

**SKILLS INTRODUCTION**

## Posing Questions

Why isn't my radio working? What's the most popular radio program? How does a radio work? What's the best kind of music? These are different kinds of questions you might ask. Some of them concern physical objects. Others are based on values or opinions—what people believe is right or wrong, or beautiful or ugly.

Questions are an essential part of science. But scientific questions are limited to the natural world—to material objects and energy changes you can observe directly or with scientific tools. The objects may be either living or nonliving things. The energy changes may be easy to observe, such as the sound of thunder overhead, or more difficult, such as the light coming from a distant star. What makes a question scientific is that it can be answered by observations, or evidence.

Scientists may start with a broad question such as “Why do people get colds?” Next, they break the question down into smaller questions: Can you catch a cold from someone else? Is there a relationship between getting chills and catching a cold? They state the final question in a way that can be answered by investigation or experiment. A good scientific question is “Does getting chilled cause colds?”

Narrowing down a question often helps researchers plan an investigation and gather evidence to answer the question. For example, to determine whether chills cause colds, a scientist could ask volunteers to undergo low temperatures that produce chills. If few or no volunteers catch colds, the scientist has obtained evidence to answer the question.



### Tips for Posing Questions

1. Begin by listing several questions on a topic about the natural world.
2. Try to eliminate questions that cannot be answered by gathering evidence.
3. Break broad questions into questions that can be investigated one at a time.
4. Word questions in a way that allows them to be answered by an investigation or experiment. Here are some good ways to begin scientific questions: “What is the relationship between . . .” “What factors cause . . .” “What is the effect of . . .” Be sure that the question identifies a relationship or factor you can investigate.

*Checkpoint* Choose the one topic below that can be answered scientifically, and word it in the form of a scientific question.

- ◆ Which flowers are prettier, daisies or roses?
- ◆ Can you get warts from handling toads?
- ◆ Do cats make better pets than dogs?

## SKILLS PRACTICE

# Posing Questions

*Examine the statements below. For each of Questions 1–10, write yes if the topic can be investigated scientifically. Write no if it cannot be investigated scientifically. Then, for each item to which you answered yes, rewrite the topic in the form of a scientific question. Answer Question 11 on the back of this sheet.*

1. Some people work better in the morning, and other people work better in the afternoon.

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2. Taking something that belongs to another person is wrong.

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3. Snakes travel in pairs.

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4. Animals behave in strange ways before an earthquake.

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5. People who don't recycle should have to pay fines.

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6. Basketball is a better sport than soccer.

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7. You will remember best whatever you read just before you fall asleep.

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8. Maria's kind of bike is faster than Rob's kind of bike.

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9. Each year when the weather gets cold, birds fly to warmer regions.

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10. Trucks use more gasoline than cars.

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11. Think About It Choose one of the scientific questions you developed and tell what kind of evidence you would need to answer the question. How do you think a researcher could collect that evidence?