Name _____ Date _____ Class _____

Lesson Outline LESSON 1

Understanding Science

A. What is science?

1. The investigation and exploration of natural events and of the new information that results from those investigations is called _____.
2. Scientists observe the natural world and form _____ about what they see.
3. Scientists use reliable skills and _____ in problem solving.

B. Branches of Science

1. Life science, or _____, is the study of all living things.
2. _____ science is the study of Earth, including its landforms, rocks, soil, and forces that shape Earth's surface.
3. Physical science is the study of _____ and physics; physical scientists study the interactions of matter and _____.

C. Scientific Inquiry

1. As scientists study the _____ world, they ask questions about what they observe.
2. Scientists practice _____ inquiry—a process that uses a variety of skills and tools to answer questions.
3. A scientist usually begins a scientific investigation by making a(n) _____, which involves gathering information.
4. A(n) _____ is a logical explanation of an observation that is drawn from prior knowledge or experience.
5. After making observations and inferences, scientists sometimes form a(n) _____ that can be tested by scientific investigation.
6. When a scientist forms a hypothesis, he or she usually makes a(n) _____, or a statement about what will happen next in a(n) _____ of events.
7. Testing a(n) _____ often means testing predictions; if the prediction is confirmed, it _____ the hypothesis, and if the prediction is not confirmed, the hypothesis might need revision.

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Name _____ Date _____ Class _____

Lesson Outline continued

8. Three ways to organize _____ are to create graphs, classify information, and make models and _____.
9. Scientists must decide whether or not the _____ they have collected support their hypothesis.
10. Scientists might make more inferences when drawing _____.
11. Communicating _____ is important because scientists use new information in their _____.

D. Results of Scientific Inquiry

1. Outcomes of scientific inquiry may include technology, new _____, and possible explanations for phenomena.
2. The practical use of scientific knowledge, especially for industrial or commercial use, is called _____.

E. Scientific Theory and Scientific Laws

1. An explanation of observations or events based on knowledge gained from many observations and investigations is called a(n) _____.
2. A(n) _____ describes a pattern or an event in nature that is always true.
3. It is important to be _____, or to question information, about scientific issues presented in the media.
4. Comparing what you already know with the information you are given in order to decide whether you agree with it is called _____.
5. Science cannot answer questions about _____ opinions, values, beliefs, or _____.
6. Scientists follow safety _____ when they conduct _____.
7. It is important to follow _____ when you work with living things or do research with people.

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Key Concept Builder LESSON 1

Understanding Science

Key Concept What is scientific inquiry?

Directions: *On each line, write the term from the word bank that correctly completes each sentence. Each term is used only once.*

analyze	**communicate**	**conclusion**
hypothesis	**observation**	**prediction**
science	**scientific inquiry**	**scientific investigations**

(1.) _____ is the investigation and exploration of natural events and of the new information that results from those investigations. Scientists use a set of skills called **(2.)** _____ to find answers to their questions. **(3.)** _____ is a scientific skill that involves using your senses to gather information and take note of what occurs. After making an observation, a scientist might form a(n) **(4.)** _____, which is a possible explanation about an observation that can be tested by **(5.)** _____.

When a scientist forms a hypothesis, he or she usually makes a(n) **(6.)** _____, or a statement about what will happen next in a sequence of events. After a hypothesis is tested, a scientist must **(7.)** _____ the results. A scientist might then draw a(n) **(8.)** _____ based on the results. Scientists write articles or speak at conferences to **(9.)** _____ their results to other scientists and to the public.

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Directions: *On the line before each description, write* ST *if the description represents a scientific theory or* SL *if the description represents a scientific law.*

_____ **1.** observation of similar events that have been observed repeatedly

_____ **2.** attempts to explain why something happens

_____ **3.** is based on repeated observations and scientific investigations

_____ **4.** states that something will happen

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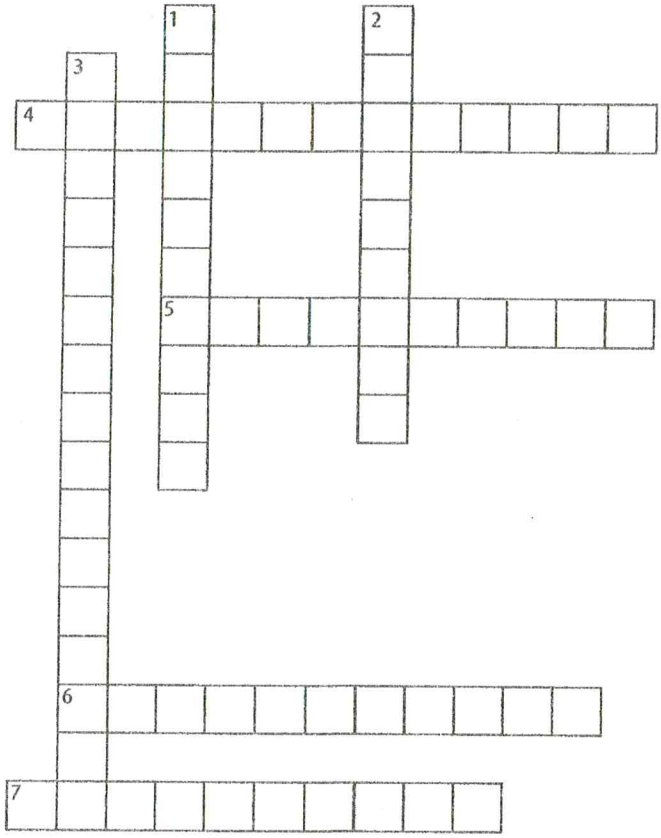
Content Practice A LESSON 1

Understanding Science

Directions: *Complete the crossword puzzle with the correct terms from the word bank.*

hypothesis	**inference**	**observation**	**prediction**
scientific law	**scientific theory**	**technology**	



Across

4. describes a pattern or an event in nature that is always true
5. the practical use of scientific knowledge, especially for industrial or commercial use
6. using one or more senses to gather information and notice what occurs
7. a possible explanation about an observation that can be tested by scientific investigations

Down

1. a statement about what will happen next in a sequence of events
2. a logical explanation of an observation that is drawn from prior knowledge or experience
3. an explanation of observations or events based on knowledge gained from many observations and investigations

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Key Concept Builder LESSON 1

Understanding Science

Key Concept How can a scientist prevent bias in a scientific investigation?

Directions: *Answer each question in the space provided.*

Question	Answer
1. What is bias?	
2. What are some sources of bias?	
3. What is a blind study?	
4. How can a blind study help reduce bias?	
5. What is sampling?	
6. What can be done to reduce bias in sampling?	
7. What is repetition?	
8. How can repetition help reduce bias?	

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