

Chapter 22 Origin of Modern Astronomy

# Section 22.1 Early Astronomy

(pages 614–621)

*This section outlines the early history of astronomy, especially changing ideas about Earth’s place in the universe.*

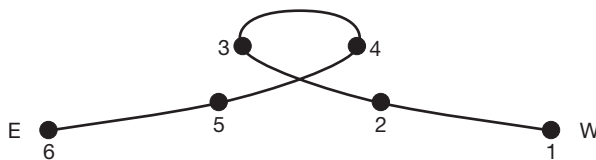
### Reading Strategy (page 614)

**Comparing and Contrasting** As you read about the geocentric and heliocentric models of the solar system, complete the table. For more information on this Reading Strategy, see the **Reading and Study Skills** in the **Skills and Reference Handbook** at the end of your textbook.

|                    | Location of Earth  | Location of Sun       | Supporters of Model |
|--------------------|--------------------|-----------------------|---------------------|
| Geocentric Model   | center of universe | a.                    | b.                  |
| Heliocentric Model | c.                 | d. center of universe | e.                  |

### Ancient Greeks (pages 614–616)

- The study of the properties of objects in space and the laws under which the universe operates is called \_\_\_\_\_.
- Is the following sentence true or false? Eratosthenes is considered to be the first person to calculate the size of Earth. \_\_\_\_\_
- ☛ The idea that the moon, sun, and known planets orbit Earth is called the \_\_\_\_\_ model of the universe. Circle the correct answer.  
Ptolemaic                  Heliocentric                  Geocentric
- The figure shows the apparent motion of Mars as seen from Earth. What type of motion is occurring between points 3 and 4? \_\_\_\_\_



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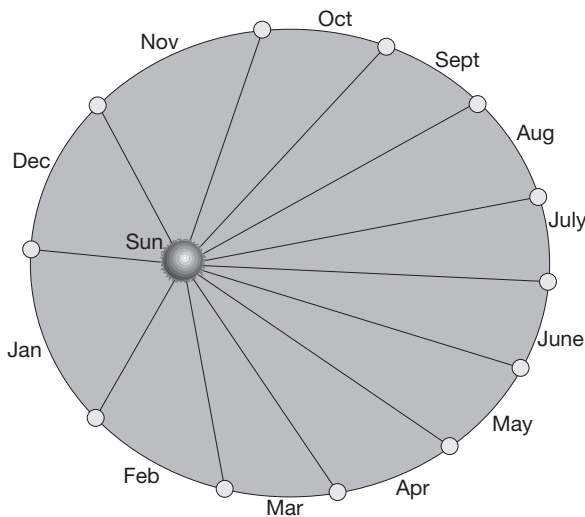
**The Birth of Modern Astronomy (pages 617–621)**

Match each description with its astronomer.

- | Description   | Astronomer             |
|---|------------------------|
| _____ 5. ☿ developed a model of the solar system with the sun at the center | a. Johannes Kepler     |
| _____ 6. 🚀 formulated and tested the law of universal gravitation           | b. Isaac Newton        |
| _____ 7. 🔭 discovered three laws of planetary motion                        | c. Galileo Galilei     |
| _____ 8. 🗝️ described the behavior of moving objects                        | d. Nicolaus Copernicus |

9. Circle the letter of the word that describes the shape of the planet's orbit as shown in the figure.

- a. circle      b. retrograde      c. ellipse      d. focus



10. Is the following sentence true or false? During December and January on the figure, the planet is moving the fastest. \_\_\_\_\_

11. The two factors that Newton showed combined to keep the planets in their elliptical orbits are the force of \_\_\_\_\_ and the tendency of a planet to remain in straight-line motion.