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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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 emphasize 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.
Using Your Science Notebook

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.
Earthquakes and Structures

I. Types of buildings

A. 

B. 

II. Earthquake-resistant structures

A. 

B. 

Model tips for staying safe during an earthquake. Draw a building and label shelter areas.

Earthquake Safety

Earthquake-resistant structures

In other buildings, steel rods are used to reinforce building walls. Steel moorings are used in some new buildings. Some new buildings are supported by flexible, circular forms. These buildings are called "ring buildings." Single-story buildings are less susceptible to damage than taller buildings. Buildings made of flexible materials generally suffer less damage than buildings made of brittle materials. What are some ways flexible buildings can be made?

Earthquake Hazards and Safety

Earthquakes and hazards

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.

Review Checklist

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

Graphic Organizers

A variety of visual organizers help you to analyze and summarize information and remember content.

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 those.

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>
<th>After You Read</th>
</tr>
</thead>
<tbody>
<tr>
<td>• An ecosystem is made up of both living and nonliving things.</td>
<td></td>
</tr>
<tr>
<td>• Producers make their own food.</td>
<td></td>
</tr>
<tr>
<td>• Energy cycles through ecosystems.</td>
<td></td>
</tr>
<tr>
<td>• All living things release some food energy as heat.</td>
<td></td>
</tr>
</tbody>
</table>

Review

Use this checklist to help you study.

- Review the information you included in your Foldable.
- Study the definitions of vocabulary words.
- Review daily homework assignments.
- Re-read the chapter and review the chapter questions.
- Look over the Standards Review at the end of the chapter.

Review Checklist

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

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

Energy and Matter in Ecosystems After You Read

1. Write an A if you agree with the statement.
2. Write a D if you disagree with the statement.
3. Write an M if you are unsure whether you agree or disagree with the statement.

<table>
<thead>
<tr>
<th>Energy and Matter in Ecosystems</th>
<th>After You Read</th>
</tr>
</thead>
<tbody>
<tr>
<td>• An ecosystem is made up of both living and nonliving things.</td>
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Energy and Matter in Ecosystems

Lesson 2 Energy Transfer (continued)

- 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.

- Summarize three main ideas you learned from the above sections.

Name ___________________ Date ______________

Lesson 3 Earthquake Hazards and Safety (continued)

I found this information on page .

Chapter Wrap-Up

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  2. kinetic energy changing into potential energy
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  When a log burns, stored is changed into.

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Name ___________________ Date ______________

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Energy and Matter in Ecosystems

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Name ___________________ Date ______________

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- Study the definitions of vocabulary words.
- Review daily homework assignments.
- Re-read the chapter and review the chapter questions.
- Look over the Standards Review at the end of the chapter.
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>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

FOLDABLES Study Organizer

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.

---

Name ___________________________ Date __________________
Mapping Earth’s Surface
Lesson 1  Reading Maps

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

1. 
2. 
3. 

Define pole, using your book or dictionary.

pole

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

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

ratio


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 ________.

**Details**

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

![Map view and Profile view](image)

**Map view**

**Profile view**

**Label** the features on the map. Use the legend.

![Legend for map](image)

- State Highway
- County Line
- Airport
- Hospital
- Stream

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

I found this information on page ________.

**SUMMARIZE IT**

Summarize the main ideas of the above sections.

I found this information on page ________.
Mapping Earth’s Surface
Lesson 2  Topographic Maps and Geologic Maps

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

geologic formation

contact

Use a dictionary to define interval.

interval
Lesson 2  Topographic Maps and Geologic Maps (continued)

**Main Idea**

**Topographic Maps**

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>

**Details**

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</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and contour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>intervals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topographic Profile</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Summarize It**

Summarize the main ideas of the above sections.

---

6  Mapping Earth’s Surface
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.

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

Geologists might

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

(Summary text placeholder)
Mapping Earth’s Surface
Chapter Wrap-Up

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.

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

---

Mapping Earth’s Surface
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>W</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.

Science Journal

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

weather

____________________________________________

New Vocabulary

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

____________________________________________

____________________________________________

ero

____________________________________________

____________________________________________

Academic Vocabulary

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

transport

____________________________________________

____________________________________________
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.

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

- Landforms
  - plateau: level land at a high elevation

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 __________.

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.*

- California Landforms
  - external forces
  - 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.

1. 
2. 
3. 

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Earth’s Structure
Lesson 2  Minerals and Rocks

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. 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. 

Define igneous rock, using your book or dictionary.

New Vocabulary

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

minerals

density

rock

magma

lava

sediment

rock cycle

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

appreciate

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Lesson 2  Minerals and Rocks (continued)

Main Idea

What is Earth made of?
I found this information on page ________.

Organize the following substances on the Mohs Hardness Scale.
diamond  gypsum  quartz  talc  topaz

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

Summarize the main ideas of the above sections.
Lesson 2  Minerals and Rocks (continued)

Main Idea

Mineral Uses
I found this information on page _________.

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>

Rocks
I found this information on page _________.

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

Summarize It
Write three sentences to summarize the main ideas you learned from the above sections.

__________________________________________

__________________________________________

__________________________________________

Earth’s Structure  15
Lesson 2  Minerals and Rocks (continued)

Main Idea

I found this information on page __________.

Details

Analyze the process that forms metamorphic rocks.

- heat
- parent rock

Sequence the steps that form sedimentary rock.

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.
Review Vocabulary

Define magnetic field using your book or a dictionary.

Magnetic field

New Vocabulary

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

- crust
- mantle
- asthenosphere
- core
- lithosphere

Academic Vocabulary

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

Layer
Lesson 3 Earth’s Interior (continued)

Main Idea

Layers

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

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.*

<table>
<thead>
<tr>
<th>core</th>
<th>crust</th>
<th>mantle</th>
<th>most dense</th>
</tr>
</thead>
</table>

I found this information on page __________.

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

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

- 
- 
- 

**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>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 sentence summarizing the main idea of each lesson.

---

20  *Earth’s Structure*
Thermal Energy and Heat

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.

List three changes that occur when you light a match.
Thermal Energy and Heat
Lesson 1 Forms of Energy

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

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.
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: _________________________________.

Analyse 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

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

Details

energy

example

kinetic energy

mass

speed

mass

kinetic energy

speed

kinetic energy

energy

unit

Potential Energy—Stored Energy

SUMMARIZE IT

Write three main ideas from these sections.

________________________________________

________________________________________

________________________________________

Name ___________________________ Date ____________

Thermal Energy and Heat 23
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.

**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.

Name __________________________  Date ______________

Thermal Energy and Heat 25
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

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

I found this information on page ____________.

Details

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. 

I found this information on page ____________.

Summarize three main ideas you learned from the above sections.

__________________________

__________________________

__________________________

Thermal Energy and Heat  27
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: 7.c

**Predict** three things you will learn in this lesson. Use the headings to help you.

1. 
2. 
3. 

**Review Vocabulary**

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

**New Vocabulary**

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

1. temperature
2. thermal expansion
3. heat

**Academic Vocabulary**

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

- **Volume**
  - 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.

I found this information on page ___________.

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

Main Idea

Measuring Temperature

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

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.
Thermal Energy and Heat
Lesson 4 Conduction, Convection, and Radiation

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

1. 

2. 

3. 

Define density, using your book or dictionary.

Write the term that matches each definition.

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 _________.

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

---

Details

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

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

**Convection**

I found this information on page _________.

**Analyze** 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.

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

**Main Idea**

I found this information on page ___________.

**Details**

**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.

**Radiation**

I found this information on page ___________.

**Organize** information about radiation. Complete the concept map.

- Travels
- Transfers
- Provides
- Transfers

**Summarize IT**

Summarize two main ideas from the above sections.

[Blank lines for summarization]
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>What I know</th>
<th>W</th>
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<tr>
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<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 reading this chapter, write three main ideas that you learned about thermal energy and heat.
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></td>
<td>• Fossil evidence supports the idea that continents have moved over time.</td>
</tr>
<tr>
<td></td>
<td>• New seafloor forms as lava flows through cracks in ocean floors.</td>
</tr>
<tr>
<td></td>
<td>• Earth’s crust is broken into sections called plates.</td>
</tr>
<tr>
<td></td>
<td>• Earth’s plates do not move.</td>
</tr>
</tbody>
</table>

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

Write three questions you would as a geologist about plate tectonics.
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
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.
Lesson 1 Continental Drift (continued)

Main Idea

Evidence for Continental Drift

I found this information on page _________.

A Hypothesis Rejected

I found this information on page _________.

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.
Plate Tectonics
Lesson 2 Seafloor Spreading

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

1. __________________________________________
2. __________________________________________
3. __________________________________________

Review Vocabulary

Define magma using your book or a dictionary.

magma

New Vocabulary

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

mid-ocean ridge

Sentence: ____________________________________

seafloor spreading

Sentence: ____________________________________

Academic Vocabulary

Use a dictionary to define hypothesis.

hypothesis

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Lesson 2 Seafloor Spreading (continued)

**Main Idea**

**Investigating the Seafloor**
*I found this information on page ____________.*

**The Seafloor Moves**
*I found this information on page ____________.*

**Evidence for Spreading**
*I found this information on page ____________.*

**Details**

**Summarize** discoveries that scientists have made from studying the seafloor.

**Model** 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.

**Identify** the position of Earth’s magnetic poles today and when they are reversed.

---

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

1. 
2. 

---

Plate Tectonics
Lesson 2  Seafloor Spreading (continued)

Main Idea

Evidence for Spreading

I found this information on page ____________.

Details

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.

I. Methods

A. __________________________

B. __________________________

II. Results

A. __________________________

B. __________________________

I found this information on page ____________.

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

SUMMARIZE IT

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

1. ______________________________________________________________________
2. ______________________________________________________________________
3. ______________________________________________________________________
4. ______________________________________________________________________

Define convection using your book or a dictionary.

convection ________________________________________________________________
______________________________________________________________
______________________________________________________________

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

lithospheric plate ____________________________________________________________
__________________________________________________________________________

plate tectonics _____________________________________________________________
__________________________________________________________________________

ocean trench ______________________________________________________________
__________________________________________________________________________

slab __________________________________________________________________________
__________________________________________________________________________

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.
Lesson 3  Theory of Plate Tectonics (continued)

Main Idea

Measuring Plate Movement

I found this information on page .

Plate Tectonics and the Rock Cycle

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.

---

Name ___________________________ Date _____________

Summarize three main ideas of the above sections.

---
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.
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>
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<td></td>
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<td></td>
</tr>
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<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 sentence to summarize the main idea of each lesson.

---

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

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

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

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.

lithospheric plate

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

boundary formed when two plates move toward each other

Use your book or a dictionary to define inclined.

inclined
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.

**Types of Rock Stress**

- Tension
- Compression
- Shear

**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.

**Summarize It**

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

---

Plate Boundaries and California  49
Lesson 1 Interactions at Plate Boundaries (continued)

**Main Idea**

**Types of Plate Boundaries**

I found this information on page __________.

**Details**

**Sequence** *the events that occur during* continental rifting.

A continent splits apart at a divergent plate boundary.

**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>
<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. ____________________________

Review Vocabulary

Define uplift using your book or a dictionary.

uplift

New Vocabulary

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

San Andreas Fault

Academic Vocabulary

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 the main ideas of the above section of the lesson.

Summarize IT

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

Rephrase the main ideas of the lesson in your own words.

Summarize It
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>
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</tr>
<tr>
<td>• All of California is located on the same lithospheric plate.</td>
<td></td>
</tr>
<tr>
<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.

[Blank lines for student responses]

54 Plate Boundaries and California
Earthquakes

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>Earthquakes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Plate movements cause earthquakes.</td>
</tr>
<tr>
<td></td>
<td>• Scientists use earthquake waves to map the inside of Earth.</td>
</tr>
<tr>
<td></td>
<td>• The Richter scale is the only way to measure the strength of an earthquake.</td>
</tr>
<tr>
<td></td>
<td>• Fire is the most common hazard that occurs following an earthquake.</td>
</tr>
</tbody>
</table>

**Foldables™ Study Organizer**

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.

---

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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?
I found this information on page __________.

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

1. Heat energy moves through Earth’s mantle by convection.
2. ____________
3. ____________
4. ____________

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.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Lesson 1 Origins of Earthquakes (continued)

**Main Idea**

**Plate Boundaries and Earthquakes**

I found this information on page __________.

**Details**

Distinguish *between the types of earthquakes that occur at each type of plate boundary. Complete the table.*

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

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

**SUMMARIZE IT**

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

__________

__________
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 [page number].*

**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.

[Diagram]

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

- Description: particle motion in the same direction as the wave propagation; also called compressional waves
- Description: also called
- Description:

**Summarize It**

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

[Student responses]
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.

Summarize it
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.
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

Factor: __________________
_______________________
_______________________
Effect: __________________
_______________________
_______________________

Factor: __________________
_______________________
_______________________
Effect: __________________
_______________________
_______________________

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

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. __________________________________________

Define San Andreas Fault using your book or a dictionary.

San Andreas Fault

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

liquefaction

tsunami

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

securely

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Lesson 4 Earthquake Hazards and Safety (continued)

**Main Idea**

**Earthquake Hazards**

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.
- 

Avoiding Earthquake Hazards

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

- 
- 
- 

**Summarize It**

Summarize the main ideas of the above sections.

- 
- 
- 

Lesson 4 Earthquake Hazards and Safety (continued)

**Main Idea**

**Earthquakes and Structures**

I found this information on page __________.

**Details**

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. ____________________________

   ____________________________

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>
<tr>
<td></td>
<td></td>
</tr>
<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>
<th>After You Read</th>
</tr>
</thead>
<tbody>
<tr>
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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 reading this chapter, write a summary sentence for each lesson to illustrate the lesson’s main ideas.
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>

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

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**

Grades 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.

- ________________________________
- ________________________________
- ________________________________

---

**Write a paragraph that contains all of the vocabulary terms.**

- ________________________________
- ________________________________
- ________________________________
- ________________________________
- ________________________________
- ________________________________

---

**Use a dictionary to define 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 __________.

Details

Identify the three places at which volcanoes often form.
1. __________________________
2. __________________________
3. __________________________

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

<table>
<thead>
<tr>
<th>At Divergent Boundary</th>
<th>At Convergent Boundary</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.
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

Academic Vocabulary

Define emerge, using a dictionary.

emerge
Lesson 2 Volcanic Eruptions and Features (continued)

**Main Idea**

What controls volcanic eruptions?

*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

**Types of Magma and Lava**

*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 It**

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.

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

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

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

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Shield Volcano</td>
<td>Cinder Cone Volcano</td>
<td>Composite Volcano</td>
</tr>
</tbody>
</table>

Summarize the main idea of the above section.

___________________________

___________________________
Lesson 2 Volcanic Eruptions and Features (continued)

Main Idea

Volcanoes in California
I found this information on page __________.

Intrusive Volcanic Features and Other Volcanic Features
I found this information on page __________.

Details

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

Scan Lesson 3 of your book. Read the headings, and look at the illustrations. Predict three things that will be discussed.

1. 
2. 
3. 

Define seismic wave, using your book or a dictionary.

seismic wave

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

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.

<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>

I found this information on page ____________.

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

Summarize the main idea of the above section.
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 from Space

SUMMARIZE IT

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

______________________________

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

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.
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.

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>

Summarize three main ideas from the above section.
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?
I found this information on page __________.

Mass Wasting
I found this information on page __________.

Water and Erosion
I found this information on page __________.

Details

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

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

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

Oxbow Lake  Alluvial Fan  Delta

Summarize the three main ideas of the above section.

__________________________

__________________________

__________________________
**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.*

![Diagram of Shoreline with Groin and Longshore Current]

**Summarize It**

Summarize the main ideas of the above section.

<table>
<thead>
<tr>
<th>Summarize the main ideas of the above section.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
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. .................................................................
   .................................................................

Review Vocabulary

Define uplift using your book or a dictionary.

uplift

New Vocabulary

Write a paragraph that includes all of the vocabulary terms.

basin and range
arrayo

Define significant using a dictionary.

significant

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

**Main Idea**

**Mountain Landscapes**

I found this information on page __________.

**Desert Landscapes**

I found this information on page __________.

**Details**

**Identify** the 4 major types of landscapes in California.

- Erosional Features
- Depositional Features

**Distinguish** erosional and depositional mountain features.

**Features of California’s Mountains**

<table>
<thead>
<tr>
<th>Erosional Features</th>
<th>Depositional Features</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

- Mohave Desert
- Colorado Desert
- Both

**SUMMARIZE IT**

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 It

Summarize the main ideas of the above section.
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.

____________________________

____________________________

____________________________

____________________________
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.

<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

Write a hypothesis that explains how you think clouds form above Mount Shasta.

[Blank lines for writing a hypothesis]
Earth’s Atmosphere
Lesson 1 Energy from the Sun

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.b

**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.

**New Vocabulary**

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

**Academic Vocabulary**

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

- 
- 

94 Earth’s Atmosphere
Lesson 1 Energy from the Sun (continued)

Main Idea

Earth’s Atmosphere
I found this information on page ___________.

Layers in the Atmosphere
I found this information on page ___________.

Details

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>
<tr>
<td>__________</td>
<td>1%</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.

Layers of the Atmosphere

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

Properties of Layers

Earth’s Surface

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

________________________________________

________________________________________
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.

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.

I found this information on page ________.

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

**SUMMARIZE IT**

Summarize two main ideas of the above sections.
Earth’s Atmosphere
Lesson 2 Energy Transfer in the Atmosphere

Grade 6 Science Content Standards—4.d: Students know convection currents distribute heat in the atmosphere and oceans. Also covers: 3.c, 3.d

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

1. ___________________________________________________________
2. ___________________________________________________________
3. ___________________________________________________________

Review Vocabulary
Define convection, using your book or a dictionary.

convection
___________________________________________________________
___________________________________________________________
___________________________________________________________

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

inversion
___________________________________________________________
___________________________________________________________
___________________________________________________________

greenhouse gas
___________________________________________________________
___________________________________________________________
___________________________________________________________

global warming
___________________________________________________________
___________________________________________________________
___________________________________________________________

Academic Vocabulary
Use a dictionary to define similar.

similar
___________________________________________________________

98 Earth’s Atmosphere
Lesson 2  Energy Transfer in the Atmosphere  (continued)

**Main Idea**

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

**Details**

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

```
     Heat Transfer
         occurs by
```

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

**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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Earth’s Atmosphere  99
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.
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

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
- sand
- water
- 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.</td>
<td>3.</td>
</tr>
<tr>
<td>2.</td>
<td>5.</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>
</table>

Summarize IT

Summarize two main ideas of the above sections.

102  Earth’s Atmosphere
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>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

Define jet stream.

Summarize three main ideas of the above sections.

Earth’s Atmosphere 103
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>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 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>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.

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. 

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

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

- **topographic map**
- **sea level**
- **ocean floor**
- **bathymetric map**
- **echo sounding**
- **continental shelf**

*Use the word method in a scientific sentence.*
Lesson 1 Earth’s Oceans (continued)

Main Idea

Mapping Earth’s Oceans

I found this information on page _________.

Details

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>
<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.

________________________________________________________________________
________________________________________________________________________
The Ocean Floor

I found this information on page __________

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

Continental Shelf: Continental Slope: Abyssal Plain:

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 two main ideas of the above section.
Oceans
Lesson 2 Ocean Currents

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

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.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>river in the ocean</td>
<td></td>
</tr>
<tr>
<td>amount of salt dissolved in water</td>
<td></td>
</tr>
<tr>
<td>cycle of currents</td>
<td></td>
</tr>
</tbody>
</table>

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

[Blank}

[Blank}
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. ________________
2. ________________
3. ________________
4. ________________
5. ________________
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.
Lesson 2 Ocean Currents (continued)

Main Idea

Influences on Ocean Currents

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

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

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

Event | Cause | Effect
---|---|---
El Niño | | |
La Niña | | |

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

**New Vocabulary**

- sediment
- shoreline
- longshore current
- longshore drift
- rip current
- suspend

**Review Vocabulary**

**Define** sediment *using its scientific meaning.*

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

1. 
2. 
3. 

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

- shoreline
- longshore current
- longshore drift
- rip current

**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>Forces</th>
<th>Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind</td>
<td></td>
</tr>
<tr>
<td>Waves</td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td></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 the main ideas of the above sections.
Lesson 3 The Ocean Shore (continued)

**Main Idea**

**Shoreline Processes**

* I found this information on page ________.

**Sand and Weathered Material**

* I found this information on page ________.

**Details**

**Analyze** how rip currents form.

**Summarize** two unintended results caused by structures built by humans.

Jetties, groins, and breakwaters: ________________

Seawalls: ________________________

**Organize** the following sediment sizes from largest to smallest:

sand, boulder, gravel, silt, clay, and cobble.

**Sequence** the steps that form sand.

Weathering __________

____________________

____________________

____________________

Rivers __________________

______________________ and

______________________

Currents ____________________

**SUMMARIZE IT**

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.
Oceans
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

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Lesson 4 Living on the California Coast (continued)

Main Idea

Geology of the California Coast

I found this information on page ________.

Details

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 It

Summarize the main ideas of the above sections.

I found this information on page ________.

I found this information on page ________.

I found this information on page ________.
Lesson 4 Living on the California Coast (continued)

Main Idea

Currents Along the Coast

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

Details

I found this information on page __________.

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.

I found this information on page __________.

Summarize the above section of this lesson.
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>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>
</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 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>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>W</th>
<th>What I want to find out</th>
</tr>
</thead>
<tbody>
<tr>
<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.

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Weather and Climate
Lesson 1 Weather

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
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>--------</td>
</tr>
<tr>
<td>air temperature</td>
</tr>
</tbody>
</table>

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

Types of Precipitation
- rain: water droplets
- [ ]
- [ ]
- [ ]
- [ ]

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
Lesson 2 Weather Patterns

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

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

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

consequence

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>
</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.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
Identify and briefly describe three cycles that affect the weather.

Cycles that Affect Weather

<table>
<thead>
<tr>
<th>Cycles that Affect the Weather</th>
</tr>
</thead>
<tbody>
<tr>
<td>day and night: daily cycle of warming and cooling of air and ground</td>
</tr>
</tbody>
</table>

Organize information about droughts and floods in the table.

<table>
<thead>
<tr>
<th></th>
<th>Droughts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caused by:</td>
<td></td>
</tr>
<tr>
<td>May result in:</td>
<td></td>
</tr>
<tr>
<td>Recent occurrences:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Floods</th>
</tr>
</thead>
<tbody>
<tr>
<td>extended periods of</td>
<td></td>
</tr>
<tr>
<td>major decrease in</td>
<td></td>
</tr>
</tbody>
</table>

Summarize why the damage from flash floods is increasing.

Summarize a main idea of the above sections.
Weather and Climate
Lesson 3 Climate

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: _____________________________________

Name ____________________________ Date ____________

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
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

<table>
<thead>
<tr>
<th>type</th>
<th>characteristics</th>
<th>typical location</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

I found this information on page __________.

Summarize two of the main ideas of the above sections.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
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 global warming → Increase in concentration of

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

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Lesson 4 California Weather and Climate (continued)

Main Idea

Mediterranean and Highland Climates

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.

Summarize It
Model the formation of a sea breeze in a sketch.

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

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

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

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.
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.

1. 
2. 
   
   Examples: 

**Abiotic Factors**

*I found this information on page ____________.*

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

- Abiotic Factors
  - 
  - 
  - 
  - 
  - 

**Summarize It**

Summarize three main ideas of the above sections.

1. 
2. 
3. 
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.

- Food: ___________________________________________
  ___________________________________________

- Water: _________________________________________
  ___________________________________________

- Shelter: _______________________________________
  ___________________________________________

- Space: _________________________________________
  ___________________________________________

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

---

**SUMMARIZE IT**

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

---

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Ecological Roles
Lesson 2 Organisms and Ecosystems

Grade 6 Science Content Standards—5.d: Students know populations of organisms can be categorized by the functions they serve in an ecosystem. Also covers: 5.c, 5.e, 7.a

Scan Lesson 2 of your book. Write three facts that you discover about organisms and ecosystems.

1. 

2. 

3. 

Define latitude.

latitude

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

Summarize two main ideas of the above section of this lesson.
Organize information about an organism’s niche. Complete the concept map.

A niche includes . . .

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

Humans do not allow fire to burn in chaparral.

Summarize two main ideas of the above sections.
Now that you have read the chapter, think about what you have learned and complete the table below. Compare your previous answers to these.

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After reading the chapter, write a summary sentence for each lesson to illustrate the chapter’s main ideas.
Construct the Foldable as directed at the beginning of this chapter.

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

c consumer

decomposer

Academic Vocabulary

Use a dictionary to define structure.

structure
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>
</tr>
</thead>
<tbody>
<tr>
<td>Biotic</td>
</tr>
<tr>
<td>Abiotic</td>
</tr>
</tbody>
</table>

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

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 three main ideas of the above sections.


Lesson 1 Producers and Consumers (continued)

**Main Idea**

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

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

**Details**

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

Photosynthesis

Both

Chemosynthesis

method used by producers to make food

**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. 

New Vocabulary

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

Academic Vocabulary

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.

- Sunlight

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.

Summarize the two main ideas of this section.

Summarize the two main ideas of this section.

---

**SUMMARIZE IT**

Summarize the two main ideas of this section.

Summarize the two main ideas of this section.
**Lesson 2 Energy in Ecosystems (continued)**

**Main Idea**

**Food as Energy**

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

- foxes
- snakes
- lizards
- desert plants
- insects

**Details**

**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

nitrogen cycle

phosphorus cycle

carbon cycle

Academic Vocabulary

Use the word resource in a scientific sentence.

resource

Use your book or a dictionary to define the following terms.
Lesson 3 Matter in Ecosystems (continued)

Main Idea

Cycles of Matter
I found this information on page _________.

Water Cycle
I found this information on page _________.

Details

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

Sequence the main steps in the water cycle.

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 __________.

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 ________________ to
make ________________.

Burning fossil fuels releases
__________________________
__________________________.

Consumers break down
______________ and
release ________________.

Summarize the main idea of the above section.

Summarize It

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>
<th>After You Read</th>
</tr>
</thead>
<tbody>
<tr>
<td>• An ecosystem is made up of both living and nonliving things.</td>
<td></td>
</tr>
<tr>
<td>• Plants make their own food.</td>
<td></td>
</tr>
<tr>
<td>• Energy cycles through ecosystems.</td>
<td></td>
</tr>
<tr>
<td>• All living things release some food energy as heat.</td>
<td></td>
</tr>
</tbody>
</table>

Review

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Summarize It

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

Before you read the chapter, respond to these statements.

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<thead>
<tr>
<th>Before You Read</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
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<td></td>
<td>• Gold is a nonrenewable mineral resource.</td>
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</tr>
<tr>
<td></td>
<td>• Oil is used to make plastic and nylon.</td>
</tr>
</tbody>
</table>

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

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

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

natural resource

renewable natural resource

estuary

nonrenewable natural resource

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

regulate
Organic Resources

I found this information on page ________.

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

Examples:

Organic material resources are ____________________________

__________________________

Inorganic Resources

I found this information on page ________.

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

Inorganic Resources

Renewable Resources

I found this information on page ________.

Identify four reasons that forests are important.

Forests

Summarize two main ideas of the above sections.
Lesson 1 Earth’s Material Resources (continued)

**Main Idea**

<table>
<thead>
<tr>
<th>Renewable Resources</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>I found this information on page __________.</em></td>
<td><strong>Analyze</strong> how human activity affects estuaries and other wetlands. <em>Complete the cause-and-effect diagram.</em></td>
</tr>
<tr>
<td><em>I found this information on page __________.</em></td>
<td><strong>Compare and contrast</strong> the different ways through which gold can be extracted from Earth.</td>
</tr>
<tr>
<td><em>I found this information on page __________.</em></td>
<td><strong>Create</strong> a concept map about water and water use in California. <em>Include at least five facts.</em></td>
</tr>
</tbody>
</table>

**Summarize It**

Summarize three main ideas of the above sections.
Review 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.

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

New Vocabulary

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

- 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
- splitting atoms to release energy

Academic Vocabulary

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

<table>
<thead>
<tr>
<th>technology</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Lesson 2 Energy Resources (continued)

**Main Idea**

**Fossil Fuels**
I found this information on page __________.

**Details**

**Compare and contrast** oil and natural gas by completing the Venn diagram below with at least seven facts.

![Venn Diagram]

**Formation of Fossil Fuels**
I found this information on page __________.

**Sequence** the 5 steps in the formation of coal.

1. 
2. 
3. 
4. 
5. 

**SUMMARIZE IT**

Summarize the main ideas of this lesson.

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________
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>Geo-thermal</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.
Resources
Lesson 3 Using Energy and Material Resources

Grade 6 Science Content Standards—6.a: Students know the utility of energy sources is determined by factors that are involved in converting these sources to useful forms and the consequences of the conversion process. Also covers: 6.b, 6.c, 7.a, 7.d, 7.e

**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.

**New Vocabulary**

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

- conservation
- recycling
- particulate

Sentence: 

**Academic Vocabulary**

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

- register
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.

1. 
2. 
3. 

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

1. 
2. 

Resources 161
Lesson 3 Using Energy and Material Resources (continued)

**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></td>
<td>creates smog in urban areas</td>
</tr>
<tr>
<td>Particulates</td>
<td></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.

______________________________________________________________________

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

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

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 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>
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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.