What Is Science?  •  Guided Reading and Study

**Thinking Like a Scientist**

*This section describes the skills scientists use to learn about the world. The section also explains the attitudes that are important in science.*

**Use Target Reading Skills**

*Before you read, preview the red headings in your text. For each heading, write a what, how, or why question in the left-hand column below. As you read, write answers to your questions in the right-hand column.*

<table>
<thead>
<tr>
<th>Scientific Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Question</strong></td>
</tr>
<tr>
<td>What does observing involve?</td>
</tr>
</tbody>
</table>
Thinking Like a Scientist

Introduction
1. What are five skills scientists use to learn more about the world?

________________________  ______________________
________________________  ______________________
________________________

Observing
2. What is observing?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

3. The senses a scientist uses in observing include sight, hearing, touch, taste, and __________.

4. In the spaces below, explain the differences between quantitative and qualitative observations.

<table>
<thead>
<tr>
<th>Observations</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Quanititative Observations</td>
<td>Qualitative Observations</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Inferring
5. What is inferring?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

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6. Circle the letter of each item that is true about inferences.
   a. Inferences are based on reasoning from what you already know.
   b. Making an inference involves guessing.
   c. An inference is an interpretation of observations.
   d. People make inferences all the time.

Predicting

7. Making a forecast of what will happen in the future based on past experience or evidence is called ________________.

8. How are inferring and predicting related?
   __________________________________________________________________________
   __________________________________________________________________________
   __________________________________________________________________________

Classifying

9. What is classifying?
   __________________________________________________________________________
   __________________________________________________________________________
   __________________________________________________________________________

10. Is the following sentence true or false? A drawback of classifying things is that objects and information stay disorganized. ________________

Making Models

11. What does making models involve?
   __________________________________________________________________________
   __________________________________________________________________________
   __________________________________________________________________________
   __________________________________________________________________________
   __________________________________________________________________________
   __________________________________________________________________________

12. Circle the letter of each item that could be a model.
   a. map
   b. movie set
   c. computer-generated illustration
   d. notebook notes
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Thinking Like a Scientist  (continued)

13. Is the following sentence true or false? Models help people study things that cannot be observed directly. __________________

14. Is the following sentence true or false? Some information about an object or process may be missing from a model. __________________

Scientific Attitudes

15. What is science?
   __________________________________________________________________________
   __________________________________________________________________________
   __________________________________________________________________________

16. What are five important attitudes that successful scientists possess?
   _______________  _______________
   _______________  _______________
   _______________  _______________

17. Circle the letter of the definition of skepticism.
   a. having an attitude of doubt
   b. being open-minded
   c. coming up with inventive ways to solve problems
   d. an eagerness to learn more about a topic

18. Is the following sentence true or false? Honesty is important when a scientist’s results go against previous ideas. _______________