About the Consultant

Douglas Fisher, Ph.D., is a Professor in the Department of Teacher Education at San Diego State University. He is the recipient of an International Reading Association Celebrate Literacy Award as well as a Christa McAuliffe award for Excellence in Teacher Education. He has published numerous articles on reading and literacy, differentiated instruction, and curriculum design as well as books, such as Improving Adolescent Literacy: Strategies at Work and Responsive Curriculum Design in Secondary Schools: Meeting the Diverse Needs of Students. He has taught a variety of courses in SDSU’s teacher-credentialing program as well as graduate-level courses on English language development and literacy. He also has taught classes in English, writing, and literacy development to secondary school students.
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*Science Grade 6*
Note-Taking Tips

Your notes are a reminder of what you learned in class. Taking good notes can help you succeed in science. These tips will help you take better notes.

• Be an active listener. Listen for important concepts. Pay attention to words, examples, and/or diagrams your teacher emphasizes.

• Write your notes as clearly and concisely as possible. The following symbols and abbreviations may be helpful in your note-taking.

<table>
<thead>
<tr>
<th>Word or Phrase</th>
<th>Symbol or Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>for example</td>
<td>e.g.</td>
</tr>
<tr>
<td>such as</td>
<td>i.e.</td>
</tr>
<tr>
<td>with</td>
<td>w/</td>
</tr>
<tr>
<td>without</td>
<td>w/o</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Word or Phrase</th>
<th>Symbol or Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>and</td>
<td>+</td>
</tr>
<tr>
<td>approximately</td>
<td>≈</td>
</tr>
<tr>
<td>therefore</td>
<td>:</td>
</tr>
<tr>
<td>versus</td>
<td>vs</td>
</tr>
</tbody>
</table>

• Use a symbol such as a star (★) or an asterisk (*) to emphasis important concepts. Place a question mark (?) next to anything that you do not understand.

• Ask questions and participate in class discussion.

• Draw and label pictures or diagrams to help clarify a concept.

Note-Taking Don’ts

• Don’t write every word. Concentrate on the main ideas and concepts.

• Don’t use someone else’s notes—they may not make sense.

• Don’t doodle. It distracts you from listening actively.

• Don’t lose focus or you will become lost in your note-taking.
This note-taking guide is designed to help you succeed in learning science content. Each chapter includes:

Language-Based Activities
Activities cover the content in your science book including vocabulary, writing, note-taking, and problem solving.

Anticipation Guide/KWL Charts
Think about what you already know before beginning a chapter and identify what you would like to learn from reading.

Science Journal
Write about what you know.

Summarize It
Each note-taking page ends with an activity that asks you to reflect on your notes and identify key concepts.

Vocabulary Development
Each lesson begins with vocabulary words that you will use as you study it. Academic Vocabulary helps you to score higher on standardized tests.
Lesson 4 Earthquake Hazards and Safety (continued)

Main Idea

Earthquakes and Structures
Outline how building planning can help reduce loss of life during an earthquake.

I. Types of buildings
   A.
   B.

II. Earthquake-resistant structures
   A.
   B.

Earthquake Safety
Model safe actions taken before, during, and after an earthquake. Draw a floor plan and label safe locations.

Note-Taking Based on the Cornell Two-Column Format
Practice effective note-taking through the use of graphic organizers, outlines, and written summaries.

Chapter Wrap-Up
This brings the information together for you. Revisiting what you thought at the beginning of the chapter provides another opportunity for you to discuss what you have learned.

Energy and Matter in Ecosystems

Lesson 2 Energy Transfer (continued)

Energy Conversions
Label the diagram of a thrown ball. Use the numbers 1, 2, and 3 to match the statements below.
1. most potential energy
2. kinetic energy changing into potential energy
3. potential energy changing into kinetic energy

Summarize how energy changes when a log burns.

When a log burns, stored __________ is changed into __________.

Model how friction changes energy. Complete the flowchart to show how the brakes of a bicycle use friction to stop the bicycle.

1. The bicycle’s wheels have __________ energy
2. __________ energy
3. __________ energy

Summarize three main ideas you learned from the above sections.

Review Checklist
This list helps you assess what you have learned and prepare for your chapter tests.

Review
Use this checklist to help you study:
- Review the information you included in your Foldable.
- Study your Science Notebook on this chapter.
- Re-read the chapter and review the charts, graphs, and illustrations.
- Review daily homework assignments.
- Review the Standards Check at the end of each lesson.
- Look over the Standards Review at the end of the chapter.

Graphic Organizers
A variety of visual organizers help you to analyze and summarize information and remember content.
Mapping Earth’s Surface

Before You Read

Before you read the chapter, think about what you know about the topic. List three things that you already know about mapping Earth’s surface in the first column. Then list three things that you would like to learn about the topic in the second column.

<table>
<thead>
<tr>
<th>K</th>
<th>What I know</th>
<th>W</th>
<th>What I want to find out</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Construct the Foldable as directed at the beginning of this chapter.

Science Journal

List some information you might get from maps if you were planning to build a new home.

__________________________

__________________________

__________________________

__________________________

__________________________

Mapping Earth’s Surface 1
Mapping Earth’s Surface
Lesson 1  Reading Maps

Grade 6 Science Content Standards—7.f: Read a topographic map and a geologic map for evidence provided on the maps and construct and interpret a simple scale map.

**Scan** Lesson 1 of your book. Predict three topics that will be covered.

1. 
2. 
3. 

**Review Vocabulary**

**Define** pole, using your book or dictionary.

pole

**New Vocabulary**

Write the correct vocabulary term next to its definition.

Distance measured on Earth’s surface east or west of an imaginary line running from pole to pole through the town of Greenwich, England

Distance measured on Earth’s surface north or south of the equator

View of a map drawn parallel to Earth’s surface, as if looking down from above; also called a plan view

View of a map drawn perpendicular to Earth’s surface; a cross section

List of symbols used on a map

**Academic Vocabulary**

Use your book or a dictionary to define ratio. Then use the term in an original sentence to show its scientific meaning.

ratio


2  Mapping Earth’s Surface
Summarize the purpose of maps.
A map shows where things are ________________ or in relationship to ________________.

Identify the Prime Meridian and the equator on the globe below. Then label the equator and poles with their degrees of longitude. Identify the Northern, Southern, Eastern, and Western Hemispheres.

Complete the diagram to show the relationship between units used to measure latitude and longitude.

Earth’s circumference is divided into ________ degrees. Each degree is divided into ________. Each ________ is divided into ________.

Summarize the main ideas of this section in three bullets.

1. 
2. 
3. 
Lesson 1  Reading Maps (continued)

**Main Idea**

**Understanding Maps**

I found this information on page ________.

**Map Scales and Legends**

I found this information on page ________.

**Details**

Compare a map view and a profile view. Choose an object. Then sketch it in each view.

Map view

Profile view

Label the features on the map. Use the legend.

State Highway  County Line  Airport  Bridge
County Route  Park Boundary  Hospital  Stream

Rephrase what is meant by a map scale with a ratio of 1:1000.

Summarize the main ideas of the above sections.

Summarize it
Mapping Earth’s Surface
Lesson 2  Topographic Maps and Geologic Maps

Grade 6 Science Content Standards—7.f: Read a topographic map and a geologic map for evidence provided on the maps and construct and interpret a simple scale map. Also covers: 7.c, 7.h

Scan the headings and bold words in Lesson 2. Write three questions that come to mind.
1. ____________________________________________
2. ____________________________________________
3. ____________________________________________

Define geology, using your book or dictionary.

geology

Use your book or a dictionary to define the following terms.

topographic map

contour line

geologic map

gologic formation

contact

Use a dictionary to define interval.

interval
Distinguish between physical and cultural features. Define each type of feature and give examples of each one.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Definition</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Model and label contour lines and contour intervals by drawing maps of two different hills at the same scale. Show one steep hill and one with a gradually rising slope. Then create topographic profiles of the hills.

<table>
<thead>
<tr>
<th></th>
<th>Steep Slope</th>
<th>Gradual Slope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contour lines and contour intervals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topographic Profile</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Summarize the main ideas of the above sections.
Lesson 2  Topographic Maps and Geologic Maps (continued)

**Main Idea**

**Geologic Maps**

I found this information on page __________.

**Details**

**Analyze** why understanding an area’s geology is important.

**Identify four ways people use geologic information.**

1. __________________________
2. __________________________
3. __________________________
4. __________________________

**Label** the geologic formations and contacts in the cross section below.

[Image of a cross section with labeled formations]

**Organize** information about two ways in which geologists investigate the geology below Earth’s surface.

Geologists might __________________________

**Summarize It**

Summarize the main ideas of this section in three bullet points.

- __________________________
- __________________________
- __________________________
Review the ideas that you listed in the table at the beginning of the chapter. Cross out any incorrect information in the first column. Then complete the table by filling in the third column.

<table>
<thead>
<tr>
<th>K</th>
<th>What I know</th>
<th>W</th>
<th>What I want to find out</th>
<th>L</th>
<th>What I learned</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Review

Use this checklist to help you study.

- Review the information you included in your Foldable.
- Study your Science Notebook on this chapter.
- Study the definitions of vocabulary words.
- Review daily homework assignments.
- Re-read the chapter and review the charts, graphs, and illustrations.
- Review the Standards Check at the end of each lesson.
- Look over the Standards Review at the end of the chapter.

SUMMARIZE IT

After studying the chapter, summarize three of its main points.


Earth's Structure

Before You Read

Before you read the chapter, think about what you know about the topic. List three things that you already know about Earth's structure in the first column. Then list three things that you would like to learn about Earth's structure in the second column.

<table>
<thead>
<tr>
<th>K</th>
<th>What I know</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>What I want to find out</td>
</tr>
</tbody>
</table>

Construct the Foldable as directed at the beginning of this chapter.

Science Journal

Describe what an auto collision might look like in slow motion.

---

Earth's Structure 9
Grade 6 Science Content Standards—1.a: Students know evidence of plate tectonics is derived from the fit of the continents; the location of earthquakes, volcanoes, and midocean ridges; and the distribution of fossils, rock types and ancient climate zones. Also covers: 1.f, 2.a, 7.c

**Scan the headings in Lesson 1 of your book. Identify three topics that will be discussed.**

1. 
2. 
3. 

**Define** weather using your book or a dictionary.

- ________________________________

**Use your book or a dictionary to define the following terms. Then use each term in a sentence to show its scientific meaning.**

- **landform**
  
  - ________________________________

- **uplift**
  
  - ________________________________

- **erosion**
  
  - ________________________________

**Use a dictionary to define transport to show its scientific meaning. Then write a sentence using the term.**

- ________________________________
Lesson 1 Landforms (continued)

**Main Idea**

How do landscapes form?

I found this information on page __________.

**Details**

Model how forces within Earth and forces at Earth’s surface shape landforms. Draw an example of each.

I found this information on page __________.

Landforms

I found this information on page __________.

Identify and describe the 3 main types of landforms. Complete the concept map.

I found this information on page __________.

Compare and contrast a mountain and a plateau by completing the table.

<table>
<thead>
<tr>
<th></th>
<th>Mountain</th>
<th>Plateau</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formed by</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SUMMARIZE IT**

Summarize the main ideas of the above sections.
Lesson 1 Landforms (continued)

**Main Idea**

**Landforms**
I found this information on page __________.

**California Landforms**
I found this information on page __________.

I found this information on page __________.

**Details**

**Sequence** the steps through which surface processes change land.

- Rivers and streams carry rock fragments downhill.

**Classify** examples of landforms in California. Give examples of landforms created by external forces and internal forces.

**Organize** information about three major types of California landforms. Identify two characteristics of each landform.

<table>
<thead>
<tr>
<th>California Landforms</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mountains</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>2.</td>
</tr>
<tr>
<td></td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>2.</td>
</tr>
<tr>
<td>Beaches</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>2.</td>
</tr>
</tbody>
</table>

**SUMMARIZE IT**

Use bullet points to summarize three main ideas you learned in the above sections.

- 
- 
- 

12 Earth’s Structure
Earth’s Structure
Lesson 2 Minerals and Rocks

Grades 6 Science Content Standards—2.c: Students know beaches are dynamic systems in which the sand is supplied by rivers and moved along the coast by the action of waves. Also covers: 6.b, 6.c, 7.e

Skim Lesson 2 of your book. Write three questions that come to mind. Look for answers to your questions as you read the section.

1. 
2. 
3. 

Review Vocabulary

Define igneous rock, using your book or dictionary.

Igneous rock

New Vocabulary

Use your book or a dictionary to define the following terms.

Minerals

Density

Rock

Magma

Lava

Sediment

Rock cycle

Academic Vocabulary

Use a dictionary to define appreciate. Then use the term in a sentence to show its scientific meaning.

Appreciate

Name ____________________________ Date ____________
Lesson 2 Minerals and Rocks (continued)

Main Idea

What is Earth made of?

I found this information on page _________.

Identify five characteristics of minerals.

<table>
<thead>
<tr>
<th>Characteristics of Minerals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Organize the following substances on the Mohs Hardness Scale.

diamond  gypsum  quartz  talc  topaz

<table>
<thead>
<tr>
<th>Softest</th>
<th>Hardest</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>10</td>
</tr>
</tbody>
</table>

Create a concept map that lists the physical properties that can be used to identify minerals.

I found this information on page _________.

Physical Properties of Minerals

I found this information on page _________.

Summarize the main ideas of the above sections.

I found this information on page _________.

Earth’s Structure
Complete the table to summarize the uses of the metallic ores shown.

<table>
<thead>
<tr>
<th>Metallic Ore</th>
<th>Metal</th>
<th>Used In</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chalcopyrite, malachite</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hematite, magnetite</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Galena</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Identify the 3 major groups of rocks.

1. ____________  2. ____________  3. ____________

Compare and contrast granite and basalt. Place all of the words or phrases below in the Venn diagram.

- igneous
- fine-grained
- cooled quickly

- formed from lava
- coarse-grained
- low-density minerals

- formed from magma
- cooled slowly
- high-density minerals

Granite   Both   Basalt

Write three sentences to summarize the main ideas you learned from the above sections.
Analyze the process that forms metamorphic rocks.

- Heat
- Parent rock

Sequence the steps that form sedimentary rock.

1. Parent rock
2. Sedimentary rock forms.

Design a diagram showing the processes of the rock cycle.

Summarize It

What are the main ideas of the above sections? Summarize these ideas in your own words.
Earth’s Structure
Lesson 3  Earth’s Interior

Grade 6 Science Content Standards—1.b: Students know Earth is composed of several layers: a cold, brittle lithosphere; a hot, convecting mantle; and a dense, metallic core. Also covers: 4.c, 7.e, 7.g

Scan the What You’ll Learn statements for Lesson 3 of your book. 

Predict three topics that will be discussed.

1. ____________________________________________
2. ____________________________________________
3. ____________________________________________

Define magnetic field using your book or a dictionary.

magnetic field

Use your book or a dictionary to define the following terms.

crust

mantle

asthenosphere

core

lithosphere

Use a dictionary to define layer. Then use the term in a scientific sentence.

layer
Lesson 3 Earth’s Interior (continued)

Main Idea

Layers
I found this information on page __________.

Details

Model how heat and pressure change inside Earth. Draw an arrow to show how heat and pressure increase.

I found this information on page __________.

Organize information about the 3 major layers of Earth in the table below. List at least four characteristics for each layer.

<table>
<thead>
<tr>
<th>Earth’s Major Layers</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crust</td>
<td></td>
</tr>
<tr>
<td>Mantle</td>
<td></td>
</tr>
<tr>
<td>Core</td>
<td></td>
</tr>
</tbody>
</table>

SUMMARIZE IT

Highlight the main idea of this section below.

Though scientists cannot see the inside of Earth directly, they use earthquake waves to study it. They have learned that Earth has three major sections: the crust, the mantle, and the core. The lithosphere is made up of the crust and the top part of the mantle.
Lesson 3  Earth’s Interior (continued)

**Main Idea**

**Heat Transfer in Earth**

I found this information on page __________.

**Details**

**Label** *the arrow with the words below to compare the density of Earth’s layers.*

least dense  most dense

---

**Summarize** how thermal energy is transferred within Earth.

---

**Analyze** how convection affects other processes on Earth.  
*Complete the concept map.*

Roles of Convection

- in the outer core
  - 
  - 
- in the mantle
  - 
  -

**Summarize It**

Summarize three main ideas from the above sections using bullet points.

- 
- 
-
Earth’s Structure  Chapter Wrap-Up

Review the ideas you listed in the table at the beginning of the chapter. Cross out any incorrect information in the first column. Then complete the table by filling in the third column.

<table>
<thead>
<tr>
<th>K</th>
<th>W</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>What I know</td>
<td>What I want to find out</td>
<td>What I learned</td>
</tr>
</tbody>
</table>

Review
Use this checklist to help you study.

☐ Review the information you included in your Foldable.
☐ Study your Science Notebook on this chapter.
☐ Study the definitions of vocabulary words.
☐ Review daily homework assignments.
☐ Re-read the chapter and review the charts, graphs, and illustrations.
☐ Review the Standards Check at the end of each lesson.
☐ Look over the Standards Review at the end of the chapter.

Summarize It
After studying the chapter, write one sentence summarizing the main idea of each lesson.
Thermal Energy and Heat

Grade 6 Science Content Standards—3.a: Students know energy can be carried from one place to another by heat flow or by waves, including water, light and sound waves, or by moving objects. Also covers: 3.b, 3.c, 3.d, 7.a, 7.c

Before You Read

*Before you read the chapter, think about what you know about the topic. List three things that you already know about thermal energy and heat in the first column. Then list three things that you would like to learn about these topics in the second column.*

<table>
<thead>
<tr>
<th>K</th>
<th>W</th>
</tr>
</thead>
<tbody>
<tr>
<td>What I know</td>
<td>What I want to find out</td>
</tr>
</tbody>
</table>

*Construct the Foldable as directed at the beginning of this chapter.*

Science Journal

*List three changes that occur when you light a match.*

<table>
<thead>
<tr>
<th>Change 1</th>
<th>Change 2</th>
<th>Change 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Scan Lesson 1 of your book. Write two facts you discovered about forms of energy while scanning the lesson.

1. 

2. 

Define gravity, using your book or dictionary.

gravity

Use your book or a dictionary to define the following terms.

energy

kinetic energy

potential energy

elastic potential energy

thermal energy

Use a dictionary to find the scientific definition of the term occur. Then write an original scientific sentence using the term.

occur
Lesson 1 Forms of Energy (continued)

Main Idea

What is energy?
I found this information on page __________.

Define energy, and give an example of energy from your everyday life.

Energy is _________________________________.

Example: ________________________________

Details

Analyze the relationship between kinetic energy, speed, and mass. Draw arrows to show how kinetic energy changes as mass and speed change.

- mass →
- kinetic energy
- speed →
- kinetic energy

Identify the unit used to measure energy.

Energy is measured in _______________. The symbol for this unit is _____.

Distinguish two ways to increase the gravitational potential energy of an object.

To increase gravitational potential energy or

SUMMARIZE IT

Write three main ideas from these sections.

________________________________________

________________________________________

________________________________________
Lesson 1 Forms of Energy (continued)

Main Idea

Potential Energy—Stored Energy
I found this information on page __________.

Details

Model and label two ways a spring can store elastic potential energy.

A spring can store elastic potential energy when it is __________ or __________.

Contrast the ways chemical potential energy is stored and released.

Chemical energy is stored in __________

Chemical energy is released when __________

Light Energy and Thermal Energy
I found this information on page __________.

Complete the table to describe light energy and thermal energy.

<table>
<thead>
<tr>
<th>Form of Energy</th>
<th>Definition</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light energy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thermal energy</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Summarize it

Write 4 sentences to summarize the main ideas of these sections.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Thermal Energy and Heat
Lesson 2 Energy Transfer

Grade 6 Science Content Standards—3.a: Students know energy can be carried from one place to another by heat flow or by waves, including water, light and sound waves, or by moving objects. Also covers: 3.b

Skim Lesson 2, and predict two topics that will be covered in this lesson.
1.

2.

Review Vocabulary

Define force. Use a dictionary or your book for help.

force

New Vocabulary

Use your book or a dictionary to define each term.

work

wave

fuel

friction

Academic Vocabulary

Use a dictionary to define the term transfer as it is used in the following sentence.

Like all waves, water waves transfer kinetic energy from one place to another.

transfer
Lesson 2 Energy Transfer (continued)

**Main Idea**

**Moving Objects**

Transfer Energy

*I found this information on page __________.*

**Waves Transfer Energy**

*I found this information on page __________.*

**Details**

**Identify** the characteristics of work. Complete the concept map.

- A force that does work
- and

**Model** how waves carry energy. Draw a water wave and a sound wave. Use arrows to show how matter and energy move.

**Contrast** electromagnetic waves with water and sound waves. Then list five types of electromagnetic wave.

---

**SUMMARIZE IT**

Summarize three main ideas from the above section.

- 
- 
- 
- 
-
Lesson 2  Energy Transfer (continued)

Main Idea

Energy Conversions

I found this information on page __________.

Details

Label the diagram of a thrown ball. Use the numbers 1, 2, and 3 to match the statements below.

1. most potential energy
2. kinetic energy changing into potential energy
3. potential energy changing into kinetic energy

Summarize how energy changes when a log burns.

When a log burns, stored ______________ is changed into ______________ and ______________.

Model how friction changes energy. Complete the flowchart to show how the brakes of a bicycle use friction to stop the bicycle.

1. The bicycle's wheels have kinetic energy.
2. 
3. 
4.

Summarize three main ideas you learned from the above sections.

______________________________

______________________________

______________________________
Predict three things you will learn in this lesson. Use the headings to help you.
1. ____________________________________________
2. ____________________________________________
3. ____________________________________________

Define speed using your book or a dictionary.

<table>
<thead>
<tr>
<th>speed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Use your book or a dictionary to define the following terms.

<table>
<thead>
<tr>
<th>temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>thermal expansion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>heat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Use a dictionary to write the scientific definition for volume. Then write a sentence from this lesson in which the term appears.

<table>
<thead>
<tr>
<th>volume</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Definition: ____________________________________
Sentence: ____________________________________
Create a diagram to show the relationship between temperature, kinetic energy, and the motion of the particles in an object.

<table>
<thead>
<tr>
<th>Cooler</th>
<th>Warmer</th>
</tr>
</thead>
</table>

Sequence the steps that cause thermal expansion when a balloon is heated with a hair dryer. Complete the flowchart.

1. [ ]
2. [ ]
3. [ ]
4. [ ]

Summarize It
In your own words, summarize the main ideas of this section.
Lesson 3 Temperature, Thermal Energy, and Heat (continued)

Main Idea

Measuring Temperature

I found this information on page __________.

Details

Compare the Fahrenheit, Celsius, and Kelvin temperature scales. Complete the table.

<table>
<thead>
<tr>
<th></th>
<th>Fahrenheit</th>
<th>Celsius</th>
<th>Kelvin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water boils</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water freezes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Heat

I found this information on page __________.

Sequence the process of heat flow between a bowl of hot soup and the surrounding air. Complete the flowchart.

- A bowl of soup is warmer than the air around it.
  - 
  - 
  - The soup and the air reach the same temperature.

Summarize It

Rephrase three main ideas of the above sections in your own words.

1. ____________________________________________
2. ____________________________________________
3. ____________________________________________
Thermal Energy and Heat
Lesson 4 Conduction, Convection, and Radiation

Grade 6 Science Content Standards—3.c: Students know heat flows in solids by conduction (which involves no flow of matter) and in fluids by conduction and by convection (which involves flow of matter). Also covers: 3.d, 7.a

Scan Lesson 4. Write three facts that you discovered as you scanned the lesson.

1. ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

2. ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

3. ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

Define density, using your book or dictionary.

material made of particles that can easily change locations
transfer of heat by collisions between particles in matter
transfer of thermal energy by electromagnetic waves
transfer of thermal energy by the movement of matter from one place to another
material in which thermal energy moves quickly
overall movement of water

Use a dictionary to write the definition for summary. Then write a sentence using the term.

summary

_______________________________________________________________
Lesson 4 Conduction, Convection, and Radiation (continued)

**Main Idea**

**Conduction**
*I found this information on page __________.*

**Details**

**Model** how energy moves between particles in conduction. Use arrows to show the transfer of energy.

**Contrast** conductors and insulators. Complete the table.

<table>
<thead>
<tr>
<th>Speed of conduction</th>
<th>Conductors</th>
<th>Insulators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examples</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Convection**
*I found this information on page __________.*

**Analyse** the transfer of energy by convection.

In convection, thermal energy is transferred by ___________.

In fluids, the particles ___________.

In solids, the particles ___________.

**Summarize It**

After reading the above sections, summarize the main ideas.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Summarize how changes in temperature and density cause a hot-air balloon to rise. Complete the flow chart.

The air in the balloon becomes warmer.

Model how convection currents form by drawing a diagram.

Organize information about radiation. Complete the concept map.

Radiation

Summarize two main ideas from the above sections.
Thermal Energy and Heat
Chapter Wrap-Up

Review the ideas you listed in the table at the beginning of the chapter. Cross out any incorrect information in the first column. Then complete the table by filling in the third column.

<table>
<thead>
<tr>
<th>K</th>
<th>W</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>What I know</td>
<td>What I want to find out</td>
<td>What I learned</td>
</tr>
</tbody>
</table>

Review

Use this checklist to help you study.

☐ Review the information you included in your Foldable.
☐ Study your Science Notebook on this chapter.
☐ Study the definitions of vocabulary words.
☐ Review daily homework assignments.
☐ Re-read the chapter and review the charts, graphs, and illustrations.
☐ Review the Standards Check at the end of each lesson.
☐ Look over the Standards Review at the end of the chapter.

SUMMARIZE IT

After reading this chapter, write three main ideas that you learned about thermal energy and heat.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Plate Tectonics

Before You Read

Before you read the chapter, respond to these statements.

1. Write an A if you agree with the statement.
2. Write a D if you disagree with the statement.

<table>
<thead>
<tr>
<th>Before You Read</th>
<th>Plate Tectonics</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Fossil evidence supports the idea that continents have moved over time.</td>
<td></td>
</tr>
<tr>
<td>• New seafloor forms as lava flows through cracks in ocean floors.</td>
<td></td>
</tr>
<tr>
<td>• Earth’s crust is broken into sections called plates.</td>
<td></td>
</tr>
<tr>
<td>• Earth’s plates do not move.</td>
<td></td>
</tr>
</tbody>
</table>

Construct the Foldable as directed at the beginning of this chapter.

Science Journal

Write three questions you would ask as a geologist about plate tectonics.

---

Grade 6 Science Content Standards—1.a: Students know evidence of plate tectonics is derived from the fit of the continents; the location of earthquakes, volcanoes, and midocean ridges; and the distribution of fossils, rock types, and ancient climatic zones. Also covers: 1.b, 1.c, 4.c, 7.a, 7.e, 7.g
Plate Tectonics
Lesson 1 Continental Drift

Grade 6 Science Content Standards—1.a: Students know evidence of plate tectonics is derived from the fit of the continents; the location of earthquakes, volcanoes, and midocean ridges; and the distribution of fossils, rock types, and ancient climatic zones. Also covers: 7.e

**Skim** Lesson 1 of your book. Write three questions that come to mind from reading the headings and examining the illustrations. Look for the answers as you read.

1. 
2. 
3. 

**Define** rock using your book or a dictionary.

rock

**Use your book to define the following terms. Then write an original sentence for each term.**

continental drift

Pangaea

**Use a dictionary to define data. Then use the term in a sentence to show its meaning.**

data
### Main Idea

**Drifting Continents**

*I found this information on page _______.

### Details

**Rephrase** Alfred Wegener’s hypothesis *about Earth’s continents in your own words.*

---

**Model** what Pangaea looked like. *Draw a map showing the connected continents.*

---

**Summarize It** Highlight the main idea of this section of the lesson below.

In the early 1900s, Alfred Wegener proposed a hypothesis to explain why the edges of the continents looked as though they could fit together like pieces of a jigsaw puzzle. Wegener thought that millions of years ago, all of the continents had formed one large landmass called Pangaea. Wegener hypothesized that Pangaea broke apart and the continents slowly drifted to their current locations.
Organize information about the evidence for continental drift. Complete the table.

<table>
<thead>
<tr>
<th>Evidence</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fit of Continents</td>
<td></td>
</tr>
<tr>
<td>Fossils</td>
<td></td>
</tr>
<tr>
<td>Rock Types</td>
<td></td>
</tr>
<tr>
<td>Mountain Ranges</td>
<td></td>
</tr>
<tr>
<td>Ancient Climate</td>
<td></td>
</tr>
</tbody>
</table>

Analyze why scientists initially rejected Wegener’s hypothesis.

Summarize two main ideas of the above sections.
Grade 6 Science Content Standards—1.a: Students know evidence of plate tectonics is derived from the fit of the continents; the location of earthquakes, volcanoes, and midocean ridges; and the distribution of fossils, rock types, and ancient climatic zones. Also covers: 7.g

Predict three topics that might be discussed in Lesson 2 after reading its headings.

1. ______________________________________________________________________

2. ______________________________________________________________________

3. ______________________________________________________________________

Define magma using your book or a dictionary.

magma

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

Use your book to define each vocabulary term. Then write one sentence that shows how the terms are related.

mid-ocean ridge

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

Sentence: __________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

Use a dictionary to define hypothesis.

hypothesis

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________
Lesson 2 Seafloor Spreading (continued)

**Main Idea**

<table>
<thead>
<tr>
<th><strong>Details</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Summarize</strong> discoveries that scientists have made from studying the seafloor.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th><strong>The Seafloor Moves</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong> the process of seafloor spreading. Draw a cross section of a mid-ocean ridge and the magma below it. Use arrows to indicate the directions of motion.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th><strong>Evidence for Spreading</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Identify</strong> the position of Earth’s magnetic poles today and when they are reversed.</td>
</tr>
</tbody>
</table>

---

**Summarize It**

Summarize the two main ideas of the above sections with two bullet points.

- 
- 

---
Label the diagram below to show what scientists learned from studying magnetic reversals. Add arrows to show the direction of spreading, and indicate where older rock and newer rock occur.

Organize information about how scientists have used seafloor drilling to provide evidence for seafloor spreading.

I. Methods
A. 
B. 

II. Results
A. 
B. 

Highlight the main idea of this section below.

Scientists use information from Earth’s magnetic pole reversals to determine the age of basalt rock on the seafloor. This has provided evidence for seafloor spreading. The youngest rock is found closest to mid-ocean ridges, and the oldest rock is found farthest away.
Grade 6 Science Content Standards—1.b: Students know Earth is composed of several layers: a cold, brittle lithosphere; a hot, convecting mantle; and a dense, metallic core. Also covers: 1.c, 4.c

### Plate Tectonics
**Lesson 3 Theory of Plate Tectonics**

Scan the headings in Lesson 3 of your book. Identify four topics that will be discussed.

1. _____________________________
2. _____________________________
3. _____________________________
4. _____________________________

**Review Vocabulary**

Define convection using your book or a dictionary.

**convection**

**New Vocabulary**

Use your book or a dictionary to define each vocabulary term.

**lithospheric plate**

**plate tectonics**

**ocean trench**

**slab**

**Academic Vocabulary**

Use a dictionary to define define. Then use the term in a sentence to show its scientific meaning.

**define**
Lesson 3  Theory of Plate Tectonics (continued)

**Main Idea**

**Earth's Plates**
I found this information on page _________.

**Types of Lithosphere**
I found this information on page _________.

**What controls plate movement?**
I found this information on page _________.

**Details**

Organize *evidence for* plate boundaries on *Earth*.

Evidence of Plate Boundaries

Identify *and describe the two different* types of lithosphere.

Types of lithosphere

Summarize *how forces within Earth affect plates*.

<table>
<thead>
<tr>
<th>Type of Force</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convection</td>
<td></td>
</tr>
<tr>
<td>Ridge Push</td>
<td></td>
</tr>
<tr>
<td>Slab Pull</td>
<td></td>
</tr>
</tbody>
</table>

**SUMMARIZE IT**

Summarize two main ideas of the above sections.

   
   
   

Plate Tectonics  43
Lesson 3  Theory of Plate Tectonics (continued)

**Main Idea**

**Measuring Plate Movement**

I found this information on page __________.

**Details**

Explain *how satellites are used to measure the movement of plates.*

Create *a diagram showing how plate tectonics moves materials through the rock cycle.*

**Summarize It**

Summarize three main ideas of the above sections.

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

Name _____________________________________________ Date ________________
Tie It Together

Synthesize It

Your book has a picture showing how continents may have drifted. It shows their positions 250 million years ago, 125 million years ago, and at the present. Work with a partner to trace the paths that the continents have taken. Then extend their paths forward in time to project where they may be 125 million years from now. Draw a map in the space below, showing your prediction. Present your prediction to the class.
Plate Tectonics Chapter Wrap-Up

Now that you have read the chapter, think about what you have learned and complete the table below. Compare your previous answers to these.

1. Write an A if you agree with the statement.
2. Write a D if you disagree with the statement.

<table>
<thead>
<tr>
<th>Plate Tectonics</th>
<th>After You Read</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Fossil evidence supports the idea that continents have moved over time.</td>
<td></td>
</tr>
<tr>
<td>• New seafloor forms as lava flows through cracks in ocean floors.</td>
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</table>

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☐ Re-read the chapter and review the charts, graphs, and illustrations.
☐ Review the Standards Check at the end of each lesson.
☐ Look over the Standards Review at the end of the chapter.

Summarize It

After studying the chapter, write one sentence to summarize the main idea of each lesson.

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________
Plate Boundaries and California

Before You Read

Before you read the chapter, respond to these statements.

1. Write an A if you agree with the statement.
2. Write a D if you disagree with the statement.

<table>
<thead>
<tr>
<th>Before You Read</th>
<th>Plate Boundaries and California</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Plates in Earth’s crust can move only from side to side.</td>
</tr>
<tr>
<td></td>
<td>• Many of California’s mountains formed as the result of plate movements.</td>
</tr>
<tr>
<td></td>
<td>• All of California is located on the same lithospheric plate.</td>
</tr>
<tr>
<td></td>
<td>• Los Angeles and San Francisco are slowly moving toward each other.</td>
</tr>
</tbody>
</table>

Construct the Foldable as directed at the beginning of this chapter.

Science Journal

You are an explorer and it is 1776. Write your description of the Sierra Nevada and your thoughts as you view these mountains for the first time.

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
Plate Boundaries and California
Lesson 1 Interactions at Plate Boundaries

Grade 6 Science Content Standards—1.c: Students know lithospheric plates the size of continents and oceans move at rates of centimeters per year in response to movements in the mantle. Also covers: 1.d, 1.e, 7.g

Skim Lesson 1. Look at the section headings and illustrations.
Write three topics that you predict will be covered in the lesson.
1. 
2. 
3. 

Define lithospheric plate using your book or a dictionary.

Match the correct term with its definition.

long, narrow valley formed as the hanging wall of a divergent boundary slips down
fracture in which rocks on one side of the fracture move relative to rocks on the other side
boundary formed when two plates move apart
boundary formed when two plates move sideways past each other
break or crack in rock
process that pulls apart a continent

Use your book or a dictionary to define inclined.

incliend

Name ___________________________________________ Date ____________________
Lesson 1 Interactions at Plate Boundaries (continued)

**Main Idea**

**Stress and Deformation**

I found this information on page ____________.

**Details**

**Organize** information about types of stress. Describe how each type of stress occurs and its results.

<table>
<thead>
<tr>
<th>Types of Rock Stress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tension</td>
</tr>
<tr>
<td>Compression</td>
</tr>
<tr>
<td>Shear</td>
</tr>
</tbody>
</table>

Model the 3 main types of faults. Draw each type of fault, and label the hanging wall and footwall. Use arrows to show how rock moves.

<table>
<thead>
<tr>
<th>Normal Fault</th>
<th>Reverse Fault</th>
<th>Strike-Slip Fault</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Summarize It**

Rephrase the main ideas of this section in your own words.

________________________

________________________

________________________

________________________

________________________

________________________
Lesson 1 Interactions at Plate Boundaries (continued)

**Main Idea**

**Types of Plate Boundaries**

*Sequence the events that occur during continental rifting.*

- A continent splits apart at a divergent plate boundary.

**Details**

- **Distinguish the 3 types of convergent plate boundaries. Describe what happens at each type of boundary.**

<table>
<thead>
<tr>
<th>Ocean-to-Ocean</th>
<th>Ocean-to-Continent</th>
<th>Continent-to-Continent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Complete this paragraph about transform plate boundaries.**

  At transform plate boundaries, plates ________________. In the ocean, these boundaries connect ________________. On the continents, ________________ can occur along these boundaries.

**Summarize It**

Summarize three main ideas from the above section of Lesson 1.

__________________________

__________________________

__________________________
Plate Boundaries and California

Lesson 2 California Geology

Grade 6 Science Content Standards—1.f: Students know how to explain major features of California geology (including mountains, faults, volcanoes) in terms of plate tectonics. Also covers: 1.e, 7.a, 7.b

Scan the headings and bold words in Lesson 2. Write three questions that come to mind. Look for answers as you read.

1. _____________________________
2. _____________________________
3. _____________________________

Define uplift using your book or a dictionary.

uplift

Use your book or a dictionary to define San Andreas Fault. Then write a short paragraph that describes the fault.

San Andreas Fault

Use a dictionary to define adjacent. Then use the term in an original sentence related to Lesson 2.

adjacent
Lesson 2 California Geology (continued)

Main Idea

Plate Tectonics in California

I found this information on page __________.

Details

Distinguish two plate boundaries found in California.
1. _______________________________________________________
2. _______________________________________________________

Identify three features of California geology caused by plate tectonics.
1. ____________ 2. ____________ 3. ____________

Create a diagram showing the San Andreas Fault. Use the words below to label your diagram. Include arrows to show how the plates are moving.
- North American Plate
- Pacific Plate
- San Francisco Bay
- transverse ranges
- coast ranges
- Salton Sea
- Los Angeles Basin
- Ventura Basin
- Cape Mendocino

Summarize It
Summarize the main ideas of the above section of the lesson.

__________________________

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Analyze the role of a convergent plate boundary in shaping California geology. Complete the cause-and-effect diagram.

The Gorda and Juan de Fuca plates are forced beneath the coast.

Organize information about the formation of mountains in California. Complete the outline.

I. Subduction
   A. 
   B. 

II. Rifting
   A. 
   B. 

Summarize two changes that might occur in the future as a result of plate tectonics.

Summarize IT

- Rephrase the main ideas of the lesson in your own words.
Plate Boundaries and California
Chapter Wrap-Up

Now that you have read the chapter, think about what you have learned and complete the table below. Compare your previous answers to these.

1. Write an A if you agree with the statement.
2. Write a D if you disagree with the statement.

<table>
<thead>
<tr>
<th>Plate Boundaries and California</th>
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<td>• Los Angeles and San Francisco are slowly moving toward each other.</td>
<td></td>
</tr>
</tbody>
</table>

Review

Use this checklist to help you study.

☐ Review the information you included in your Foldable.
☐ Study your Science Notebook on this chapter.
☐ Study the definitions of vocabulary words.
☐ Review daily homework assignments.
☐ Re-read the chapter and review the charts, graphs, and illustrations.
☐ Review the Standards Check at the end of each lesson.
☐ Look over the Standards Review at the end of the chapter.

SUMMARIZE IT

After studying this chapter, write sentences summarizing three of its main ideas.
Earthquakes

Grade 6 Science Content Standards—1.g: Students know how to determine the epicenter of an earthquake and know that the effects of an earthquake on any region vary, depending on the size of the earthquake, the distance of the region from the epicenter, the local geology, and the type of construction in the region. Also covers: 1.d, 1.e, 2.d, 7a–b, 7d–e, 7g

Before You Read

Before you read the chapter, respond to these statements.

1. Write an A if you agree with the statement.
2. Write a D if you disagree with the statement.

<table>
<thead>
<tr>
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<th>Earthquakes</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
<td></td>
<td>• Fire is the most common hazard that occurs following an earthquake.</td>
</tr>
</tbody>
</table>

Construct the Foldable as directed at the beginning of this chapter.

Science Journal

Have you ever experienced an earthquake? If so, write a paragraph about the event. If not, write how you imagine it would feel to experience an earthquake.
Earthquakes
Lesson 1 Origins of Earthquakes

Scan Lesson 1 of your book. Write two important facts you discovered about the origins of earthquakes while scanning the lesson.

1. ____________________________________________
2. ____________________________________________

Define fault using your book or a dictionary.

fault

Use your book or a dictionary to define the following terms.

earthquake

elastic strain

focus

Use a dictionary to find the scientific definition of the term interact. Find a sentence in the lesson in which the word is used, and write the sentence below.

interact

Definition: ______________________________________

Sentence: ______________________________________
Lesson 1 Origins of Earthquakes (continued)

Main Idea

What is an earthquake?

Sequence the changes in energy that occur leading up to an earthquake.

Heat energy moves through Earth’s mantle by convection.

Summarize what happens after elastic strain builds up in rocks. Complete the statements below.

When elastic strain builds up, rocks ___________________________. Either ________________________, or the rupture will occur ________________________.

Model the spread of seismic waves from the focus of an earthquake. Use arrows to show how waves spread.

Summarize two main ideas of the above sections.
Distinguish between the types of earthquakes that occur at each type of plate boundary. Complete the table.

<table>
<thead>
<tr>
<th></th>
<th>Divergent Boundary</th>
<th>Convergent Boundary</th>
<th>Transform Boundary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of stress</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of fault</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magnitude of earthquake</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Organize information about earthquakes that occur away from plate boundaries. Complete the concept map.

Earthquakes away from plate boundaries

Summarize the main ideas of the above section with two bullet points.

- 
- 

58  Earthquakes
Earthquakes
Lesson 2 Earthquakes and Seismic Waves

Grade 6 Science Content Standard—1.g: Students know how to determine the epicenter of an earthquake and know that the effects of an earthquake on any region vary, depending on the size of the earthquake, the distance of the region from the epicenter, the local geology, and the type of construction in the region. Also covers: 7.e

Predict three topics that will be covered in Lesson 2. Use the headings and bold words to help.

1. __________________________________________
2. __________________________________________
3. __________________________________________

Review Vocabulary

Use wave in a scientific sentence. Use a dictionary or your book for help.

wave

_________________________________________________________________

_________________________________________________________________

New Vocabulary

Write the correct term to match each definition in the blank.

__________ compressional wave with particle motion in the same direction the wave travels

__________ wave of energy produced at the focus of an earthquake

__________ shearing wave with particle motion perpendicular to the direction of wave travel

__________ point on Earth’s surface directly above an earthquake focus

Academic Vocabulary

Use a dictionary to define the term internal as it is used in the following sentence.

Scientists study the internal structure of Earth.

internal

_________________________________________________________________

_________________________________________________________________
Lesson 2  Earthquakes and Seismic Waves (continued)

Main Idea
What are seismic waves?
I found this information on page __________.

Details
Model how energy travels during an earthquake as seismic waves. Draw a diagram showing how the energy travels. Label the epicenter and identify how the amount of energy changes with distance.

Classify the three types of seismic waves. Describe each type of wave.

Types of Seismic Waves
I found this information on page __________.

Summarize It
Rephrase two main ideas from these sections in your own words.

Name ___________________________ Date _______________
Lesson 2  Earthquakes and Seismic Waves (continued)

Main Idea

Using Seismic Wave Data

I found this information on page __________.

Details

Model how P-waves, S-waves, and surface waves travel in an earthquake. Draw a diagram showing which waves arrive first.

Outline discoveries scientists have made using seismic waves.

I. Internal structure
   A. ____________________________
   ____________________________
   ____________________________
   B. ____________________________
   ____________________________
   ____________________________

II. Shadow zone
   A. Definition: ____________________________
   ____________________________
   ____________________________
   B. ____________________________
   ____________________________
   ____________________________

Summarize the main ideas of the above sections.

_____________________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

Earthquakes 61
Earthquakes
Lesson 3 Measuring Earthquakes

Grade 6 Science Content Standards—1.g: Students know how to determine the epicenter of an earthquake and know that the effects of an earthquake on any region vary, depending on the size of the earthquake, the distance of the region from the epicenter, the local geology, and the type of construction in the region. Also covers: 7.b, 7.g

Skim Lesson 3, and predict three topics that you will study in this lesson.
1. 
2. 
3. 

Review Vocabulary

Define sediment using your book or a dictionary.

sediment

New Vocabulary

Use your book or a dictionary to define the following terms.

seismograph

seismogram

Academic Vocabulary

Use the word indicate in a scientific sentence.

indicate
Lesson 3 Measuring Earthquakes (continued)

**Main Idea**

**How are earthquakes measured?**

I found this information on page ___________.

**Recording Seismic Waves**

I found this information on page ___________.

**Locating an Epicenter**

I found this information on page ___________.

---

**Details**

**Analyze** how scientists determined the size of the December 2004 Indian Ocean earthquake.

---

**Summarize** how a mechanical seismograph works.

---

**Sequence** the steps scientists use to locate the epicenter of an earthquake. Complete the flow chart.

Find the difference in the arrival times of the P- and S-waves.

---

**Summarize It**

Summarize one main idea from each section above.

---

Earthquakes 63
Lesson 3 Measuring Earthquakes (continued)

Main Idea

Measuring Earthquake Size

I found this information on page __________.

Details

Distinguish between the scales used to measure the magnitude of earthquakes. Describe the key features of each scale.

<table>
<thead>
<tr>
<th>Richter Magnitude Scale</th>
<th>Moment Magnitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>scale is based on</td>
<td>scale is based on</td>
</tr>
<tr>
<td>magnitude values</td>
<td></td>
</tr>
</tbody>
</table>

Analyze factors that affect earthquake intensity. Identify two factors that affect intensity, and summarize the effect of each.

Factors that affect intensity

<table>
<thead>
<tr>
<th>Factor:</th>
<th>Effect:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Earthquake Intensity

I found this information on page __________.

Summarize It

Highlight the main ideas of each section above in the following passage.

Scientists use magnitude scales to measure the movement and energy released by earthquakes, and intensity to describe how much damage earthquakes cause. The Richter scale measures the amount of movement recorded on a seismogram. The moment magnitude is determined by the amount of energy released. It varies with the distance from the epicenter and the geology of the area.
Earthquakes
Lesson 4 Earthquake Hazards and Safety

Grade 6 Science Content Standards—1.g: Students know how to determine the epicenter of an earthquake and know that the effects of an earthquake on any region vary, depending on the size of the earthquake, the distance of the region from the epicenter, the local geology, and the type of construction in the region. Also covers: 2.d, 7.a, 7.b

Scan Lesson 4 of your book. Write three facts that you discovered about earthquake hazards and safety as you scanned the lesson.

1. 

2. 

3. 

Review Vocabulary
Define San Andreas Fault using your book or a dictionary.

San Andreas Fault

New Vocabulary
Use your book or a dictionary to define each of the following terms.

liquefaction

tsunami

Academic Vocabulary
Use a dictionary to write the scientific definition for securely. Then use the word in a sentence.

securely


Identify five hazards that might result from an earthquake.

Earthquakes can cause

Explain how liquefaction occurs and how it damages buildings.

Sequence the events that cause a tsunami. Complete the flow chart.

The seafloor moves suddenly.

Summarize how scientists determine the risk of earthquake hazards in an area.

Summarize the main ideas of the above sections.
Lesson 4 Earthquake Hazards and Safety (continued)

**Main Idea**

Earthquakes and Structures

*Outline how building planning can help reduce loss of life during an earthquake.*

I. Types of buildings
   A. 
   
   B. 

II. Earthquake-resistant structures
   A. 
   
   B. 

**Earthquake Safety**

*Model tips for staying safe during and after an earthquake. Draw at least two safe behaviors for each environment.*

<table>
<thead>
<tr>
<th>Indoors</th>
<th>Outdoors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Summarize It**

Summarize two main ideas of the above sections of this lesson.
Earthquakes  Chapter Wrap-Up

Now that you have read the chapter, think about what you have learned and complete the table below. Compare your previous answers to these.

1. Write an A if you agree with the statement.
2. Write a D if you disagree with the statement.

<table>
<thead>
<tr>
<th>Earthquakes</th>
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☐ Study the definitions of vocabulary words.
☐ Review daily homework assignments.
☐ Re-read the chapter and review the charts, graphs, and illustrations.
☐ Review the Standards Check at the end of each lesson.
☐ Look over the Standards Review at the end of the chapter.

Summarize It

After reading this chapter, write a summary sentence for each lesson to illustrate the lesson’s main ideas.
Volcanoes

Before You Read

Before you read the chapter, respond to these statements.

1. Write an A if you agree with the statement.
2. Write a D if you disagree with the statement.

<table>
<thead>
<tr>
<th>Before You Read</th>
<th>Volcanoes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• A volcano forms when magma reaches Earth’s surface.</td>
<td></td>
</tr>
<tr>
<td>• Volcanic eruptions occur as a result of chemical reactions inside Earth.</td>
<td></td>
</tr>
<tr>
<td>• All lava has the same composition.</td>
<td></td>
</tr>
<tr>
<td>• Volcanic eruptions can change habitats for humans and wildlife.</td>
<td></td>
</tr>
</tbody>
</table>

FOLDABLES

Construct the Foldable as directed at the beginning of this chapter.

Science Journal

Make a list of what you might hear, smell, feel, see, and possibly taste while watching a volcanic eruption.
Volcanoes
Lesson 1 Volcanoes and Plate Boundaries

Grade 6 Science Content Standards—1.e: Students know major geologic events, such as earthquakes, volcanic eruptions, and mountain building, result from plate motion. Also covers: 1.d, 7.b

Scan Lesson 1 of your book. Use the checklist below.

☐ Read all of the headings.
☐ Read all of the boldface words.
☐ Look at the charts, graphs, and pictures.
☐ Think about what you already know about volcanoes and plate boundaries.

Write three things that you will learn about volcanoes and plate boundaries.

1. ______________________________________
2. ______________________________________
3. ______________________________________

Define lithospheric plate, using your book or a dictionary.

lithospheric plate

Write a paragraph that contains all of the vocabulary terms.

volcano
descent
hot spot
vent
fissure eruption

Use a dictionary to define source.

source
Lesson 1 Volcanoes and Plate Boundaries (continued)

Main Idea

What is a volcano?
I found this information on page __________.

How do volcanoes form?
I found this information on page __________.

Details

Distinguish magma from lava.
Magma: ____________________________
Lava: ____________________________

Sequence the events that occur as a volcano forms.

Heat deep inside Earth causes rock to melt, forming magma.

A cone-shaped landform develops from the lava that pours onto Earth’s surface.

Organize information about fissure eruptions by completing the table.

<table>
<thead>
<tr>
<th>Fissure Eruptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>When they occur</td>
</tr>
<tr>
<td>Where they occur</td>
</tr>
<tr>
<td>What they form</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Summarize the three main ideas of the above sections.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Lesson 1 Volcanoes and Plate Boundaries (continued)

Main Idea

Where do volcanoes occur?

I found this information on page _________.

Identify the three places at which volcanoes often form.

1. ________________________
2. ________________________
3. ________________________

Compare and contrast how volcanoes form at divergent and convergent plate boundaries.

Classify the types of plates involved in the formation of each group of landforms, using the graphic organizer.

Volcanic Landforms at Converging Plates

include

Island Arcs

that form where

that form where

Summarize the main idea of the above section.

Summarize the main idea of the above section.
Volcanoes
Lesson 2 Volcanic Eruptions and Features

Grade 6 Science Content Standards—1.d: Students know that earthquakes are sudden motions along breaks in the crust called faults and that volcanoes and fissures are locations where magma reaches the surface. Also covers: 1.f, 7.g

Skim Lesson 2 of your book. Write three questions that come to mind. Look for answers to your questions as you read the lesson.

1. 
2. 
3. 

Review Vocabulary

Use landform in a sentence to show its scientific meaning.

landform

New Vocabulary

Use your book to define each vocabulary term.

shield volcano

cinder cone volcano

tephra

composite volcano

Define emerge, using a dictionary.

emerge
Identify three factors that affect how a volcano erupts.

1. 
2. 
3.

Label the arrow to show how the amount of silica in magma affects its viscosity.

Low Viscosity

High Viscosity

_________ silica

_________ silica

Compare and contrast basaltic magma and lava and granitic magma and lava.

<table>
<thead>
<tr>
<th>Silica Content</th>
<th>Basaltic</th>
<th>Granitic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viscosity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of Eruption</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Contrast pahoehoe lava and aa lava.

Pahoehoe lava: __________________________

__________________________

Aa lava: __________________________

__________________________

Summarize the main ideas of the above section.

____________________________________

____________________________________

____________________________________

____________________________________

____________________________________

____________________________________

____________________________________
Lesson 2 Volcanic Eruptions and Features (continued)

**Main Idea**

**Types of Volcanoes**

I found this information on page _________.

**Details**

Organize information about the three types of volcanoes by completing the graphic organizer.

Volcano Types

- **Shield**
  - Appearance:
  - Composition:
  - Formation:

- **Cinder Cone**
  - Appearance:
  - Composition:
  - Formation:

- **Composite**
  - Appearance:
  - Composition:
  - Formation:

Model the three types of volcanoes by drawing a cross-section of each in the boxes provided.

<table>
<thead>
<tr>
<th>Shield Volcano</th>
<th>Cinder Cone Volcano</th>
<th>Composite Volcano</th>
</tr>
</thead>
</table>

**Summarize It**

Summarize the main idea of the above section.
Complete the following paragraph.

The _______________ plate _______________ beneath the _______________ plate. This forms a _______________.

Part of this extends into _______________.

Identify features of intrusive volcanoes. Make a small sketch of each to help you remember what each one is.

<table>
<thead>
<tr>
<th>Intrusive Volcanic Features</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Model the stages of caldera formation by drawing three pictures.

Stage 1    Stage 2    Stage 3

Summarize two main ideas of the above sections.
**Volcanoes**

**Lesson 3  Hazards of Volcanic Eruptions**

Grade 6 Science Content Standards—2.d: Students know earthquakes, volcanic eruptions, landslides, and floods change human and wildlife habitat. Also covers: 7.a, 7.b, 7.d

---

**Review Vocabulary**

**Define** seismic wave, *using your book or a dictionary.*

**seismic wave**

---

**New Vocabulary**

*Use your book or a dictionary to define the vocabulary terms. Then use each term in a sentence that shows its scientific meaning.*

- **volcanic ash**
  - ____________________________
  - ____________________________
  - ____________________________

- **lahar**
  - ____________________________
  - ____________________________
  - ____________________________

- **pyroclastic flow**
  - ____________________________
  - ____________________________
  - ____________________________

---

**Academic Vocabulary**

*Use a dictionary to define release. Then use the term in a sentence to show its scientific meaning.*

**release**

---

---

---
Organize information by listing six hazards of volcanic eruptions.

Hazards of volcanic eruptions include:

- Volcanic Ash
- Landslides and Lahars
- Gases
- Pyroclastic Flows
- Lava Flows

Identify and describe information about the harm that volcanic eruptions pose to habitats.

<table>
<thead>
<tr>
<th>Volcanic Hazard</th>
<th>Potential Damage to Human or Natural Habitats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volcanic Ash</td>
<td></td>
</tr>
<tr>
<td>Landslides and Lahars</td>
<td></td>
</tr>
<tr>
<td>Gases</td>
<td></td>
</tr>
<tr>
<td>Pyroclastic Flows</td>
<td></td>
</tr>
<tr>
<td>Lava Flows</td>
<td></td>
</tr>
</tbody>
</table>

Summarize the main idea of the above section.

- Effects on Habitats
- Volcanic Potential Damage to Human or Natural Habitats
Lesson 3 Hazards of Volcanic Eruptions (continued)

Main Idea

Predicting Volcanic Eruptions

I found this information on page ___________.

Details

Analyze why each sign listed can be used to predict possible volcanic activity.

- Small Earthquakes
- Gas Emissions
- Ground Movement
- Temperature

Identify three ways scientists monitor volcanic activity from space.

Monitoring Volcanic Activity

I found this information on page ___________.

Summarize two main ideas of the above sections in two bullet points.

Summarize IT
Volcanoes Chapter Wrap-Up

Now that you have read the chapter, think about what you have learned and complete the table below. Compare your previous answers to these.

1. Write an A if you agree with the statement.
2. Write a D if you disagree with the statement.

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Summarize It

After studying the chapter, write one summary sentence for each lesson to illustrate the chapter’s main ideas.
Weathering and Erosion

Before You Read

Before you read the chapter, respond to these statements.

1. Write an A if you agree with the statement.
2. Write a D if you disagree with the statement.

<table>
<thead>
<tr>
<th>Before You Read</th>
<th>Weathering and Erosion</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Soil is made of a mixture of weathered rocks, minerals, and organic matter.</td>
<td></td>
</tr>
<tr>
<td>• Flowing water can move pieces of rock.</td>
<td></td>
</tr>
<tr>
<td>• Most of California’s coastal cliffs were formed by the action of waves.</td>
<td></td>
</tr>
<tr>
<td>• Glaciers carve V-shaped valleys.</td>
<td></td>
</tr>
</tbody>
</table>

Construct the Foldable as directed at the beginning of this chapter.

Science Journal

Make a list of five things you know about the ocean. Select two of them and write a paragraph about each topic. Then, write a third paragraph that compares the two.
Weathering and Erosion
Lesson 1 Weathering

Scan the headings in Lesson 1 of your book. Identify four topics that will be discussed.

1. ____________________________
2. ____________________________
3. ____________________________
4. ____________________________

Define mineral using your book or a dictionary.

mineral

Read the definitions below. Write the correct vocabulary term on the blank to the left of each definition.

mixture of weathered rock, minerals, and organic matter
breakdown of rocks at Earth’s surface from exposure to water and gases in the atmosphere
destructive process that breaks down and changes rocks
process that occurs when water freezes, expands, and melts in the cracks of rocks
breaking of rock into smaller pieces without changing its mineral composition

Define contact. Use a dictionary to help you.

contact
Lesson 1 Weathering (continued)

Main Idea

What is weathering?
I found this information on page __________.

Chemical Weathering
I found this information on page __________.

Details

Organize information by listing four agents of weathering. Give an example of each.

Agents of Weathering

Classify the 2 types of weathering processes.

Weathering processes

Outline information about chemical weathering.
Chemical Weathering

I. Definition: ______________________________

II. Causes
A. ______________________________
B. ______________________________
C. ______________________________
D. ______________________________

Summarize the main ideas of the above section.

Weathering and Erosion 83
Lesson 1 Weathering (continued)

**Main Idea**

**Physical Weathering**

- Identify major causes of physical weathering.

**Details**

**Soil Formation**

- Complete the diagram to describe the process of soil formation.

**Label** the soil profile diagram to identify the composition of the layers. Sketch the particles in each layer.

<table>
<thead>
<tr>
<th>A Horizon (topsoil)</th>
<th>B Horizon</th>
<th>C Horizon</th>
<th>Bedrock</th>
</tr>
</thead>
</table>
Weathering and Erosion
Lesson 2  Erosion and Deposition

Grade 6 Science Content Standards—2.a: Students know water running downhill is the dominant process in shaping the landscape, including California’s landscape. Also covers: 2.b–d

---

**Scan the What You’ll Learn statements for Lesson 2 of your book. Identify four topics that will be discussed.**

1. 
2. 
3. 
4. 

---

**Define sediment using your book or a dictionary.**

sediment

---

**Read the definitions below. Write the correct vocabulary term on the blank to the left of each definition.**

large mass of ice and snow

event that occurs when the water level in a river rises above the usual height and overflows the sides of its banks

landform consisting of loose sand and gravel

form of erosion that is caused by gravity

laying down of sediments in a new location

rapid, gravity-caused event that moves soil, loose rocks, and boulders

wide, flat valley located along the sides of some rivers and streams

---

**Use a dictionary to define ultimate.**

ultimate
Lesson 2  Erosion and Deposition (continued)

**Main Idea**

What are erosion and deposition?

*Organize information about the causes of erosion by completing the graphic organizer.*

```
Causes of Erosion

[Diagram]
```

**Details**

**Organize** information about the causes of erosion by completing the graphic organizer.

```
Causes of Erosion

[Diagram]
```

**Mass Wasting**

Classify information about types of mass wasting by completing the concept map.

```
Mass wasting can occur

- slowly, as
- suddenly, as
```

**Water and Erosion**

Model three features that result when streams deposit sediments by sketching them below.

```
Oxbow Lake
Alluvial Fan
Delta
```

**Summarize It**

Summarize the three main ideas of the above section.

---

---
Lesson 2 Erosion and Deposition (continued)

Main Idea

Shorelines and Erosion

I found this information on page __________.

Details

Contrast five features formed by wave erosion.
1. Cliff: ____________________________
2. Wave-cut platform: ____________________________
3. Marine terrace: ____________________________
4. Sea cave: ____________________________
5. Sea stack, sea arch: ____________________________

Sequence the 3 steps that create a longshore current.
1. ____________________________
2. ____________________________
3. ____________________________

Model how a groin affects a shoreline. Indicate where the groin would trap sediment.

Summarize IT

Summarize the main ideas of the above section.

______________________________
______________________________
______________________________
Lesson 2 Erosion and Deposition (continued)

Main Idea

What are glaciers?

I found this information on page __________.

Details

Compare alpine glaciers and continental glaciers. Use the phrases below to complete the Venn diagram.

- form where more snow falls in summer than melts in winter
- cover entire land areas
- large masses of ice and snow
- also called ice sheets
- also called valley glaciers

- form high in mountains
- found only in Antarctica and Greenland
- flow from higher to lower elevations

Alpine Glaciers

Both

Continental Glaciers

Wind

I found this information on page __________.

Identify and describe two types of wind-blown deposits.

1. ____________________________________________

2. ____________________________________________

Summarize two main ideas of the above sections of the lesson.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Weathering and Erosion
Weathering and Erosion
Lesson 3  Reshaping the California Landscape

Grade 6 Science Content Standards—1.f: Students know how to explain major features of California geology (including mountains, faults, volcanoes) in terms of plate tectonics. Also covers: 2.a, 2.b, 2.c, 7.d

Scan Lesson 3 of your book. Read the headings and bold words and look at the pictures. Write three things that you learn about California landscapes.

1. _______________________________________
   _______________________________________
   _______________________________________

2. _______________________________________
   _______________________________________
   _______________________________________

3. _______________________________________
   _______________________________________
   _______________________________________

Define uplift using your book or a dictionary.

uplift

Write a paragraph that includes all of the vocabulary terms.

basin and range

array

Define significant using a dictionary.

significant

Academic Vocabulary

Review Vocabulary

New Vocabulary

Weathering and Erosion  89
Lesson 3 Reshaping the California Landscape (continued)

Main Idea

Mountain Landscapes

Identify the 4 major types of landscapes in California.

Distinguish erosional and depositional mountain features.

Desert Landscapes

Compare two types of desert landscapes by completing the Venn diagram with at least five facts.

I found this information on page __________.

I found this information on page __________.

Summarize three main ideas of the above sections.
Lesson 3  Reshaping the California Landscape (continued)

Main Idea

The Central Valley

Outline information about the Central Valley.
I. Description
   A. Location: ____________________________
   B. Elevation: ____________________________

II. Main Rivers
   A. ____________________________
   B. ____________________________

III. Other Features
   A. ____________________________
   B. ____________________________

Coastal Landscapes

Model three features that may result from erosion along California’s rocky coasts by sketching them. Label the three features in your drawing.

Summarize the main ideas of the above section.

I found this information on page _________.

I found this information on page _________.

Weathering and Erosion 91
Weathering and Erosion

Chapter Wrap-Up

*Now that you have read the chapter, think about what you have learned and complete the table below. Compare your previous answers to these.*

1. Write an A if you agree with the statement.
2. Write a D if you disagree with the statement.

<table>
<thead>
<tr>
<th>Weathering and Erosion</th>
<th>After You Read</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Soil is made of a mixture of weathered rocks, minerals, and organic matter.</td>
<td></td>
</tr>
<tr>
<td>- Flowing water can move pieces of rock.</td>
<td></td>
</tr>
<tr>
<td>- Most of California’s coastal cliffs were formed by the action of waves.</td>
<td></td>
</tr>
<tr>
<td>- Glaciers carve V-shaped valleys.</td>
<td></td>
</tr>
</tbody>
</table>

Review

*Use this checklist to help you study.*

- Review the information you included in your Foldable.
- Study your Science Notebook on this chapter.
- Study the definitions of vocabulary words.
- Review daily homework assignments.
- Re-read the chapter and review the charts, graphs, and illustrations.
- Review the Standards Check at the end of each lesson.
- Look over the Standards Review at the end of the chapter.

**SUMMARIZE IT**

After studying the chapter, write one summary sentence for each lesson to illustrate the chapter’s main ideas.

---

92  Weathering and Erosion
Earth’s Atmosphere

Before You Read

Before you read the chapter, think about what you know about the topic. List three things that you already know about Earth’s atmosphere in the first column. Then list three things that you would like to learn about Earth’s atmosphere in the second column.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>K</strong></td>
<td><strong>W</strong></td>
</tr>
<tr>
<td>What I know</td>
<td>What I want to find out</td>
</tr>
</tbody>
</table>

Construct the Foldable as directed at the beginning of this chapter.

Science Journal

Write a hypothesis that explains how you think clouds form above Mount Shasta.
Skim Lesson 1 of your book. Write three questions that come to mind. Look for answers to your questions as you read the lesson.

1. 
2. 
3. 

Define radiation.

Read the definitions below. Write the correct vocabulary term on the blank to the left of each definition.

- electromagnetic radiation with wavelengths shorter than visible light
- region of the atmosphere that extends from Earth’s surface to a height of about 8km to 15 km
- entire range of wavelengths or frequencies of electromagnetic radiation
- region of the atmosphere that extends from about 15 km to 50 km
- electromagnetic radiation with longer wavelengths than visible light that is sometimes felt as heat
- mixture of gases that surround Earth

Use a dictionary to define visible. Then use it in a sentence to show its scientific meaning.
Identify the main components of the atmosphere and list their percentages.

Composition of Earth’s Atmosphere

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>___________ :</td>
<td>__________</td>
</tr>
<tr>
<td>___ %</td>
<td>___ %</td>
</tr>
</tbody>
</table>

Label the diagram to identify the locations of the four layers of the atmosphere. On the right side of the diagram, describe properties of each layer.

1. __________
2. __________
3. __________
4. __________

Earth’s Surface

Summarize the main ideas of the above sections in two bullet points.

1. __________
2. __________
Define electromagnetic spectrum. Then list the 3 types of electromagnetic radiation that make up 99 percent of solar radiation.

Electromagnetic spectrum: ________________________________

Solar radiation consists of:
1. ________________________________
2. ________________________________
3. ________________________________

Compare and contrast infrared and ultraviolet radiation.
Complete the Venn diagram with at least five facts.

Infrared Radiation  Both  Ultraviolet Radiation

Summarize three main ideas of the above section.

Summarize three main ideas of the above section.
Lesson 1  Energy from the Sun (continued)

Main Idea

The Sun’s Continuous Spectrum

I found this information on page ___________.

Details

Model what happens to the Sun’s radiation that strikes Earth’s atmosphere. Make a drawing to show how much of the Sun’s radiation reaches Earth’s surface, is reflected back into space, and is absorbed by the atmosphere.

The Sun’s Power

I found this information on page ___________.

Summarize how the angle at which the Sun’s radiation strikes Earth affects temperatures.

Create a concept map about the importance of solar energy on Earth.

Summarize two main ideas of the above sections.

Earth’s Atmosphere  97
Earth’s Atmosphere
Lesson 2 Energy Transfer in the Atmosphere

Scan the What You’ll Learn statements for Lesson 2 of your book.
Identify three topics that will be discussed.
1. ______________________________________
2. ______________________________________
3. ______________________________________

Define convection, using your book or a dictionary.

convection

Use your book or a dictionary to define the vocabulary terms.
Use each term in a sentence that shows its scientific meaning.
inversion

Use a dictionary to define similar.
similar
Lesson 2  Energy Transfer in the Atmosphere  (continued)

Complete the graphic organizer below with the 3 types of heat transfer.

**Main Idea**

**Conduction in Air**
I found this information on page _________.

**Convection in Air**
I found this information on page _________.

**Details**

**Complete** the graphic organizer below with the 3 types of heat transfer.

**Conduction in Air**

**Convection in Air**

**Summarize** why increasing the temperature of air changes its density.

Model the way in which convection currents affect air circulation patterns in a room. Use arrows to show the path of air movement. Label the arrows to indicate warm air and cool air.

**SUMMARIZE IT**

Summarize the main ideas of the above sections in two bullet points.

---

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Lesson 2 Energy Transfer in the Atmosphere (continued)

**Main Idea**

**Radiation**

Traveling Through Space

I found this information on page ____________.

**Details**

**Compare and contrast** the three forms of heat transfer in the chart.

<table>
<thead>
<tr>
<th></th>
<th>Radiation</th>
<th>Conduction</th>
<th>Convection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does it need a medium?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How is its energy transferred?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Create** a drawing to show how Earth maintains a radiation balance.

I found this information on page ____________.

**Identify** three greenhouse gases. Then explain how scientists think greenhouse gases might play a role in global warming.

1. ____________ 2. ____________ 3. ____________

Role in Global Warming: ____________________________________

__________________________________

__________________________________

**Summarize It**

Summarize two main ideas of the above sections.

__________________________________

__________________________________

__________________________________

__________________________________

100  Earth’s Atmosphere
Review

Earth’s Atmosphere
Lesson 3 Air Currents

Grade 6 Science Content Standards—4.d: Students know convection currents distribute heat in the atmosphere and oceans. Also covers: 4.a, 4.e

Scan Lesson 3 of your book. Use the checklist below.

☐ Read all of the headings.
☐ Read all of the bold words.
☐ Look at the charts, graphs, and pictures.
☐ Think about what you already know about air currents.

Write three things that you have learned about air currents by scanning the lesson.

1. 
2. 
3. 

Define density using your book or a dictionary.

density

Write a paragraph that includes all of the vocabulary terms.

wind
updraft
downdraft
Coriolis effect
jet stream

define temporarily using a dictionary.
temporarily

Define temporarily using a dictionary.

temporarily
Lesson 3 Air Currents (continued)

**Main Idea**

**Local Winds and Eddies**

I found this information on page ________.

**Details**

**Sequence** the Earth materials listed to indicate how rapidly each heats up when it absorbs solar radiation.

- forest
- water
- sand
- snow and ice
- asphalt or concrete

Increasing temperature

<table>
<thead>
<tr>
<th>Less Radiation Absorbed</th>
<th>More Radiation Absorbed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. clay</td>
<td>3. sand</td>
</tr>
<tr>
<td>2. asphalt or concrete</td>
<td>5. sand</td>
</tr>
</tbody>
</table>

**Create** two diagrams to show the movement of air in an updraft and a downdraft. Label each diagram to show heated, less dense air and cooler, denser air. Use arrows to show the direction of air movement.

<table>
<thead>
<tr>
<th>Updraft</th>
<th>Downdraft</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Summarize It**

Summarize two main ideas of the above sections.

__________________________

__________________________

__________________________

__________________________


g Earth’s Atmosphere
Air Currents Around Earth

Model the directions in which winds blow in the Northern and Southern Hemispheres as a result of the Coriolis effect. Use arrows to draw the path followed by the winds.

<table>
<thead>
<tr>
<th>Northern Hemisphere Winds</th>
<th>Southern Hemisphere Winds</th>
</tr>
</thead>
</table>

Complete the graphic organizer below to identify the cells in the three-cell model of air movement.

Three-Cell Model

which moves

which moves

which moves

from the ______ toward the ______

until it sinks near _______

from the ______ toward the ______

until it rises near _______

between 30˚ and 60˚ latitude

Define jet stream.

Summarize three main ideas of the above sections.
Earth’s Atmosphere Chapter Wrap-Up

Review the ideas you listed in the table at the beginning of the chapter. Cross out any incorrect information in the first column. Then complete the table by filling in the third column.

<table>
<thead>
<tr>
<th>K</th>
<th>What I know</th>
<th>W</th>
<th>What I want to find out</th>
<th>L</th>
<th>What I learned</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Review

Use this checklist to help you study.

☐ Review the information you included in your Foldable.
☐ Study your Science Notebook on this chapter.
☐ Study the definitions of vocabulary words.
☐ Review daily homework assignments.
☐ Re-read the chapter and review the charts, graphs, and illustrations.
☐ Review the Standards Check at the end of each lesson.
☐ Look over the Standards Review at the end of the chapter.

Summarize It

After studying the chapter, write one summary sentence for each lesson to illustrate the chapter’s main ideas.
Before You Read

Before you read the chapter, think about what you know about the topic. List three things that you already know about oceans in the first column. Then list three things that you would like to learn about oceans in the second column.

<table>
<thead>
<tr>
<th><strong>K</strong></th>
<th><strong>W</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What I know</strong></td>
<td><strong>What I want to find out</strong></td>
</tr>
</tbody>
</table>

Construct the Foldable as directed at the beginning of this chapter.

Near Earth’s poles, where the angle of sunlight is low, the water is cold. Write a hypothesis that explains how warm ocean currents reach higher latitudes and cold ocean currents reach lower latitudes.
Scan Lesson 1 of your book. Write three facts you discovered about Earth’s oceans while scanning the lesson.

1. 
2. 
3. 

Review Vocabulary

Define topographic map. Then use the term in a sentence.

topographic map

Use your book or a dictionary to define the following terms.

sea level

ocean floor

bathymetric map

echo sounding

continental shelf

New Vocabulary

Academic Vocabulary

Use the word method in a scientific sentence.

method
Lesson 1 Earth’s Oceans (continued)

Main Idea

Mapping Earth’s Oceans

Organize information about Earth’s 5 major oceans by completing the table.

<table>
<thead>
<tr>
<th>Name</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pacific Ocean</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Complete the paragraph to describe how sound is used to measure depth.

An instrument attached to _______________ emits a sound wave. Depth is determined by the time it takes the sound to _______________. The __________ it takes, the __________ the depth.

Summarize the main ideas of the above sections with two bullet points.

- 
- 
- 
- 
- 
- 
- 
- 
- 
-
Define and describe the 5 typical geologic features of the ocean floor.

**The Ocean Floor**

<table>
<thead>
<tr>
<th>Continental Shelf:</th>
<th>Continental Slope:</th>
<th>Abyssal Plain:</th>
</tr>
</thead>
</table>

- Trenches:
- Mid-Ocean Ridges:

Model the features of the ocean floor. Draw and label a bathymetric profile showing each of the features that you defined above in the graphic organizer.

**Summarize It**

Summarize two main ideas of the above section.
Scan the headings in Lesson 2 of this chapter. Predict three topics that will be discussed.
1. 
2. 
3. 

Define latitude using your book or a dictionary.

Read the definitions below. Write the correct vocabulary term on the blank to the left of each definition. Then write a paragraph containing the vocabulary terms.

river in the ocean

amount of salt dissolved in water

cycle of currents

Use your book or a dictionary to define the term cycle. Then use the term in a sentence to show its scientific meaning.


Lesson 2 Ocean Currents (continued)

Main Idea

Influences on Ocean Currents

I found this information on page __________.

Details

Identify six things that are moved from place to place by ocean currents.

1. ________________ 4. ________________
2. ________________ 5. ________________
3. ________________ 6. ________________

Summarize how the oceans help equalize the amount of heat throughout the planet.

________________________________________________________________________

________________________________________________________________________

Model how the Coriolis effect deflects ocean currents in the northern and southern hemispheres. Use arrows to indicate the direction of currents.

Summarize two main ideas of the above sections.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

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Lesson 2 Ocean Currents (continued)

**Main Idea**

**Influences on Ocean Currents**

I found this information on page ___________.

**Details**

Complete the flow chart to describe the process that forms deep ocean currents in Antarctica.

- Surface water is ______ by air.
- Salinity ______ as some water freezes.
- Surface water becomes ______ and ______.

Model the currents that make up the North Pacific Gyre using labeled arrows.

- Asia
- North America

Analyze the causes and effects of El Niño and La Niña.

<table>
<thead>
<tr>
<th>Event</th>
<th>Cause</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>El Niño</td>
<td></td>
<td></td>
</tr>
<tr>
<td>La Niña</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Summarize the main ideas of the above sections in your own words.

---

Oceans 111
**Oceans**

**Lesson 3 The Ocean Shore**

Grade 6 Science Content Standards—2.c: Students know beaches are dynamic systems in which the sand is supplied by rivers and moved along the coast by the action of waves.

---

**Academic Vocabulary**

- **sediment**

- **shoreline**

- **longshore current**

- **longshore drift**

- **rip current**

- **suspend**

---

**Review Vocabulary**

Define *sediment* using its scientific meaning.

---

**New Vocabulary**

*Use your book or a dictionary to define the following terms.*

---

**Skim** *Lesson 3 and predict three topics that you will study.*

1. 

2. 

3. 

---

*Use a dictionary to find the scientific definition of the term* suspend.
Lesson 3  The Ocean Shore (continued)

**Main Idea**

**Shoreline Processes**

I found this information on page _________.

**Details**

**Summarize** forces that erode the shoreline.

<table>
<thead>
<tr>
<th>Erosion by Wind and Waves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forces</td>
</tr>
<tr>
<td>Wind</td>
</tr>
<tr>
<td>Waves</td>
</tr>
<tr>
<td>Water</td>
</tr>
</tbody>
</table>

**Distinguish** two factors that affect the rate of shoreline erosion.

1. ________________________________

2. ________________________________

**Draw** longshore current and longshore drift. *Use arrows to show the direction of waves and movement of sediment.*


**SUMMARIZE IT**

Summarize the main ideas of the above sections.

_________________________

_________________________
Main Idea

Analyze how rip currents form.

Summarize two unintended results caused by structures built by humans.

Organize the following sediment sizes from largest to smallest: sand, boulder, gravel, silt, clay, and cobble.

Sequence the steps that form sand.

Sand and Weathered Material

Sand and Weathered Material

I found this information on page _________.

I found this information on page _________.

I found this information on page _________.

I found this information on page _________.

I found this information on page _________.

I found this information on page _________.

Highlight one main idea of this section in the paragraph below.

Weathering breaks large boulders into smaller rocks. Rain then washes small rocks into rivers. Rivers transport these rocks to the ocean. Along the way, rocks are continually weathered and broken down into smaller and smaller pieces. These small pieces are then transported along the shoreline.
Lesson 4 Living on the California Coast

Grade 6 Science Content Standards—4.d: Students know convection currents distribute heat in the atmosphere and oceans. Also covers: 1.e, 7.c, 7.f

Scan Lesson 4 of your book using the checklist below.

- Read all the lesson titles.
- Read all the boldface words.
- Look at all the pictures.
- Think about what you already know about the California coast.

Ask three questions about the topic.
1. ____________________________
2. ____________________________
3. ____________________________

Define transform plate boundary using your book or a dictionary.

Transform plate boundary

Write the vocabulary terms to the left of their definitions.

- narrow, warm water current that flows north from the tropics
- large, slow-moving current that travels in a southward direction bringing cool water from northern latitudes
- related to the ocean
- place in which an organism lives

Use a dictionary to define region. Then use it in a sentence to show its scientific meaning.

Region
Geology of the California Coast

Summarize the tectonic activity that has affected the California coast in the past and present by completing the paragraph.

Most of California lies on ________________, and the Pacific Ocean rests on ________________. Until about 30 million years ago, ________________. Then the direction of their movement changed and they started ________________. This lifted and crushed ________________.

Analyze why California has so many rocky beaches.

Complete the graphic organizer to identify the causes of tsunamis. Underline the cause that results in the largest tsunamis.

Summarize the main ideas of the above sections.

---

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Lesson 4 Living on the California Coast (continued)

**Main Idea**

**Currents Along the Coast**

_I found this information on page ___________._

**Details**

Model and label the two major currents along the California coast.

<table>
<thead>
<tr>
<th>Current</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

_Summarize why there are no hurricanes in California._

When a storm system curves northward and eastward toward California, it reaches the ________________ of the California current and ________________.

**Identify two factors which account for the abundant marine life found at the Channel Islands.**

1. ________________
2. ________________

_Create and label a sketch of the intertidal zone._

_Summarize the above section of this lesson._

[Blank lines for summarization]
Oceans Chapter Wrap-Up

Review the ideas you listed in the table at the beginning of the chapter. Cross out any incorrect information in the first column. Then complete the table by filling in the third column.

<table>
<thead>
<tr>
<th>K</th>
<th>W</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>What I know</td>
<td>What I want to find out</td>
<td>What I learned</td>
</tr>
</tbody>
</table>

After reading this chapter, write one summary sentence for each lesson to illustrate the chapter’s main ideas.
Weather and Climate

Before You Read

Before you read the chapter, think about what you already know about the topic. List three things that you already know about weather and climate in the first column. Then list three things that you would like to learn about weather and climate in the second column.

<table>
<thead>
<tr>
<th>K</th>
<th>What I know</th>
<th>W</th>
<th>What I want to find out</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Construct the Foldable as directed at the beginning of this chapter.

Science Journal

Describe your observations of California’s weather, climate, and seasons. Analyze the importance of water in your descriptions.

________________________________________

________________________________________

________________________________________

________________________________________

________________________________________

________________________________________
Weather and Climate
Lesson 1 Weather

Grade 6 Science Content Standards—4.a: Students know the sun is the major source of energy for phenomena on Earth’s surface; it powers winds, ocean currents, and the water cycle. Also covers: 4.e

Scan the headings of the paragraphs throughout Lesson 1. Identify two topics that you will learn about.
1. 
2. 

Review Vocabulary
Use your book or a dictionary to define wind.

New Vocabulary
Write the vocabulary term to the left of its definition.

- cycle in which water constantly moves between the hydrosphere and the atmosphere
- temperature at which air becomes fully saturated with water vapor and condensation forms
- atmospheric conditions, along with short term changes, of a certain place at a certain time
- amount of water vapor present in air
- amount of water vapor in the air relative to the maximum amount of water vapor the air can hold at that temperature before becoming saturated
- water, in liquid or solid form, that falls from the atmosphere

Academic Vocabulary
Use a dictionary to define traditionally.

traditionally
Lesson 1 Weather (continued)

**Main Idea**

**Weather Factors**

I found this information on page ________.

**Details**

Organize information by listing and briefly describing factors that describe weather.

<table>
<thead>
<tr>
<th>Factors That Describe Weather</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor</td>
</tr>
<tr>
<td>air</td>
</tr>
<tr>
<td>rain: water droplets</td>
</tr>
</tbody>
</table>

Identify four types of precipitation and describe their forms when they reach Earth’s surface.

<table>
<thead>
<tr>
<th>Types of Precipitation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

**Summarize IT**

Summarize a main idea of this section.

______________________________

______________________________

______________________________
Lesson 1 Weather (continued)

**Main Idea**

The Water Cycle

I found this information on page __________.

**Details**

Label the graph about water in the hydrosphere.

About 96% of Earth’s water is stored in __________.

About 4% of Earth’s water is present as __________ water in __________.

Model the water cycle in the space below.

---

**Summarize It**

Summarize three main ideas of the above sections with three bullet points.

---

Weather and Climate
Weather and Climate
Lesson 2 Weather Patterns

Grade 6 Science Content Standards—4.e: Students know differences in pressure, heat, air movement, and humidity result in changes in weather. Also covers: 2.d

**Scan the headings throughout Lesson 2. Write three questions about topics covered in the lesson.**

1. 
2. 
3. 

**Define atmosphere, using your book or dictionary.**

*atmosphere*

**New Vocabulary**

Read the definitions below. Write the correct vocabulary term on the blank to the left of each definition.

regular change in temperature and length of day that result from the tilt of Earth’s axis

flood that takes place suddenly

colder air moving toward warmer air and pushing it upwards

body of air that has consistent weather features

lighter, warmer air moving over heavier, colder air

period of time when precipitation is much lower than normal or absent

**Academic Vocabulary**

Find the sentence in this lesson that uses the word consequence, and write the sentence below.


Weather and Climate 123
Summarize information about the characteristics of an air mass’s key weather features.

The weather features that characterize an air mass include _______ and _______. An air mass gets its characteristics from _________________.

Create a diagram of a warm front and a cold front in the space below. Include labels for the air masses in your diagram.

<table>
<thead>
<tr>
<th>Warm Front</th>
<th>Cold Front</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Predict what will happen to the air pressure near Earth’s surface as air moves vertically.

As warm air rises, air pressure ___________.

As cold air sinks, air pressure ___________.

Summarize the main ideas of the above sections in a short paragraph.
Lesson 2  Weather Patterns (continued)

**Main Idea**

Cycles that Affect Weather

_I found this information on page _________._

**Details**

Identify and briefly describe three cycles that affect the weather.

Cycles that Affect the Weather

- **Day and night:** daily cycle of warming and cooling of air and ground
- [ ]
- [ ]
- [ ]

**Severe Weather**

_I found this information on page _________._

Organize information about droughts and floods in the table.

<table>
<thead>
<tr>
<th>Droughts</th>
<th>Floods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caused by:</td>
<td>extended periods of</td>
</tr>
<tr>
<td>May result in:</td>
<td>major decrease in</td>
</tr>
<tr>
<td>Recent occurrences:</td>
<td></td>
</tr>
</tbody>
</table>

Summarize why the damage from flash floods is increasing.

| [ ] |

**Summarize It**

Summarize a main idea of the above sections.

| [ ] | [ ] |
Weather and Climate
Lesson 3 Climate

Grade 6 Science Content Standards—4.d: Students know convection currents distribute heat in the atmosphere and oceans. Also covers: 4.e

Scan the headings and illustrations in Lesson 3 of your book. Write two questions about this lesson that come to mind.

1. 
2. 

Review Vocabulary

Define habitat using your book or a dictionary.

habitat

New Vocabulary

Use your book to define the following terms. Then write a sentence that uses them.

climate

mediterranean climate

highland climate

Sentence: 

Academic Vocabulary

Use a dictionary to define affect. Then use it in a sentence to show its meaning.

affect

Sentence: 

126 Weather and Climate
Lesson 3 Climate (continued)

**Main Idea**

**A World of Many Climates**

I found this information on page ________.

**Details**

**Compare** the mediterranean climate and the highland climate.

**California’s Two Main Climates**

- **type**
  - [ ]
  - [ ]

- **characteristics**
  - [ ]
  - [ ]

- **typical location**
  - [ ]
  - [ ]

I found this information on page ________.

**Distinguish** between California’s main regions of mediterranean climate from its main regions of highland climate by marking and labeling the map.

**Summarize It**

Summarize two of the main ideas of the above sections.

<table>
<thead>
<tr>
<th>Idea 1</th>
<th>Idea 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>______</td>
<td>______</td>
</tr>
<tr>
<td>______</td>
<td>______</td>
</tr>
</tbody>
</table>
Summarize how climate controls affect climate.

1. Latitude

2. Distribution of land and water

3. Ocean currents

4. Prevailing winds

5. Human influences on climate

Sequence the changes that some scientists think could result from global warming.

Burning of ___________________ → Increase in concentration of ___________________

Global warming

Summarize the main idea of the above section in a single sentence.
Weather and Climate
Lesson 4 California Climate and Local Weather Patterns

Scan the headings and illustrations in Lesson 4 of your book. Write three topics that you think will be discussed in this lesson.

1. 
2. 
3. 

Define California Current, using your book or dictionary.

California Current

Use your book to define the following terms.

rain shadow

sea breeze

land breeze

valley breeze

mountain breeze

Santa Ana wind

Use a dictionary to define accumulate. Then use it in a sentence to show its meaning.

accumulate


Weather and Climate 129
Lesson 4  California Weather and Climat (continued)

Main Idea

Mediterranean and Highland Climates

I found this information on page ___________.

I found this information on page ___________.

I found this information on page ___________.

Details

Identify three factors that affect the climates of California.

California's climates are influenced by

Sequence the formation of fog along the California coast.

Westerlies ____________________________

______________________________

The warm air crosses over the ____________________________ of the California current.

Model and label the formation of a rain shadow.

Summarize three main ideas of the above sections with two bullet points.
Lesson 4  California Weather and (continued)

**Main Idea**

**Local Winds**

Model the formation of a sea breeze in a sketch.

**Details**

Compare and contrast valley breezes and mountain breezes in the Venn diagram with at least five facts.

Rephrase how Santa Ana winds can lead to fires in southern California.

**Summarize It**

Summarize the three main ideas of the above sections with three bullet points.
Weather and Climate  Chapter Wrap-Up

Review the ideas you listed in the table at the beginning of the chapter. Cross out any incorrect information in the first column. Then complete the table by filling out the third column.

<table>
<thead>
<tr>
<th>K</th>
<th>W</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>What I know</td>
<td>What I want to find out</td>
<td>What I learned</td>
</tr>
</tbody>
</table>

**Review**

*Use this checklist to help you study.*

- [ ] Review the information you included in your Foldable.
- [ ] Study your *Science Notebook* on this chapter.
- [ ] Study the definitions of vocabulary words.
- [ ] Review daily homework assignments.
- [ ] Re-read the chapter and review the charts, graphs, and illustrations.
- [ ] Review the Standards Check at the end of each lesson.
- [ ] Look over the Standards Review at the end of the chapter.

**SUMMARIZE IT**

After studying the chapter, write one summary sentence for each section to illustrate that chapter’s main ideas.

________________________________________________________

________________________________________________________

________________________________________________________

________________________________________________________

________________________________________________________
### Ecological Roles

**Before You Read**

*Before you read the chapter, respond to these statements.*

1. Write an A if you agree with the statement.
2. Write a D if you disagree with the statement.

<table>
<thead>
<tr>
<th>Before You Read</th>
<th>Ecological Roles</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• An ecosystem consists only of the living things in an area.</td>
</tr>
<tr>
<td></td>
<td>• Soil, sunlight, water, and temperature help determine which organisms can live in an area.</td>
</tr>
<tr>
<td></td>
<td>• Animals and plants that live in the desert do not need water.</td>
</tr>
<tr>
<td></td>
<td>• A niche is an organism’s role in its community.</td>
</tr>
</tbody>
</table>

*Construct the Foldable as directed at the beginning of this chapter.*

*Science Journal*

Write three questions you have about the photo that you might like to explore further.
Ecological Roles
Lesson 1 Biotic and Abiotic Factors

Grade 6 Science Content Standards—5.e: Students know the number and types of organisms an ecosystem can support depends on the resources available and on abiotic factors, such as quantities of light and water, a range of temperatures, and soil composition. Also covers: 4.a, 7.c

Skim the headings in Lesson 1 of your book. Identify three topics that will be discussed.

1. 
2. 
3. 

Define climate using your book or a dictionary.

clim__

Read the definitions below. Write the correct vocabulary term on the blank to the left of each definition.

living part of an ecosystem

dark-colored soil material that makes nutrients available to plants

group of organisms that share similar characteristics and can reproduce among themselves producing fertile offspring

all the species that occupy an area

nonliving part of an ecosystem

number of individuals of one species that occupy an area

an environmental factor that limits the population of organisms in an ecosystem

the organisms in an area and the place they live

Use your book or a dictionary to define adapt to show its scientific meaning.

ad__

Name __________________________ Date ________________

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Lesson 1  Biotic and Abiotic Factors (continued)

**Main Idea**

What is an ecosystem?

I found this information on page __________.

**Details**

Define ecosystem, and describe some interactions that take place in an ecosystem. Give two examples.

Examples:

Organize information about the abiotic factors that are found in an ecosystem. Give one example of how each affects organisms.

Abiotic Factors

I found this information on page __________.

**Summarize It**

Summarize three main ideas of the above sections.
Lesson 1  Biotic and Abiotic Factors (continued)

**Main Idea**

**Biotic Factors** and **Limiting Factors**

I found this information on page ________.

**Details**

**Organize** information about limiting factors. **Describe how each limiting factor affects populations in an ecosystem.**

<table>
<thead>
<tr>
<th>Limiting Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food:</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Water:</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Shelter:</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Space:</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

**Rephrase** in your own words how changes in one population can affect other populations. Use sea otters as an example.

I found this information on page ________.

**Summarize It**

Choose one main idea from each section above. Summarize the main idea in your own words.

Choose one main idea from each section above. Summarize the main idea in your own words.
Scan Lesson 2 of your book. Write three facts that you discover about organisms and ecosystems.

1. 

2. 

3. 

New Vocabulary

Write a paragraph using all the vocabulary terms.

biome
niche
habitat

Use a dictionary to define migrate. Then use the term in a sentence to show its scientific meaning.

migrate
Lesson 2 Organisms and Ecosystems (continued)

Main Idea

Biomes
I found this information on page __________.

Details

Outline information about four biomes found in the world.

I. Tundra
   A. ________________________________________
   B. ________________________________________

II. Taiga
   A. ________________________________________
   B. ________________________________________

III. Rain Forest
   A. Types and locations
      1. ________________________________________
      2. ________________________________________
   B. Shared characteristics
      1. ________________________________________
      2. ________________________________________

IV. Grassland
   A. ________________________________________
   B. ________________________________________

Identify and describe climate features of California biomes.

<table>
<thead>
<tr>
<th></th>
<th>Temperate Deciduous Forest</th>
<th>Desert</th>
<th>Chapparal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Summarize two main ideas of the above section of this lesson.

____________________________________________________________________
____________________________________________________________________
Lesson 2  Organisms and Ecosystems (continued)

Main Idea

Habitat and Niches

I found this information on page ________.

Organize information about an organism’s niche. Complete the concept map.

Analyze how human action can affect an ecosystem. Sequence causes and effects.

Humans do not allow fire to burn in chaparral.

Human Impacts on Niches

I found this information on page ________.

A niche includes . . .

Summarize two main ideas of the above sections.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Ecological Roles  Chapter Wrap-Up

Now that you have read the chapter, think about what you have learned and complete the table below. Compare your previous answers to these.

1. Write an A if you agree with the statement.
2. Write a D if you disagree with the statement.

<table>
<thead>
<tr>
<th>Ecological Roles</th>
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☐ Review the Standards Check at the end of each lesson.
☐ Look over the Standards Review at the end of the chapter.

SUMMARIZE IT

After reading the chapter, write a summary sentence for each lesson to illustrate the chapter’s main ideas.
Energy and Matter in Ecosystems

Before You Read

Before you read the chapter, respond to these statements.

1. Write an A if you agree with the statement.
2. Write a D if you disagree with the statement.

<table>
<thead>
<tr>
<th>Before You Read</th>
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</thead>
<tbody>
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<td></td>
<td>• Plants make their own food.</td>
</tr>
<tr>
<td></td>
<td>• Energy cycles through ecosystems.</td>
</tr>
<tr>
<td></td>
<td>• All living things release some food energy as heat.</td>
</tr>
</tbody>
</table>

Construct the Foldable as directed at the beginning of this chapter.

Write a paragraph on what you know about energy and matter in ecosystems.

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________
Energy and Matter in Ecosystems
Lesson 1 Producers and Consumers

Grade 6 Science Content Standards—5.a: Students know energy entering ecosystems as sunlight is transferred by producers into chemical energy through photosynthesis and then from organism to organism through food webs. Also covers: 5.c, 7.a, 7.g

Scan Lesson 1 of your book. Write two facts you discovered about producers and consumers while scanning the lesson.

1. ____________________________________________
2. ____________________________________________

Review Vocabulary

Define ecosystem.

ecosystem

New Vocabulary

Use your book or a dictionary to define the following terms.

ecology

producer

photosynthesis

consumer

decomposer

Academic Vocabulary

Use a dictionary to define structure.

structure
Lesson 1 Producers and Consumers (continued)

**Main Idea**

**Ecosystems**

I found this information on page __________.

**Details**

Classify factors in a pond ecosystem as biotic or abiotic. Include at least six factors.

<table>
<thead>
<tr>
<th>Factors of a Pond Ecosystem</th>
<th>Biotic</th>
<th>Abiotic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Summarize the key relationship between the biotic factors and the abiotic factors in an ecosystem.

Producers

I found this information on page __________.

Sequence the steps by which plants make and use food.

sunlight + ______________ + ______________

are used to make

simple ______________

which

are used to make starches, __________, __________, and other compounds

**Summarize It**

Summarize three main ideas of the above sections.
Lesson 1 Producers and Consumers (continued)

Main Idea

Producers

Compare and contrast photosynthesis with chemosynthesis. Identify the energy source for each and list organisms that use each.

Photosynthesis

method used by producers to make food

Both

Chemosynthesis

Consumers

Distinguish between the types of consumers. Give at least two examples of each type of consumer and identify what they eat.

<table>
<thead>
<tr>
<th>Types of Consumers</th>
<th>Examples</th>
<th>What They Eat</th>
</tr>
</thead>
<tbody>
<tr>
<td>herbivores</td>
<td>elephants,</td>
<td>plants</td>
</tr>
<tr>
<td>scavengers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Identify two beneficial roles played by decomposers and scavengers.

Decomposers

Summarize It

Highlight the main idea in the information below.
Consumers are categorized by the kinds of foods they eat. For example, lions are categorized as carnivores because they eat meat, and bears are omnivores because they eat both animals and plants.
Scan the headings in Lesson 2 of your book. Predict three things you will learn.

1. __________________________
2. __________________________
3. __________________________

Read the definitions below. Write the correct vocabulary term on the blank to the left of each definition.

_________________________ consumer at the top of the energy pyramid

_________________________ complicated model of the flow of energy in an ecosystem

_________________________ consumer at the bottom of the energy pyramid

_________________________ illustration of how energy moves through an ecosystem

_________________________ consumer at the second level of the energy pyramid

Use a dictionary to define the term convert as it is used in the following sentence.

Producers such as trees and bushes convert sunlight, water, and carbon dioxide into sugars.

convert

_________________________
Lesson 2 Energy in Ecosystems (continued)

Main Idea

Energy Through the Ecosystem

I found this information on page ___________.

Food as Energy

I found this information on page ___________.

Details

Sequence the flow of energy through ecosystems. Fill in the boxes with the words producers, consumers, and decomposers.

Create an example of a food chain.

- Include and label a producer, a herbivore, and a carnivore or omnivore that eats the herbivore.
- Use arrows to show the transfer of energy.

Rephrase in your own words why a food web is a more accurate model of energy flow through an ecosystem than a food chain.

<table>
<thead>
<tr>
<th>Summarize It</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summarize the two main ideas of this section.</td>
</tr>
</tbody>
</table>
Food as Energy

Draw arrows to show how energy would flow in this food web.

- foxes
- snakes
- lizards
- desert plants
- insects

Identify an example of an organism at each level of the energy pyramid:

- producer
- primary consumer
- secondary consumer
- tertiary consumer

Analyze why a pyramid is used as the model for energy flow through an ecosystem.

Summarize IT

Write two sentences to summarize the above section.
Energy and Matter in Ecosystems
Lesson 3 Matter in Ecosystems

Grade 6 Science Content Standards—5.b: Students know matter is transferred over time from one organism to others in the food web and between organisms and the physical environment. Also covers: 7.a, 7.b, 7.g

Skim the headings and illustrations of Lesson 3 to identify four cycles that will be discussed.
1. ________________________________
2. ________________________________
3. ________________________________
4. ________________________________

Review Vocabulary
Use the term water cycle in a sentence to show its scientific meaning.

water cycle

New Vocabulary
Use your book or a dictionary to define the following terms.
nitrifying bacteria

Use the word resource in a scientific sentence.

resource
Lesson 3 Matter in Ecosystems (continued)

**Main Idea**

**Cycles of Matter**

*Summarize how dead plant and animal material are made available to support new life.*

**Water Cycle**

*Sequence the main steps in the water cycle.*

**Details**

*Model the nitrogen cycle in a diagram.*

**Summarize It**

Summarize two main ideas of the above section with bullet points.
Lesson 3 Matter in Ecosystems (continued)

Main Idea

**Phosphorous Cycle**

*I found this information on page _________.*

**Details**

*Compare and contrast the phosphorus cycle with the nitrogen cycle.*

Unlike nitrogen, phosphorus:  
Like nitrogen, phosphorus:

**The Carbon Cycle**

*I found this information on page _________.*

**Model** the carbon cycle. *Identify the role of each item shown in the cycle. Draw arrows showing the flow of carbon through the cycle.*

Air  

Producers (plants and algae) use  

make  

Burning fossil fuels releases  
Consumers break down  

and release  


Summarize the main idea of the above section.

Summarize the main idea of the above section.
Tie It Together

Synthesize It

Create a food web.

1. Make a list of foods that you ate yesterday.
2. Determine whether the main component of each food came from a producer or a consumer.
3. For each consumer, identify at least one food that it ate.
4. Create a food web that includes yourself.

List:

Web:
Energy and Matter in Ecosystems

Chapter Wrap-Up

Now that you have read the chapter, think about what you have learned and complete the table below. Compare your previous answers to these.

1. Write an A if you agree with the statement.
2. Write a D if you disagree with the statement.

<table>
<thead>
<tr>
<th>Energy and Matter in Ecosystems</th>
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<td>• Plants make their own food.</td>
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Summarize It

After reading this chapter, write one summary sentence for each lesson to explain the chapter’s main ideas.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

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Construct the Foldable as directed at the beginning of this chapter.

Before You Read

Before you read the chapter, respond to these statements.

1. Write an A if you agree with the statement.
2. Write a D if you disagree with the statement.

<table>
<thead>
<tr>
<th>Before You Read</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Gold is a nonrenewable mineral resource.</td>
</tr>
<tr>
<td></td>
<td>• The supply of fossil fuels is unlimited.</td>
</tr>
<tr>
<td></td>
<td>• Sun and wind are nonpolluting alternative energy resources.</td>
</tr>
<tr>
<td></td>
<td>• Oil is used to make plastic and nylon.</td>
</tr>
</tbody>
</table>

Look around your classroom or your bedroom at home. Make a list of the objects that are made from resources in nature.
Resources
Lesson 1 Earth’s Material Resources

Grade 6 Science Content Standards—6.b: Students know different natural energy and material resources, including air, soil, rocks, minerals, petroleum, fresh water, wildlife, and forests, and know how to classify them as renewable or nonrenewable. Also covers: 6.c, 7.c

**Skim** Lesson 1 of your book. Predict three topics that might be discussed.

1. 
2. 
3. 

**Define** magma.

magma

**Review Vocabulary**

**New Vocabulary**

Use your book or a dictionary to define the following terms.

natural resource

renewable natural resource

estuary

nonrenewable natural resource

**Academic Vocabulary**

Use a dictionary to define regulate. Then use it in a sentence to show its meaning.

regulate

Name ___________________________ Date ________________
Lesson 1 Earth’s Material Resources (continued)

Main Idea

Organic Resources
I found this information on page __________.

Inorganic Resources
I found this information on page __________.

Renewable Resources
I found this information on page __________.

Details

Define organic material resources, and give five examples of these resources.

Organic material resources are ________________________________
______________________________
Examples: ________________________________

Organize information about inorganic resources. Complete the concept map with examples.

Identify four reasons that forests are important.

Summarize two main ideas of the above sections.
Analyze how human activity affects estuaries and other wetlands. Complete the cause-and-effect diagram.

Humans use wetland areas in ways that destroy ____________.

Compare and contrast the different ways through which gold can be extracted from Earth.

<table>
<thead>
<tr>
<th>Type of Mine</th>
<th>Method of Extraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Placer</td>
<td></td>
</tr>
<tr>
<td>Underground</td>
<td></td>
</tr>
</tbody>
</table>

Create a concept map about water and water use in California. Include at least five facts.

Summarize three main ideas of the above sections.
Review Vocabulary

Academic Vocabulary

New Vocabulary

Scan Lesson 2 of your book. Use the checklist below.

- Read all of the headings.
- Read all of the boldface words.
- Look at the tables and figures.
- Think about what you already know about energy resources.

Write three things that you predict will be covered in the lesson.
1. __________________________
2. __________________________
3. __________________________

Define crust.

heat energy in Earth’s crust
joining of two atoms to form a different atom
fuel formed in Earth’s crust over hundreds of millions of years

Read the definitions below. Write the correct vocabulary term on the blank to the left of each definition.

Use a dictionary to define technology. Then use it in a sentence to show its scientific meaning.
Compare and contrast oil and natural gas by completing the Venn diagram below with at least seven facts.

**Formation of Fossil Fuels**

Sequence the 5 steps in the formation of coal.

1. 
2. 
3. 
4. 
5. 

**Summarize the main ideas of this lesson.**

---

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### Alternatives to Fossil Fuels and Energy from Resources

I found this information on page _________.

### Organize information about alternative energy sources.

<table>
<thead>
<tr>
<th>Type of Energy</th>
<th>How It Works</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydro-electric</td>
<td>Water moves through a dam to generate electricity.</td>
<td>renewable</td>
<td>requires dams to be built</td>
</tr>
<tr>
<td>Wind</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geothermal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nuclear</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solar</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biomass</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wave</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Summarize the main idea of the above section.

Summarize the main idea of the above section.
Resources
Lesson 3 Using Energy and Material Resources

Skim Lesson 3 of your book. Write three questions that come to mind. Look for answers to your questions as you read the lesson.

1. __________________________________________________________________________
2. __________________________________________________________________________
3. __________________________________________________________________________

Review Vocabulary

Define global warming.

global warming

Use your book to define the following terms. Then write a sentence that uses two of the terms together.

conservation

recycling

particulate

Sentence: ___________________________________________________________________

New Vocabulary

Use a dictionary to define register as a verb. Then use it in a sentence to show its scientific meaning.

register

Sentence: ___________________________________________________________________
Lesson 3 Using Energy and Material Resources (continued)

Main Idea

**Location of Natural Resources**

I found this information on page _________.

**Details**

Label the map below to show where resources are located in the United States. Choose five resources, and locate them on the map. Use colors and/or symbols to show where each resource is located, and make a legend for your map in the left margin.

Manufacturing Common Objects

I found this information on page _________.

Complete the table to identify materials used to manufacture common objects.

<table>
<thead>
<tr>
<th>Object</th>
<th>Plastic</th>
<th>Chemical</th>
<th>Pencil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource(s)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Summarize what recycling is and why it is important.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

**Summarize It**

Summarize the main ideas of the above sections with two bullet points.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
**Main Idea**

**Drawbacks of Using Fossil Fuel**

I found this information on page ________.

**Details**

*Identify and describe damage caused by pollutants produced by fossil fuels.*

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Damaging Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil spills</td>
<td></td>
</tr>
<tr>
<td>Carbon dioxide</td>
<td>forms acid rain</td>
</tr>
<tr>
<td>Particulates</td>
<td>creates smog in urban areas</td>
</tr>
</tbody>
</table>

*Identify six ways to conserve gasoline.*

1. ____________________________________________
2. ____________________________________________
3. ____________________________________________
4. ____________________________________________
5. ____________________________________________
6. ____________________________________________

**Summarize It**

Summarize two main ideas of the above sections.

____________________________________________________________________________________

____________________________________________________________________________________
Lesson 3  Using Energy and Material Resources (continued)

**Main Idea**

**Alternative Energy and the Environment**

*I found this information on page __________.*

**Details**

**Classify** types of alternative energy and their effects on the environment.

- **Alternative Energy**
  - **Wind**
  - **Effects:**
  - **Effects:**
  - **Effects:**

**Using Energy Resources Wisely**

*I found this information on page __________.*

**Analyze** what will happen if nonrenewable energy resources are used at current levels over time. Complete the cause-and-effect diagram.

- **Nonrenewable resources continue to be used at current levels.**

**Define** conservation, and explain why it is useful.

- 
- 
- 

**Summarize It**

Summarize the main ideas of the above sections with two bullet points.

- 
-
Resources  Chapter Wrap-Up

Now that you have read the chapter, think about what you have learned and complete the table below. Compare your previous answers to these.

1. Write an A if you agree with the statement.
2. Write a D if you disagree with the statement.

<table>
<thead>
<tr>
<th>Resources</th>
<th>After You Read</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Gold is a nonrenewable mineral resource.</td>
<td></td>
</tr>
<tr>
<td>• The supply of fossil fuels is unlimited.</td>
<td></td>
</tr>
<tr>
<td>• Sun and wind are nonpolluting alternative energy resources.</td>
<td></td>
</tr>
<tr>
<td>• Oil is used to make plastic and nylon.</td>
<td></td>
</tr>
</tbody>
</table>

**Review**

*Use this checklist to help you study.*

- [ ] Review the information you included in your Foldable.
- [ ] Study your *Science Notebook* on this chapter.
- [ ] Study the definitions of vocabulary words.
- [ ] Review daily homework assignments.
- [ ] Re-read the chapter and review the charts, graphs, and illustrations.
- [ ] Review the Standards Check at the end of each lesson.
- [ ] Look over the Standards Review at the end of the chapter.

**Summarize It**

After studying the chapter, write one or two sentences to summarize the main idea of each lesson.