SECTION 1

Asking About Life

Key Concept Asking questions is the first step in a scientific investigation.

What You Will Learn

- Questions lead to learning about science.
- Print or electronic resources can be used to find information.
- Your everyday life is affected by life scientists in many ways.

Why It Matters

Asking questions and performing scientific investigations help you learn about the world around you.

Vocabulary

• life science

READING STRATEGY

Prediction Guide Before reading this section, write each heading from this section in your **Science Journal.** Below each heading, write what you think you will learn.

Imagine that it's summer. You are lying in the grass at the park, casually looking around. Three dogs are playing on your left. A few bumblebees are visiting nearby flowers. And an ant is carrying a crumb away from your sandwich.

Suddenly, a question pops into your head: How do ants find food? Then, you think of another question: Why do the bees visit the yellow flowers but not the red ones? Congratulations! You have just taken the first steps toward becoming a life scientist. How did you do it? You observed the living world around you. You were curious, and you asked questions about your observations. Once you have a question, you can start thinking about ways to find answers. Those steps are what science is all about. **Life science** is the study of living things.

Starting with a Question

The world around you is full of an amazing diversity of life. Single-celled algae, giant redwood trees, and 40-ton whales are living things. For every living thing, or organism, you could ask questions such as: (1) How does the organism get its food? (2) Where does it live? and (3) Why does it behave in a particular way?

Figure 1 *Part of science is asking questions about the world around you.*

In Your Own Backyard

Questions are easy to think of. Take a look around your room, your home, and your neighborhood. What questions about life science come to mind? The student in **Figure 1** has questions about some very familiar organisms. Do you know the answer to any of her questions?

Touring the World

The questions you can ask about your neighborhood are examples of the questions you could ask about the world. The world is made up of many different types of places, such as deserts, forests, coral reefs, and tide pools. Just about anywhere you go, you will find some kind of living organism. If you observe this organism, you can easily think of questions to ask about it.

Investigation: The Search for Answers

Once you ask a question, it's time to look for an answer. But how do you start your investigation? There are several methods that you can use.

life science (LIEF SIE uhns) the study of living things

Research

You can find answers to some of your questions by doing research, as **Figure 2** shows. You can ask someone who knows a lot about the subject of your questions. You can look up information in print resources, such as textbooks, encyclopedias, and magazines. You can also use electronic resources, such as the World Wide Web. The World Wide Web is a computer network that allows people all over the world to share information. You may learn more about your subject if you find the report of an experiment that someone has done. But be sure to think about the source of the information that you find. Scientists use information only from reliable sources.

Figure 2 *At a library, you will find many print and electronic resources.*

Standards Check **What is an example of an electronic resource that you can use to do research?** 7.7.b

Observation

You can also find answers to questions by making careful observations. For example, if you want to know which birds live around you, you can go for a walk and look for them. Or you can hang a bird feeder outside your window and observe the birds that use it.

Experimentation

You can even answer some of your questions by doing an experiment, as **Figure 3** shows. An experiment should be carefully designed to answer a specific question. Making good observations and analyzing data are some of the other important parts of doing experiments.

Figure 3 *This student is doing an experiment to find the hardness of a mineral.*

Quick Lab

Asking Questions

7.7.b

1. With your group, pick a living thing. Print the name of the living thing in the middle of a large piece of **paper.**
2. Use **markers** to write questions about the living thing on the paper.
3. Choose one of the questions. On the back of the paper, list all of the possible ways that you could find an answer to that question.

15 min

Investigation and Experimentation
7.7.b Use a variety of print and electronic resources (including the World Wide Web) to collect information and evidence as part of a research project.

Why Ask Questions?

What is the point of asking all of these questions? Life scientists may find some interesting answers, but do any of the answers matter? Will the answers affect *your* life? Absolutely! As you study life science, you will see how the investigations of life science affect you and all living things around you.

Fighting Diseases

Polio is a disease that causes paralysis by affecting the brain and nerves. Do you know anyone who has had polio? Probably not. The polio virus has been eliminated from most of the world. But at one time, it was much more common. In 1952, before life scientists discovered ways to prevent the spread of the polio virus, it infected 58,000 Americans.

Today, life scientists continue to search for ways to fight diseases. Acquired immune deficiency syndrome (AIDS) is a disease that kills millions of people every year. The scientist in **Figure 4** is trying to learn more about AIDS. Life scientists have discovered how the virus that causes AIDS is carried from one person to another. Scientists have also learned about how the virus affects the body. By learning more about the virus, scientists may find a cure for this deadly disease.

Figure 4 *Scientists hope to find a cure for AIDS by studying the virus that causes the disease.*

Researching Food Sources

How can enough food be produced to feed everyone? How can we make sure that food is safe to eat? Many scientists do research to find answers to these types of questions. The scientist in **Figure 5** is studying a plant that was grown in a lab. Some scientists do experiments to see if they can make plants grow faster or larger. Other scientists research ways to preserve food so that it lasts longer.

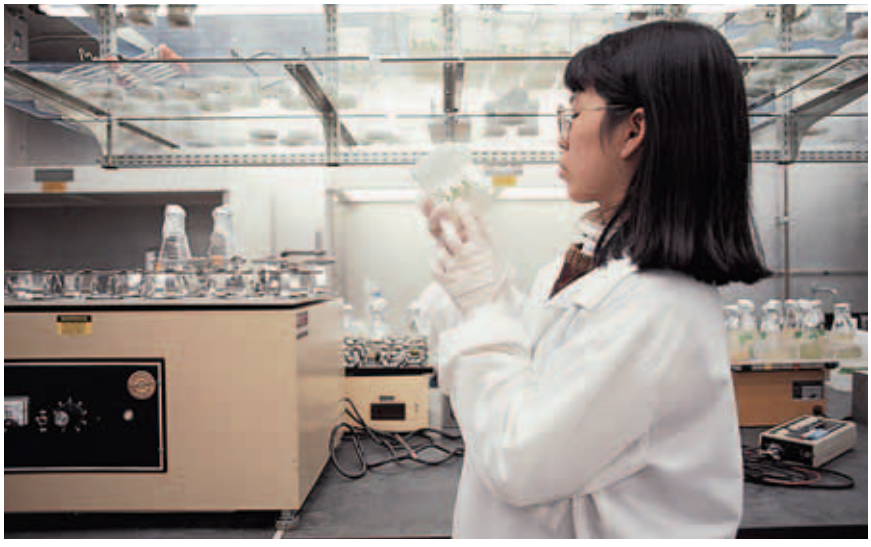

Figure 5 *Scientists study plants to find better ways to produce food.*

Protecting the Environment

Life scientists also study environmental problems on Earth. Many environmental problems are caused by the misuse of natural resources. Understanding how we affect the world around us is the first step in finding solutions to problems such as pollution and the extinction of wildlife.

Why should we try to decrease pollution? Pollution can harm our health and the health of other organisms. Water pollution may be a cause of frog deformities seen in parts of the world. Pollution in oceans kills marine mammals, birds, and fish. The scientists in **Figure 6** are monitoring water quality to determine if the water is polluted.

The actions of humans affect many living things. When we cut down trees to clear land for crops or to get lumber, we change and sometimes destroy habitats. Hunting and loss of habitat have caused many animals, including Siberian tigers, California condors, and some species of fish, to become endangered. By learning about the food and habitat needs of endangered animals, scientists hope to develop a plan that will ensure the survival of these animals.

Figure 6 *These environmental scientists are testing water quality.*

SECTION **Review**

7.7.b

Summary

- Science is a process of gathering knowledge about the natural world. Science includes making observations and asking questions. Life science is the study of living things.
- To find answers to your questions, you can make observations, do experiments, or use print and electronic resources to do research.
- Life science can help find cures for diseases, can research food sources, can monitor pollution, and can help living things survive.

Using Vocabulary

1. Write an original definition for *life science*.

Understanding Concepts

2. **Describing** Why are questions important in life science?
3. **Listing** Give three examples of resources that you can use to do research.

INTERPRETING GRAPHICS Use the picture below to answer the next item.

4. **Listing** Propose five questions about the animal in this picture.

Critical Thinking

5. **Expressing Opinions** You can find a wide variety of information on the World Wide Web. What do you think makes a source reliable?
6. **Applying Concepts** When would a life scientist study a nonliving thing, such as a lake or a rock?
7. **Making Comparisons** A volcanologist is a scientist who studies volcanoes. How is the work of a volcanologist similar to the work of a life scientist? How do the two jobs differ?

Internet Resources

For a variety of links related to this chapter, go to www.scilinks.org

Topic: Careers in Life Science

SciLinks code: HY70224