Know? 1-1 | | *QUESTION TYPE:* | Completion | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 61. In the mnemonic, *My Very Educated Mother Just Served Us Noodles*, \_\_\_\_\_\_\_\_\_ refers to Mars.   |  |  | | --- | --- | | *ANSWER:* | Mother | | *POINTS:* | 1 | | *REFERENCES:* | p. 4 | | *QUESTION TYPE:* | Completion | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/21/2016 11:58 PM | |

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| 62. \_\_\_\_\_\_\_\_\_\_\_\_ is the closest planet to the Sun.   |  |  | | --- | --- | | *ANSWER:* | Mercury | | *POINTS:* | 1 | | *REFERENCES:* | Figure 1-6 | | *QUESTION TYPE:* | Completion | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/21/2016 11:59 PM | |

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| 63. \_\_\_\_\_\_\_\_ is the smallest planet in the solar system.   |  |  | | --- | --- | | *ANSWER:* | Mercury | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A | | *QUESTION TYPE:* | Completion | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 64. The average distance from Earth to the Sun is 1 AU.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *POINTS:* | 1 | | *REFERENCES:* | Figure 1-6 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/22/2016 12:07 AM | |

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| 65. The nearest star is 1 ly from the solar system.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *REFERENCES:* | p. 5 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 66. A light-year is the distance light travels in one year.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *POINTS:* | 1 | | *REFERENCES:* | p. 4 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 67. A kilometer contains 1 million meters.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 68. The Sun is a star in the Milky Way Galaxy.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *POINTS:* | 1 | | *REFERENCES:* | p. 5 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/22/2016 12:08 AM | |

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| 69. The metric system is a decimal system.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 70. 3.42 × 107 km is the same as 3.42 × 104 m.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 71. The numbers 9.81×105 and 981,000 are equivalent.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 72. An astronomical unit is larger than a light-year.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 73. A supercluster refers to a large group of stars within the Milky Way.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *REFERENCES:* | p. 6 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 74. The Milky Way and the Milky Way Galaxy are the same thing.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *RATIONALE:* | Refer to the Glossary. | | *POINTS:* | 1 | | *REFERENCES:* | p. 5 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 75. Our Sun was born in a spiral arm.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *RATIONALE:* | Refer to spiral arms. | | *POINTS:* | 1 | | *REFERENCES:* | p. 6 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/22/2016 12:09 AM | |

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| 76. Life began on land.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *RATIONALE:* | Where did microscopic life begin? | | *POINTS:* | 1 | | *REFERENCES:* | p. 7 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 77. Life and human life are the same thing.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *RATIONALE:* | Life can refer to microscopic life. | | *POINTS:* | 1 | | *REFERENCES:* | p. 7 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 78. The scientific method is a simple, mechanical way of grinding facts into understanding.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *REFERENCES:* | How Do We Know? 1-1 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 79. The relative distance between the planets increase with distance from the Sun.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *POINTS:* | 1 | | *REFERENCES:* | Figure 1-7 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/22/2016 12:10 AM | |

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| 80. The Moon is a large moon compared to the size of its host planet.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *POINTS:* | 1 | | *REFERENCES:* | Figure 1-5 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/22/2016 12:11 AM | |

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| 81. The Milky Way Galaxy is alone, that is, not a part of a group or cluster.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *REFERENCES:* | p. 6 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 82. The Big Bang is a point in space.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *REFERENCES:* | p. 7 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 83. The solar system is larger than the Milky Way Galaxy.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *REFERENCES:* | p. 5 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 84. The name of our planetary system orbiting our Sun is called the Milky Way Galaxy.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *REFERENCES:* | p. 6 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/22/2016 12:11 AM | |

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| 85. Our universe is the planets orbiting the Sun, the Sun, and all the asteroids and comets in between and around our system.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *REFERENCES:* | p. 6 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 2/22/2016 12:12 AM | |

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| 86. Why would the English system of units be more useful if a foot contained 10 inches?   |  |  | | --- | --- | | *ANSWER:* | Because our number system is base-10, having units based on 10 simplifies calculations. Fractions could be expressed in decimal notation. Prefixes could be used, such as milli-, centi-, kilo- to express lengths of varying orders of magnitudes. | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A | | *QUESTION TYPE:* | Essay | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 5/6/2016 2:17 AM | |

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| 87. Why do we measure some distances in astronomy in light-years and some in astronomical units?   |  |  | | --- | --- | | *ANSWER:* | Consider using millimeters to describe the distance between New York and California, 3,920,000,000 millimeters. This distance is correct, but it is far more convenient to state the distance as 3920 kilometers. Distances in astronomy are huge when compared to distances we measure on Earth. It is simpler and more convenient to use larger distance units for discussion and calculations. | | *POINTS:* | 1 | | *REFERENCES:* | Appendix A | | *QUESTION TYPE:* | Essay | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 6/4/2016 3:09 PM | |

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| 88. From what you know about astronomical units and light-years, how would you define a light-minute?   |  |  | | --- | --- | | *ANSWER:* | A light-minute is the distance light travels in a minute, or (3.0 × 108 m)(60 s) =  18 × 106 km. | | *POINTS:* | 1 | | *REFERENCES:* | p. 4 | | *QUESTION TYPE:* | Essay | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 6/4/2016 3:09 PM | |

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| 89. "I live 20 minutes from Center City." How is this statement similar to giving astronomical distances in light-years?   |  |  | | --- | --- | | *ANSWER:* | Twenty minutes is a measurement of time. In this case, the person speaking is referring to the time it takes to travel from City Center to home. If someone says an object is a distance of a certain number of light years, this is incorrect. Light-years is a measurement of distance. It is a common misperception that a light-year is a unit of time, because it has the word “year”. | | *POINTS:* | 1 | | *REFERENCES:* | p. 4 | | *QUESTION TYPE:* | Essay | | *HAS VARIABLES:* | False | | *NOTES:* | Distance is velocity x time. | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 6/4/2016 3:09 PM | |

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| 90. Describe the difference between a solar system and a galaxy.   |  |  | | --- | --- | | *ANSWER:* | A solar system consists of a star, or possibly a binary star system, surrounded by orbiting objects such as planets, asteroids, and comets. A galaxy is a collection of many millions or billions of stars, many of which are members of solar systems. | | *POINTS:* | 1 | | *REFERENCES:* | p. 3, 5 | | *QUESTION TYPE:* | Essay | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 6/4/2016 3:10 PM | |

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| 91. Considering that the Sun is about 1/100 AU in diameter and a typical planet like Earth is 1/10,000 AU, discuss whether or not our Solar System is crowded or empty.   |  |  | | --- | --- | | *ANSWER:* | ​  The Sun and planets make up only a tiny fraction of the volume of the Solar System, so it is relatively empty. | | *POINTS:* | 1 | | *REFERENCES:* | Figure 1-7 | | *QUESTION TYPE:* | Essay | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 5/6/2016 2:29 AM | |

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| 92. Briefly describe the scientific method.   |  |  | | --- | --- | | *ANSWER:* | The scientific method is a process scientists use to better understand the natural world. It is a combination of many ways of analyzing information, finding relationships, and creating new ideas. Scientists use insight and ingenuity to form, test, revise, and possibly discard hypotheses, in the quest to gain a fundamental understanding of nature. | | *POINTS:* | 1 | | *REFERENCES:* | How Do We Know? 1-1 | | *QUESTION TYPE:* | Essay | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 6/4/2016 3:10 PM | |

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| 93. Draw a schematic (not to scale) diagram showing the Sun, the Earth circling around it, and the other seven planets with labels for each orbit.   |  |  | | --- | --- | | *ANSWER:* | Diagram should show the Sun and the eight planets in order: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune. | | *POINTS:* | 1 | | *REFERENCES:* | Figures 1-6 and 1-7 | | *QUESTION TYPE:* | Essay | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 6/4/2016 3:10 PM | |

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| 94. Assume a textbook shows a diagram of the solar system on, say, a standard notebook-sized sheet. The orbits of eight planets are sketched around the Sun at the center. The planets and orbits are drawn large enough that features like continents on Earth or the rings of Saturn are clearly visible. The Sun is drawn large enough that sunspots are clearly visible. Discuss what is wrong or right with this diagram.   |  |  | | --- | --- | | *ANSWER:* | The diagram is correct in that there are eight planets orbiting the Sun. It is incorrect in several ways. One, if the Sun and planets were drawn to scale, it would be impossible to make out surface features of the Sun or Earth, or the rings of Saturn. Two, although the planets orbit the Sun, the orbits are not perfect circles but ellipses. | | *POINTS:* | 1 | | *REFERENCES:* | Figure 1-6, 1-7 | | *QUESTION TYPE:* | Essay | | *HAS VARIABLES:* | False | | *NOTES:* | Are the orbits and objects drawn to scale? How do you know? | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 6/4/2016 3:11 PM | |

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| 95. Is the scientific method a hypothesis? How do you know?   |  |  | | --- | --- | | *ANSWER:* | No, the scientific method is a process of which a hypothesis is one piece. | | *POINTS:* | 1 | | *REFERENCES:* | How Do We Know? 1-1 | | *QUESTION TYPE:* | Essay | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 96. Draw a schematic (not to scale) of the Milky Way Galaxy face on so that you see the spiral arms. Label the spiral arms. Now draw a schematic (not to scale) of the Milky Way Galaxy edge-on, and locate and label the disk.   |  |  | | --- | --- | | *ANSWER:* | Arms are shown in the face-on figure, usually two grand spiral arms (even though the MWG has spurs). Edge-on, the MWG appears like a quarter and we see the outer rim of the arms, which we refer to as the disk. | | *POINTS:* | 1 | | *REFERENCES:* | Figure 1-11 | | *QUESTION TYPE:* | Essay | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 4/11/2014 2:50 PM | |

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| 97. Draw a schematic (not to scale) of filaments, walls, and voids, labeling each.   |  |  | | --- | --- | | *ANSWER:* | The drawing should look like soap bubbles. | | *POINTS:* | 1 | | *REFERENCES:* | Figure 1-13 | | *QUESTION TYPE:* | Essay | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 4/11/2014 2:50 PM | | *DATE MODIFIED:* | 5/6/2016 1:24 PM | |