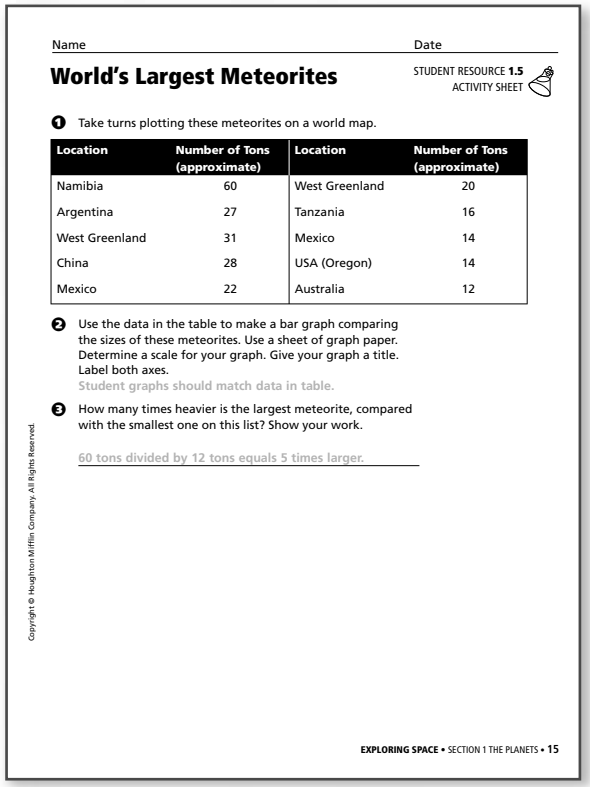
5. Students make predictions.

Tell students that the word *planet* comes from the ancient Greek word meaning "wanderer." Tell students that planets orbit around the Sun, just as Earth does. Thus, their position in the sky changes from week to week and month to month. Planets that are closer to the Sun change position in less time than planets that are farther away.

Assessment

Ask: **How helpful do you think your sky map will be three months from now?** *(Sample answer: The planets will have moved, so the sky map will need to be changed.)*

Investigate 3



Name Date

World's Largest Meteorites

STUDENT RESOURCE **1.5** ACTIVITY SHEET

❶ Take turns plotting these meteorites on a world map.

Location	Number of Tons (approximate)	Location	Number of Tons (approximate)
Namibia	60	West Greenland	20
Argentina	27	Tanzania	16
West Greenland	31	Mexico	14
China	28	USA (Oregon)	14
Mexico	22	Australia	12

❷ Use the data in the table to make a bar graph comparing the sizes of these meteorites. Use a sheet of graph paper. Determine a scale for your graph. Give your graph a title. Label both axes.

Student graphs should match data in table.

❸ How many times heavier is the largest meteorite, compared with the smallest one on this list? Show your work.

60 tons divided by 12 tons equals 5 times larger.

Student Resource 1.5 (p. 15)

World's Largest Meteorites

20 minutes **Whole Class**

Objectives

- Students analyze data by plotting meteorite strikes on a map.
- Students communicate data by constructing a bar graph.

Materials

For each student

1 sh. *graph paper

For the class

- *markers
- posters, planets
- *self-stick notes
- *world map

**Not provided in kit*

Student Resource

- 1.5 *World's Largest Meteorites*

Inquiry Focus

- Analyze Data

In Advance

- Display the planet posters.
- Post a map of the world that students may stick notes to.

1. Distribute Student Resource.

Make copies of Student Resource 1.5, *World's Largest Meteorites,* and distribute to students.

2. Review objects in the solar system.
Direct student attention to the planet posters. Ask: **What objects are in the solar system, other than planets and the Sun?** *(moons, meteors, asteroids, comets)* Have students take out the *Vocabulary* Resource page. Review as a class the definitions of *asteroid, comet, meteor,* and *meteorite.* Explain that, of all of these objects, meteorites are the only ones that reach Earth's surface.

3. Students plot meteorite strikes on map.
Using the data from the *World's Largest Meteorites* Resource page, have student pairs take turns plotting meteorite strikes by country on the world map using self-stick notes. The table does not give exact locations, so students should place the note anywhere in the country named. Write the relative sizes of the meteorites on the note.

Teaching Tip

Step 3: If you do not have a large world map you can print out a map or photocopy one from a book and make a transparency from it. Then, project the transparency on a blank wall.

4. Students analyze meteorite maps.
Ask: **Do you see any patterns in the data?** *(Students may note that Greenland had two of the largest meteorites. Tell them that these are two of several pieces of the same object, which broke up in Earth's atmosphere.)* Ask: **Where did all of these meteorites strike Earth?** *(on land)* Ask: **Why do you think that is?** *(Student ideas will vary.)* Explain that meteorites are more likely to hit the ocean than to hit land, because much more of Earth's surface is ocean. Ask: **Why did all of the meteorites listed in the chart hit land?** *(Guide discussion to help students realize that meteorites that hit the ocean usually are not found.)*

Teaching Tip

Step 5: Students can research dates and locations of other meteor strikes and add them to their graph.

5. Students make bar graphs.
Hand out graph paper. Have students use the data in the table to make bar graphs comparing the sizes of the meteorites in the table. As needed, model how to label the graph's axes on the board. The horizontal axis should be the location of each meteorite, the vertical axis should be the number of tons. Help students figure out an appropriate scale for their vertical axis, based on the largest value in the table.

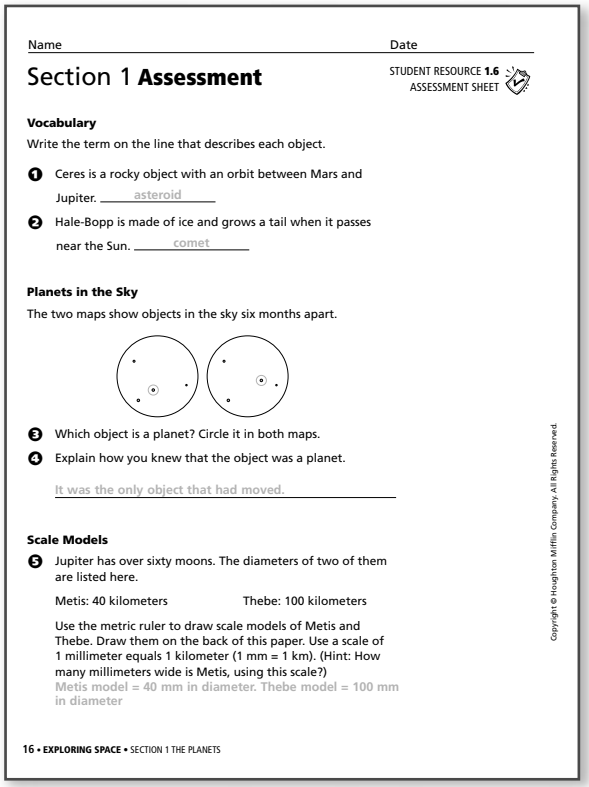
Assessment

Ask: **What is a meteorite?** *(A rock that made it through Earth's atmosphere and hit the ground.)*

Music Link

Obtain a recording of *The Planets, op. 32,* by Gustav Holst, from a library. In class, play one to two minutes of the pieces "Mars," "Venus," and "Jupiter." Do not tell students the music is about planets. Working in small groups, have students write a sentence or phrase, describing what each piece sounds like. *(Sample answer: thunder, bats in a castle)* Compare ideas on each piece. Then tell students that the entire piece of music is about seven planets (Earth and Pluto are excluded) as they are portrayed in ancient mythology. Play each piece again and have students guess which planet each is about.

Section Assessment



Name _____ Date _____

Section 1 **Assessment**

STUDENT RESOURCE **1.6** ASSESSMENT SHEET

Vocabulary

Write the term on the line that describes each object.

1. Ceres is a rocky object with an orbit between Mars and Jupiter. asteroid
2. Hale-Bopp is made of ice and grows a tail when it passes near the Sun. comet

Planets in the Sky

The two maps show objects in the sky six months apart.

3. Which object is a planet? Circle it in both maps.
4. Explain how you knew that the object was a planet.

It was the only object that had moved.

Scale Models

5. Jupiter has over sixty moons. The diameters of two of them are listed here.

Metis: 40 kilometers Thebe: 100 kilometers

Use the metric ruler to draw scale models of Metis and Thebe. Draw them on the back of this paper. Use a scale of 1 millimeter equals 1 kilometer (1 mm = 1 km). (Hint: How many millimeters wide is Metis, using this scale?)
Metis model = 40 mm in diameter. Thebe model = 100 mm in diameter

16 • **EXPLORING SPACE** • SECTION 1 THE PLANETS

Student Resource 1.6 (p. 16)

Materials

For each student

1 *compass, drawing (optional)

1 ruler, metric

**Not provided in kit*

Student Resource

- 1.6 *Section 1 Assessment*

1. Make copies of Student Resource 1.6, *Section 1 Assessment*. Distribute a copy of the assessment, a metric ruler, and a compass (if compasses were used during Investigate 1) to each student. Make sure each student has a sharp pencil for the hands-on portion of the assessment. If you do not have enough metric rulers for every student, have half of the students start with question 5 and use the rulers first.
2. Allow each student to complete the assessment independently.
3. Discuss the answers as a whole-class activity.