HorizonsExploring the Universe 14th Edition Seeds Test Bank

Chapter 1. Here and Now

1. How many centimeters are there in one kilometer?
   a. 100
   b. 1,000
   c. 10,000
   d. 100,000
   e. 1×10^6

ANSWER:	d
POINTS:	1
REFERENCES:	Appendix A
QUESTION TYPE:	Multiple Choice
HAS VARIABLES:	False
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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
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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
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4. The Sun is
   a. a star which generates its own energy.
   b. 1 AU from Earth.

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    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

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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

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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

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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

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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

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9. 2.9×10^7 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

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10. 1.65 billion is the same as
   a. 1.65×10^{12}.
   b. 1.65×10^9.
   c. 1.65×10^6.
   d. 1.65×10^5.

e. 1.65×10^3.

ANSWER:	b
POINTS:	1
REFERENCES:	Appendix A
QUESTION TYPE:	Multiple Choice
HAS VARIABLES:	False
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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
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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
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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
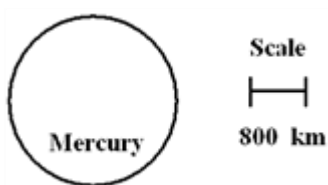*POINTS:*   1
REFERENCES: Appendix A
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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14. Using the scale in the diagram below, what is the diameter of Mercury?

a. about 240 km
b. about 2400 km
c. about 24,000 km
d. about 240,000 km
e. about 2.4×10^6 km

ANSWER: b
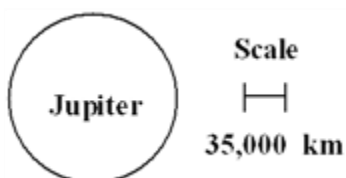*POINTS:*   1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
NOTES: Diameter is twice the radius.
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15. Using the scale in the diagram below, what is the diameter of Jupiter?

a. about 7.0×10^4 km
b. about 7.0×10^5 km
c. about 1.4×10^4 km
d. about 1.4×10^5 km

e. about 3.5×10^6 km

ANSWER: d
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
NOTES: Diameter is twice the radius.
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16. Earth has a radius of about 6400 km, the Sun has a radius of about 7.0×10^5 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. 7.0×10^5 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
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17. The speed of light is 3.0×10^5 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. 4.3×10^5 km

ANSWER: a
POINTS: 1
REFERENCES: Appendix A
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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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

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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

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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

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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

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POINTS: 1
REFERENCES: pp. 3-5
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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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
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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
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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

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HAS VARIABLES: False
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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
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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
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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
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28. 64,200,000,000 is equal to
    a. 6.42×10^{7}.
    b. 6.42×10^{-7}.
    c. 6.42×10^{10}.
    d. 6.42×10^{-10}.
    e. $1.0 \times 10^{64.2}$.

ANSWER: c
POINTS: 1
REFERENCES: Appendix A
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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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
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30. 3.0×10^{5} times 1.5×10^{9} is equal to
    a. 4.5×10^{45}.
    b. 4.5×10^{14}.
    c. 2.0×10^{4}.
    d. 2.0×10^{14}.
    e. 2.0×10^{45}.

ANSWER: b
POINTS: 1
REFERENCES: Appendix A
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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31. 4.4×10^6 divided by 8.8×10^{10} is equal to
   a. 5.0×10^{-5}.
   b. 5.0×10^{-4}.
   c. 5.0×10^4.
   d. 3.9×10^{17}.
   e. 3.9×10^{16}.

ANSWER: a
POINTS: 1
REFERENCES: Appendix A
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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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. 1.5×10^{11} AU

ANSWER: d
POINTS: 1
REFERENCES: Appendix A
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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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
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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
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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
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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
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37. Which color best represents space as drawn in this chapters' figures?

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    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

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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

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39. If light travels 63,000 AU in 1 year at 3×10^8 m/s, which of these best represents the unit of a light-year?

    a. 63,000 AU   b. 3×10^8 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

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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

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HAS VARIABLES: False
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41. How fast does light travel from Proxima Centuri to Earth?
    a. 4.2 ly   b. 4.2 years
    c. 3×10^8 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
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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
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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
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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

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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

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

47. By how much is the FOV (field of view) enlarged from Figure 1 to Figure 3?
    a. 100   b. 1×10^5
    c. 1,000   d. 10,000

ANSWER:　　　　　d
RATIONALE:　　　100x100
POINTS:　　　　　1
REFERENCES:　　　p. 2

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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
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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
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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
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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
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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
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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
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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
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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
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56. The number 52,600,000,000 would be written in scientific notation as _____.
ANSWER: 5.26×10^{10}
POINTS: 1
REFERENCES: Appendix A

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QUESTION TYPE:	Completion
HAS VARIABLES:	False
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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
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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

59. _____ is the closest star to Earth.

ANSWER:	Sun
POINTS:	1
REFERENCES:	Figure 1-6
QUESTION TYPE:	Completion
HAS VARIABLES:	False
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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
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61. In the mnemonic, *My Very Educated Mother Just Served Us Noodles*, _____ refers to Mars.

ANSWER:	Mother

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POINTS: 1
REFERENCES: p. 4
QUESTION TYPE: Completion
HAS VARIABLES: False
DATE CREATED: 4/11/2014 2:50 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
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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
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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
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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

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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
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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
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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

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

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70. 3.42×10^7 km is the same as 3.42×10^4 m.
    a. True
    b. False

71. The numbers 9.81×10^5 and 981,000 are equivalent.
    a. True
    b. False

72. An astronomical unit is larger than a light-year.
    a. True
    b. False

73. A supercluster refers to a large group of stars within the Milky Way.
    a. True
    b. False

Chapter 1. Here and Now

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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
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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
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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
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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.

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POINTS:	1
REFERENCES:	p. 7
QUESTION TYPE:	True / False
HAS VARIABLES:	False
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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
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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
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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
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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

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POINTS:	1
REFERENCES:	p. 6
QUESTION TYPE:	True / False
HAS VARIABLES:	False
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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
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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
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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
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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

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ANSWER: False
POINTS: 1
REFERENCES: p. 6
QUESTION TYPE: True / False
HAS VARIABLES: False
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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
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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
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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 $(3.0 \times 10^8 \text{ m})(60 \text{ s}) = 18 \times 10^6$ km.
POINTS: 1
REFERENCES: p. 4
QUESTION TYPE: Essay
HAS VARIABLES: False
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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

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REFERENCES:	p. 4
QUESTION TYPE:	Essay
HAS VARIABLES:	False
NOTES:	Distance is velocity x time.
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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
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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
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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
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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.

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POINTS: 1
REFERENCES: Figures 1-6 and 1-7
QUESTION TYPE: Essay
HAS VARIABLES: False
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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?
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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
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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
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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.

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POINTS:	1
REFERENCES:	Figure 1-13
QUESTION TYPE:	Essay
HAS VARIABLES:	False
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