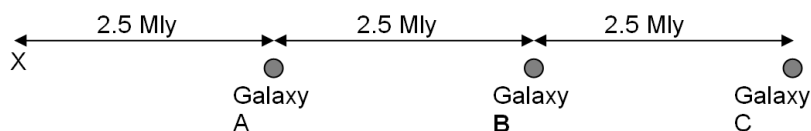


## Chapter 02 Earth in Space

### Multiple Choice Questions

The following diagram shows the relative position of some galaxies (2.5 Mly = 2.5 million light years). The location labeled "X" is the observation point.



1. Suppose these galaxies were observed at location X using the Hubble telescope. Place them in order from **most red shift to least red shift**.

- A. A, B, C
- B. C, B, A**
- C. B, A, C
- D. C, A, B

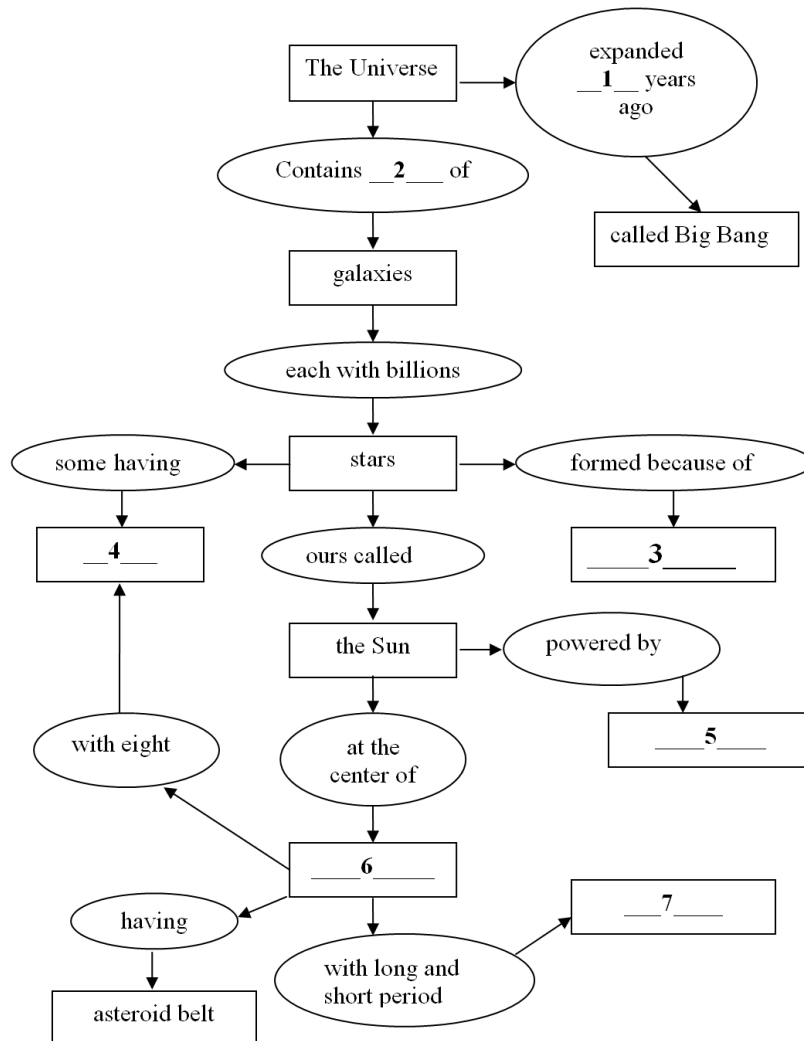
*Blooms Level 3- Apply*  
*Section 2.2*

2. Predict what happens to the brightness of a star with an orbiting extra-solar planet.

- A. It brightens when the planet is between its star and us.
- B. It dims when the planet is between its star and us.**
- C. Brightness is not affected by the orbit.

*Blooms Level 3- Apply*  
*Section 2.2*

Analyze the map and select the proper response for each missing term or phrase.



3. Analyze the map and select the proper response for missing term or phrase for number 1.

- A. 150,000
- B. 15 million
- C. 15 billion**
- D. 15 trillion

*Blooms Level 4- analyze*  
*Section 2.2*

4. Analyze the map and select the proper response for missing term or phrase for number 2.
- A. Hundreds
  - B. Thousands
  - C. Millions
  - D.** Billions

*Blooms Level 4- analyze*  
*Section 2.2*

5. Analyze the map and select the proper response for missing term or phrase for number 3.
- A. Fusion
  - B.** Gravity
  - C. Heliosphere

*Blooms Level 4- analyze*  
*Section 2.3*

6. Analyze the map and select the proper response for missing term or phrase for number 4.
- A. Asteroids
  - B. Comets
  - C.** Planets

*Blooms Level 4- analyze*  
*Section 2.3*

7. Analyze the map and select the proper response for missing term or phrase for number 5.
- A. Gravity
  - B.** Fusion
  - C. Heliosphere

*Blooms Level 4- analyze*  
*Section 2.3*

8. Analyze the map and select the proper response for missing term or phrase for number 6.

- A. Solar system
- B. Universe
- C. Galaxy

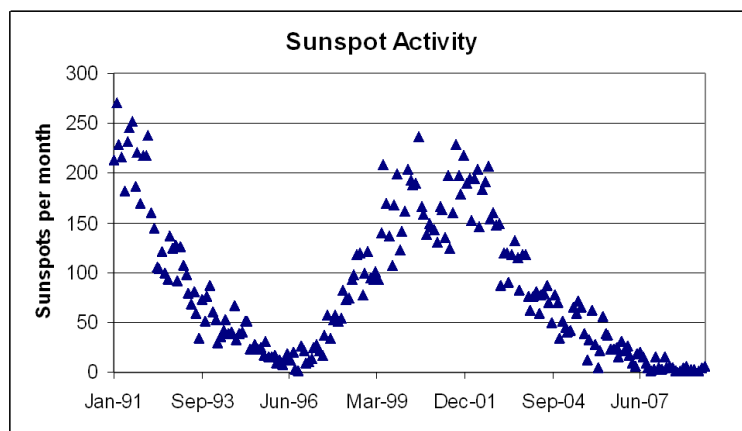
*Blooms Level 4- analyze*  
*Section 2.1*

9. Analyze the map and select the proper response for missing term or phrase for number 7.

- A. Planets
- B. Moons
- C. Comets

*Blooms Level 4- analyze*  
*Section 2.4*

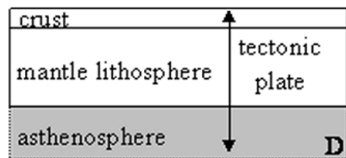
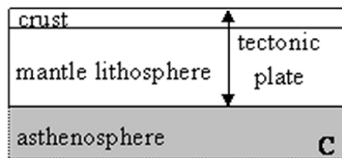
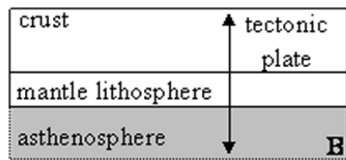
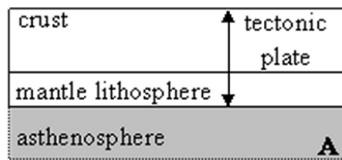
10. Based on this graph of the number of sunspots per month data from the U.S. Dept. of Commerce, NOAA, Space Weather Prediction Center (SWPC), when can we expect the next significant disruption to electronic communications?



- A. 2008
- B. 2012
- C. 2018
- D. 2023

*Blooms Level 5- Evaluate*  
*Section 2.3*

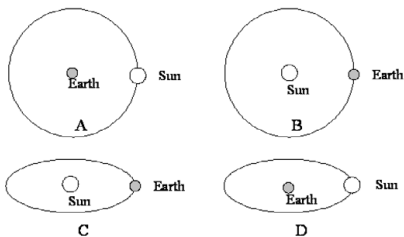
11. Which diagram best summarizes the structure of a tectonic plate?



- A. A
- B. B
- C. C**
- D. D

*Blooms Level 2- Understand*  
*Section 2.6*

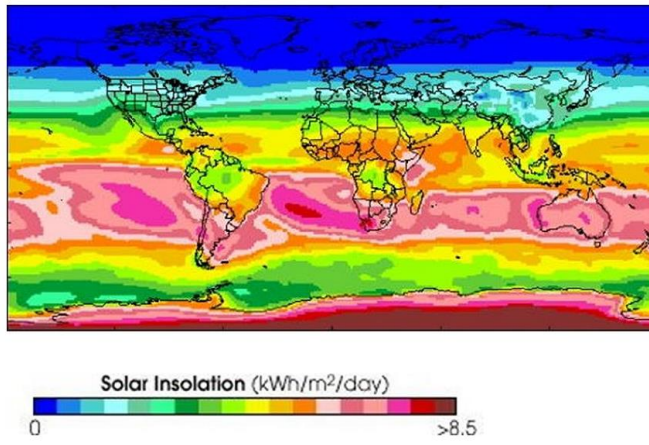
12. Which of these diagrams best illustrates the Earth's orbit around the Sun as viewed looking directly down on the orbit?



- A. A
- B. B**
- C. C
- D. D

*Blooms Level 3- Apply*  
*Section 2.5*

13. What time of year is represented by the global insolation data shown in the diagram below?



- A. January
- B. July
- C. No way to tell

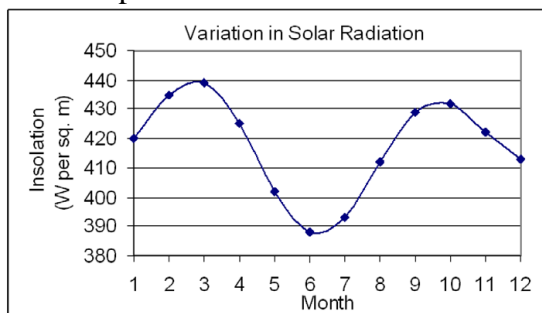
*Blooms Level 4- analyze*  
*Section 2.5*

14. How would an increase in rotational tilt angle change the locations of the Tropics of Cancer and Capricorn?

- A. Both would move toward the poles
- B. Both would move toward the equator
- C. Both would move north of their present locations
- D. Both would move south of their present locations

*Blooms Level 3- Apply*  
*Section 2.5*

15. According to the diagram below, what location on Earth most likely experienced this insolation pattern in 2006?



- A. Equator
- B. Tropic of Cancer
- C. Tropic of Capricorn

*Blooms Level 4- analyze*  
*Section 2.5*

16. What would happen to the seasons if the tilt of the axis was opposite to what it is now?

- A. All seasons would reverse
- B. Only winter and summer would reverse
- C. Only fall and spring would reverse
- D. None would reverse

*Blooms Level 2- Understand*  
*Section 2.5*

17. According to the diagram below, which statement best reflects the relative positions of the Sun, Earth, the moon, and Mars in our solar system?



- A. A represents the Sun, B is the moon, and C is the Earth.
- B. A represents the Earth, B is the moon, and C is Mars.
- C. D represents the Sun, E is the Earth, and F is the moon.
- D. D is the Earth, E is the Sun, and F is Mars.

*Blooms Level 5- Evaluate*  
*Section 2.1*

18. The Greek philosopher Aristotle, like many people at his time, believed the Earth was the center of the universe and that other planets revolved around our own. What is the name given to this ancient concept?

- A. The heliocentric orbit hypothesis
- B.** The geocentric orbit hypothesis
- C. The One Earth hypothesis
- D. The Many Worlds hypothesis

*Blooms Level 1- Remember*  
*Section 2.1*

19. How do scientists estimate the age of the Universe?

- A. By measuring the age of the oldest known asteroids
- B.** By measuring the relative motion of other galaxies
- C. By measuring speed of light from distant stars

*Blooms Level 1- Remember*  
*Section 2.2*

20. How old is the Universe?

- A. 11-20 thousand years
- B. 11-29 million years
- C.** 11-20 billion years

*Blooms Level 1- Remember*  
*Section 2.2*



21. An astronomer has been observing two Cepheid variable stars over the course of a month. Both variable stars have the exact same period of pulsation. Star A is twice as bright as Star B. Which of the following statements most accurately reflects the relationship between the astronomer (on Earth) and both Cepheid variable stars?

- A. Stars A and B have the same luminosity, but Star A is closer to Earth than Star B.
- B. Stars A and B have the same luminosity, but Star B is closer to Earth than Star A.
- C. Stars A and B are both the same distance from Earth, but the luminosity of Star A is greater than Star B.

*Blooms Level 5- Evaluate*  
*Section 2.2*

22. What process formed heavy elements, such as iron, found in your body?

- A. They formed in the Earth's core during its early stages.
- B. They formed during supernovae of ancient stars.
- C. They formed during the Big Bang.

*Blooms Level 1- Remember*  
*Section 2.3*

23. How does "space weather" affect you?

- A. It causes moving air and clouds on Earth that causes weather systems.
- B. It causes the Earth's magnetic field to form and permits navigation.
- C. It causes electrical surges that can disrupt power systems.

*Blooms Level 2- Understand*  
*Section 2.4*

24. Which type of planet is most likely to have volcanoes?

- A. Terrestrial or rocky
- B. Jovian or gas giant
- C. Dwarf

*Blooms Level 1- Remember*  
*Section 2.4*

25. Which statement comparing terrestrial and Jovian planets in our solar system is most accurate?

- A. Jovian planets are smaller and more dense than terrestrial planets.
- B. Jovian planets are larger and more dense than terrestrial planets.
- C. Jovian planets are smaller and less than terrestrial planets.
- D.** Jovian planets are larger and less dense than terrestrial planets.

*Blooms Level 2- Understand*  
*Section 2.4*

26. How did scientists initially deduce part of the Earth's core is molten?

- A.** Because certain vibrations do not pass through it.
- B. Because it is the source of molten material for active volcanoes.
- C. Because the Earth has a magnetic field that requires the presence of a molten core.

*Blooms Level 2- Understand*  
*Section 2.6*

27. What type of cooling mechanism relies on movement of material?

- A.** Convection
- B. Conduction
- C. Radiative

*Blooms Level 1- Remember*  
*Section 2.6*

28. The Big Rock Mining company decides to build a mine shaft in South Africa that extends 3.5 km beneath Earth's surface. What approximate temperature would a person experience at the bottom of the mine shaft? (Hint: use the average accepted value for geothermal gradient.)

- A. 25°C
- B. 110°C
- C. 75°C
- D.** 88°C

*Blooms Level 3- Apply*  
*Section 2.6*

29. "Heat mining", a new means of energy generation that is currently being studied, relies upon what known characteristic of Earth?

- A. Presence of a liquid outer core
- B. Relatively thin nature of the oceanic crust
- C. Geothermal gradient**
- D. Magnetic field

*Blooms Level 2- Understand*  
*Section 2.6*

30. Why are there seasons?

- A. Earth gets closer and farther away from the Sun as it orbits annually.
- B. Insolation varies annually because of the Earth's rotational tilt.**
- C.

The Sun's solar output increases and decreases on an annual cycle.

*Blooms Level 2- Understand*  
*Section 2.5*

31. A team of scientists has discovered an Earth-sized planet orbiting the star Epsilon Eridani, about 10.5 light-years from Earth. After careful calculation, the scientists estimate that the new planet has a stronger gravity field than Earth. Based upon this information, which of the following is the most reasonable hypothesis for the scientists to make about the new planet?

- A. The new planet has a thicker atmosphere compared to Earth.**
- B. The new planet has a stronger magnetic field compared to Earth.
- C. The new planet has liquid water.
- D. The new planet receives more solar insolation from its parent star compared to Earth.

*Blooms Level 4- analyze*  
*Section 2.6*

32. Why does Earth have a magnetic field?
- A. Due to the abundance of different atmospheric gases
  - B. Due to the types of rocks found in the lithosphere
  - C.** Due to the Earth's liquid outer core
  - D. Due to the proximity to the Sun

*Blooms Level 1- Remember*  
*Section 2.6*

### **True / False Questions**

33. The Earth is closer to the Sun during summer in the northern hemisphere than it is during winter.

**FALSE**

*Blooms Level 1- Remember*  
*Section 2.5*

34. If the Earth were smaller it would have a less dense atmosphere.

**TRUE**

*Blooms Level 2- Understand*  
*Section 2.6*

35. Life on Earth would most likely be less advanced if there were no magnetic field.

**TRUE**

*Blooms Level 3- Apply*  
*Section 2.6*

36. Temperatures on Earth would be lower if there were less carbon dioxide in the atmosphere.

**TRUE**

*Blooms Level 3- Apply  
Section 2.6*

37. Earth's orbit around the Sun is highly elliptical.

**FALSE**

*Blooms Level 1- Remember  
Section 2.5*

38. If Earth did not have an atmosphere, its surface would have more craters formed by meteorite impacts.

**TRUE**

*Blooms Level 2- Understand  
Section 2.6*

39. If Earth was smaller it would have a warmer interior.

**FALSE**

*Blooms Level 2- Understand  
Section 2.6*

40. Galileo Galilei was the first person to argue that the Sun, rather than Earth, was the center of our solar system.

**FALSE**

*Blooms Level 1- Remember  
Section 2.1*

Chapter 02 - Earth in Space

41. If Earth's axial tilt were less (i.e., closer to vertical), we would experience less variation in climate between seasons.

**TRUE**

*Blooms Level 3- Apply*  
*Section 2.4*