

MULTIPLE CHOICE

1. How many centimetres are there in one kilometre?
- a. 1,000
 - b. 10,000
 - c. 1×10^5
 - d. 1×10^6

ANS: C PTS: 1 REF: 4 BLM: Higher Order

2. Why is scientific notation used in astronomy?
- 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. Astronomers invented scientific notation.

ANS: A PTS: 1 REF: 6 BLM: Remember

3. What is the average distance from the Earth to the Sun?
- a. 1 million kilometres
 - b. 1 billion kilometres
 - c. 1 light year
 - d. 1 Astronomical Unit

ANS: D PTS: 1 REF: 6 BLM: Remember

4. How long ago did the Big Bang happen?
- a. 4.5 billion years
 - b. 13.7 billion years
 - c. 37 billion years
 - d. 45 billion years

ANS: B PTS: 1 REF: 10 BLM: Remember

5. What is the ratio of the diameter of the Sun to the diameter of the Earth?
- a. 100 : 1
 - b. 1000 : 1
 - c. 10,000 : 1
 - d. 100,000 : 1

ANS: A PTS: 1 REF: 5 BLM: Remember

6. What does a typical galaxy like our Milky Way galaxy contain?
- a. primarily planets
 - b. gas and dust only
 - c. stars, planets, gas, and dust
 - d. a single star and planets

ANS: C

PTS: 1

REF: 8

BLM: Remember

7. Using the cosmic calendar, where the Big Bang happened January 1, in what month did the Milky Way form?
- January
 - March
 - August
 - December

ANS: B

PTS: 1

REF: 10

BLM: Remember

8. How many stars are in the Milky Way galaxy?
- about 100 trillion
 - about 100 billion
 - about 100 million
 - about 100,000

ANS: B

PTS: 1

REF: 8

BLM: Remember

9. What is another way to say 2.9×10^7 ?
- 29 thousand
 - 290 thousand
 - 2.9 million
 - 29 million

ANS: D

PTS: 1

REF: 6

BLM: Higher Order

10. Which of the following is another way to express 1.65 billion?
- 1.65×10^5
 - 1.65×10^6
 - 1.65×10^9
 - 1.65×10^{12}

ANS: C

PTS: 1

REF: 6

BLM: Higher Order

11. From 1979 to 1999, what planet was farther from the Sun than Pluto?
- Earth
 - Jupiter
 - Uranus
 - Neptune

ANS: D

PTS: 1

REF: 7

BLM: Remember

12. Which of the following has the distances arranged in order from smallest to largest?
- kilometre, light year, millimetre, Astronomical Unit
 - Astronomical Unit, millimetre, light year, kilometre
 - millimetre, kilometre, Astronomical Unit, light year
 - light year, kilometre, Astronomical Unit, millimetre

ANS: C

PTS: 1

REF: 4-7

BLM: Higher Order

13. It takes light 1.3 seconds to travel from the Moon to the Earth and 8 minutes to travel from the Sun to the Earth. How much farther from the Earth is the Sun, compared to the Moon?
- 2.1 times farther
 - 6.2 times farther
 - 10 times farther
 - 370 times farther

ANS: D

PTS: 1

REF: 7

BLM: Higher Order

14. If light takes 8 minutes to travel from the Sun to the Earth and over 4 hours to travel from the Sun to the planet Neptune, what is the distance from the Sun to Neptune?
- 5 Astronomical Units
 - 30 Astronomical Units
 - 0.6 light years
 - 5 light years

ANS: B

PTS: 1

REF: 7

BLM: Higher Order



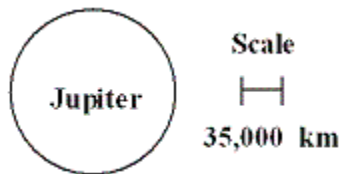
15. In the diagram, what is the diameter of Mercury?
- about 240 kilometres
 - about 2400 kilometres
 - about 24,000 kilometres
 - about 2.4×10^6 kilometres

ANS: B

PTS: 1

REF: 5

BLM: Higher Order



16. In the diagram, what is the diameter of Jupiter?
- about 7.0×10^4 kilometres
 - about 1.4×10^5 kilometres
 - about 7.0×10^5 kilometres
 - about 3.5×10^6 kilometres

ANS: B

PTS: 1

REF: 5

BLM: Higher Order

17. The Earth has a radius of about 6400 kilometres, the Sun has a radius of about 7.0×10^5 kilometres, and a rubber ball has a radius of 6.4 centimetres. 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?
- 7.0 cm

- b. 70 cm
- c. 700 cm
- d. 7000 cm

ANS: C PTS: 1 REF: 7 BLM: Higher Order

18. The speed of light is 3.0×10^5 km/sec, and it takes light 1.3 seconds for light to travel from the Moon to the Earth. Based on this information, what is the distance to the Moon?
- a. 2.3 kilometres
 - b. 3.9 kilometres
 - c. 230,000 kilometres
 - d. 390,000 kilometres

ANS: D PTS: 1 REF: 7 BLM: Higher Order

19. If the distance to the nearest star is 4.2 light years, what can we conclude about the star?
- a. The star is 4.2 million AU away.
 - b. The star's light takes 4.2 years to reach us.
 - c. The star must have formed 4.2 billion years ago.
 - d. The star must be very young.

ANS: B PTS: 1 REF: 7 BLM: Higher Order

20. How long does it take light to cross the Milky Way galaxy?
- a. about 8 minutes
 - b. about 8 years
 - c. about 80,000 years
 - d. about 200 million years

ANS: C PTS: 1 REF: 8 BLM: Higher Order

21. What is the reason for compressing the history of the universe into a single year in the cosmic calendar?
- a. to compare astronomical timescales with human experience
 - b. to emphasize how old the universe is
 - c. to simplify calculations of ages of objects in the universe
 - d. to express the distances of objects in light-years

ANS: A PTS: 1 REF: 10 BLM: Higher Order

22. Which sequence below is correctly ordered from smallest to largest 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

ANS: A PTS: 1 REF: 5-8 BLM: Higher Order

23. How are planets and stars different?
- a. Planets are larger than stars.
 - b. Planets reflect light, while stars produce their own light.

- c. Stars move across the sky faster than planets.
- d. Planets are brighter than stars.

ANS: B PTS: 1 REF: 6 BLM: Higher Order

24. If an object is 1,000 light years away, how do we see it?
- a. as it looked 1,000 years ago
 - b. as it appeared to our ancestors 1,000 years ago
 - c. as it looked 1,000 light years ago
 - d. as it is right now, but it appears 1,000 times dimmer

ANS: A PTS: 1 REF: 6 BLM: Higher Order

25. Why do astronomers measure distances in strange units like astronomical units and light-years?
- a. these units are more convenient when dealing with large distances
 - b. these units are part of the metric system
 - c. these units are about the same size as a typical star
 - d. these units can more easily be expressed using scientific notation

ANS: A PTS: 1 REF: 6 BLM: Higher Order

26. Assume the size of the Sun is represented by a baseball (diameter about 7 cm). At this scale the Earth is about 15 metres (150 million kilometres, or 8 light minutes) away. How far away, to scale, would the nearest stars to the Sun be? Pick the closest answer.
- a. 100 metres away
 - b. about the distance across 50 soccer fields (50 x 100 metres, or 5 kilometres)
 - c. about the distance between Toronto and Windsor (330 kilometres)
 - d. about the distance from Toronto to Vancouver (4300 kilometres)

ANS: D PTS: 1 REF: 7 BLM: Higher Order

COMPLETION

1. The name of the average distance from the Earth to the Sun is one _____.

ANS: Astronomical Unit

PTS: 1 REF: 6 BLM: Remember

2. Light takes about 8 minutes to travel from the Sun to the Earth, and about 40 minutes to travel from the Sun to Jupiter. Jupiter is about _____ AU from the Sun.

ANS:
five (5)
5
five

PTS: 1 REF: 7 BLM: Higher Order

3. A(n) _____ is the largest known structure in the universe.

ANS: filament

PTS: 1

REF: 8

BLM: Remember

4. A(n) _____ is the distance that light would travel in one year.

ANS: light year

PTS: 1

REF: 7

BLM: Remember

5. The number 52,600,000,000 would be written in scientific notation as _____.

ANS: 5.26×10^{10}

PTS: 1

REF: 6

BLM: Higher Order

TRUE/FALSE

1. The average distance from the Earth to the Sun is 1 Astronomical Unit.

ANS: T

PTS: 1

2. The nearest star is 1 light year from the solar system.

ANS: F

PTS: 1

3. A light year is the distance that light travels in one year.

ANS: T

PTS: 1

4. A kilometre contains 1 million metres.

ANS: F

PTS: 1

5. The Sun is a star in the Milky Way galaxy.

ANS: T

PTS: 1

6. The metric system is a decimal system.

ANS: T

PTS: 1

7. 3.42×10^7 kilometres is the same as 3.42×10^4 metres.

ANS: F

PTS: 1

8. The numbers 9.81×10^5 and 981,000 are equivalent.

ANS: T PTS: 1

9. An Astronomical Unit is larger than a light year.

ANS: F PTS: 1

10. A supercluster refers to a large group of stars within the Milky Way.

ANS: F PTS: 1

ESSAY

1. Explain the difference between a light year and the orbital period of the Earth.

ANS:
Answer not provided.

PTS: 1

2. Why would the English system of units be more useful if a foot contained 10 inches?

ANS:
Answer not provided.

PTS: 1

3. Why do we measure some distances in astronomy in light years and some in Astronomical Units?

ANS:
Answer not provided.

PTS: 1

4. From what you know about Astronomical Units and light years, how would you define a light minute?

ANS:
Answer not provided.

PTS: 1

5. "I live 20 minutes from Centre City." How is this statement similar to giving astronomical distances in light years?

ANS:

Answer not provided.

PTS: 1

6. Describe the difference between a solar system and a galaxy.

ANS:

Answer not provided.

PTS: 1

7. Considering that the Sun is about 1/100 AU in diameter and a typical planet like the Earth is 1/10,000 AU in diameter, discuss whether or not our Solar System is crowded or empty.

ANS:

Answer not provided.

PTS: 1

8. Briefly describe the scientific method.

ANS:

No answer provided.

PTS: 1