Visual Skills Check

Use the following questions to check your understanding of some of the many types of visual information used in astronomy. For additional practice, try the Chapter 2 Visual Quiz at MasteringAstronomy.

The figure above is a typical diagram used to describe Earth’s seasons.

1. Which of the four labeled points (A through D) represents the day with the most hours of daylight for the Northern Hemisphere?
2. Which of the four labeled points represents the day with the most hours of daylight for the Southern Hemisphere?
3. Which of the four labeled points represents the beginning of spring for the Southern Hemisphere?
4. The diagram exaggerates the sizes of Earth and the Sun relative to the orbit. If Earth were correctly scaled relative to the orbit in the figure, how big would it be?
   a. about half the size shown
   b. about 2 millimeters across
   c. about 0.1 millimeter across
   d. microscopic
5. Given that Earth’s actual distance from the Sun varies by less than 3% over the course of a year, why does the diagram look so elliptical?
   a. It correctly shows that Earth is closest to the Sun at points A and C and farthest at points B and D.
   b. The elliptical shape is an effect of perspective, since the diagram shows an almost edge-on view of a nearly circular orbit.

The figure above (based on Figure 2.14) shows the Sun’s path through the constellations of the zodiac.

6. As viewed from Earth, in which zodiac constellation does the Sun appear to be located on April 21?
   a. Leo
   b. Aquarius
   c. Libra
   d. Aries
7. If the date is April 21, what zodiac constellation will be visible on your meridian at midnight?
   a. Leo
   b. Aquarius
   c. Libra
   d. Aries
8. If the date is April 21, what zodiac constellation will you see setting in the west shortly after sunset?
   a. Scorpius
   b. Pisces
   c. Taurus
   d. Virgo

Exercises and Problems

MasteringAstronomy For instructor-assigned homework and other learning materials, go to MasteringAstronomy.

Review Questions

Short-Answer Questions Based on the Reading

1. What are constellations? How did they get their names?
2. Suppose you were making a model of the celestial sphere with a ball. Briefly describe all the things you would need to mark on your celestial sphere.
3. On a clear, dark night, the sky may appear to be “full” of stars. Does this appearance accurately reflect the way stars are distributed in space? Explain.
4. Why does the local sky look like a dome? Define horizon, zenith, and meridian. How do we describe the location of an object in the local sky?
5. Explain why we can measure only angular sizes and angular distances for objects in the sky. What are arcminutes and arcseconds?
6. What are circumpolar stars? Are more stars circumpolar at the North Pole or in the United States? Explain.
8. What is the zodiac, and why do we see different parts of it at different times of year?
9. Suppose Earth’s axis had no tilt. Would we still have seasons? Why or why not?
10. Briefly describe key facts about the solstices and equinoxes.
11. What is precession? How does it affect what we see in our sky?
12. Briefly describe the Moon’s cycle of phases. Can you ever see a full moon at noon? Explain.
13. Why do we always see the same face of the Moon?
14. Why don’t we see an eclipse of every new and full moon? Describe the conditions needed for a solar or lunar eclipse.
15. What do we mean by the apparent retrograde motion of the planets? Why was this motion difficult for ancient astronomers to explain? How do we explain it today?