Chapter 7 Review

Make Your Own Summary

Summarize the key concepts of this chapter using a graphic organizer. The Chapter Summary on the previous page will help you identify the key concepts. Refer to Study Toolkit 4 on pages 566–567 to help you decide which graphic organizer to use.

Reviewing Key Terms

1. The Mesopotamians were the first _____ for whom we have evidence of detailed astronomical observations. (7.1)

2. Earth _____ on its axis and _____ around the Sun. (7.1)

3. Groups of stars that seem to form distinctive patterns are called _____. (7.2)

4. During a _____, the new Moon completely blocks the Sun. (7.3)

5. A _____ is a celestial object that orbits one or more stars, is spherical, and does not share its orbit with another object. (7.4)

6. _____ is the apparent motion of a planet opposite to the usual east-to-west motion. (7.4)

7. A _____ that survives impact with the atmosphere and reaches the ground is called a _____. (7.5)

Knowledge and Understanding K/U

8. Why was recording the movement of stars in the night sky important to early sky watchers?

9. Why does the Moon have phases?

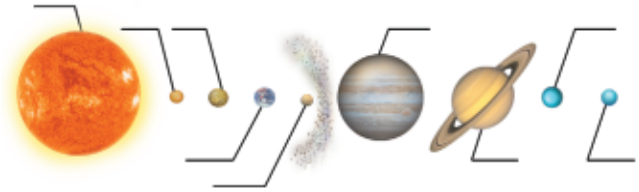
10. Identify the phases of the Moon that are shown in the diagram below.

A B C

11. Why can you not see the new Moon?

12. Describe how a total eclipse of the Sun would look from the Moon. Include a diagram with your description.

13. Draw a diagram of the solar system, like the one shown below. Complete your diagram by labelling each object.



The solar system

14. Why are the distances between objects in the solar system not measured in light-years?

15. What name do astronomers give to the average distance between Earth and the Sun?

16. The planets are classified as the inner planets and the outer planets. What do you think this classification is based on?

17. Describe characteristics that all the outer planets share.

18. Describe the difference between Pluto and the eight planets.

19. What causes "shooting stars," the streaks of light that cross the night sky?

20. Compare and contrast asteroids and meteoroids.

21. Describe a comet. Include a diagram and a definition in your description. Explain where comets originate and why comets have two tails.

Thinking and Investigation T/I

22. The same side of the Moon is always visible from Earth because the Moon rotates at about the same rate as it revolves around Earth. Would a person living in a lunar colony experience day and night? Explain your answer.

23. A solar eclipse always occurs about two weeks before or after a lunar eclipse. Explain why.

Communication C

24. BIG IDEAS Different types of celestial objects in the solar system and universe have distinct properties that can be investigated and quantified. Create a table with planetary facts. Include mass, diameter, period of rotation, moons, average surface temperature, atmosphere (yes/no), special features (such as rings), orbital radius, and any other characteristics that interest you. Prepare a brochure using the information in your table. Include drawings of the planets. A hypothetical space agency will use the brochure to select a planet to research, by sending a spacecraft to it.

25. BIG IDEAS People use observational evidence of the properties of the solar system and the universe to develop theories to explain their formation and evolution. Explain how studying objects in the Oort Cloud and Kuiper Belt can help astronomers understand the solar system.

26. BIG IDEAS Space exploration has generated valuable knowledge but at enormous cost. Assess the NEOSSat program. Write an editorial for the school newspaper in which you express your opinion on Canada's financial and technological contributions.

27. Draw a diagram to show the difference between rotation and revolution.

28. Explain why constellations appear to move through the night sky.

29. Describe why Earth experiences seasons. Include a drawing that shows why the surface of Earth warms in the summer and cools in the winter.

Application A

30. Sometimes a halo appears around the Moon. Some people say that the halo means bad weather is approaching. Research the causes of the halo on the Internet or in other sources.

31. Suppose that astronomers spotted a large rock at approximately the same distance as the Moon is from Earth, on a collision course with Earth. How much time would there be to prepare? Would there be minutes, days, months? Follow these steps to estimate an answer:

a. Earth takes about 30 000 000 s to orbit the Sun. Consider Earth's orbit to be circular, with a radius of 150 000 000 km. Estimate Earth's orbital speed.

b. Suppose that Earth runs into an asteroid orbiting at the same speed as Earth, in the opposite direction. How fast would the object appear to be approaching Earth?

c. How long would the object take to cover the 400 000 km distance between Earth and the Moon?