

For each question, select the best answer from the four alternatives.

- In which region of the Sun do nuclear fusion reactions take place? (8.2) **K/U**
 - radiative zone
 - photosphere
 - corona
 - core
- Which statement best explains why people on Earth always see the same side of the Moon? (8.5) **K/U**
 - A day is the same length on Earth as it is on the Moon.
 - It takes 365 days for the Moon to complete one revolution around Earth.
 - Earth revolves around the Sun more slowly than the Moon revolves around Earth.
 - The Moon rotates on its axis and revolves around Earth in the same amount of time.
- Under what circumstances can we observe a solar eclipse? (8.5) **K/U**
 - when the Moon is aligned between Earth and the Sun
 - when the Sun is aligned between Earth and the Moon
 - when Earth is aligned between the Sun and the Moon
 - when the Moon, Earth, and the Sun move out of alignment
- Which statement best explains why Pluto is no longer considered a planet? (8.3) **K/U**
 - Pluto is not in orbit around a star.
 - Pluto does not dominate its own orbit.
 - Pluto is not close enough to the Sun.
 - Pluto does not have a spherical shape.

Indicate whether each of the statements is TRUE or FALSE. If you think the statement is false, rewrite it to make it true.

- During the new moon phase, the surface of the Moon is not visible from Earth. (8.5) **K/U**
- In North America, the North Star is visible only at night during spring and summer. (8.6) **K/U**

Copy each of the following statements into your notebook. Fill in the blanks with a word or phrase that correctly completes the sentence.

- The _____ is at the centre of the Solar System. (8.2) **K/U**
- During our _____ season, Earth's northern hemisphere is tilted toward the Sun to a greater degree than it is at other times of the year. (8.5) **K/U**
- Stars are _____ objects, which means that they produce and emit light. (8.1) **K/U**

Match each term on the left with the most appropriate description on the right.

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|---------------|--|
| 10. (a) star | (i) a small celestial object made of rock and metal that orbits the Sun between Mars and Jupiter |
| (b) asteroid | (ii) a chunk of ice, rock, and dust that travels in a very long orbit around the Sun |
| (c) comet | (iii) a celestial object, sometimes human-made, that travels around a larger celestial object |
| (d) meteorite | (iv) a lump of metal or rock that has hit Earth's surface |
| (e) satellite | (v) a celestial body composed of hot gases that radiates large amounts of energy (8.1, 8.3) K/U |

Write a short answer to each of these questions.

11. Why does a planet's orbital radius represent that planet's average distance from the Sun and not its exact distance? (8.5) **K/U**
12. (a) Neptune's average distance from the Sun is 4 497 000 000 km. What is Neptune's average distance from the Sun in astronomical units (AU)? (8.3, 8.5) **T/I**
(b) The average distance between Venus and the Sun is 0.72 AU. What is this distance in kilometres? (8.3) **T/I**
13. At its closest point, Mercury is approximately 0.31 AU from the Sun. Use this information to describe how Mercury's orbit compares to Earth's orbit. (8.3) **T/I**
14. Imagine that you see the aurora borealis for the first time while on vacation. Write a postcard to a friend describing the event and explaining the natural conditions that caused it to happen. (8.2) **K/U C**
15. Solar scientists study space weather, which includes natural events such as solar storms. Based on what you have learned in this chapter, do you think it is important to forecast space weather? Explain your answer in a brief paragraph. (8.2) **C A**
16. Canada has several time zones. When it is noon in Ottawa, it is 9 a.m. in Vancouver. If noon is the time when the Sun is highest in the sky, explain why Canada needs more than one time zone. (8.5) **A**
17. You are a member of a committee that will recommend a location for a new observatory. There are two choices for the location. One choice is a site in a large city where many people would have easy access to the observatory. During construction, workers and materials could be transported to the site easily. The other choice is a site on a mountain range far from any major city. Workers, materials, and visitors would have to travel long distances to reach the observatory site. Which site would you recommend? Give at least two reasons for your choice. (8.9) **C A**
18. A friend tells you that because a geostationary satellite always remains over a specific point on Earth's surface, the satellite does not move in the sky. Explain to your friend why this explanation is incorrect. (8.11) **K/U C**
19. Is it possible to have a solar eclipse and a spring tide at the same time? Draw a diagram to explain your answer. (8.5) **K/U C**
20. Although solar eclipses occur about as often as lunar eclipses, more people can observe a lunar eclipse than a solar eclipse. Explain why this is true. (8.5) **K/U C**
21. Imagine that you are stranded on an island in the ocean without any timekeeping devices. Describe how you could keep track of days and months using the movements of Earth and the Moon. (8.5) **C A**
22. If people in your community were to name constellations today, do you think they would name them after wild animals, mythical figures, and common tools such as a dipper? Explain your answer. (8.6) **C A**
23. Will a GPS receiver function anywhere on Earth? Explain your answer. (8.11) **K/U A**
24. Why must a planet's moon contain less mass than the planet itself? (8.5) **K/U**