QUICK LAB DIRECTED Inquiry

The Geocentric Model of the Solar System ADVANCED

Small groups
20 minutes

LAB RATINGS

Teacher Prep —
Student Setup —
Cleanup —

MATERIALS

For each group
- books and magazines
- computer (with Internet access)

My Notes

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SAFETY INFORMATION

Remind students to review all safety cautions and icons before beginning this lab.

TEACHER NOTES

In this activity, students will investigate the geocentric theory of the solar system. Students can carry out their research on the Internet, but you may also wish to provide them with other resources about models of the solar system. Talks should be limited to about 5 minutes. You may wish to have students conduct research as homework. If time does not permit each group to give a talk, select one group to present and then have the class discuss. Other groups could submit written reports. Alternatively, you could have each group make its presentation to you separately for evaluation.

Skills Focus Conducting Research, Interpreting Observations, Defending Models

MODIFICATION FOR GUIDED Inquiry

Retrograde planetary motions provided problems for advocates of the geocentric theory. Have students investigate this phenomenon and how the proponents of the geocentric theory reconciled the observations with their concept. Students should provide drawings, models, or illustrated and annotated posters that explain the retrograde motion of the planets.

Answer Key

1. Sample answer: The sun appears to circle Earth from east to west.
2. The moon, planets, stars, and constellations all rise in the east, travel across the sky, and set in the west.
3. Sample answer: Earth rotates on its axis from west to east, which accounts for the observation that heavenly objects appear to move across the sky from east to west.

Name _____ Class _____ Date_____

QUICK LAB DIRECTED Inquiry

The Geocentric Model of the Solar System

In this lab, you will identify the evidence that led ancient astronomers to conclude that Earth was at the center of the universe and the solar system. You will then describe an alternative explanation that fits the same evidence. Finally, you will be asked to play the role of one of the ancient astronomers who supported the geocentric model and give an oral report explaining this reasoning.

OBJECTIVES

- Identify the evidence that supported the geocentric model of the solar system.
- Describe an alternative explanation for a set of observations.

MATERIALS

For each group

- books and articles
- computer (with Internet access)

PROCEDURE

1. What observation about the sun's motions did early astronomers use to support the geocentric theory?

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2. What other observations might have supported the idea that Earth was at the center of the solar system and the universe?

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Quick Lab continued

3. What other explanation might account for the observations that led ancient astronomers to think that Earth was at the center of the universe and solar system?

4. The Greek astronomer Ptolemy argued that Earth was at the center of the universe. Pretend your group is Ptolemy and his students. Carry out a brief discussion in these roles, describing why you support the geocentric concept of the universe. Be sure to supply the evidence that supports your position. For background information, check appropriate books and articles on the history of science. Record your evidence and sources.