THE SCALE OF THE COSMOS

**Multiple Choice**

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

\_\_\_\_ 1. How many centimeters are there in one kilometer

|  |  |
| --- | --- |
| a. | 100 |
| b. | 1000 |
| c. | 10,000 |
| d. | 100,000 |
| e. | 1106 |

\_\_\_\_ 2. Scientific notation is used in science because

|  |  |
| --- | --- |
| a. | it makes it easy to write large or small numbers. |
| b. | all astronomical distances are expressed in metric units. |
| c. | it makes conversions between units easy. |
| d. | all of the above |
| e. | none of the above |

\_\_\_\_ 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 |

\_\_\_\_ 4. The sun is

|  |  |
| --- | --- |
| a. | a star. |
| b. | 1 AU from Earth. |
| c. | more than 100 times the diameter of Earth. |
| d. | all of the above. |
| e. | none of the above. |

\_\_\_\_ 5. If the nearest star is 4.2 light-years away, 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. |

\_\_\_\_ 6. A galaxy 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. |

\_\_\_\_ 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 |

\_\_\_\_ 8. The Milky Way Galaxy

|  |  |
| --- | --- |
| a. | contains about 100 billion stars. |
| b. | is about 100 light-years in diameter. |
| c. | is the largest known object in the universe. |
| d. | a., b., and c. are correct |
| e. | Only a. and c. are correct. |

\_\_\_\_ 9. The Milky Way Galaxy

|  |  |
| --- | --- |
| a. | contains about 100 stars. |
| b. | is the largest known object in the universe. |
| c. | is about 75,000 light-years in diameter. |
| d. | is located about 2.2 million light years from the sun |
| e. | Only a. and c. are correct. |

\_\_\_\_ 10. What does the size of the image of a star in a photograph tell us about the star?

|  |  |
| --- | --- |
| a. | the diameter of the star |
| b. | the brightness of the star |
| c. | the mass of the star |
| d. | the temperature of the star |
| e. | the distance to the star |

\_\_\_\_ 11. 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 |

\_\_\_\_ 12. From 1979 to 1999 Pluto was closer to the sun than

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

\_\_\_\_ 13. 2.9107 is the same as

|  |  |
| --- | --- |
| a. | 2.9 thousand. |
| b. | 29 thousand. |
| c. | 290 thousand. |
| d. | 2.9 million. |
| e. | 29 million. |

\_\_\_\_ 14. 64,200,000,000 is equal to

|  |  |
| --- | --- |
| a. | 6.42107. |
| b. | 6.4210-7. |
| c. | 6.421010. |
| d. | 6.4210-10. |
| e. | 1.01064.2. |

\_\_\_\_ 15. 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 2.4106 km |

\_\_\_\_ 16. 3.0105 times 1.5109 is equal to

|  |  |
| --- | --- |
| a. | 4.51045. |
| b. | 4.51014. |
| c. | 2.0104. |
| d. | 2.01014. |
| e. | 2.01045. |

\_\_\_\_ 17. 4.4106 divided by 8.81010 is equal to

|  |  |
| --- | --- |
| a. | 5.010-5. |
| b. | 5.010-4. |
| c. | 5.0104. |
| d. | 3.91017. |
| e. | 3.91016. |

\_\_\_\_ 18. If light takes 8 minutes to reach Earth from the sun and 5.3 hours to reach Pluto, what is the approximate distance from the sun to Pluto?

|  |  |
| --- | --- |
| a. | 5.3 AU |
| b. | 40 AU |
| c. | 40 ly |
| d. | 5.3 ly |
| e. | 0.6 ly |

\_\_\_\_ 19. 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. | 1.51011 AU |

\_\_\_\_ 20. Earth has a radius of about 6400 km, the sun has a radius of about 7.0105 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 the earth, what is the radius of a ball needed to represent the sun in your model?

|  |  |
| --- | --- |
| a. | 7.0105 cm |
| b. | 7.0 cm |
| c. | 700 cm |
| d. | 70 cm |
| e. | 7000 cm |

**True/False**

*Indicate whether the sentence or statement is true or false.*

\_\_\_\_ 21. The average distance from Earth to the sun is 1 AU.

\_\_\_\_ 22. The nearest star is 1 ly from the solar system.

\_\_\_\_ 23. A light-year is the distance light travels in one year.

\_\_\_\_ 24. A kilometer contains 1 million meters.

\_\_\_\_ 25. The sun is a star in the Milky Way Galaxy.

\_\_\_\_ 26. The metric system is a decimal system.

\_\_\_\_ 27. The Local Group contains the sun and only about two dozen other stars.

\_\_\_\_ 28. A supercluster refers to a large group of stars within the Milky Way.