Science Notebook

Glencoe Science

Florida Science

Grade 8

Consultant
Douglas Fisher, Ph.D.

Mc Graw Hill Glencoe

New York, New York Columbus, Ohio Chicago, Illinois Peoria, Illinois Woodland Hills, California

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.

Mc Graw Hill Glencoe

The McGraw·Hill Companies

Send all inquiries to:
Glencoe/McGraw-Hill
8787 Orion Place
Columbus, Ohio 43240-4027

ISBN 0-07-869576-7

Printed in the United States of America

1 2 3 4 5 6 7 8 9 024 08 07 06 05

Table of Contents

Table of Contents

Note-Taking Tips

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

- Be an active listener. Listen for important concepts. Pay attention to words, examples, and/or diagrams your teacher emphasizes.
- Write your notes as clearly and concisely as possible. The following symbols and abbreviations may be helpful in your note-taking.

Word or Phrase	Symbol or Abbreviation
for example	e.g.
such as	i.e.
with	w/
without	w/o

Word or Phrase	Symbol or Abbreviation
and	+
approximately	≈
therefore	∴
versus	vs

- Use a symbol such as a star (★) or an asterisk (*) to emphasis important concepts. Place a question mark (?) next to anything that you do not understand.
- Ask questions and participate in class discussion.
- Draw and label pictures or diagrams to help clarify a concept.

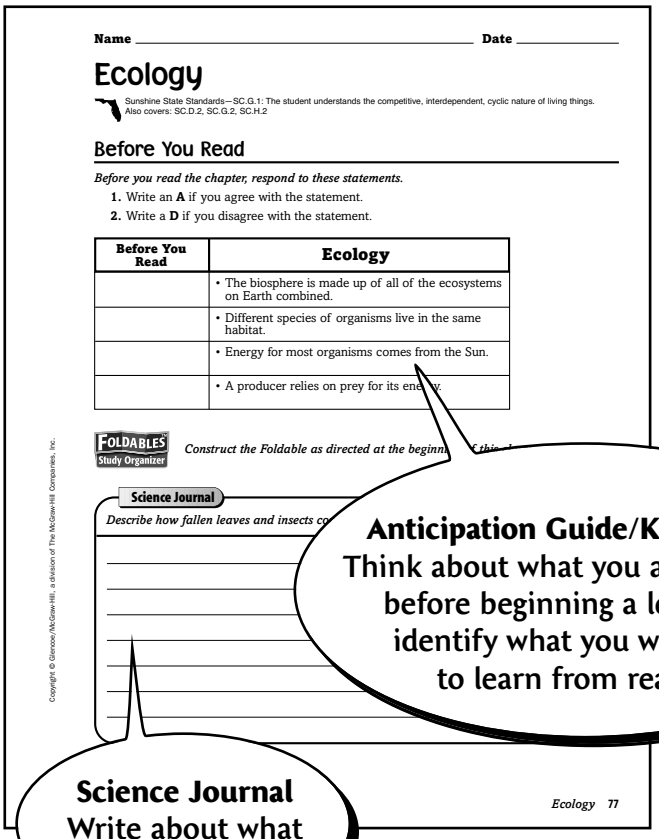
Note-Taking Don'ts

- **Don't** write every word. Concentrate on the main ideas and concepts.
- **Don't** use someone else's notes—they may not make sense.
- **Don't** doodle. It distracts you from listening actively.
- **Don't** lose focus or you will become lost in your note-taking.

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.



Name _____ Date _____

Ecology

Sunshine State Standards—SC.G.1: The student understands the competitive, interdependent, cyclic nature of living things. Also covers: SC.D.2, SC.G.2, SC.H.2

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.

Before You Read	Ecology
	• The biosphere is made up of all of the ecosystems on Earth combined.
	• Different species of organisms live in the same habitat.
	• Energy for most organisms comes from the Sun.
	• A producer relies on prey for its ene[illegible]y.

FOLDABLES Study Organizer *Construct the Foldable as directed at the beginn[illegible] of this c[illegible]*

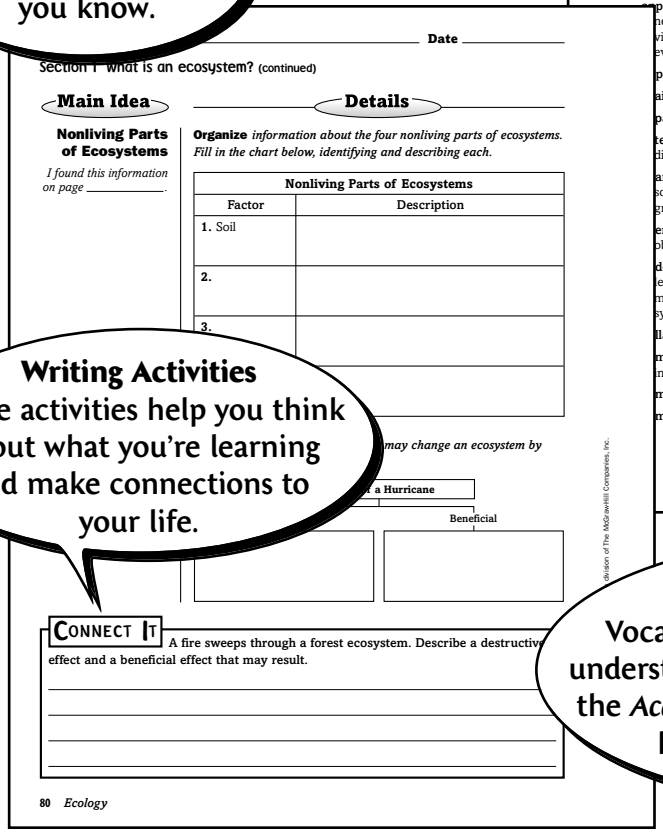
Science Journal

Describe how fallen leaves and insects co[illegible]

Ecology 77

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

Science Journal
Write about what you know.



Date _____

Section 1 What is an ecosystem? (continued)

Main Idea **Details**

Nonliving Parts of Ecosystems

I found this information on page _____.

Organize *information about the four nonliving parts of ecosystems. Fill in the chart below, identifying and describing each.*

Nonliving Parts of Ecosystems	
Factor	Description
1. Soil	
2.	
3.	

may change an ecosystem by

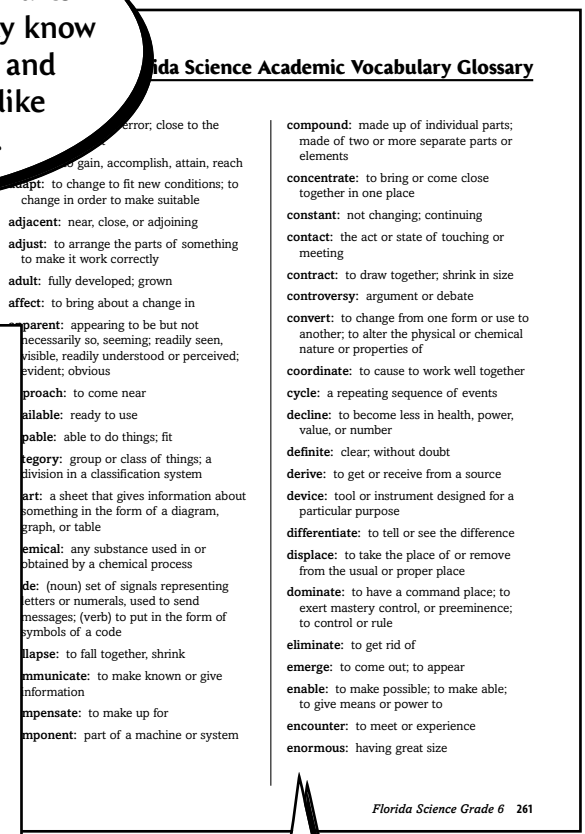
a Hurricane

Beneficial

CONNECT IT A fire sweeps through a forest ecosystem. Describe a destructive effect and a beneficial effect that may result.

80 *Ecology*

Writing Activities
These activities help you think about what you're learning and make connections to your life.



ida Science Academic Vocabulary Glossary

error; close to the

gain, accomplish, attain, reach

dapt: to change to fit new conditions; to change in order to make suitable

adjacent: near, close, or adjoining

adjust: to arrange the parts of something to make it work correctly

adult: fully developed; grown

affect: to bring about a change in

pparent: appearing to be but not necessarily so, seeming; readily seen, visible, readily understood or perceived; evident; obvious

proach: to come near

ailable: ready to use

pable: able to do things; fit

tegory: group or class of things; a division in a classification system

art: a sheet that gives information about something in the form of a diagram, graph, or table

emical: any substance used in or obtained by a chemical process

de: (noun) set of signals representing letters or numerals, used to send messages; (verb) to put in the form of symbols of a code

llapse: to fall together, shrink

mmunicate: to make known or give information

mpensate: to make up for

mponent: part of a machine or system

compound: made up of individual parts; made of two or more separate parts or elements

concentrate: to bring or come close together in one place

constant: not changing; continuing

contact: the act or state of touching or meeting

contract: to draw together; shrink in size

controversy: argument or debate

convert: to change from one form or use to another; to alter the physical or chemical nature or properties of

coordinate: to cause to work well together

cycle: a repeating sequence of events

decline: to become less in health, power, value, or number

definite: clear; without doubt

derive: to get or receive from a source

device: tool or instrument designed for a particular purpose

differentiate: to tell or see the difference

displace: to take the place of or remove from the usual or proper place

dominate: to have a command place; to exert mastery control, or preeminence; to control or rule

eliminate: to get rid of

emerge: to come out; to appear

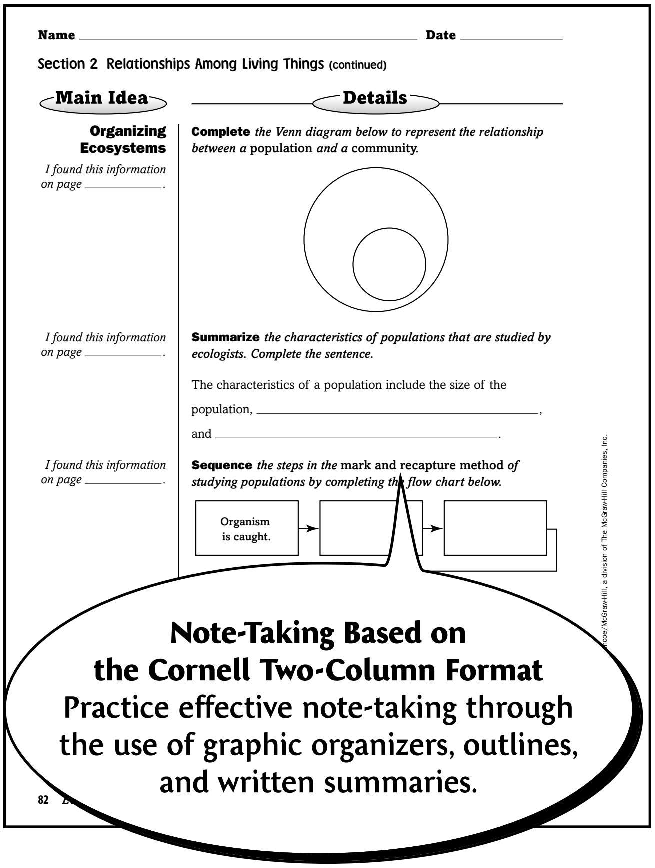
enable: to make possible; to make able; to give means or power to

encounter: to meet or experience

enormous: having great size

Florida Science Grade 6 261

Vocabulary Development
Vocabulary words help you to better understand your science lessons. Learning the *Academic Glossary* can help you score higher on standardized tests.



Name ______________________________ Date __________

Section 2 Relationships Among Living Things (continued)

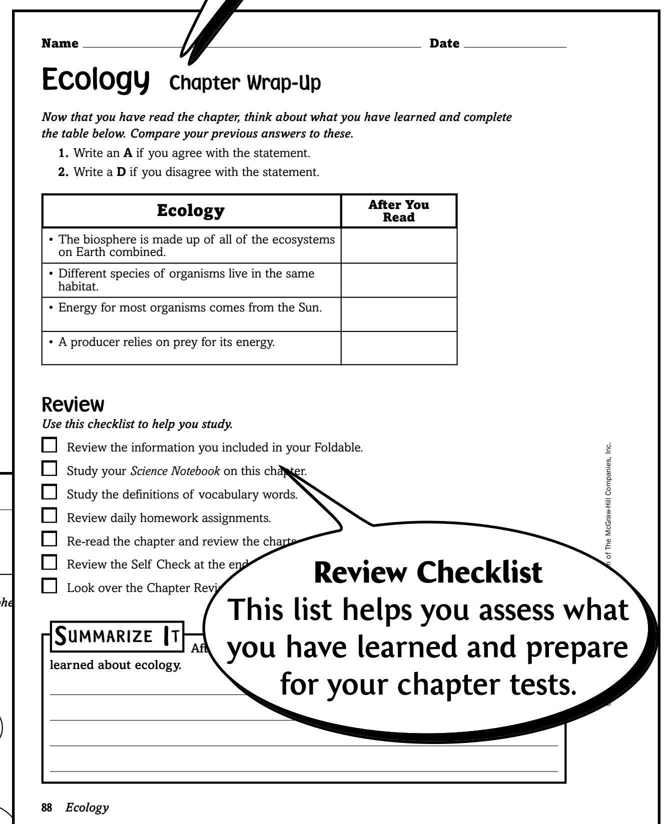
Main Idea	Details
Organizing Ecosystems *I found this information on page ______.*	**Complete** *the Venn diagram below to represent the relationship between a* population *and a* community.
I found this information on page ______.	**Summarize** *the characteristics of populations that are studied by ecologists. Complete the sentence.* The characteristics of a population include the size of the population, ______________, and ______________.
I found this information on page ______.	**Sequence** *the steps in the* mark and recapture method *of studying populations by completing the flow chart below.* Organism is caught. → ____ → ____

Note-Taking Based on the Cornell Two-Column Format

Practice effective note-taking through the use of graphic organizers, outlines, and written summaries.

Chapter Wrap-Up

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



Name ______________________________ Date __________

Ecology 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.

Ecology	After You Read
• The biosphere is made up of all of the ecosystems on Earth combined.	
• Different species of organisms live in the same habitat.	
• Energy for most organisms comes from the Sun.	
• A producer relies on prey for its energy.	

Review

Use this checklist to help you study.

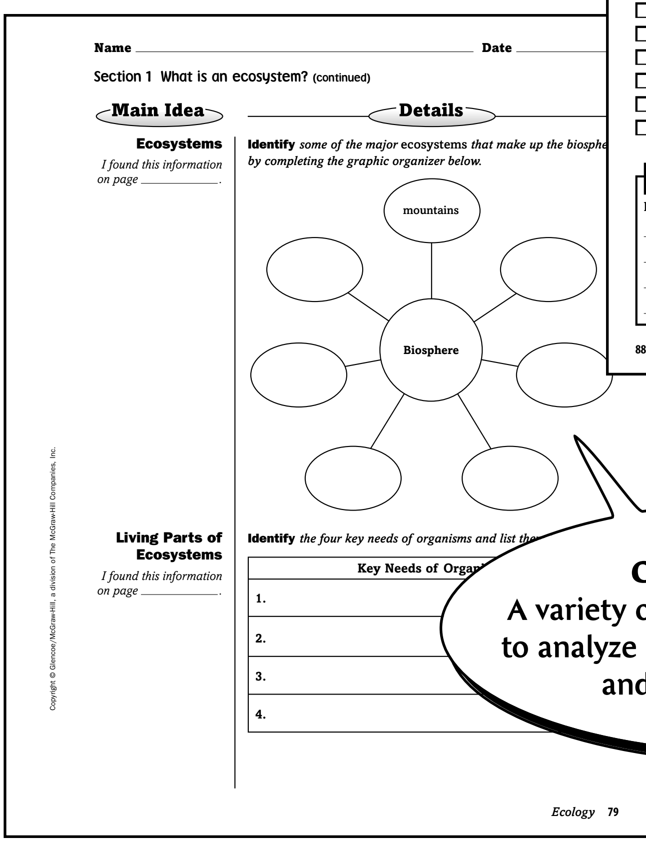
- ☐ Review the information you included in your Foldable.
- ☐ Study your *Science Notebook* on this chapter.
- ☐ Study the definitions of vocabulary words.
- ☐ Review daily homework assignments.
- ☐ Re-read the chapter and review the charts
- ☐ Review the Self Check at the end
- ☐ Look over the Chapter Revi

SUMMARIZE IT Aft... learned about ecology.

88 *Ecology*

Review Checklist

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



Name ______________________________ Date __________

Section 1 What is an ecosystem? (continued)

Main Idea	Details
Ecosystems *I found this information on page ______.*	**Identify** *some of the major* ecosystems *that make up the biosphe... by completing the graphic organizer below.* (Biosphere; mountains)
Living Parts of Ecosystems *I found this information on page ______.*	**Identify** *the four key needs of organisms and list the...* Key Needs of Organ... 1. 2. 3. 4.

Ecology 79

Graphic Organizers

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

Name _____ **Date** _____

The Nature of Science and Inquiry

Sunshine State Standards—SC.H.1: The student uses the scientific processes and habits of mind to solve problems. Also covers: SC.H.2, SC.H.3

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.

Before You Read	The Nature of Science and Inquiry
	• Science and technology are independent of one another.
	• Only scientists use science skills.
	• Scientific theories can change if new information becomes available.
	• Science experiments that are done by professional scientists do not need to be repeated.

FOLDABLES™ Study Organizer

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

Science Journal

Write down three examples of how science affects your everyday life.

_____

_____

_____

_____

Name _____ **Date** _____

The Nature of Science and Inquiry

Section 1 What is science?

Benchmarks—SC.H.1.3.1: The student knows that scientific knowledge is subject to modification . . .
Also covers: SC.H.1.3.3, SC.H.1.3.5, SC.H.1.3.6, SC.H.2.3.1, SC.H.3.3.4, SC.H.3.3.6

Skim *through Section 1 of your text. Write three questions that come to mind from reading the headings and looking at the illustrations.*

1. _____

_____

2. _____

_____

3. _____

_____

Review Vocabulary

Define theory. *Write a sentence about a theory you have heard people talk about in everyday life.*

theory _____

_____

New Vocabulary

Write the correct key term from your text next to each definition.

_____ an explanation of a pattern observed repeatedly in the natural world

_____ a way of learning more about the natural world

_____ a collection of structures, cycles, and processes that relate to and interact with each other

_____ a rule that describes a pattern in nature

Academic Vocabulary

Use a dictionary to help you write a scientific definition of the word **cycle.**

cycle _____

_____

Name _____ **Date** _____

Section 1 What is science? (continued)

Main Idea

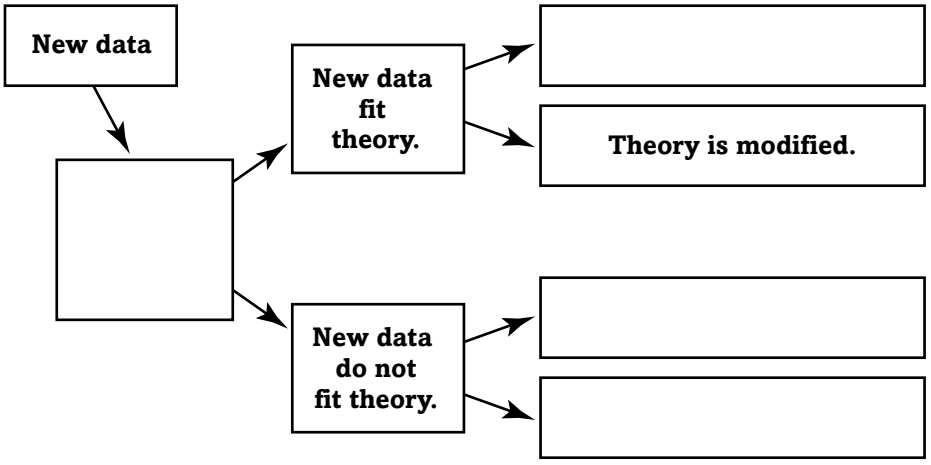
Details

Learning About the World

I found this information on page _____.

Complete *the graphic organizer to show what may happen to a scientific theory when new data are discovered. Use the following phrases:*

- Evaluate scientific theory.
- Theory is discarded.
- Theory is modified.
- Theory stays the same.



Systems in Science

I found this information on page _____.

Synthesize *information from your book to list some of the structures, cycles, and processes in your school day.*

Structures	Cycles	Processes

Choose at least one structure, one cycle, and one process from your list and describe the ways they interact.

_____

_____

_____

_____

_____

Name _____ **Date** _____

Section 1 What is science? (continued)

Main Idea

Details

The Branches of Science

I found this information on page _____.

Classify *which branch of science*—**physical science, Earth science,** *or* **life science**—*includes each of the following examples. Then, write one additional example studied by that science.*

Example	Branch of Science	Additional Example
Soil		
Fish		
Light		
Meteors		
Chemical reactions		
Body systems		
Plants		
Clouds		

Technology

I found this information on page _____.

Complete *the following sentences about the relationship between science and technology.*

_____ is a way to learn about the natural world. To use these answers for helping people, however, they must be applied in some way. _____ is the practical use of _____ in our everyday lives.

Connect It

Write about a time when you used science to figure out a problem in your everyday life. Include an additional question about this topic that you might like to investigate.

_____

_____

_____

_____

Name _____ **Date** _____

The Nature of Science and Inquiry

Section 2 Science in Action

Benchmarks—SC.H.1.3.1: The student knows that scientific knowledge is subject to modification . . .
Also covers: SC.H.1.3.3, SC.H.1.3.4, SC.H.1.3.5, SC.H.1.3.6, SC.H.2.3.1, SC.H.3.3.3

Skim *the headings in Section 2. Then make three predictions about what you will learn.*

1. _____

2. _____

3. _____

Review Vocabulary

Define observation *and give an example of an observation you made today.*

observation _____

New Vocabulary

Define the following key terms.

hypothesis _____

infer _____

controlled experiment _____

variable _____

constant _____

Academic Vocabulary

Define chart *to show its scientific meaning.*

chart _____

Name _____ **Date** _____

Section 2 Science in Action (continued)

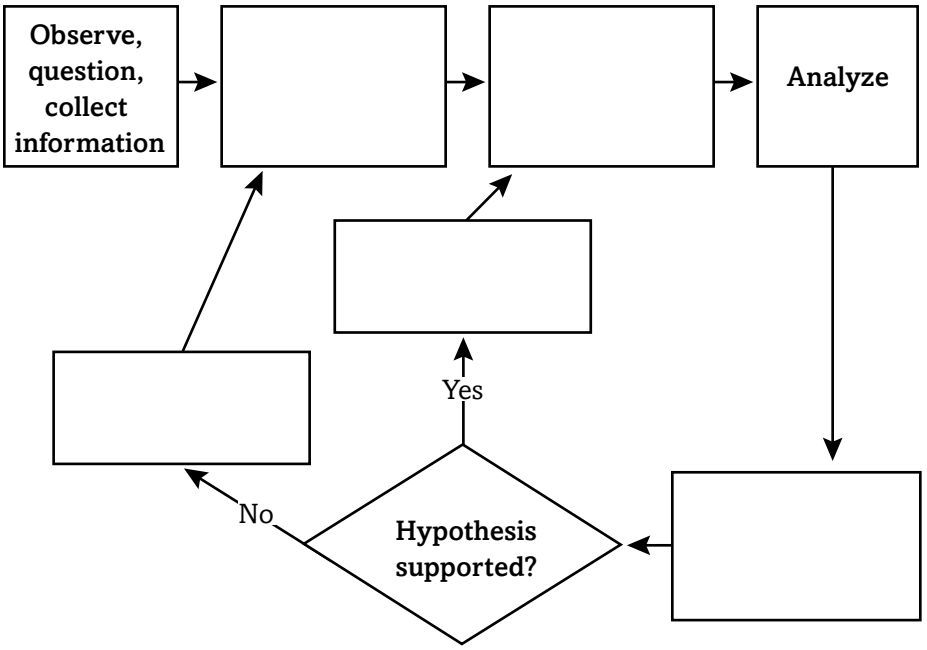
Main Idea

Details

Scientific Inquiry Skills

I found this information on page _____.

Sequence *the steps of* scientific inquiry. *Complete the flow chart.*



Drawing Conclusions

I found this information on page _____.

Summarize *how scientists draw conclusions and communicate those conclusions.*

I. Drawing conclusions

A. _____

B. _____

II. Communicating conclusions

A. What to communicate

1. _____

2. _____

B. How to communicate

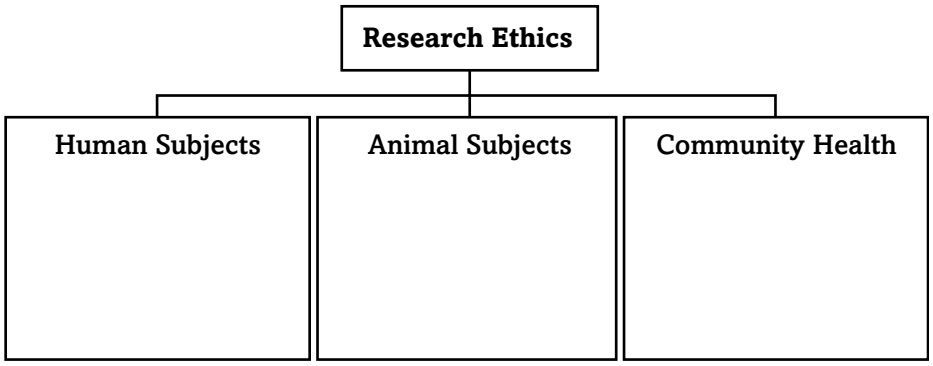
1. _____

2. _____

Name _____ **Date** _____

Section 2 Science in Action (continued)

Main Idea	Details
Experiments *I found this information on page _____.*	**Compare and contrast** *types of* variables *and* constants. The _____ is changed in an experiment. The _____ changes because of a change in the _____. The _____ must stay the same.
Safety Precautions *I found this information on page _____.*	**Change** *the safety habits below to the correct wording. Use your book for help.* **1.** Find and follow some safety symbols. **2.** Point test tubes towards yourself but not your lab partner. **3.** Only reach into holes or under rocks if your teacher is nearby.
Research Ethics *I found this information on page _____.*	**Organize** *information about* research ethics. *Complete the graphic organizer by giving examples of ethical rules that apply to each area.*



CONNECT IT

Think of a scientific question that you would like to answer. Then, write three hypotheses, or possible answers, to your question. How could you test your hypotheses?

_____

_____

_____

Name _____ **Date** _____

The Nature of Science and Inquiry

Section 3 Models in Science

Benchmarks—SC.H.2.3.1: The student recognizes that patterns exist within and across systems.
Also covers: SC.H.1.3.1, SC.H.1.3.5, SC.H.1.3.6, SC.H.3.3.4

Scan *Section 3 of your book. Then write three questions that you have about the use of models in science. Try to answer your questions as you read.*

1. _____

2. _____

3. _____

Review Vocabulary

Define scientific method. *Then give an example of the scientific method in action.*

scientific method _____

_____

_____

New Vocabulary

Define model. *Then give some examples of real-life and scientific models.*

model _____

_____

_____

Academic Vocabulary

Define encounter. *Then use the term in an original sentence that shows its scientific meaning.*

encounter _____

_____

_____

Name _____ **Date** _____

Section 3 Models in Science (continued)

Main Idea

Details

Why are models necessary?

I found this information on page _____.

Summarize *in a short paragraph how* models *are helpful.*

_____

_____

_____

Types of Models

I found this information on page _____.

Organize *information in the table to describe the three types of models and their uses.*

Models		
Type	**Description**	**Use**
Physical		
	built using computer software	
		help people understand abstract concepts that often are beyond common experience

Making Models

I found this information on page _____.

Create *a diagram of the building in which you live. Provide as much detail as possible so that your model will be accurate. Identify uses for this model.*

_____

_____

Name _____ **Date** _____

Section 3 Models in Science (continued)

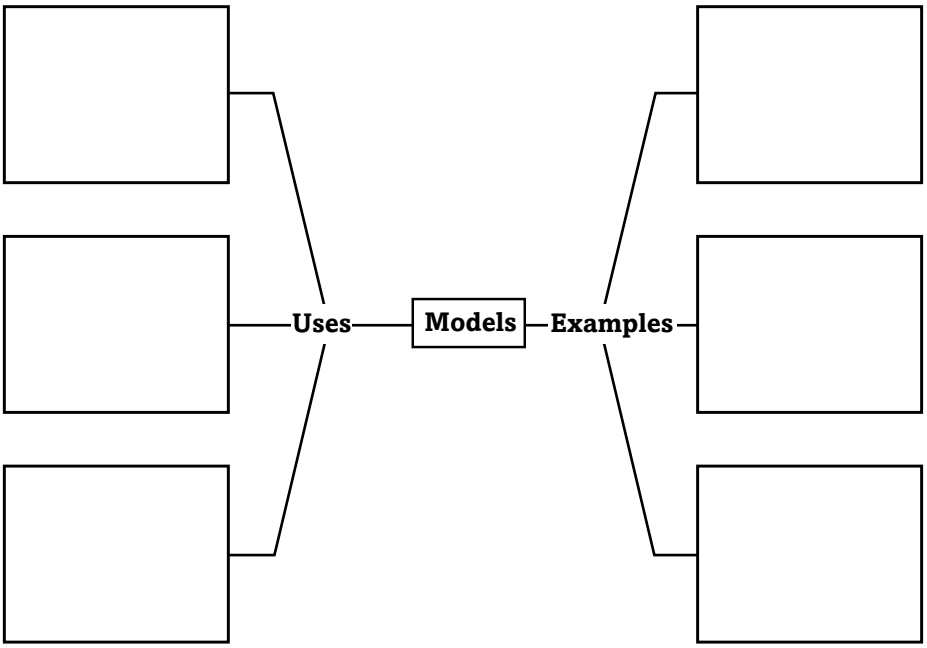
Main Idea

Details

Using Models

I found this information on page _____.

Complete *the graphic organizer about three ways that models are useful and three examples of scientific models.*



Limitations of Models

I found this information on page _____.

Identify *two reasons that models have limitations and list an example of a model for each reason.*

1. _____

2. _____

CONNECT IT

As more has been learned about the solar system, the models used to represent it have changed. What are some other models that might have changed over time as new discoveries were made?

_____

_____

Name _____ **Date** _____

The Nature of Science and Inquiry

Section 4 Evaluating Scientific Explanation

Benchmarks—SC.H.1.3.4: The student knows that accurate record keeping, openness, and replication are essential to maintaining an investigator's credibility with other scientists and society. Also covers: SC.H.1.3.1, SC.H.1.3.3, SC.H.1.3.5, SC.H.1.3.6, SC.H.1.3.7, SC.H.3.3.5

Skim *through the section. Read the headings and look at the illustrations. Then write three questions that come to mind. Add to these impressions as you read the section.*

1. _____

_____

2. _____

_____

3. _____

_____

Review Vocabulary

Define *the word* prediction. *Write a sentence to give an example of a prediction to show its scientific meaning.*

prediction _____

_____

New Vocabulary

Define the following key terms.

critical thinking _____

_____

data _____

_____

Academic Vocabulary

Use evaluate *in a sentence to show its scientific meaning.*

evaluate _____

_____

Name _____ **Date** _____

Section 4 Evaluating Scientific Explanation (continued)

Main Idea	Details

Believe it or not?

I found this information on page _____.

Complete *the following sentences using these terms.*

sense inferences evaluate observations
conclusions accurate critical

You can _____ an explanation using _____ thinking. First, you should examine the _____ and decide if you believe they are _____. Then, look at the _____ or _____ made about the data and decide if they make _____.

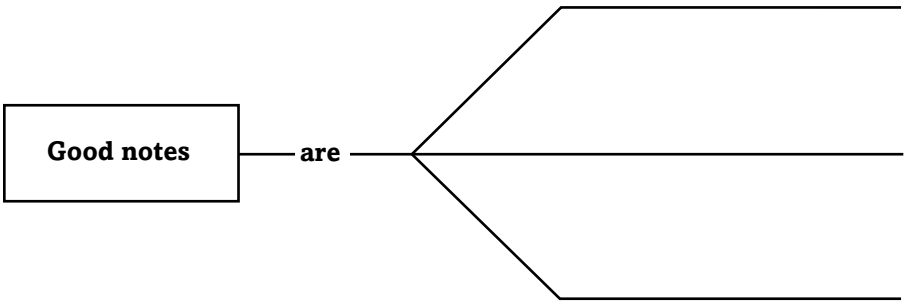
Evaluating the Data

I found this information on page _____.

Summarize *three features of* **reliable data.**

1. _____
2. _____
3. _____

Organize *three characteristics of good notes.*



Name _____ **Date** _____

Section 4 Evaluating Scientific Explanation (continued)

Main Idea

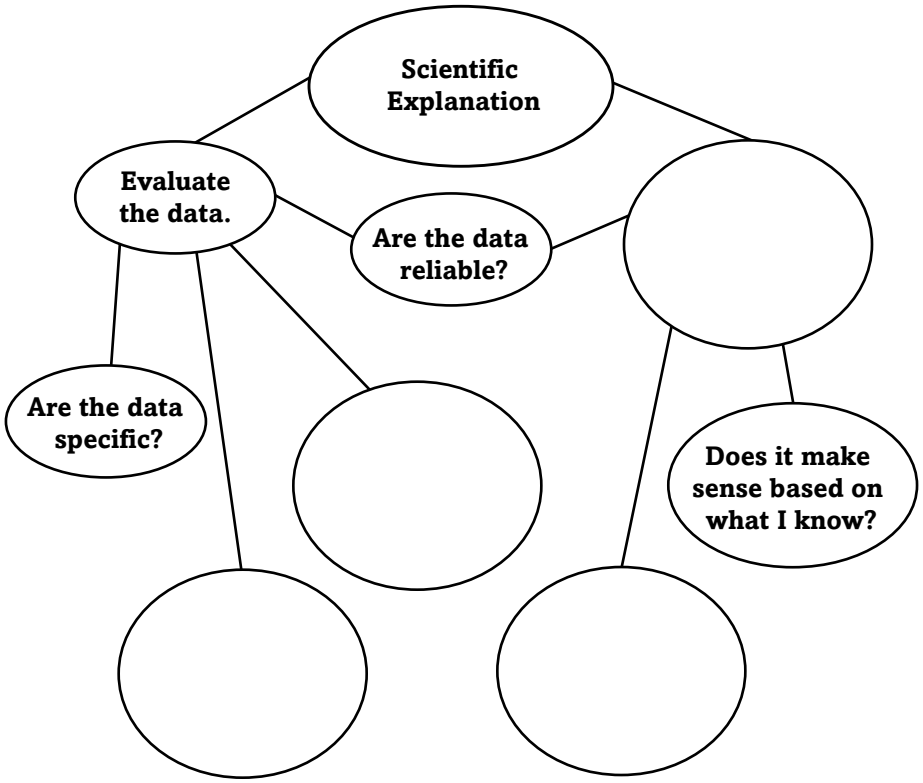
Evaluating the Conclusions

I found this information on page _____.

Details

Complete *the concept web to show the steps you might use when evaluating a scientific explanation. Use the phrases:*

- Are there good notes?
- Can the data be repeated?
- Could there be another explanation?
- Evaluate the conclusion.



CONNECT IT

Create your own advertisement for a wrinkle cream. Include claims about the product's safety and effectiveness, and use information that might help support those claims. List reasons why another person should or should not believe your ad.

Advertisement: _____

_____

_____

Reasons: _____

_____

_____

Name _____ **Date** _____

The Nature of Science and Inquiry

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.

The Nature of Science and Inquiry	After You Read
• Science and technology are independent of one another.	
• Only scientists use science skills.	
• Scientific theories can change if new information becomes available.	
• Science experiments that are done by professional scientists do not need to be repeated.	

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 Self Check at the end of each section.
- ☐ Look over the Chapter Review at the end of the chapter.

SUMMARIZE IT **After reading this chapter, identify three things you have learned about the nature of scientific inquiry.**

_____

_____

_____

_____

Name _____ **Date** _____

Forces Shaping Earth

Sunshine State Standards—SC.D.1: The student recognizes that processes in the lithosphere, atmosphere, hydrosphere, and biosphere interact to shape the Earth. Also covers: SC.C.1

Before You Read

Preview the chapter title, the section titles, and the section headings. List at least two ideas for each section in each column.

K What I know	W What I want to find out

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

Science Journal

Use descriptive adjectives to describe mountains in a short paragraph.

Name _____ **Date** _____

Forces Shaping Earth

Section 1 Earth's Moving Plates

Benchmarks—SC.C.1.3.2: The student knows that vibrations in materials set up wave disturbances that spread away from the source (e.g., sound and earthquake waves). Also covers: SC.D.1.3.5, SC.H.1.3.3, SC.H.1.3.5, SC.H.1.3.6, SC.H.1.37, SC.H.2.3.1

Scan *the section before you begin to read. Write three facts that you discovered about Earth's moving plates.*

1. _____
2. _____
3. _____

Review Vocabulary

Define *the word* **density** *using your book or a dictionary.*

density _____

_____

New Vocabulary

Write the vocabulary term that matches each definition.

_____ solid, innermost layer of Earth's interior

_____ layer of Earth that lies above the inner core and is thought to be made up mostly of molten metal

_____ largest layer of Earth's interior

_____ Earth's outermost layer

_____ rigid layer of Earth made of the crust and a part of the upper mantle

_____ section of Earth's crust and rigid upper mantle

_____ large fracture in rock along which movement occurs

_____ type of plate movement that occurs when one plate sinks beneath another plate

_____ shaking of the ground caused by a sudden release of energy in Earth's crust

Academic Vocabulary

Use **contract** *in a sentence to reflect its scientific meaning.*

contract _____

_____

Name _____ **Date** _____

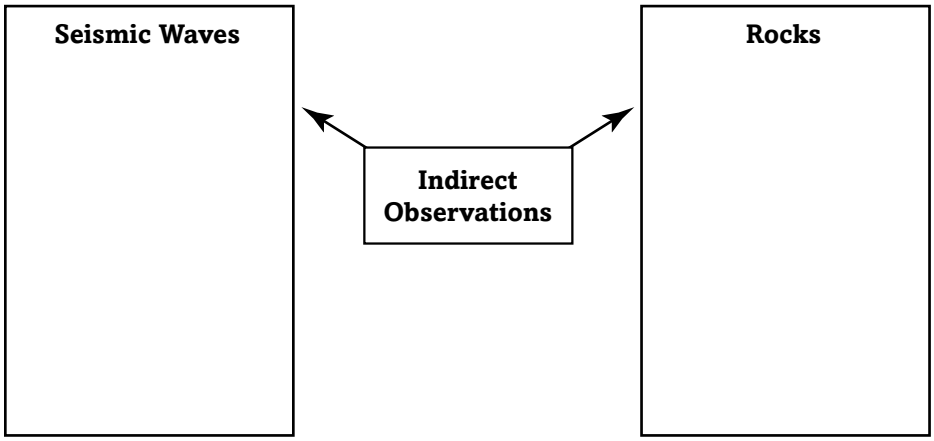
Section 1 Earth's Moving Plates (continued)

Main Idea | **Details**

Clues to Earth's Interior

I found this information on page _____.

Complete *the graphic organizer to explain how scientists use indirect observations to learn about* Earth's interior.



Earth's Layers

I found this information on page _____.

Organize *information about* Earth's layers. *Complete the outline.*

Earth's Layers

A. Inner core

1. _____

2. _____

B. Outer core

1. _____

2. _____

C. Mantle

1. _____

2. _____

D. Crust

1. _____

2. _____

Earth's Plates

I found this information on page _____.

Analyze Earth's plates. *Fill in the missing words.*

Earth's plates are sections of the _____. They move on top of the _____, which is _____.

Name _____ **Date** _____

Main Idea

Details

Plate Boundaries

I found this information on page _____.

Summarize *the different ways that plates interact at* plate boundaries. *Provide an example of each location.*

Plate Interaction	Results	Location Where Occurs
Plates move apart.		
Continental plates collide.		
One plate sinks beneath another plate.		
Plates slide past one another.		

Why do plates move?

I found this information on page _____.

Distinguish *three possible causes of* plate motion.

1. _____
2. _____
3. _____

CONNECT IT

Compare Earth's plates to a jigsaw puzzle. How are they similar?

_____

_____

_____

Name _____ **Date** _____

Forces Shaping Earth

Section 2 Uplift of Earth's Crust

Benchmarks—SC.D.1.3.3: The student knows how conditions that exist in one system influence the conditions that exist in other systems. Also covers: SC.D.1.3.5, SC.H.1.3.5, SC.H.2.3.1

Scan *Section 2. Then write three questions that occur to you.*

1. _____
2. _____
3. _____

Review Vocabulary

Define erosion *using your book or a dictionary.*

erosion _____

New Vocabulary

Write a sentence that reflects the scientific meaning for each vocabulary term.

fault-block mountain _____

folded mountain _____

upwarped mountain _____

volcano _____

isostasy _____

Academic Vocabulary

Write a two-line poem using the term erode.

erode _____

Name _____ **Date** _____

Section 2 Uplift of Earth's Crust (continued)

Main Idea — **Details**

Building Mountains

I found this information on page _____.

Identify *the four main types of* mountains.

1. _____ 3. _____

2. _____ 4. _____

Contrast *mountains that are still forming with older mountains.*

Mountains that are still forming are _____ and _____.

Older mountains have _____.

I found this information on page _____.

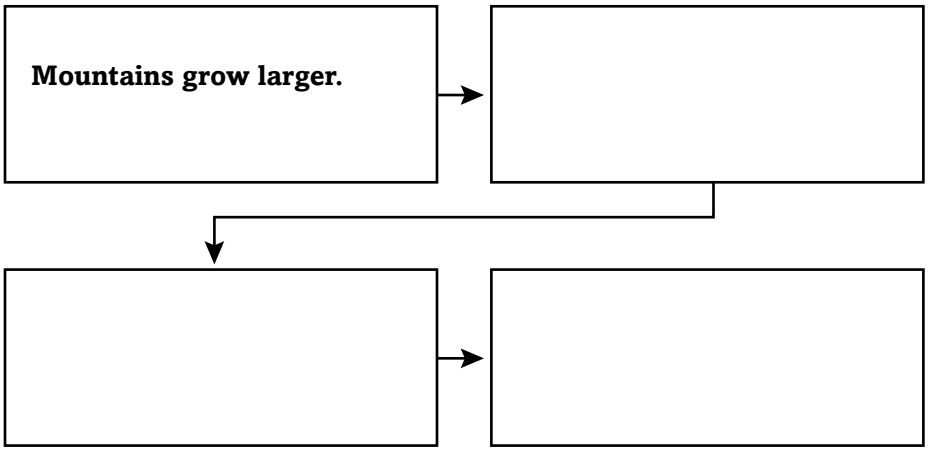
Organize *information from your book about* fault-block, folded, *and* upwarped mountains.

Fault-block Example:	**how it forms** →	
	where it forms →	
Folded Example:	**how it forms** →	
	where it forms →	
Upwarped Example:	**how it forms** →	
	where it forms →	interior of continent

Name _____ **Date** _____

Section 2 Uplift of Earth's Crust (continued)

Main Idea	Details
Building Mountains *I found this information on page _____.*	**Create** *a cross-section drawing of a volcanic mountain formed on land. Show the* magma, magma chamber, pipe, vent, *and* crater *as the magma flows from underground out of the crater.*
Other Types of Uplift *I found this information on page _____.*	**Sequence** *how gravity affects uplifted crust. Complete the flow chart.*



Connect It

Use what you have learned about isostasy to compare the crust under the Appalachian Mountains today with the crust when the mountains formed.

_____

_____

_____

Name _____ **Date** _____

Forces Shaping Earth Chapter Wrap-Up

Review the ideas you listed in the K-W-L 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. How do your ideas now compare with those you provided at the beginning of the chapter?

K What I know	W What I want to find out	L What I learned

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 Self Check at the end of each section.
- ☐ Look over the Chapter Review at the end of the chapter.

SUMMARIZE IT **After reading this chapter, identify three things that you have learned about forces that shape Earth.**

_____

_____

_____

_____

Name _____ **Date** _____

Weathering and Erosion

Sunshine State Standards—SC.D.1: The student recognizes that processes in the lithosphere, atmosphere, hydrosphere, and biosphere interact to shape the Earth.

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.

Before You Read	Weathering and Erosion
	• Weathering is the conditions of the atmosphere at a given time.
	• Soil forms from pieces of broken rock and other kinds of matter.
	• Erosion moves rock and soil from one place to another.
	• Water can cause erosion, but ice cannot.

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

Science Journal

Describe a place—a home, a park, a river, or a mountain. What might that place look like in a year, a hundred years, even 5,000 years?

Name _____ **Date** _____

Weathering and Erosion

Section 1 Weathering and Soil Formation

Benchmarks—SC.D.1.3.1: knows that mechanical and chemical activities shape and reshape the Earth's land surface . . . . Also covers: SC.D.1.3.2, SC.D.1.3.3, SC.D.1.3.4, SC.H.1.3.5, SC.H.1.3.5, SC.H.1.3.7, SC.H.2.3.1

Skim *through Section 1 of your book. Read the headings and look at the illustrations. Write three questions that come to mind.*

1. _____
2. _____
3. _____

Review Vocabulary

Define *the key terms using your book or a dictionary.*

acid rain _____

New Vocabulary

weathering _____

mechanical weathering _____

chemical weathering _____

soil _____

topography _____

Academic Vocabulary

Define process. *Use a dictionary to help you.*

process _____

Name _____ **Date** _____

Section 1 Weathering and Soil Formation (continued)

Main Idea	Details

Weathering

I found this information on page _____.

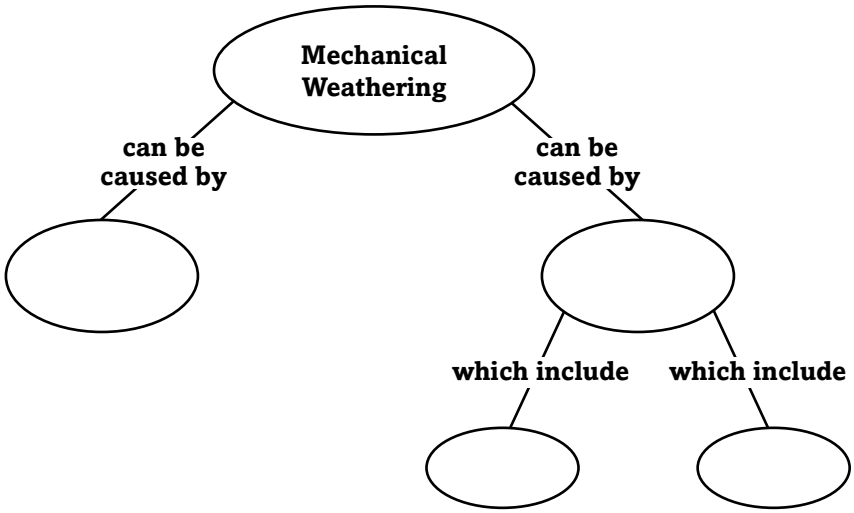
Organize *information by listing three things that cause* rocks to weather.

Causes of Weathering	
1.	
2.	
3.	

Mechanical Weathering

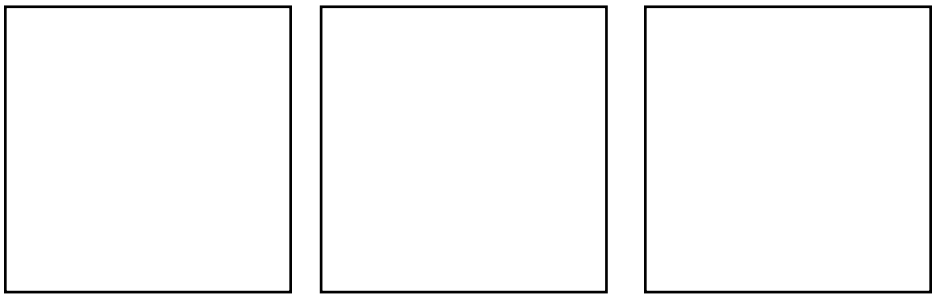
I found this information on page _____.

Identify *major causes of* mechanical weathering. *Complete the concept map below.*



I found this information on page _____.

Create *three drawings to show the process of* ice wedging.



Water seeps into cracks.

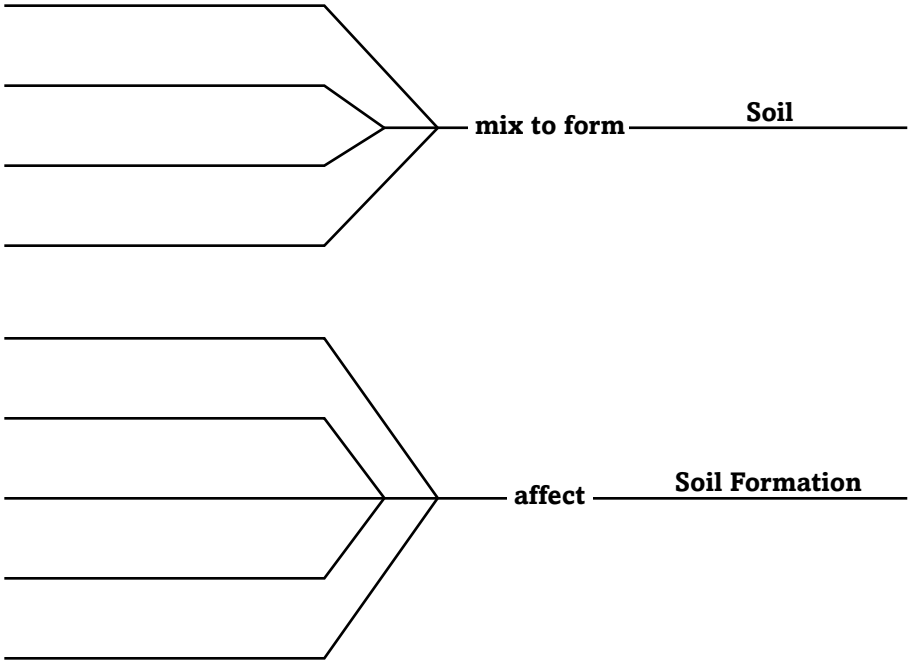
Water freezes and expands, making cracks wider.

Ice melts and the process repeats.

Name _____ **Date** _____

Section 1 Weathering and Soil Formation (continued)

Main Idea	Details
Chemical Weathering *I found this information on page* _____.	**Organize** *the information on* chemical weathering *in the outline below.* Chemical weathering **A.** Definition: _____ _____ **B.** Causes: **1.** _____ **2.** _____ **3.** _____
Soil *I found this information on page* _____.	**Complete** *the graphic organizers about* soil *and* soil formation.



Connect It

The temperature on some mountains is below freezing all year. Predict what soil on these mountains is like.

_____

_____

_____

Name _____ **Date** _____

Weathering and Erosion

Section 2 Erosion of Earth's Surface

Benchmarks—SC.D.1.3.1: knows that mechanical and chemical activities shape and reshape the Earth's land surface . . . . Also covers: SC.D.1.3.3, SC.D.1.3.4, SC.D.1.3.5, SC.H.1.3.4, SC.H.1.3.5, SC.H.1.3.7

Scan *Use the checklist below to preview Section 2 of your book. Then write three facts that you discovered about how erosion affects Earth's surface.*

- ☐ Read all headings.
- ☐ Read all boldface words.
- ☐ Look at all of the pictures.
- ☐ Think about what you already know about features of Earth's surface.

1. _____

2. _____

3. _____

Review Vocabulary

Write the correct vocabulary term next to each definition.

_____ the dropping of sediment that occurs when an agent of erosion can no longer carry its load

New Vocabulary

_____ the movement of rock or soil by gravity, ice, wind, or water

_____ erosion that occurs when gravity alone causes rock or sediment to move down a slope

_____ the process in which sediment moves slowly downhill

_____ the movement of rock or sediment downhill along a curved surface

_____ the erosion of the land by wind

_____ erosion that occurs when wind blows sediment into rocks, makes pits in the rocks, and produces a smooth, polished surface

_____ water that flows over the ground

Academic Vocabulary

Use a dictionary to define **occur.**

occur _____

Name _____ **Date** _____

Section 2 Erosion of Earth's Surface (continued)

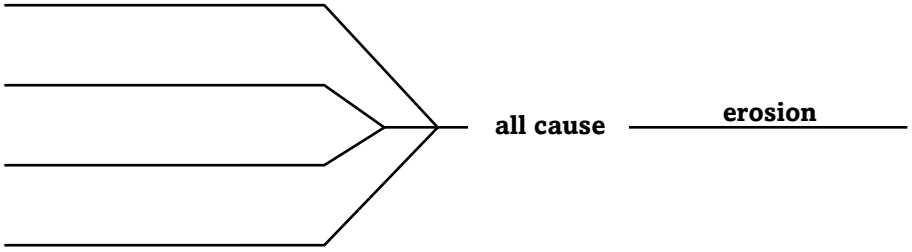
Main Idea

Details

Agents of Erosion

I found this information on page _____.

Organize *information on the* 4 agents of erosion *by filling in the concept map.*



Gravity

I found this information on page _____.

Compare and contrast *the four types of* mass movements. *Write ways they are all the same and some ways they are different.*

Mass Movements	
Similarities	Differences

Ice

I found this information on page _____.

Sequence *four steps explaining how* glaciers *form and change Earth's surface.*

Glaciers Form and Change Earth's Surface	
1.	
2.	
3.	
4.	

Name _____ **Date** _____

Section 2 Erosion of Earth's Surface (continued)

Main Idea	Details

Wind

I found this information on page _____.

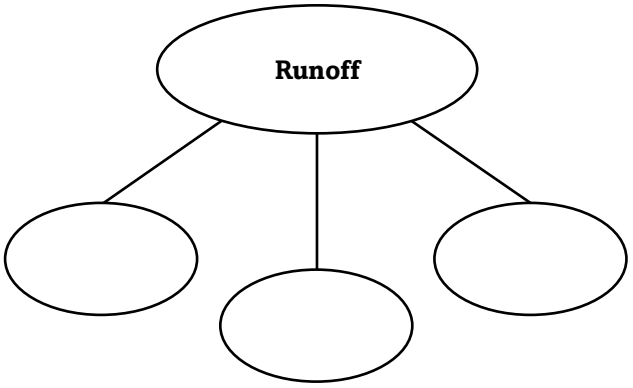
Model *how a* **sand dune** *moves by making a diagram in the box. Label the following features:*

- sand blows up this side
- sand falls down this side
- dune movement (arrow)
- wind (arrow)

Water

I found this information on page _____.

Complete *the concept map by listing several ways that water can flow over Earth's surface.*



Effects of Erosion

I found this information on page _____.

Analyze *the effects of erosion. List three examples of* **landforms** *caused by erosion, and three examples caused by depositon.*

Effects of Erosion	
Where Sediment Is Removed (erosion)	Where Sediment Accumulates (deposition)

Name _____ **Date** _____

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.

Weathering and Erosion	After You Read
• Weathering is the conditions of the atmosphere at a given time.	
• Soil forms from pieces of broken rock and other kinds of matter.	
• Erosion moves rock and soil from one one place to another.	
• Water can cause erosion, but ice cannot.	

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 Self Check at the end of each section.
- ☐ Look over the Chapter Review at the end of the chapter.

SUMMARIZE IT **After reading this chapter, identify three things you have learned about weathering and erosion.**

_____

_____

_____

_____

Name _____ **Date** _____

The Periodic Table

Sunshine State Standards—SC.H.2.: The student understands that most natural events occur in comprehensible, consistent patterns. Also covers: SC.A.1

Before You Read

Preview the chapter title, section titles, and section headings. List at least two ideas for each section in each column.

K What I know	W What I want to find out

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

Science Journal

Think of an element you have heard about. Make a list of the properties you know and the properties you want to learn about.

Name _____ **Date** _____

The Periodic Table

Section 1 Introduction to the Periodic Table

Benchmarks—SC.H.2.3.1: The student recognizes that patterns exist within and across systems.
Also covers: SC.A.1.3.1, SC.A.1.3.5, SC.H.1.3.6, SC.H.3.3.5

Skim *Section 1 of your book. Write three questions that come to mind from reading the headings and looking at the illustrations.*

1. _____

2. _____

3. _____

Review Vocabulary

element

Use **element** *in a sentence to show its scientific meaning.*

_____

_____

New Vocabulary

Write the correct vocabulary term next to its definition.

_____ column of elements in the periodic table that have similar physical or chemical properties

_____ element that shares some properties with metals and some with nonmetals

_____ element in Groups 1, 2, or 13–18

_____ element that has a shiny luster, is a good conductor of heat and electricity, is malleable, and is ductile

_____ element in Groups 3–12

_____ element that is usually a gas or brittle solid at room temperature and does not conduct heat and electricity well

_____ row of elements in the periodic table whose properties change gradually

Academic Vocabulary

symbol

Define **symbol** *using a dictionary to show its scientific meaning.*

_____

_____

Name _____ **Date** _____

Section 1 Introduction to the Periodic Table (continued)

Main Idea	Details
Development of the Periodic Table *I found this information on page* _____.	**Organize** *information about the* development of the periodic table. *Complete the outline.* **History of the Periodic Table** **I.** Mendeleev's contributions **A.** _____ **B.** _____ **C.** _____ **II.** Moseley's contributions **A.** _____ **B.** _____
Today's Periodic Table *I found this information on page* _____.	**Distinguish** *a* period *from a* group *by completing the sentences.* A period is _____ _____. A group is _____ _____.
I found this information on page _____.	**Create** *a drawing of an empty periodic table. Shade the* representative elements *one color, the* transition elements *another, and the* inner transition elements *a third color.*

Name _____ **Date** _____

Section 1 Introduction to the Periodic Table (continued)

Main Idea | **Details**

Today's Periodic Table

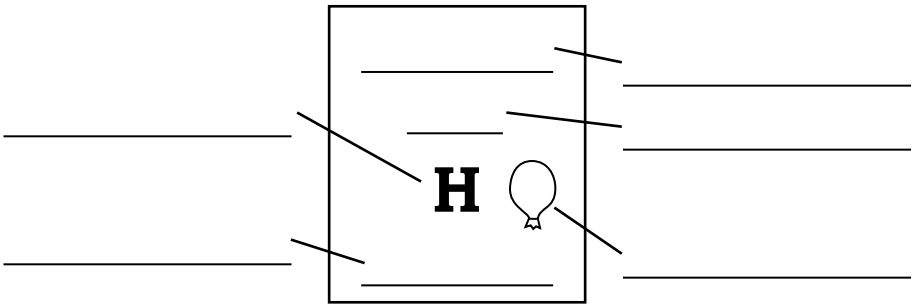
I found this information on page _____.

Contrast metals, nonmetals, *and* metalloids *in the table.*

Metals	Nonmetals	Metalloids

I found this information on page _____.

Label *the square below with the information you would find about hydrogen in its* element key. *Fill in the missing information.*



I found this information on page _____.

Summarize *how names and symbols for elements are chosen. Include both existing and newly discovered elements.*

_____

_____

_____

_____

_____

CONNECT IT Suppose you discovered a new element. How would you predict where it would fit in the periodic table if you did not know its atomic number?

_____

_____

Name _____ **Date** _____

The Periodic Table

Section 2 Representative Elements

Benchmarks—SC.A.1.3.1: The student identifies various ways in which substances differ (e.g., mass, volume, shape, density, texture, and reaction to temperature and light). Also covers: SC.A.1.3.5, SC.G.1.3.4

Read *the* What You'll Learn *statements for Section 2. Predict three topics that will be discussed in the section.*

1. _____

2. _____

3. _____

Review Vocabulary **Define** atomic number.

atomic number _____

New Vocabulary *Use your book to define each vocabulary term.*

alkali metal _____

alkaline earth metal _____

semiconductor _____

halogen _____

noble gas _____

Academic Vocabulary *Use a dictionary to define* trend.

trend _____

Name _____ **Date** _____

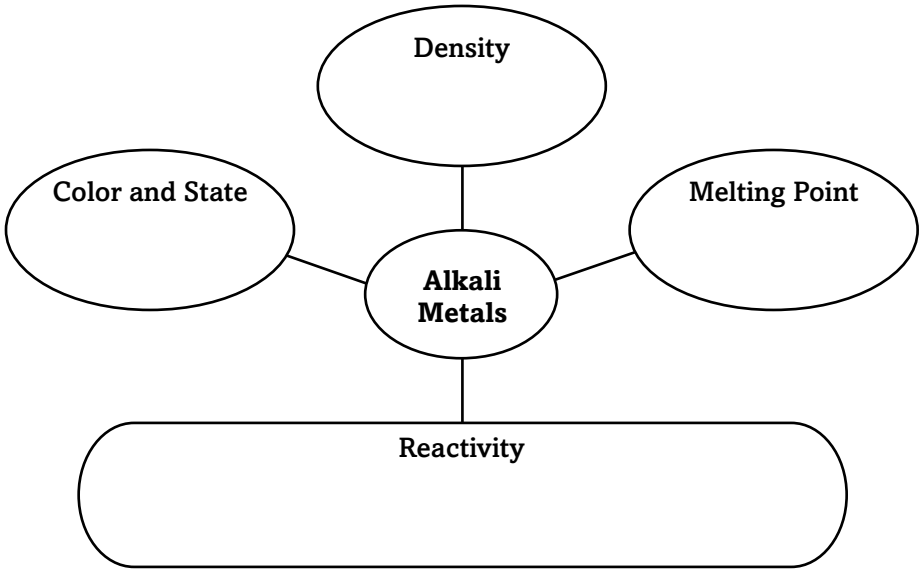
Section 2 Representative Elements (continued)

Main Idea | **Details**

Groups 1 and 2

I found this information on page _____.

Summarize *the properties of the* alkali metals.



I found this information on page _____.

Compare and contrast *the* alkaline earth metals *and the* alkali metals. ***Describe the hardness, density, melting points, and reactivity of elements in the two groups.***

_____

_____

_____

_____

Groups 13 through 18

I found this information on page _____.

Summarize *information about elements in the* boron family *by filling in the missing words in the paragraph below.*

All the elements in group 13 are _____ except _____, which is a metalloid. The elements in this family are used to make many different things. Pots and pans made with _____ can move straight from the refrigerator to the oven without cracking. _____ is used to make soft drink cans. _____, which will melt in your hands, is used to make computer chips.

Name _____ **Date** _____

Section 2 Representative Elements (continued)

Main Idea | **Details**

I found this information on page _____.

Compare *the elements in the* carbon group.

	Metal, Non-metal, or Metalloid?	Where it is Found or How it is Used
Carbon	nonmetal	
Silicon	metalloid	
Germanium	metalloid	
Tin	metal	
Lead	metal	

I found this information on page _____.

Complete *the outline to identify important points about certain elements in* Groups 15 *and* 16.

I. Group 15

A. _____: makes up about 80% of the air you breathe

B. Phosphorus: _____

II. Group 16

A. Oxygen: _____

B. _____: combines with hydrogen and oxygen to make sulfuric acid, one of the most commonly used chemicals

C. Selenium: _____

I found this information on page _____.

Identify *at least one important fact about each group of elements.*

Halogens: _____

Noble gases: _____

CONNECT IT **Choose any three elements from this section and explain how they are important to your daily life.**

_____

_____

Name _____ **Date** _____

The Periodic Table

Section 3 Transition Elements

Benchmarks—SC.A.1.3.1: The student identifies various ways in which substances differ (e.g., mass, volume, shape, density, texture, and reaction to temperature and light). Also covers: SC.A.1.3.5, SC.D.2.3.1, SC.D.2.3.2, SC.G.2.3.3, SC.G.2.3.4, SC.H.1.3.4, SC.H.1.3.5, SC.H.3.3.4

Scan *the headings and illustrations in this section. Write three facts you learned about transition elements as you scanned the section.*

1. _____
2. _____
3. _____

Review Vocabulary

Use mass number *in a scientific sentence.*

mass number _____

_____

New Vocabulary

Define *each vocabulary term using a dictionary or your book.*

catalyst _____

_____

lanthanide _____

_____

actinide _____

_____

Academic Vocabulary

Use a dictionary to define series *to show its scientific meaning.*

series _____

_____

Name _____ **Date** _____

Section 3 Transition Elements (continued)

Main Idea | **Details**

The Metals in the Middle

I found this information on page _____.

Identify *four key characteristics of the* transition elements *including their location in the periodic table.*

1. _____

2. _____

3. _____

4. _____

I found this information on page _____.

Summarize *the properties of the* iron triad.

Iron Triad

What these elements have in common: _____

Element: _____	**Element:** _____	**Element:** _____
Uses:	**Uses:**	**Uses:**

I found this information on page _____.

Identify *uses of transition elements.*

Element(s)	Uses
Tungsten	
Mercury	
Elements in the platinum group	

Name _____ **Date** _____

Section 3 Transition Elements (continued)

Main Idea

Inner Transition Elements

I found this information on page _____.

I found this information on page _____.

Details

Compare and contrast *the* lanthanides *and* actinides.

	Lanthanides	Actinides
Properties		
Uses		

Summarize *how scientists create* **synthetic elements.**

Using a particle accelerator scientists make _____ _____. The nuclei _____ to form _____. Some of these elements are _____ and last only _____.

Identify ***two ways dentists and orthodontists use transition elements.***

1. _____

2. _____

CONNECT IT

Hypothesize why a scientist should be extra careful when using a mercury thermometer.

_____

_____

_____

Name _____ **Date** _____

Tie It Together

The Periodic Table

Create a periodic table puzzle.

1. Obtain six pieces of paper. Cut each piece of paper into six equal pieces.
2. Make an element box for each of the first 36 elements in the periodic table. On each element box, fill in only part of the information shown on the periodic table.
3. Swap your set of partially complete element boxes with a partner.
4. Complete each element box in your partner's set.
5. Then, piece together your partner's periodic table in order.

Name _____ **Date** _____

The Periodic Table Chapter Wrap-Up

After You Read

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. Compare your previous responses with these.

K What I know	W What I want to find out	L What I learned

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 Self Check at the end of each section.
- ☐ Look over the Chapter Review at the end of the chapter.

SUMMARIZE IT **After reading this chapter, identify three things you have learned about elements and the periodic table.**

_____

_____

_____

_____

Name _____ Date _____

Atomic Structure and Chemical Bonds

Sunshine State Standards—SC.A.2: The student understands the basic principles of atomic theory.
Also covers: SC.H.2

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.

Before You Read	Atomic Structure and Chemical Bonds
	• Electrons exist with specific levels of energy.
	• Elements can be arranged according to their properties.
	• An atom that loses an electron is called a molecule.
	• Elements can form bonds by sharing electrons.

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

Science Journal

Write a sentence comparing household glue to chemical bonds.

Name _____ **Date** _____

Atomic Structure and Chemical Bonds

Section 1 Why do atoms combine?

Benchmarks—SC.A.2.3.2: The student knows the general properties of the atom (a massive nucleus of neutral neutrons and positive protons surrounded by a cloud of negative electrons) and accepts that single atoms are not visible. Also covers: SC.A.1.3.5, SC.H.1.3.6, SC.H.2.3.1, SC.H.3.3.5

Skim *the objectives for Section 1. Write three questions that come to mind from reading these statements. Look for answers to each question as you read the section.*

1. _____

2. _____

3. _____

Review Vocabulary

Define chemical change *to show its scientific meaning.*

chemical change _____

New Vocabulary

Write the correct vocabulary term next to its definition.

_____ the area around the nucleus where electrons are most likely found

_____ the different areas for an electron in an atom

_____ uses the symbol for an element and dots representing the number of electrons in its outer energy level

_____ force that holds two atoms together

Academic Vocabulary

Use a dictionary to define period. *Then tell how the word is used in the context of the periodic table.*

period _____

Name _____ **Date** _____

Section 1 Why do atoms combine? (continued)

Main Idea	Details

Atomic Structure

I found this information on page _____.

Model *the* structure of an atom *that has 3 protons, 4 neutrons, and 3 electrons. Label the* protons, neutrons, electrons, *and* nucleus *in your drawing.*

Electron Arrangement

I found this information on page _____.

Complete *the chart to show the maximum* number of electrons *that can exist in each energy level of an atom.*

Energy Level	Maximum Number of Electrons
1	
2	
3	
4	

Write the formula for calculating the maximum number of electrons that can occupy an energy level.

Formula for calculating electrons per energy level: _____

Periodic Table and Energy Levels

I found this information on page _____.

Analyze *the relationship of the atomic number of a neutral atom to the number of electrons and protons it contains.*

_____

_____

_____

Name _____ **Date** _____

Section 1 Why do atoms combine? (continued)

Main Idea

Details

Electron Configuration

I found this information on page _____.

Identify *the number of electrons each of the atoms has in its outer energy level. Then shade the boxes of the elements that are* stable.

1																	18
H																	He
_____																	_____
	2											13	14	15	16	17	
Li	Be											B	C	N	O	F	Ne
_____	_____											_____	_____	_____	_____	_____	_____

Element Families

I found this information on page _____.

Compare *how the* elements in a family *are similar. Use the noble gases and alkali metals as examples.*

_____

_____

_____

_____

_____

_____

Electron Dot Diagrams

I found this information on page _____.

Model *the arrangement of electrons by making* electron dot diagrams *for the elements represented below.*

Li	Be	B	C	N	O	F	Ne

CONNECT IT

Hydrogen gas is lighter than helium gas. Hypothesize why airships use helium for buoyancy instead of hydrogen.

_____

_____

_____

_____

Name _____ **Date** _____

Atomic Structure and Chemical Bonds

Section 2 How Elements Bond

Benchmarks—SC.A.2.3.2: The student knows the general properties of the atom (a massive nucleus of neutral and positive protons surrounded by a cloud of negative electrons) and accepts that single atoms are not visible. Also covers: SC.A.2.3.1, SC.H.1.3.4, SC.H.1.3.6, SC.H.1.3.7, SC.H.2.3.1, SC.H.3.3.5

Predict *three things that might be discussed in this section after reading the headings that appear in it.*

1. _____

2. _____

3. _____

Review Vocabulary

Use **compound** *in a sentence to show its scientific meaning.*

compound _____

_____

New Vocabulary

Write the correct vocabulary term next to its definition.

_____ chemical shorthand that uses symbols to tell what elements are in a compound and their ratios

_____ chemical bond that forms between atoms when they share electrons

_____ atom that is no longer neutral because it has more or fewer electrons than protons

_____ bond in which electrons are shared unequally

_____ chemical bond formed when metal atoms share their pooled electrons

_____ attraction between oppositely charged ions

_____ neutral particle formed when atoms share electrons

Academic Vocabulary

Define **achieve** *to show its scientific meaning.*

achieve _____

_____

Name _____ **Date** _____

Section 2 How Elements Bond (continued)

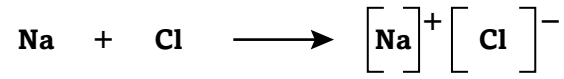
Main Idea

Details

Ionic Bonds—Loss and Gain

I found this information on page _____.

Complete *the electron dot diagram below to show the final compound.*



Summarize *what is occurring in the diagram. Your description should include the words* ion, negative, positive, *and* compound.

_____

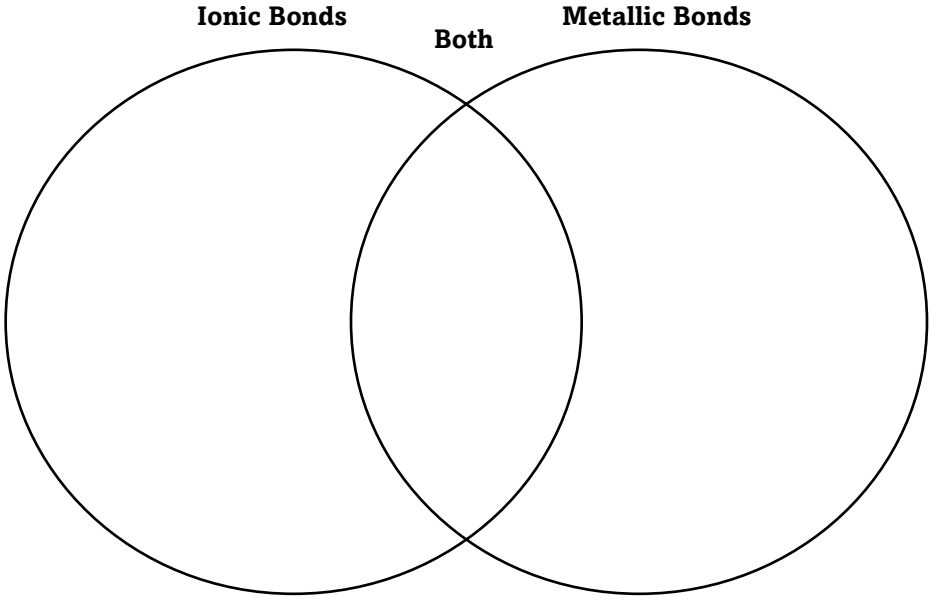
_____

_____

Metallic Bonding—Pooling

I found this information on page _____.

Compare and contrast metallic bonds *with* ionic bonds *by completing the Venn diagram with at least five facts.*



Describe *two characteristics of metals that are caused by metallic bonding.*

_____

_____

_____

Name _____ **Date** _____

Section 2 How Elements Bond (continued)

Main Idea	Details
Covalent Bonds—Sharing *I found this information on page* _____.	**Organize** *information about* covalent bonds. **I.** Covalent Bond **A.** Definition: _____ _____ **B.** How atoms share electrons **1.** _____ **2.** _____ **C.** Multiple bonds: _____ _____
Polar and Nonpolar Molecules *I found this information on page* _____.	**Model** *a* polar molecule. *Label the ends as positive or negative.*
Chemical Shorthand *I found this information on page* _____.	**Label** *the parts of the* chemical formula *shown. Then summarize what the formula tells you about the compound.* H_2O

CONNECT IT

Chlorine is a gas with a distinct odor. Do you think that someone with an acute sense of smell would be able to smell chlorine in table salt? Explain.

_____

_____

_____

Name _____ **Date** _____

Atomic Structure and Chemical Bonds 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.

Atomic Structure and Chemical Bonds	After You Read
• Electrons exist with specific levels of energy.	
• Elements can be arranged according to their properties.	
• An atom that loses an electron is called a molecule.	
• Elements can form bonds by sharing electrons.	

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 Self Check at the end of each section.
- ☐ Look over the Chapter Review at the end of the chapter.

SUMMARIZE IT **After reading this chapter, identify three things you have learned about how chemicals bond.**

_____

_____

_____

Name _____ **Date** _____

States of Matter

Sunshine State Standards—SC.A.1: The student understands that all matter has observable, measurable properties. Also covers: SC.C.2

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.

Before You Read	States of Matter
	• There are four states of matter.
	• Solids take the shape of their containers.
	• Substances cannot change directly from a solid to a gas.
	• The air around you is putting pressure on your body.

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

Science Journal

Write about what you predict is a source of the warm water in a hot natural spring in a cold, snowy climate.

Name _____ **Date** _____

States of Matter

Section 1 Matter

Benchmarks—SC.A.1.3.4: The student knows that atoms in solids are close together and do not move around easily; in liquids, atoms tend to move farther apart; in gas, atoms are quite far apart and move around freely. Also covers: SC.A.1.3.1, SC.A.1.3.3, SC.H.2.3.1

Skim *through Section 1 of your text. Write three questions that come to mind when reading the headings and looking at the illustrations.*

1. _____

2. _____

3. _____

Review Vocabulary

Define *the term* atom *in a scientific sentence.*

atom _____

_____

New Vocabulary

Write the correct vocabulary term next to each definition.

_____ matter that does not have a definite shape or volume

_____ anything that takes up space and has mass

_____ matter with a definite shape and volume

_____ a liquid's resistance to flow

_____ uneven forces acting on the particles on the surface of a liquid

_____ matter with a definite volume but no definite shape that can flow from one place to another

Academic Vocabulary

Use a dictionary to define **definite.**

definite _____

_____

Name _____ **Date** _____

Section 1 Matter (continued)

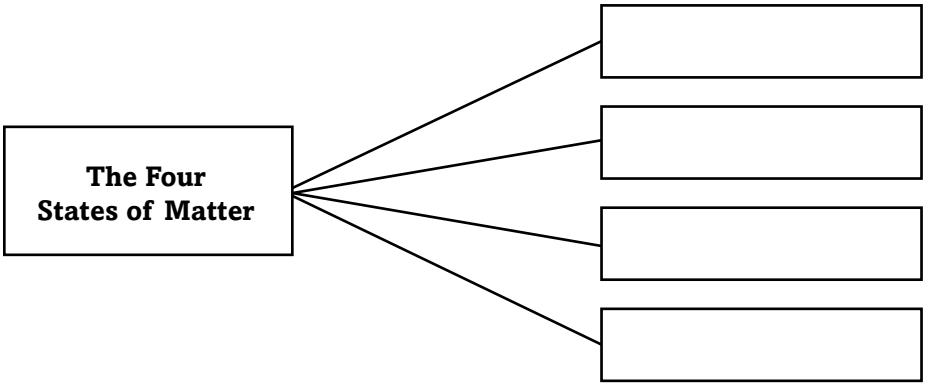
Main Idea	Details

What is matter?

I found this information on page _____.

Define matter, *and identify the 4 states of matter.*

Matter: _____



Solids

I found this information on page _____.

Create *a drawing of the particles in a crystalline solid and in an amorphous solid. Then write a caption explaining how the two types of solids differ.*

Crystalline Solid	Amorphous Solid

Caption: _____

_____

_____

Liquids

I found this information on page _____.

Contrast solids *with* liquids *by placing checks to show whether the property is true for solids, liquids, or both.*

Property	Solids	Liquids
Have a definite shape		
Have a definite volume		
Particles can move relative to each other		

Name _____ **Date** _____

Section 1 Matter (continued)

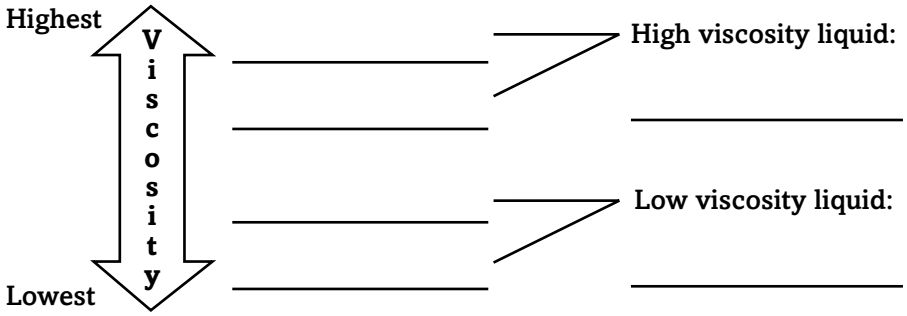
Main Idea

Details

Liquids

I found this information on page _____.

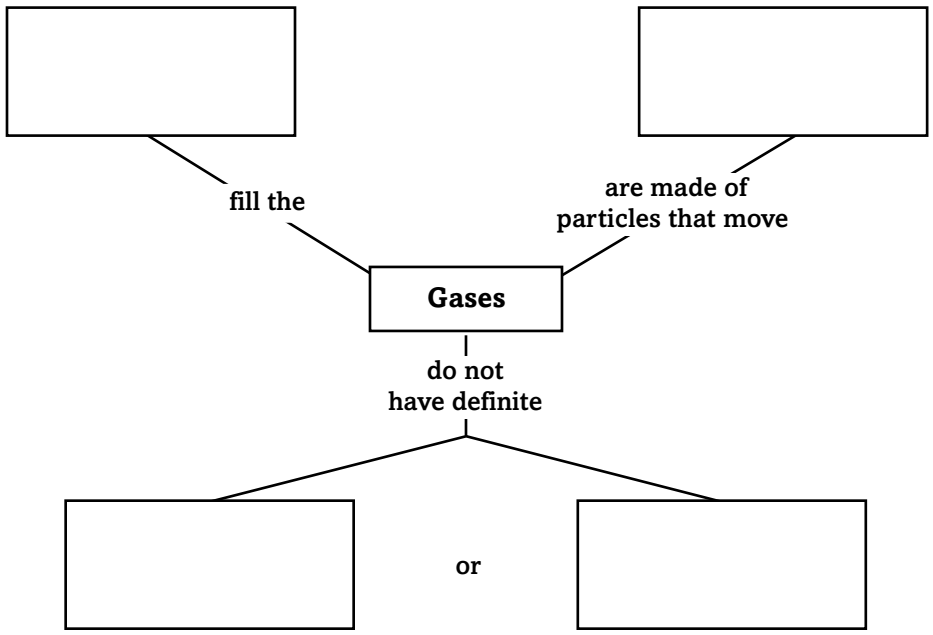
Sequence *four substances that you know according to viscosity. Then write a description of a liquid with high viscosity and a liquid with low viscosity.*



Gases

I found this information on page _____.

Organize *information about* gases.



Synthesize It

You can walk through air and swim through water, but you can't pass through a wall. Use what you have learned about matter to explain why this is true.

_____

_____

_____

Name _____ **Date** _____

States of Matter

Section 2 Matter Changes of State

Benchmarks—SC.A.1.3.4: The student knows that atoms in solids are close together and do not move around easily; in liquids, atoms tend to move farther apart; in gas, atoms are quite far apart and move around freely. Also covers: SC.A.1.3.1, SC.A.1.3.3, SC.A.1.3.5, SC.B.1.3.5, SC.H.1.3.5

Predict *three things that might be discussed in this section after reading the title and headings.*

1. _____
2. _____
3. _____

Review Vocabulary

Define *the term* energy *using a dictionary or your book.*

energy _____

New Vocabulary

Write a paragraph that explains the terms thermal energy, temperature, *and* heat. *Underline each term.*

thermal energy _____

temperature _____

heat _____

_____

_____

_____

_____

_____

_____

_____

Write a definition for each of the following terms.

melting _____

freezing _____

vaporization _____

condensation _____

Academic Vocabulary

Use a dictionary to define item.

item _____

Name _____ **Date** _____

Section 2 Matter Changes of State (continued)

Main Idea

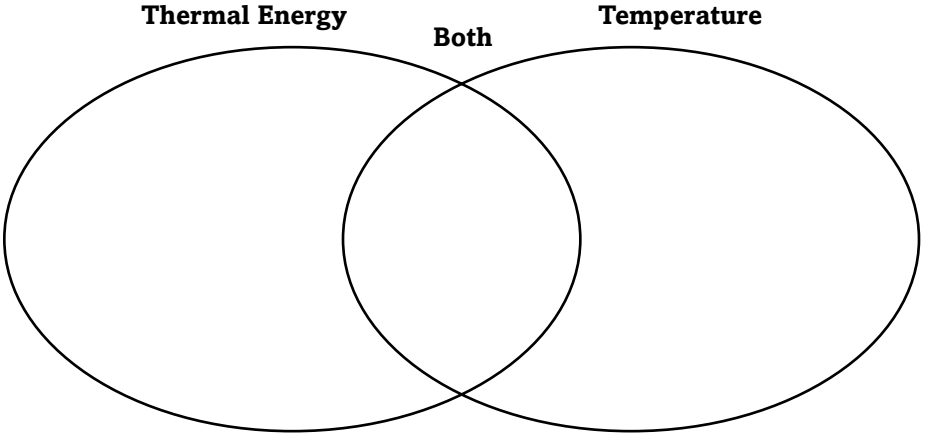
Details

Thermal Energy and Heat

I found this information on page _____.

Classify *each phrase to show whether it describes* **thermal energy, temperature,** *or* **both.**

- depends on the number of particles
- average energy of particles
- involves kinetic energy of particles
- total energy of particles



I found this information on page _____.

Create *a drawing to show a glass of lemonade with ice cubes in it. Use arrows to show the movement of thermal energy.*

Specific Heat

I found this information on page _____.

Complete *the table below on* **specific heat.**

	Rate at Which Temperature Changes	Example
Substances with high specific heats		
Substances with low specific heats		

Name _____ **Date** _____

Section 2 Matter Changes of State (continued)

Main Idea

Details

Changes Between the Solid and Liquid States

I found this information on page _____.

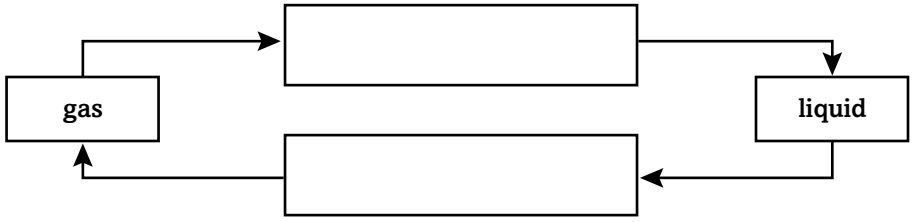
Compare melting *and* freezing *by completing the table.*

	Melting	Freezing
What is it?		
Is thermal energy released or absorbed?		

Changes Between the Liquid and Gas States

I found this information on page _____.

Distinguish *the changes between* gas *and* liquid states *by filling in the graphic organizer.*



Changes Between the Solid and Gas States

I found this information on page _____.

Summarize *information about* sublimation *and give an example of a substance that can sublimate.*

_____

_____

_____

_____

_____

Evaluate It

A person steps out of the swimming pool on a cool, windy day and feels a cold chill. Explain why the person feels so cold after coming out of the water.

_____

_____

_____

_____

Name _____ **Date** _____

States of Matter

Section 3 Behavior of Fluids

Benchmarks—SC.A.1.3.6: The student knows that equal volumes of different substances may have different masses.
Also covers: SC.A.1.3.1, SC.C.2.3.2, SC.H.1.3.2, SC.H.1.3.5, SC.H.1.3.6, SC.H.3.3.4, SC.H.3.3.5, SC.H.3.3.6

Scan *Section 3 of your book. Write three facts you discovered about fluids as you scanned the section.*

1. _____
2. _____
3. _____

Review Vocabulary

Define *the term* force *in a sentence to show its scientific meaning.*

force _____

New Vocabulary

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

pressure _____

buoyant force _____

Archimedes' principle _____

density _____

Pascal's principle _____

Academic Vocabulary

Use a dictionary to define expand *to show its scientific meaning.*

expand _____

Name _____ **Date** _____

Section 3 Behavior of Fluids (continued)

Main Idea | **Details**

Pressure

I found this information on page _____.

Complete *the* formula for pressure. *Then analyze how pressure changes with a change in force or area.*

$$\text{Pressure} = \frac{\square}{\square}$$

If force	and area	then pressure
increases	stays the same	
decreases	stays the same	
stays the same	increases	
stays the same	decreases	

I found this information on page _____.

Define atmospheric pressure *and describe why you do not feel it.*

_____

_____

_____

_____

_____

I found this information on page _____.

Create *and label a drawing to show how a weather balloon changes size as it rises into the atmosphere. Provide a caption to explain your illustration.*

Caption: _____

_____

Name _____ **Date** _____

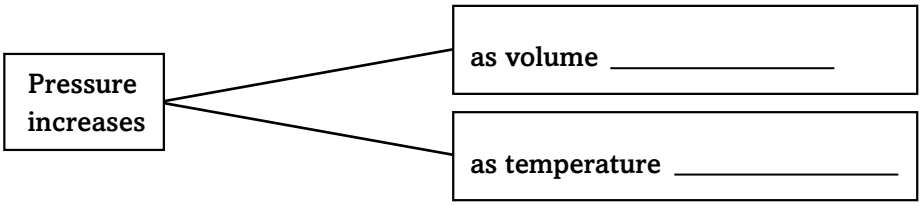
Section 3 Behavior of Fluids (continued)

Main Idea	Details

Changes in Gas Pressure

I found this information on page _____.

Complete *the graphic organizer to show how changes in* volume *and* temperature *can increase* pressure.



Float or sink?

I found this information on page _____.

Compare *the* buoyancy of an object *that is more dense than water with an object that is less dense than water. Draw and label arrows to show the buoyant force and weight of each.*

More Dense	Less Dense

Pascal's Principle

I found this information on page _____.

Summarize Pascal's principle, *in your own words and give an original example from your life that illustrates the principle.*

_____

_____

_____

_____

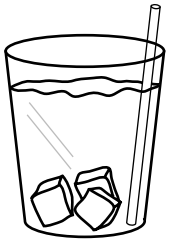
Evaluate It

Analyze the drawing of ice water. Explain what is wrong with this representation. Also explain why it is wrong.

_____

_____

_____



Name _____ **Date** _____

Tie It Together

Synthesize It

Describe a situation from daily life in which you have experienced each change of state identified below. Explain how thermal energy was involved in the change of state.

Condensation

Melting

Freezing

Evaporation

Name _____ **Date** _____

States of Matter 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.

States of Matter	After You Read
• There are four states of matter.	
• Solids take the shape of their containers.	
• Substances cannot change directly from a solid to a gas.	
• The air around you is putting pressure on your body.	

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 Self Check at the end of each section.
- ☐ Look over the Chapter Review at the end of the chapter.

SUMMARIZE IT

After reading this chapter, identify three things you have learned about states of matter.

_____

_____

_____

_____

Name _____ **Date** _____

Motion and Momentum

Sunshine State Standards—SC.C.1: The student understands that types of motion may be described, measured, and predicted. Also covers: SC.C.2

Before You Read

Preview the chapter and section titles and the section headings. Complete the two columns of the table by listing at least two ideas in each column.

K What I know	W What I want to find out

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

Science Journal

Describe how your motion changed as you moved from your school's entrance to your classroom.

Name _____ **Date** _____

Motion and Momentum

Section 1 What is motion?

Benchmarks—SC.C.1.3.1: The student knows that the motion of an object can be described by its position, direction of motion, and speed. Also covers: SC.H.1.3.5, SC.H.2.3.1

Preview *the section by reading the* What You'll Learn *statements. Write three questions that come to mind from reading these statements.*

1. _____
2. _____
3. _____

Review Vocabulary

Write a sentence that uses the word meter *to show its scientific meaning.*

meter _____

_____

New Vocabulary

Define *the new vocabulary terms to show their scientific meanings.*

speed _____

_____

average speed _____

_____

instantaneous speed _____

_____

velocity _____

_____

Academic Vocabulary

Use a dictionary to define displace.

displace _____

_____

Name _____ **Date** _____

Section 1 What is motion? (continued)

Main Idea	Details
Changing Position *I found this information on page* _____.	**Analyze** *the meaning of* relative motion. *Complete the sentences.* To determine whether something changes position, you must identify _____. An object changes position if _____. **Contrast** distance *and* displacement. *Draw a diagram showing distance and displacement for a person moving halfway around a park. Label the distance and displacement.*
Speed *I found this information on page* _____.	**Complete** *the equation for* calculating speed. **speed** (in meters/second) = _____ **Compare and contrast** average speed *and* instantaneous speed. *Give an example of average speed, one of instantaneous speed, and one in which instantaneous speed changes.* **Average speed:** _____ **Instantaneous speed:** _____ **Example:** _____

Name _____ **Date** _____

Section 1 What is motion? (continued)

Main Idea

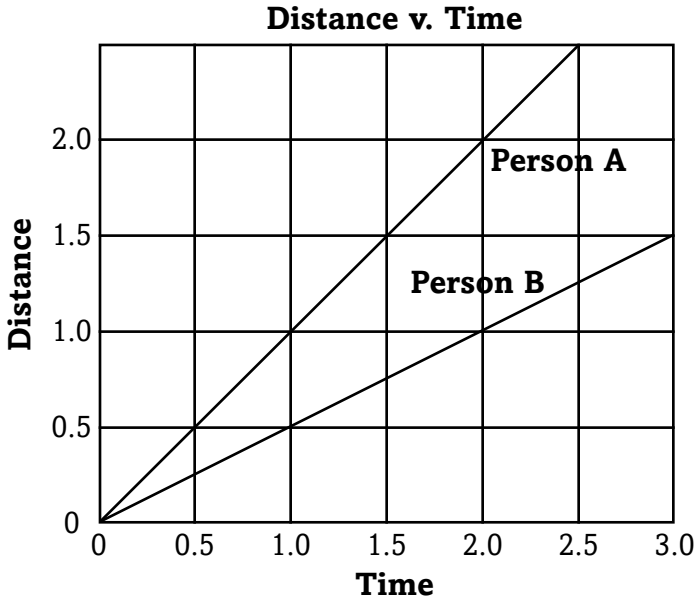
Details

Graphing Motion

I found this information on page _____.

Analyze ***the*** **distance-time graph.** ***Graph lines to show***

- Person C whose speed is 2 m/s.
- Person D who is standing still.



Velocity

I found this information on page _____.

Analyze ***how an object's*** **velocity** ***can change. Identify three ways in which velocity can change.***

1. _____

2. _____

3. _____

CONNECT IT

Think of a time recently when you might have run around a track or traveled in a car or bus. Describe the motion thoroughly. Remember to include how your velocity changed.

_____

_____

_____

Name _____ **Date** _____

Motion and Momentum

Section 2 Acceleration

Benchmarks—SC.C.1.3.1: The student knows that the motion of an object can be described by its position, direction of motion, and speed. Also covers: SC.H.1.3.5

Predict *three things you will learn in this section. Read the section title and subheadings to help you make your predictions.*

1. _____
2. _____
3. _____

Review Vocabulary

Define kilogram. *Then use it in a sentence to show its scientific meaning.*

kilogram _____

New Vocabulary

Use your book to write the scientific definition of acceleration. *Then use it in a sentence to show its scientific meaning.*

acceleration _____

Academic Vocabulary

Use a dictionary to find the mathematical definition of positive. *Then use it in a sentence to show its scientific meaning.*

positive _____

Name _____ **Date** _____

Section 2 Acceleration (continued)

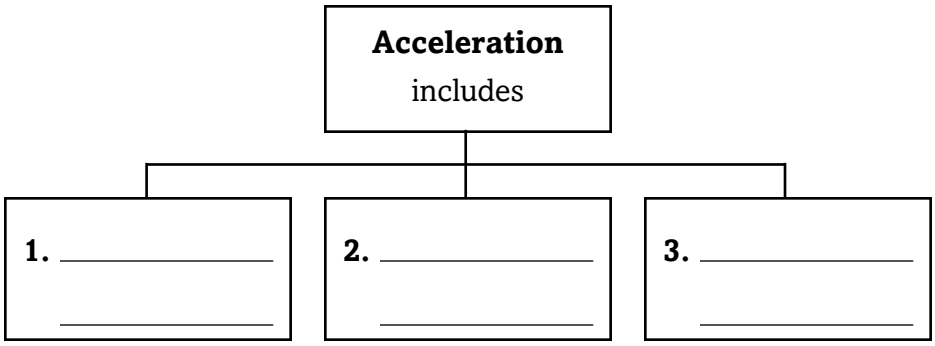
Main Idea

Details

Acceleration is a Change in Velocity

I found this information on page _____.

Distinguish *the 3 ways that an object can accelerate. Complete the concept map.*



Calculating Acceleration

I found this information on page _____.

Complete *the equation to* calculate acceleration *for objects moving in a straight line.*

Acceleration Equation

$$\text{acceleration (in m/s}^2\text{)} = \frac{\text{\_\_\_\_\_ (in m/s)} - \text{\_\_\_\_\_ (in m/s)}}{\text{time (in s)}}$$

Analyze *the equation above to rewrite it using symbols.*

$$a = \frac{\quad}{\quad}$$

I found this information on page _____.

Compare and contrast positive *and* negative acceleration *in a straight line by completing the table.*

Types of Acceleration		
	Positive	Negative
Change in speed		
Relationship of initial speed to final speed	Initial speed is less than final speed.	

Name _____ **Date** _____

Section 2 Acceleration (continued)

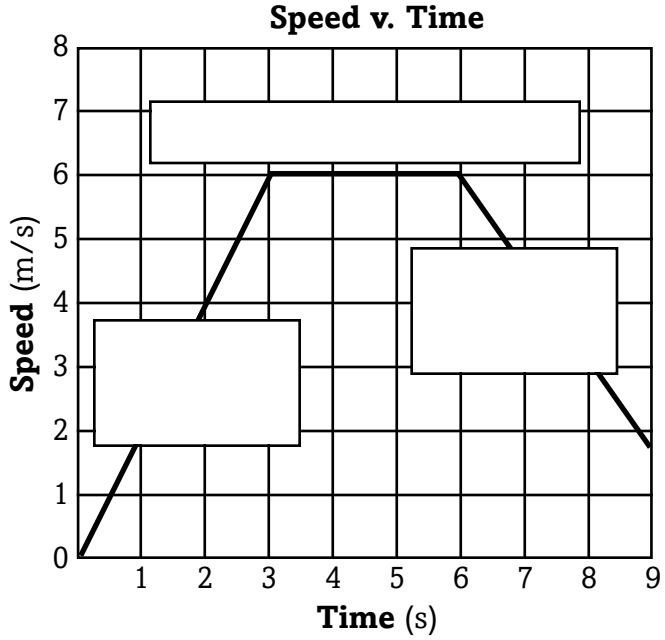
Main Idea

Calculating Acceleration

I found this information on page _____.

Details

Analyze *the acceleration graph below. Label the parts of the graph showing* zero acceleration, positive acceleration, *and* negative acceleration.



Summarize *how you can identify each type of acceleration on an acceleration graph. Complete the sentences.*

A line for positive acceleration slopes _____.

A line for negative acceleration slopes _____.

A line for zero acceleration _____.

Synthesize It

A jogger runs around a circular track. She starts at a speed of 2 m/s, then speeds up to 6 m/s. She runs at that speed for 20 minutes, and then comes to a stop. Describe her acceleration. Is it ever zero?

_____

_____

_____

_____

Name _____ **Date** _____

Motion and Momentum

Section 3 Momentum

Benchmarks—SC.C.2.3.5: The student understands that an object in motion will continue at a constant speed and in a straight line until acted upon by a force and that an object at rest will remain at rest until acted upon by a force. Also covers: SC.H.1.3.4, SC.H.1.3.5, SC.H.1.3.6, SC.H.2.3.1, SC.H.3.3.4, SC.H.3.3.5, SC.H.3.3.6

Scan *the headings, bold words, and illustrations in Section 3. Write two facts you discovered about momentum as you scanned the section.*

1. _____

2. _____

Review Vocabulary

Define mass *to show its scientific meaning.*

mass _____

New Vocabulary

Use your book or a dictionary to define the new vocabulary terms.

inertia _____

momentum _____

law of conservation of momentum _____

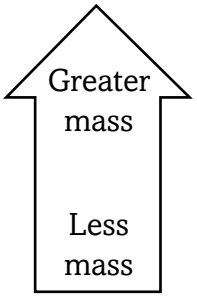
Academic Vocabulary

Use a dictionary to define predict *to show its scientific meaning.*

predict _____

Name _____ **Date** _____

Section 3 Momentum (continued)

Main Idea	Details
Mass and Inertia *I found this information on page _____.*	**Label** *the arrow below to show the* **relationship between mass and inertia.**  Has _____ inertia Has _____ inertia
Momentum *I found this information on page _____.*	**List** *two factors that affect an object's* **momentum.** **1.** _____ **2.** _____ affect → **momentum**
I found this information on page _____.	**Summarize** *the* **calculation of momentum** *in words on the lines below.* _____ _____ _____
	Complete *the equation used to calculate momentum.* **momentum** = _____ (in kg) × _____ (in m/s) (in kg • m/s)
	Analyze *the equation above and rewrite it using symbols. Use the letter* **p** *to represent momentum.* _____
Conservation of Momentum *I found this information on page _____.*	**Summarize** *the law of conservation of momentum in your own words. Two balls that collide are an example.* _____ _____ _____

Name _____ **Date** _____

Section 3 Momentum (continued)

Main Idea

Using Momentum Conservation

I found this information on page _____.

Details

Model *the* law of conservation of momentum *when a moving object of small mass collides with an object of greater mass that is initially at rest. In the first row, model what happens if the two objects stick together. In the second, model what happens if the two bounce away from each other.*

- Use arrows to show the size and direction of each object's momentum.
- Label each object with its mass, speed, and direction.

	Before Impact	After Impact
Stick together		
Bounce off		

Connect It

At a science fair, contestants can win a prize if they can roll a ball with a specific momentum chosen by the presenter. The contestants have a choice of two balls. One has greater mass than the other. Which would you choose, and why?

_____

_____

_____

_____

Name _____ **Date** _____

Tie It Together

Work with a partner to perform the experiment below to explore changes in momentum.

Materials

wooden block
ball that will roll easily
meter stick
stopwatch
tape
triple-beam balance

1. Find and record the mass of the block and ball, using the balance.

   Block: _____

   Ball: _____

2. Mark a line on the floor with tape. Place the block on the line. Measure a distance of 5 m from the line and mark a second line.
3. Practice rolling the ball until you can roll it from the 5-meter line to the block.
4. Roll the ball from the 5-meter line to the block. Use the stopwatch to time the roll. Then measure how far the block moved from the line when the ball hit it. Use a table like the one below to record your data.
5. Repeat step 4 four more times, varying the speed with which you roll the ball. Record the time and distance for each trial.
6. Use your data to calculate the speed for each trial. Then use that information and the mass of the ball to calculate the momentum of the ball in each trial.
7. Analyze your data. What relationship do you see between the momentum of the ball and the distance the block moved? Why do you think this relationship exists?

_____

_____

_____

_____

_____

Data Table

Trial	Time	Speed	Momentum	Distance Block Moved
1				
2				
3				
4				
5				

Name _____ **Date** _____

Motion and Momentum 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.

K What I know	W What I want to find out	L What I learned

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 Self Check at the end of each section.
- ☐ Look over the Chapter Review at the end of the chapter.

SUMMARIZE IT **After reading this chapter, identify three things you have learned about motion and momentum.**

_____

_____

_____

_____

Name _____ **Date** _____

Force and Newton's Laws

Sunshine State Standards—SC.C.2: The student understands that the types of force that act on an object and the effect of that force can be described, measured, and predicted. Also covers: SC.A.1

Before You Read

Preview the chapter and section titles and the section headings. List at least two ideas for each section in each column.

K What I know	W What I want to find out

FOLDABLES™ Study Organizer

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

Science Journal

Describe three examples of pushing or pulling an object. How did the object move?

Name _____ **Date** _____

Force and Newton's Laws

Section 1 Newton's First Law

Benchmarks—SC.C.2.3.5: understands that an object in motion will continue at a constant speed and in a straight line until acted upon by a force and that an object at rest will remain at rest until acted upon by a force. Also covers: SC.C.2.3.1, SC.C.2.3.2, SC.C.2.3.3, SC.C.2.3.4, SC.H.1.3.5, SC.H.3.3.5

Predict *three topics that will be discussed in Section 1 as you scan the headings.*

1. _____

2. _____

3. _____

Review Vocabulary

velocity

Define velocity. *Use* velocity *in a sentence to show its scientific meaning.*

_____

_____

_____

New Vocabulary

Write the correct vocabulary term next to each definition.

_____ force that opposes sliding between two touching surfaces

_____ two or more forces that act on an object and do not cancel each other

_____ combination of all of the forces acting on an object

_____ two or more forces whose effects cancel each other

_____ states that if the net force acting on an object is zero, the object will remain at rest or, if it is moving, continue to move in a straight line with constant speed

_____ a push or pull

Academic Vocabulary

constant

Use a dictionary to define constant *to show its scientific meaning.*

_____

_____

Name _____ **Date** _____

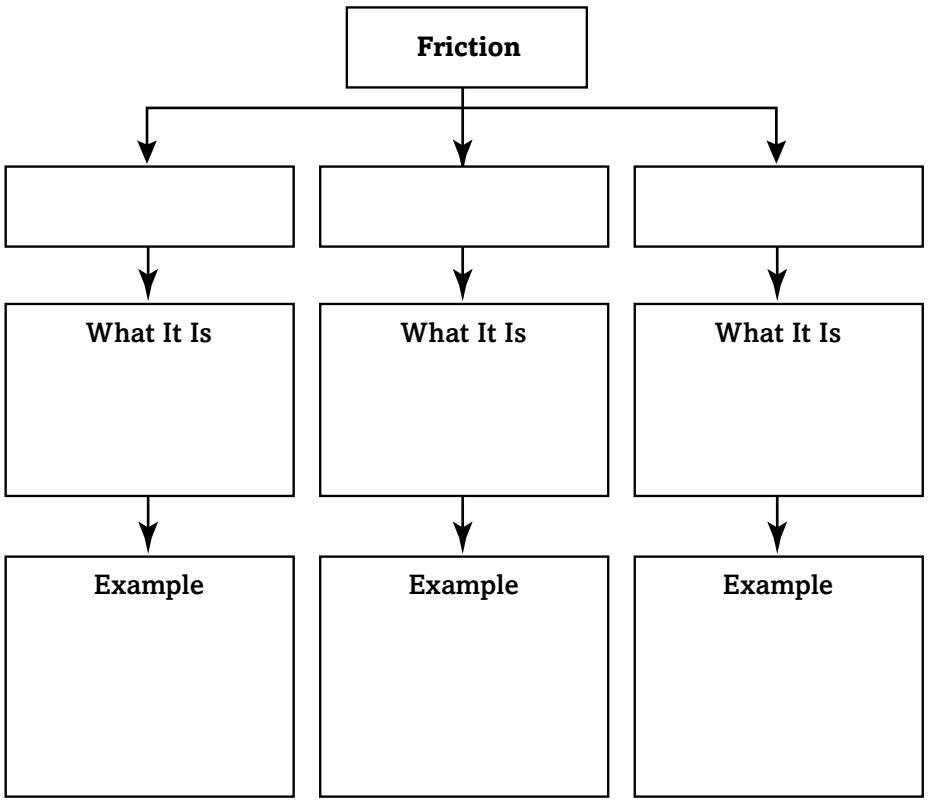
Section 1 Newton's First Law (continued)

Main Idea	Details
Force *I found this information on page* _____.	**Analyze** *how forces combine to form a* net force. If forces act in the same direction _____. If forces act in opposite directions _____ _____.
I found this information on page _____.	**Create** *two drawings to show how an object is affected by* balanced *and* unbalanced forces. *Use arrows and labels to show the forces and motion. Below each drawing, explain the effect of the forces.* **Balanced Forces** _____ _____ **Unbalanced Forces** _____ _____

Name _____ **Date** _____

Section 1 Newton's First Law (continued)

Main Idea	Details
Newton's First Law of Motion *I found this information on page _____.*	**Summarize** Newton's first law of motion *in your own words.*
Friction *I found this information on page _____.*	**Compare** *the three types of friction. Complete the concept map.*



SYNTHESIZE IT

A carpenter uses sandpaper to smooth a rough piece of wood. State what type of friction the carpenter is using.

_____

_____

_____

Name _____ **Date** _____

Force and Newton's Laws

Section 2 Newton's Second Law

Benchmarks—SC.C.2.3.6: explains and shows the ways in which a net force can act on an object.
Also covers: SC.A.1.3.2, SC.C.2.3.2, SC.C.2.3.7, SC.H.1.3.1, SC.H.1.3.5, SC.H.3.3.5

Read *the* What You'll Learn *statements. Write two questions that come to mind as you read the statements.*

1. _____

2. _____

Review Vocabulary

Define acceleration *to show its scientific meaning.*

acceleration _____

_____

New Vocabulary

Use your book to define each term.

Newton's second law of motion _____

_____

_____

weight _____

_____

_____

center of mass _____

_____

_____

Academic Vocabulary

Use a dictionary to define require.

require _____

_____

Name _____ **Date** _____

Section 2 Newton's Second Law (continued)

Main Idea

Details

Force and Acceleration

I found this information on page _____.

Summarize Newton's second law of motion *in your own words. Then complete the equation used to calculate acceleration.*

_____

_____

$$\text{acceleration (in meters/second}^2) = \frac{\text{\_\_\_\_\_ in newtons}}{\text{\_\_\_\_\_ in kilograms}}$$

Gravity

I found this information on page _____.

Complete *the table to show how mass and distance affect* gravitational force.

If . . .	Then gravity . . .
mass is larger	
mass is smaller	
distance increases	
distance decreases	

Distinguish *between* weight *and* mass *by explaining what would happen to the weight and mass of an object if it were taken from Earth to Mars.*

On Mars, the weight would _____ because _____ _____. The mass would _____ because _____.

Using Newton's Second Law

I found this information on page _____.

Contrast speeding up, slowing down, *and* turning *as forms of acceleration. Identify the direction of the force in each case.*

Acceleration	Direction of Force
speeding up	→
slowing down	→
turning	→

Name _____ **Date** _____

Section 2 Newton's Second Law (continued)

Main Idea	Details

Circular Motion

I found this information on page _____.

Model *how a satellite stays in orbit around Earth. Label the direction of* centripetal force *and the direction of the satellite's motion.*

Air Resistance

I found this information on page _____.

Summarize *the two factors that affect the* air resistance *on a falling object.*

1. _____

2. _____

I found this information on page _____.

Complete *the chart below about the properties of air resistance.*

The direction of air resistance is . . .	
It increases as an object . . .	
When it equals the object's weight, the net force is . . .	
When it balances the force of gravity, the object falls . . .	

CONNECT IT

The gravitational force on the Moon is one-sixth the gravitational force on Earth. Hypothesize what it would be like to jump or play ball on the Moon.

_____

_____

_____

Name _____ **Date** _____

Force and Newton's Laws

Section 3 Newton's Third Law

Benchmarks—SC.H.1.3.4: The student knows that accurate record keeping, openness, and replication are essential to maintaining an investigator's credibility with other scientists and society. Also covers: SC.A.1.3.2, SC.C.2.3.5, SC.C.2.3.7, SC.H.1.3.5, SC.H.1.3.7, SC.H.3.3.4

Scan *the list below to preview Section 3 of your book.*

- ☐ Read all section titles.
- ☐ Read all bold words.
- ☐ Look at all of the pictures.
- ☐ Think about what you already know about forces and gravity.

Write two facts you discovered about Newton's third law of motion as you scanned the section.

1. _____

2. _____

Review Vocabulary

Define force *to show its scientific meaning.*

force

_____

_____

New Vocabulary

Use your book to define **Newton's third law of motion.**

Newton's third law of motion

_____

_____

Academic Vocabulary

Use a dictionary to define **react.**

react

_____

_____

Name _____ **Date** _____

Section 3 Newton's Third Law (continued)

Main Idea | **Details**

Action and Reaction

I found this information on page _____.

Summarize Newton's third law of motion *in your own words.*

_____

_____

Model *how* action *and* reaction forces *act in pairs.*

- Draw a situation in which a force pair acts.
- Use arrows to label the action and reaction forces.

Analyze *how the forces act and how the motions of the objects change.*

_____

_____

_____

_____

I found this information on page _____.

Sequence *the events in a rocket launch that show Newton's third law. Complete the flow chart.*

Rocket fuel is ignited, producing hot gas.

↓

_____ **Action force**

↓

_____ **Reaction force**

Name _____ **Date** _____

Section 3 Newton's Third Law (continued)

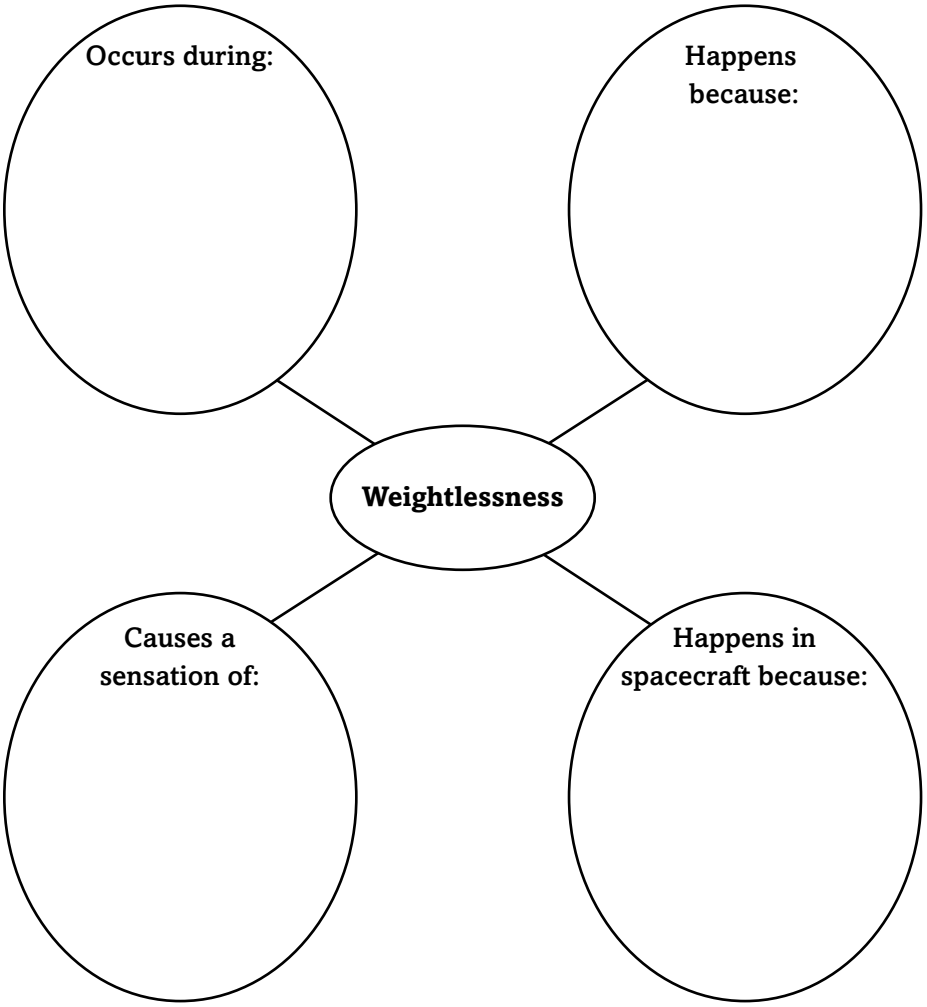
Main Idea

Weightlessness

I found this information on page _____.

Details

Organize *information about* weightlessness. *Complete the concept web.*



Summarize It

Explain why action and reaction forces do not cancel each other's effects. Give an example.

_____

_____

_____

_____

_____

Name _____ **Date** _____

Tie It Together

Think of an activity that you enjoy in your daily life. Describe how each of Newton's laws applies to your chosen activity. Then, draw a diagram to show how you use force in the activity.

Newton's First Law of Motion: _____

Newton's Second Law of Motion: _____

Newton's Third Law of Motion: _____

Diagram:

Name _____ **Date** _____

Force and Newton's Laws

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.

K What I know	W What I want to find out	L What I learned

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 Self Check at the end of each section.
- ☐ Look over the Chapter Review at the end of the chapter.

SUMMARIZE IT **After reading this chapter, identify three things that you have learned about forces and Newton's laws.**

_____

_____

_____

_____

Name _____ **Date** _____

Electromagnetic Waves

Sunshine State Standards—SC.A.2: The student understands the basic principles of atomic theory.
Also covers: SC.B.1, SC.H.1

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.

Before You Read	Electromagnetic Waves
	• A wave transfers energy from one place to another without transferring matter.
	• All electromagnetic waves produce light that you can see.
	• Some electromagnetic waves can damage your skin.
	• Radio and TV stations can broadcast at any frequency.

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

Science Journal

Describe how sitting in sunlight makes you feel. How can sunlight affect your skin?

Name _____ **Date** _____

Electromagnetic Waves

Section 1 The Nature of Electromagnetic Waves

Benchmarks—SC.B.1.3.6: The student knows the properties of waves; that each wave consists of a number of crests and troughs; and the effects of different media on waves. Also covers: SC.A.2.3.1, SC.B.1.3.3, SC.C.1.3.2, SC.C.2.3.1

Skim *through Section 1 of your book. Write three questions that come to mind from reading the headings and examining the illustrations.*

1. _____
2. _____
3. _____

Review Vocabulary

Define wave *to show its scientific meaning.*

wave _____

New Vocabulary

Use your book to define the following terms. Then write a sentence using each term.

electromagnetic wave _____

electromagnetic radiation _____

Academic Vocabulary

Use a dictionary to define transfer *to show its scientific meaning.*

transfer _____

Name _____ **Date** _____

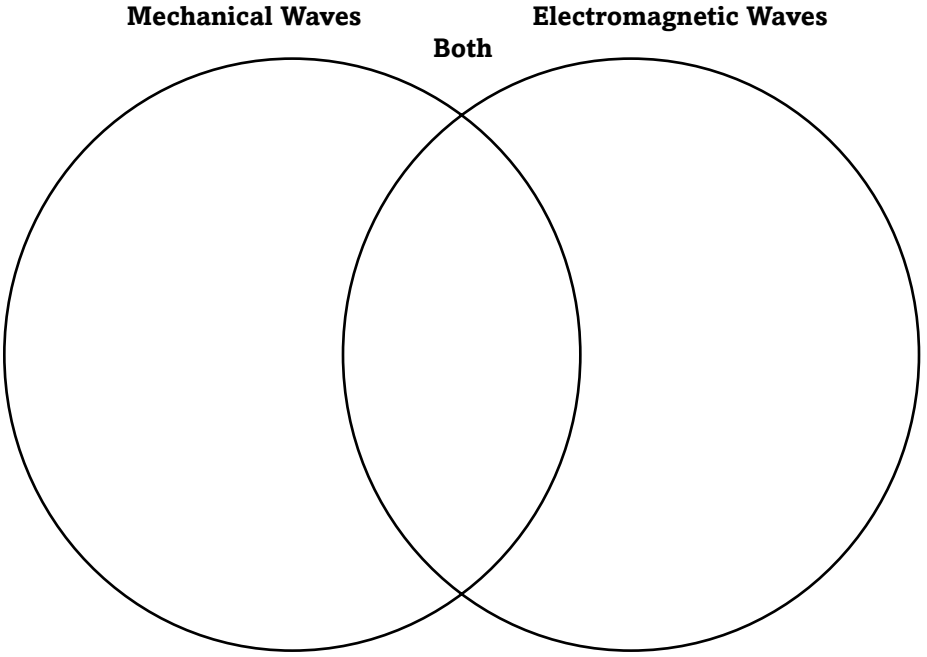
Section 1 The Nature of Electromagnetic Waves (continued)

Main Idea | **Details**

Waves in Space

I found this information on page _____.

Compare and contrast mechanical waves *and* electromagnetic waves *by completing the Venn diagram with at least seven different facts.*



Forces and Fields

I found this information on page _____.

Distinguish *between the 3 types of force fields. List each type and its effect in the chart below.*

Force Fields	
Type of force field	Effect

Name _____ **Date** _____

Section 1 The Nature of Electromagnetic Waves (continued)

Main Idea | **Details**

Making Electromagnetic Waves and Properties of Electromagnetic Waves

I found this information on page _____.

Model *how* electromagnetic waves *are produced. Then write a caption explaining your model.*

Caption:

_____

_____

_____

_____

I found this information on page _____.

Complete *the outline below to organize information about the* properties of electromagnetic waves.

Properties of Electromagnetic Waves

I. Wavelength and frequency

A. One complete vibration of the particle creates

_____

B. The frequency of an electromagnetic wave is

_____

II. Electromagnetic radiation

A. _____

B. _____

SYNTHESIZE IT

Sketch waves of different wavelengths. Label the wavelength in each wave. Identify which of your waves would have the highest and lowest frequencies.

Name _____ **Date** _____

Electromagnetic Waves

Section 2 The Electromagnetic Spectrum

Benchmarks—SC.B.1.3.3: The student knows the various forms in which energy comes to Earth from the Sun.
Also covers: SC.A.2.3.3, SC.B.1.3.6, SC.H.1.3.4, SC.H.1.3.5, SC.H.1.3.7

Scan *the headings of Section 2 in your book. Identify three topics that will be discussed.*

1. _____

2. _____

3. _____

Review Vocabulary

Define prism *to show its scientific meaning.*

prism _____

New Vocabulary

Write a paragraph describing electromagnetic radiation. Use all of the vocabulary words in ways that show their scientific meanings.

electromagnetic spectrum _____

_____

radio wave _____

infrared wave _____

_____

visible light _____

ultraviolet radiation _____

X ray _____

_____

gamma ray _____

_____

_____

Academic Vocabulary

Use a dictionary to define vary *to show its scientific meaning.*

vary _____

Name _____ **Date** _____

Section 2 The Electromagnetic Spectrum (continued)

Main Idea

Details

Electromagnetic Waves

I found this information on page _____.

Sequence *the 6* groups of electromagnetic waves *from the lowest frequency and longest wavelength to the highest frequency and shortest wavelength.*

1. _____ **4.** _____

2. _____ **5.** _____

3. _____ **6.** _____

Radio Waves

I found this information on page _____.

Create *a graphic organizer to identify at least six applications of radio waves.*

Infrared Waves

I found this information on page _____.

Identify *two key facts about* infrared waves.

1. Infrared waves are emitted strongly by _____ _____.

2. Infrared waves can be detected by _____ _____.

Visible Light

I found this information on page _____.

Summarize *why* visible light *has different colors.*

_____

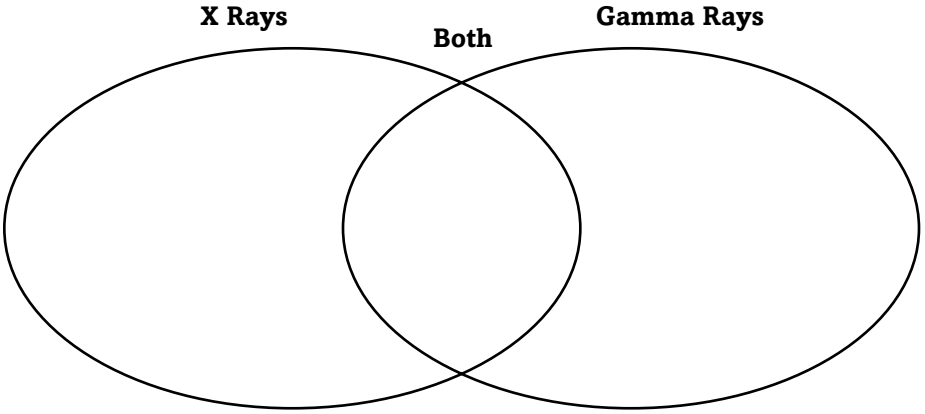
_____

_____

_____

Name _____ **Date** _____

Section 2 The Electromagnetic Spectrum (continued)

Main Idea	Details
Ultraviolet Radiation *I found this information on page _____.*	**Distinguish** *the effects of* ultraviolet radiation *on the human body.* Harmful effect(s): _____ Helpful effect(s): _____
X Rays and Gamma Rays *I found this information on page _____.*	**Compare and contrast** X rays *and* gamma rays. *Complete the Venn diagram.* 
Astronomy with Different Wavelengths *I found this information on page _____.*	**Analyze** *why astronomers use satellites to study objects in space that do not produce visible light.* _____ _____ _____ _____

SUMMARIZE IT Explain how electromagnetic waves are used by air-traffic controllers to monitor and track airplane traffic.

_____

_____

_____

_____

Name _____ **Date** _____

Electromagnetic Waves

Section 3 Using Electromagnetic Waves

Benchmarks—SC.H.1.3.4: The student knows that accurate record keeping, openness, and replication are essential to maintaining an investigator's credibility with other scientists and society. Also covers: SC.H.1.3.5, SC.H.1.3.6, SC.H.1.3.7, SC.H.3.3.4, SC.H.3.3.5, SC.H.3.3.6

Scan *the list below to preview Section 3 of your book.*

- ☐ Read all section headings.
- ☐ Read all bold words.
- ☐ Read all charts and graphs.
- ☐ Look at all of the pictures.
- ☐ Think about what you already know about electromagnetic waves.

Write three facts you discovered about using electromagnetic waves as you scanned this section.

1. _____

2. _____

3. _____

Review Vocabulary

Define satellite *to show its scientific meaning.*

satellite _____

New Vocabulary

Use your book to define the following terms.

carrier wave _____

_____

_____

Global Positioning System _____

_____

_____

Academic Vocabulary

Use a dictionary to define enable *to show its scientific meaning.*

enable _____

Name _____ **Date** _____

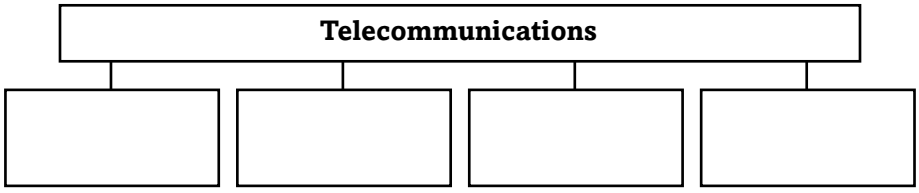
Section 3 Using Electromagnetic Waves (continued)

Main Idea | **Details**

Telecommunications

I found this information on page _____.

Organize *examples of* telecommunication.



Using Radio Waves

I found this information on page _____.

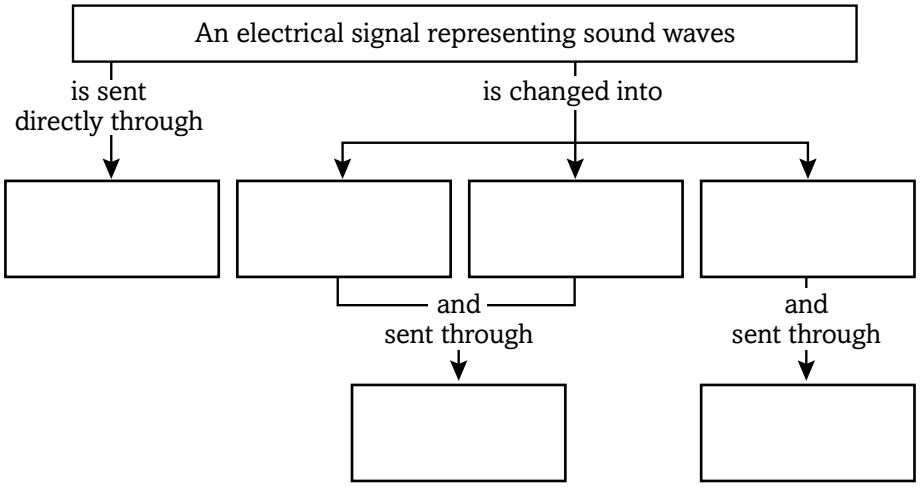
Sequence ***the process by which radio transmissions travel from a station to your radio. Include information about both AM and FM radio. The first step has been completed for you.***

1. A radio station broadcasts its assigned frequency as a carrier wave.
2. _____
3. _____
4. _____
5. _____

Telephones

I found this information on page _____.

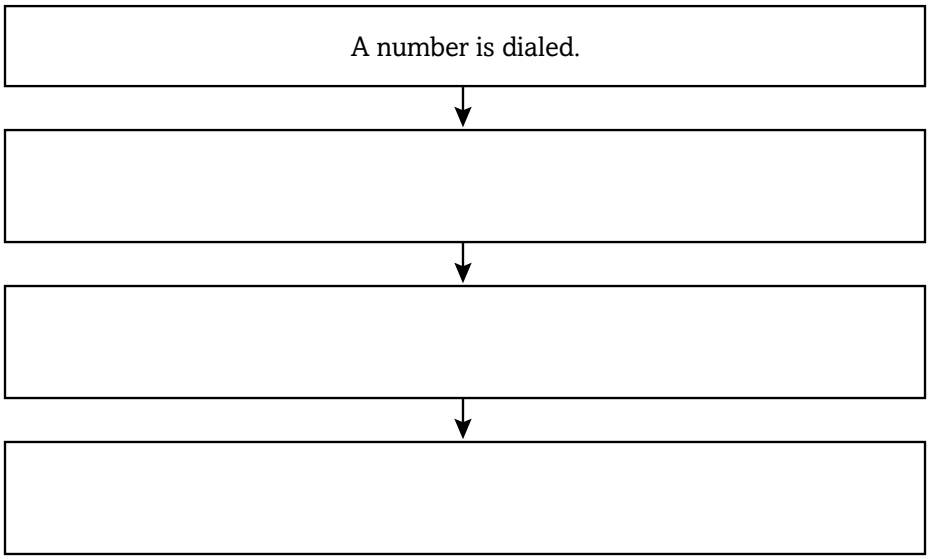
Classify ***the different ways electrical signals from a telephone can be sent to a receiving telephone.***

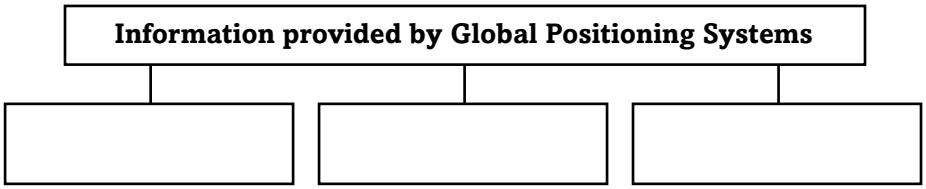


Name _____ **Date** _____

Section 3 Using Electromagnetic Waves (continued)

Main Idea	Details
Telephones *I found this information on page _____.*	**Sequence** *the events that occur when a pager is used.*
Communication Satellites *I found this information on page _____.*	**Summarize** *how radio signals are sent to the other side of the world.*
The Global Positioning System *I found this information on page _____.*	**Complete** *the graphic organizer below to identify the information provided by a* Global Positioning System.





CONNECT IT

Describe at least two possible uses of a Global Positioning System.

_____

_____

_____

_____

Name _____ **Date** _____

Tie It Together

Design a Banner

With a partner, create a large banner or poster about different types of electromagnetic radiation.

- *Draw the electromagnetic spectrum on your banner.*
- *Identify each type of electromagnetic wave and its wavelength range.*
- *Include interesting facts and uses for each type of wave.*
- *Add one or two pictures for each type of wave to show how people use that type of radiation.*

Name _____ **Date** _____

Electromagnetic Waves 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.

Electromagnetic Waves	After You Read
• A wave transfers energy from one place to another without transferring matter.	
• All electromagnetic waves produce light that you can see.	
• Some electromagnetic waves can damage your skin.	
• Radio and TV stations can broadcast at any frequency.	

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 Self Check at the end of each section.
- ☐ Look over the Chapter Review at the end of the chapter.

SUMMARIZE IT **After reading this chapter, identify three things you have learned about electromagnetic waves.**

_____

_____

_____

_____

Name _____ **Date** _____

Thermal Energy

Sunshine State Standards—SC.B.2: The student understands the interaction of matter and energy.
Also covers: SC.A.1, SC.B.1

Before You Read

Think about the term thermal energy. *List as many words as you can think of that use* therm- *as part of their root word.*

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

Science Journal

Describe five things that you do to make yourself feel warmer or cooler.

Name _____ **Date** _____

Thermal Energy

Section 1 Temperature and Thermal Energy

Benchmarks—SC.A.1.3.3: The student knows that temperature measures the average energy of motion of the particles that make up the substance. Also covers: SC.B.1.3.2, SC.B.1.3.4, SC.H.1.3.5

Skim *through Section 1 of your text. Write three topics that might be discussed in this section.*

1. _____
2. _____
3. _____

Review Vocabulary

Define *the following term using your book or a dictionary.*

kinetic energy _____

New Vocabulary

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

temperature _____

thermal energy _____

Academic Vocabulary

Use a dictionary to define random. *Then use random in a sentence to show its scientific meaning.*

random _____

Name _____ **Date** _____

Section 1 Temperature and Thermal Energy (continued)

Main Idea **Details**

What is temperature?

I found this information on page _____.

Complete *the paragraph about* **temperature.**

Molecules are always _____. Energy of motion is called _____. Molecules have more _____ when they are moving _____. Temperature is _____ _____.

Measuring Temperature

I found this information on page _____.

Compare *the three temperature scales in the chart below.*

Characteristics of Each Scale	Fahrenheit	Celsius	Kelvin
Temperature at which water freezes			
Temperature at which water boils			
Number of degrees between water's freezing and boiling points			

I found this information on page _____.

Organize *the formulas from your book into the conversion chart.*

	Formula	Break the calculation down
Fahrenheit to Celsius		
Celsius to Fahrenheit		
Celsius to Kelvin		

Name _____ **Date** _____

Main Idea

Details

Thermal Energy

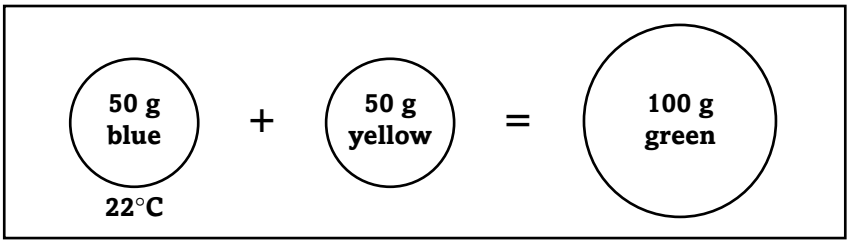
I found this information on page _____.

Compare *the* potential energy *of molecules with the potential energy of a ball. Complete the statements that have been started for you.*

Potential Energy Statements	Ball Analogy Statement
1. Molecules in a material exert attractive forces on each other.	Gravity exerts an _____ _____
2. Molecules in a material have potential energy.	A ball _____ has potential energy.
3. As molecules move closer together or farther apart, potential energy changes.	As a ball moves closer to or farther from Earth's surface, _____

I found this information on page _____.

Synthesize *Suppose you have two balls of colored dough, each at 22°C. One ball is blue, the other is yellow. When the two balls are mixed together, their total mass is 100g of green dough. Mark the statements that are true about this thermal energy analogy. Correct any false statements so they become true.*



_____ The mass of the green dough is twice the mass of the blue dough.

_____ The mass of the green dough is equal to the sum of the mass of the yellow and the blue dough.

_____ The thermal energy of the green dough is equal to twice the sum of thermal energy of the yellow and the blue dough.

Name _____ **Date** _____

Thermal Energy

Section 2 Transferring Thermal Energy

Benchmarks—SC.B.1.3.5: The student knows the processes by which thermal energy tends to flow from a system of higher temperature to a system of lower temperature. Also covers: SC.H.1.3.5

Use the checklist below to preview Section 2 of your text.

- ☐ Read all section titles.
- ☐ Read all bold words.
- ☐ Read all charts and graphs.
- ☐ Look at all the pictures and read their captions.
- ☐ Think about what you already know about heat.

Write three facts you discovered about heat.

1. _____

2. _____

3. _____

Review Vocabulary

Use the term* electromagnetic wave *in a scientific sentence.

electromagnetic wave

_____

_____

New Vocabulary

Define ***Read the definitions below, and write the key term on the blank in the left column.***

_____ transfer of thermal energy by the movement of particles in a gas or liquid

_____ transfer of thermal energy by direct contact by collisions between particles

_____ thermal energy that is transferred from a substance at a higher temperature to a substance at a lower temperature

_____ material that transfers heat easily

_____ amount of heat needed to raise the temperature of 1 kg of a substance by 1°C

_____ transfer of energy by electromagnetic waves

Name _____ **Date** _____

Section 2 Transferring Thermal Energy (continued)

Main Idea

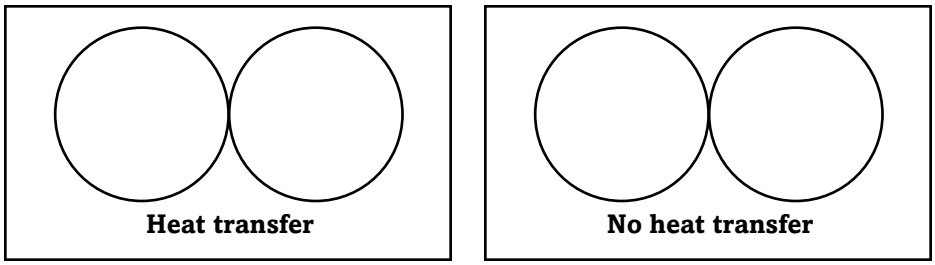
Details

Heat and Thermal Energy

I found this information on page _____.

Label ***the two drawings to illustrate the statement: Heat is transferred when objects that differ in temperature are brought into contact.***

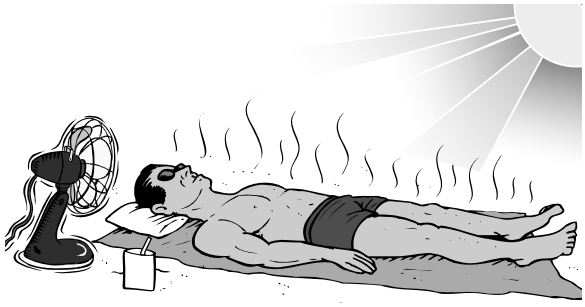
- Label the temperature of each object.
- Draw an arrow showing the direction of heat transfer.



Conduction, Radiation, and Convection

I found this information on page _____.

Analyze ***the drawing below to help classify each type of energy transfer as*** **conduction, convection,** ***or*** **radiation.**



The Sun's rays heat the sand particles by _____.

Body heat is transferred to the air by _____.

Cool air pushes in to replace warm air flow by natural _____.

Heat is transferred from sand to towel to body by _____.

Heat from the Sun warms iced tea by _____.

The fan pushes air molecules by forced _____.

Warmer molecules move more quickly, transferring heat throughout the iced tea by _____.

Name _____ **Date** _____

Section 2 Transferring Thermal Energy (continued)

Main Idea

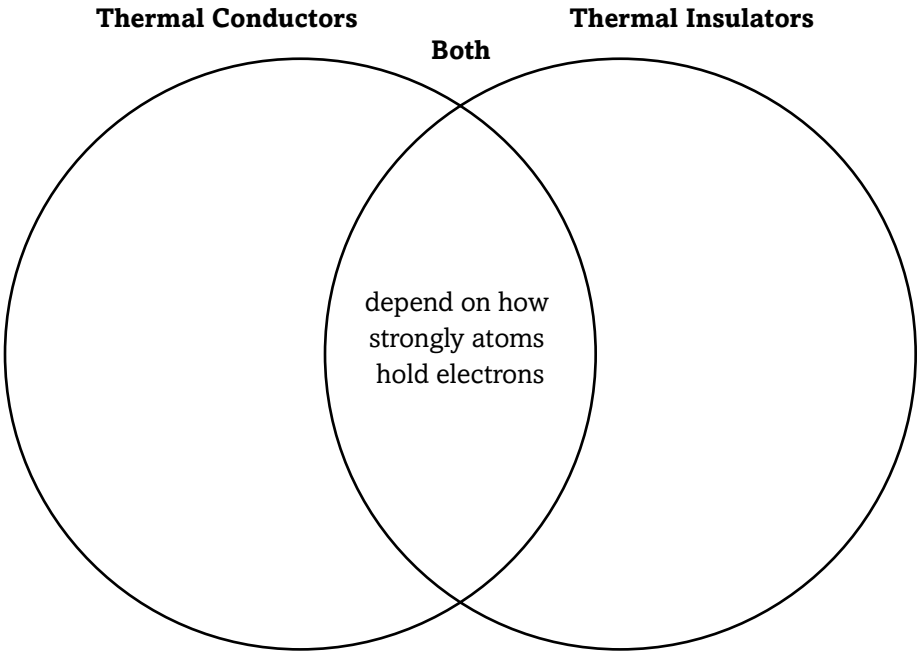
Thermal Conductors and Thermal Insulators

I found this information on page _____.

Details

Compare and contrast thermal conductors *and* thermal insulators *by writing the words and phrases in the Venn diagram.*

- does not conduct heat easily
- conducts heat easily
- gold and copper
- air
- material contains some loosely held electrons
- materials do not contain loosely held electrons



Connect It

Analyze sources of thermal pollution and their effects on organisms and the environment. Design a possible plan to reduce thermal pollution.

Name _____ **Date** _____

Thermal Energy

Section 3 Usable Energy

Benchmarks—SC.B.1.3.1: The student identifies forms of energy and explains that they can be measured and compared. Also covers: SC.B.1.3.2, SC.B.1.3.4, SC.B.1.3.5, SC.B.2.3.1, SC.H.1.3.4, SC.H.1.3.5, SC.H.1.3.7, SC.H.2.3.1

Skim *the headings in Section 3 and make three predictions about what you will learn.*

1. _____
2. _____
3. _____

Review Vocabulary

Define *the following term to show its scientific meaning.*

work _____

New Vocabulary

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

law of conservation of energy _____

heat engine _____

system _____

entropy _____

Academic Vocabulary

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

convert _____

Name _____ **Date** _____

Section 3 Usable Energy (continued)

Main Idea

Details

Forms of Energy

I found this information on page _____.

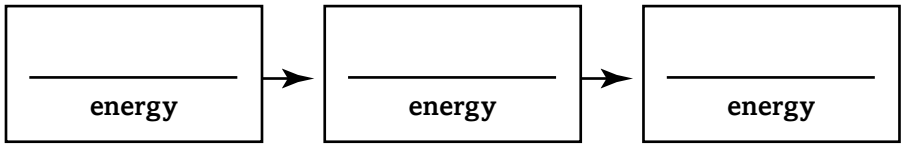
Identify *the 6 different forms of energy and give an example for each.*

Types of Energy	

Automobile Engines

I found this information on page _____.

Analyze *the energy conversions in an* internal combustion engine. *Complete the diagram and paragraph below.*



In a car, about _____ percent of the chemical energy in the _____ is eventually converted into _____ of the car's moving parts. Because _____ between the moving parts produces additional _____. About _____ percent of the energy from the _____ finally makes the engine, the car, and the surroundings _____.

I found this information on page _____.

Complete *the* **energy efficiency** *equation.*

energy efficiency (%) = _____ × 100

Name _____ **Date** _____

Section 3 Usable Energy (continued)

Main Idea

Details

Entropy and Disorder

I found this information on page _____.

Compare *the amount of* entropy *in molecules in the two examples of matter.*

Less Entropy ⟷ **More Entropy**

Molecules in an ice cube:	Gas molecules in a balloon:
1. _____	1. _____
2. _____	2. _____

Entropy Always Increases

I found this information on page _____.

Summarize *the* second law of thermodynamics.

The second law of thermodynamics states that _____

_____.

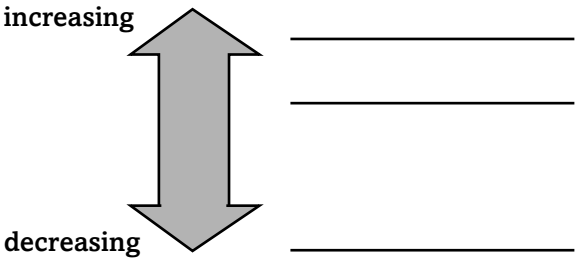
This means that in any system, changes that occur cause _____

_____.

Entropy and Thermal Energy

I found this information on page _____.

Label *the diagram to show what is increasing and what is decreasing during an energy conversion. Use the terms* usable energy, waste energy, *and* entropy.



Connect It

Describe a situation in your life that relates to the concept of entropy.

_____

_____

_____

Name _____ **Date** _____

Tie It Together

Synthesize

Suppose that you are a television weather forecaster. As a part of your job, you have been asked to help educate people about science. On the lines below, plan a weather forecast for your region. After you have finished planning, present your forecast to the class. Explain as many of the following terms as possible during your forecast.

temperature Fahrenheit scale Celsius scale radiation convection conduction

Tomorrow's Weather Forecast

Date: _____ **Location:** _____

Forecast: _____

Notes about terms: _____

Name _____ **Date** _____

Thermal Energy Chapter Wrap-Up

After You Read

Examine the list of terms that include the root **therm-** ***that you wrote at the beginning of this chapter. Write in the space below what you think*** **therm-** ***means.***

_____

_____

_____

_____

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 Self Check at the end of each section.
- ☐ Look over the Chapter Review at the end of the chapter.

SUMMARIZE IT

After reading this chapter, identify three things you have learned about thermal energy.

_____

_____

_____

_____

_____

_____

Name _____ **Date** _____

The Solar System

Sunshine State Standards—SC.E.1: The student understands the . . . Solar System and the universe and how this affects life on Earth. Also covers: SC.C.2, SC.D.1, SC.H.3

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.

Before You Read	The Solar System
	• The planets revolve around Earth.
	• The solar system is more than 4.6 billion years old.
	• Mercury has an atmosphere similar to Earth's.
	• Uranus has craters and deep valleys.
	• Earth is the only planet known to be able to support life.

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

Science Journal

If you could command the Keck telescope, what would you view? Describe what you would see.

Name _____ **Date** _____

The Solar System

Section 1 Solar System Models

Benchmarks—SC.E.1.3.1: The student understands the vast size of our Solar System and the relationship of the planets and their satellites. Also covers: SC.C.2.3.7, SC.D.1.3.5, SC.E.1.3.3, SC.H.1.3.1, SC.H.1.3.4, SC.H.1.3.5, SC.H.1.3.6, SC.H.2.3.1, SC.H.3.3.5, SC.H.3.3.6

Skim *the headings in Section 1. Write three things you expect to learn in Section 1.*

1. _____

2. _____

3. _____

Review Vocabulary

Define planet, *using your book or a dictionary.*

planet _____

New Vocabulary

Write a scientific sentence describing the solar system.

solar system _____

Academic Vocabulary

Define **contract** *as a verb, using a dictionary. Then rewrite the following sentence, using the word* **contracted**.

Over time, the cloud of gas and dust became smaller, forming a large, tightly packed, spinning disk.

contract _____

Name _____ **Date** _____

Section 1 Solar System Models (continued)

Main Idea | **Details**

Ideas About the Solar System

I found this information on page _____.

Contrast *the* Earth-centered model *of the solar system and the* Sun-centered model *of the solar system in the table below.*

	Earth-centered	Sun-centered
How many planets are in the system?		
Describe motions in the system.		

I found this information on page _____.

Evaluate ***how Galileo's discoveries provided evidence for the Sun-centered model of the solar system. Complete the statements.***

Galileo discovered that the planet _____ went through _____ like our _____. These changes could occur only _____.

I found this information on page _____.

Create ***a drawing of the solar system. Draw and label the Sun and the planets in the correct order. Identify which planets were included in the Earth-centered model of the solar system by putting a check mark beside those planets.***

Name _____ **Date** _____

Section 1 Solar System Models (continued)

Main Idea	Details
How the Solar System Formed *I found this information on page _____.*	**Sequence** *the steps in the* formation of the solar system. **1.** _____ **2.** _____ **3.** _____ **4.** _____
Motions of the Planets *I found this information on page _____.*	**Summarize** *Johannes Kepler's contributions to the scientific understanding of planets' motion. Complete the outline.* **I.** Shape of orbits **A.** _____ **B.** _____ **II.** Movement of planets **A.** _____ **B.** _____

SUMMARIZE IT

Summarize how ideas about the structure and motions of the solar system have changed over time.

_____

_____

_____

_____

Name _____ **Date** _____

The Solar System

Section 2 The Inner Planets

Benchmarks—SC.E.1.3.2: The student knows that available data from various satellite probes show the similarities and differences among planets and their moons in the Solar System. Also covers: SC.E.1.3.1, SC.H.1.3.6, SC.H.3.3.4, SC.H.3.3.5

Scan *the headings of Section 2. Write a question for each heading.*

Mercury: _____

Venus: _____

Earth: _____

Mars: _____

Review Vocabulary **Define** space probe, *using your book or a dictionary.*

space probe _____

_____

New Vocabulary *Write a scientific sentence using each vocabulary term.*

Mercury _____

_____

Venus _____

_____

Earth _____

_____

Mars _____

_____

Academic Vocabulary *Use a dictionary to define* reveal *to show its scientific meaning.*

reveal _____

_____

Name _____ **Date** _____

Section 2 The Inner Planets (continued)

Main Idea	Details

Mercury

I found this information on page _____.

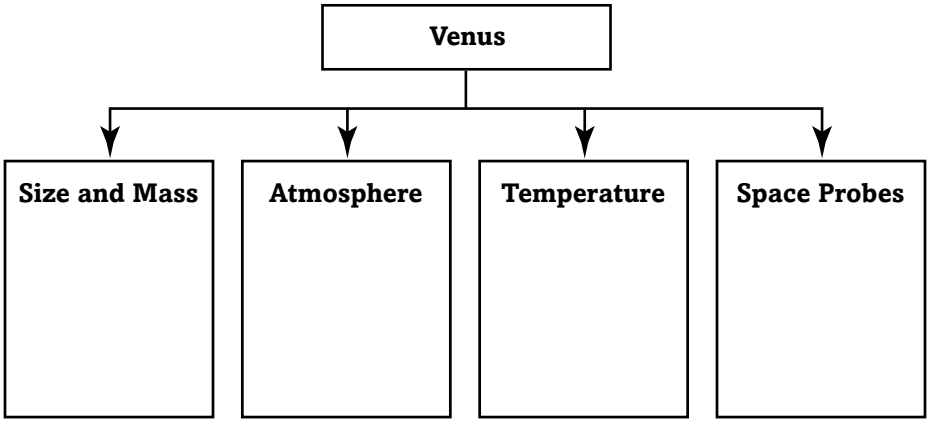
Organize *key facts about* Mercury. *Complete the table.*

Mercury	
Location	
Surface	
Core	
Atmosphere	
Temperature	
Explored By	

Venus

I found this information on page _____.

Complete *the graphic organizer to identify key features of* Venus.



Earth

I found this information on page _____.

Summarize *unique features of Earth that allow it to support life.*

_____

_____

_____

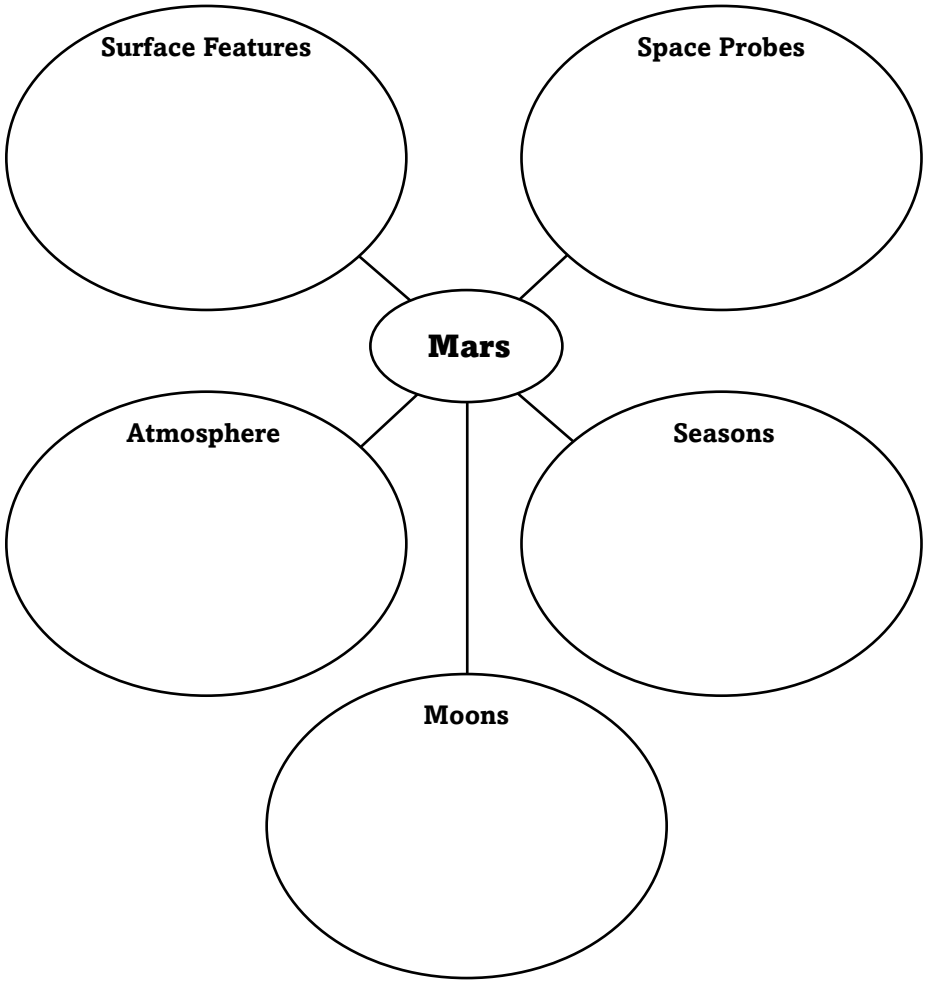
_____

_____

Name _____ **Date** _____

Section 2 The Inner Planets (continued)

Main Idea	Details
Mars *I found this information on page _____.*	**Summarize** *important information about* Mars *as you complete the concept map.*



SYNTHESIZE IT

Compare and contrast the inner planets. Choose one feature, such as temperature, size, or atmosphere, and write a paragraph comparing and contrasting this feature for the four inner planets.

_____

_____

_____

_____

_____

Name _____ **Date** _____

The Solar System

Section 3 The Outer Planets

Benchmarks—SC.H.3.3.5: The student understands that contributions to the advancement of science, mathematics, and technology have been made by different kinds of people, in different cultures, at different times and are an intrinsic part of the development of human culture. Also covers: SC.E.1.3.1, SC.E.1.3.2, SC.H.1.3.6

Skim *Section 3. Predict two ways in which the outer planets differ from the inner planets.*

1. _____

_____

2. _____

_____

Review Vocabulary **Define** *the word* **moon** *using a dictionary or your book.*

moon _____

New Vocabulary *Label each definition with the correct vocabulary word.*

_____ the seventh planet from the Sun; large and gaseous, with a distinct bluish-green color

_____ largest planet and fifth from the Sun; contains more mass than all of the other planets combined

_____ considered to be the ninth planet from the Sun; has a solid icy-rock surface

_____ giant, high-pressure storm in Jupiter's atmosphere

_____ usually the eighth planet from the Sun; large and gaseous, with rings that vary in thickness

_____ second-largest planet and sixth from the Sun; has a complex ring system and at least 31 moons

Academic Vocabulary *Define* **survey** *as a verb, using a dictionary. Then use this term in a sentence related to the topic of Section 3.*

survey _____

_____

Name _____ **Date** _____

Section 3 The Outer Planets (continued)

Main Idea | **Details**

Jupiter

I found this information on page _____.

Sequence *the space probes that have explored Jupiter.*

1979: _____

1995: _____

2000: _____

Complete *the table to identify key facts about* Jupiter.

Jupiter	
Atmosphere	
Moons	

Saturn

I found this information on page _____.

Organize *key facts about* Saturn.

Saturn	
Space Probes	
Atmosphere	
Rings	
Moons	

Name _____ **Date** _____

Section 3 The Outer Planets (continued)

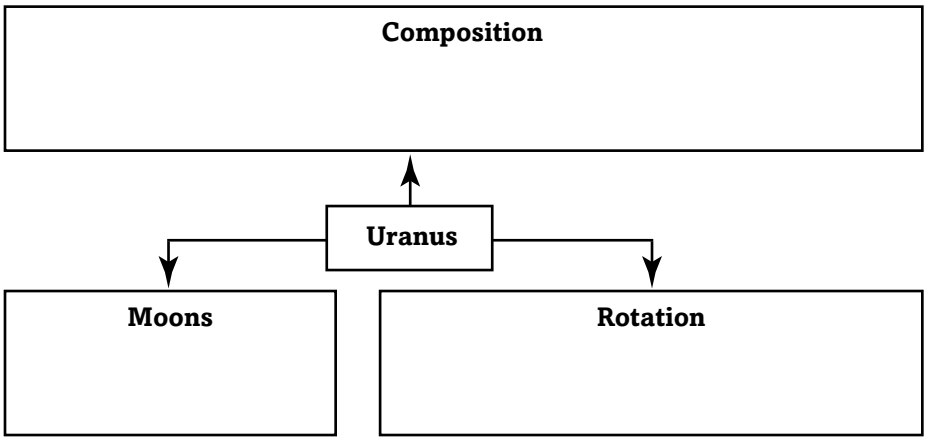
Main Idea

Details

Uranus

I found this information on page _____.

Summarize *details about* Uranus *in the graphic organizer.*



Neptune

I found this information on page _____.

Complete *the table of key facts about* Neptune.

Neptune	
Atmosphere	
Moons	

Pluto

I found this information on page _____.

Summarize *the features that make* Pluto *unique.*

_____

_____

_____

_____

Connect It

Summarize the major features that distinguish the outer planets from the inner planets.

_____

_____

_____

Name _____ **Date** _____

The Solar System

Section 4 Other Objects in the Solar System

Benchmarks—SC.E.1.3.2: The student knows that available data from various satellite probes show the similarities and differences among planets and their moons in the Solar System. Also covers: SC.E.1.3.1, SC.H.1.3.1., SC.H.1.3.4, SC.H.1.3.6, SC.H.2.3.1, SC.H.3.3.5

Scan *the title and headings in Section 4. Write a sentence that describes what you think will be covered in the section.*

_____

_____

_____

Review Vocabulary

Create a scientific sentence using the term crater.

crater _____

_____

New Vocabulary

Define *each term, using your book or a dictionary.*

comet _____

_____

meteor _____

_____

meteorite _____

_____

asteroid _____

_____

Academic Vocabulary

Define approach, *using a dictionary. Then locate a sentence in Section 4 that uses the word or a form of the word.*

approach _____

_____

_____

Name _____ **Date** _____

Section 4 Other Objects in the Solar System (continued)

Main Idea	Details

Comets

I found this information on page _____.

Summarize *two facts about the* Oort Cloud.

1. _____

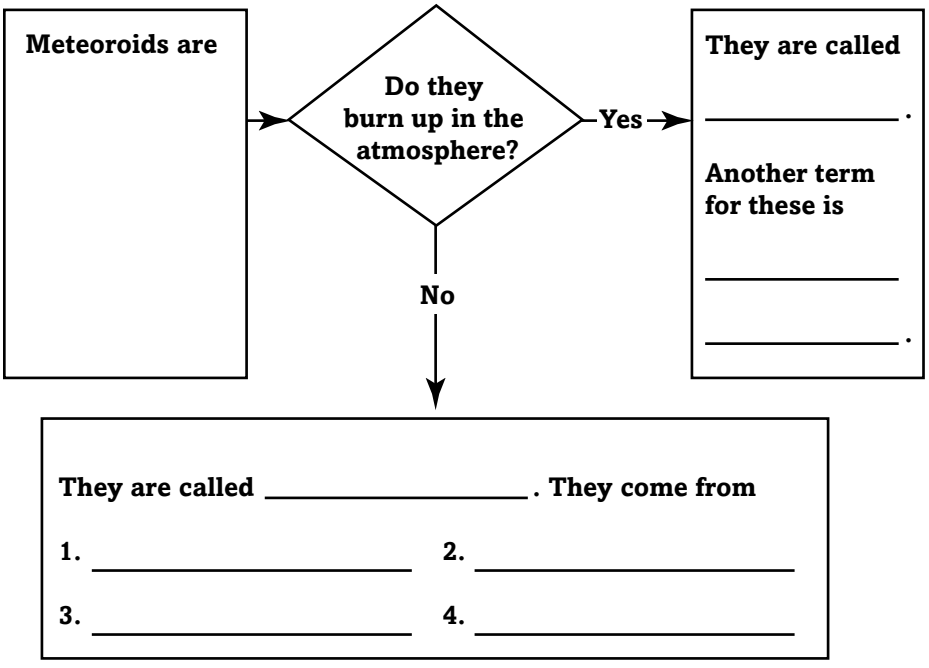
2. _____

Model *a* comet. *Draw and label its* nucleus, coma, *and* tail. *Show the* solar wind *coming from the Sun and where the Sun is in relation to the comet's tail.*

Meteoroids, Meteors, and Meteorites

I found this information on page _____.

Distinguish *between* meteoroids, meteors, *and* meteorites. *Complete the graphic organizer. Identify key features of meteoroids, and then contrast meteors and meteorites.*



Name _____ **Date** _____

Section 4 Other Objects in the Solar System (continued)

Main Idea	Details
Asteroids *I found this information on page* _____.	**Organize** *information about* asteroids. *Complete the outline.* Asteroids are _____ _____. **A.** Location **1.** _____ **2.** _____ **B.** What scientists learn from asteroids **1.** _____ **2.** _____ **Model** *the appearance of the* asteroid belt *in the solar system. Identify the two planets between which it lies.*

SYNTHESIZE IT

Compare and contrast comets, meteoroids, and asteroids in a paragraph or a table.

Name _____ **Date** _____

The Solar System 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.

The Solar System	After You Read
• The planets revolve around Earth.	
• The solar system is more than 4.6 billion years old.	
• Mercury has an atmosphere similar to Earth's.	
• Uranus has craters and deep valleys.	
• Earth is the only planet known to be able to support life.	

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 Self Check at the end of each section.
- ☐ Look over the Chapter Review at the end of the chapter.

SUMMARIZE IT

You are planning a new space probe mission to the solar system. Decide on one or more planets, moons, comets, or asteroids that you would like to study. Explain what you expect to see and learn about each object.

_____

_____

_____

_____

Name _____ **Date** _____

Stars and Galaxies

Sunshine State Standards—SC.E.1: The student understands the interaction and organization in the Solar System and the universe and how this affects life on Earth.

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.

Before You Read	Stars and Galaxies
	• Modern astronomy divides the sky into 88 constellations.
	• The Sun is an ordinary star and is the center of our solar system.
	• All stars have the same brightness.
	• The Milky Way is a part of a cluster called the Local Group, made up of about 45 galaxies.

FOLDABLES™ Study Organizer

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

Science Journal

Write a description of a galaxy in your Science Journal.

Name _____ **Date** _____

Stars and Galaxies

Section 1 Stars in Our Galaxy

Benchmarks—SC.E.2.3.1: The student knows that thousands of other galaxies appear to have the same elements, forces, and forms of energy found in our Solar System. Also covers: SC.D.1.3.5, SC.E.1.3.3, SC.E.1.3.4, SC.H.2.3.1, SC.H.3.3.5

Predict *three topics that will be discussed in Section 1 as you scan the headings and illustrations.*

1. _____

2. _____

3. _____

Review Vocabulary

Define gravitation *to show its scientific meaning.*

gravitation _____

_____

New Vocabulary

Define the following terms to show their scientific meanings.

constellation _____

_____

absolute magnitude _____

_____

apparent magnitude _____

_____

light-year _____

_____

Academic Vocabulary

Use a dictionary to define component *as a noun. Then explain what the statement "breaking it down into its component parts" might mean.*

component _____

_____

Name _____ **Date** _____

Section 1 Stars in Our Galaxy (continued)

Main Idea | **Details**

Constellations

I found this information on page _____.

Organize *facts about* constellations *into an outline. Use the structure provided below as a guide.*

I. Constellations

A. _____

_____

B. _____

_____

C. _____

_____

II. Movement of constellations

A. Circumpolar constellations

1. _____

_____

2. _____

_____

B. Other constellations

1. _____

_____

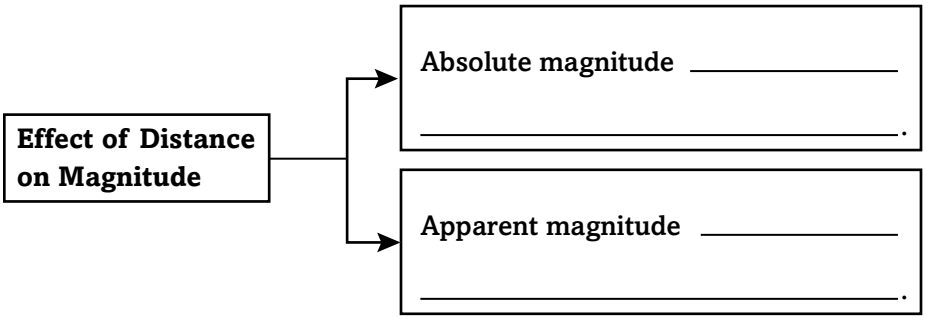
2. _____

_____

Absolute and Apparent Magnitudes

I found this information on page _____.

Complete *the diagram to show how each type of* magnitude *is related to a star's distance.*



Name _____ **Date** _____

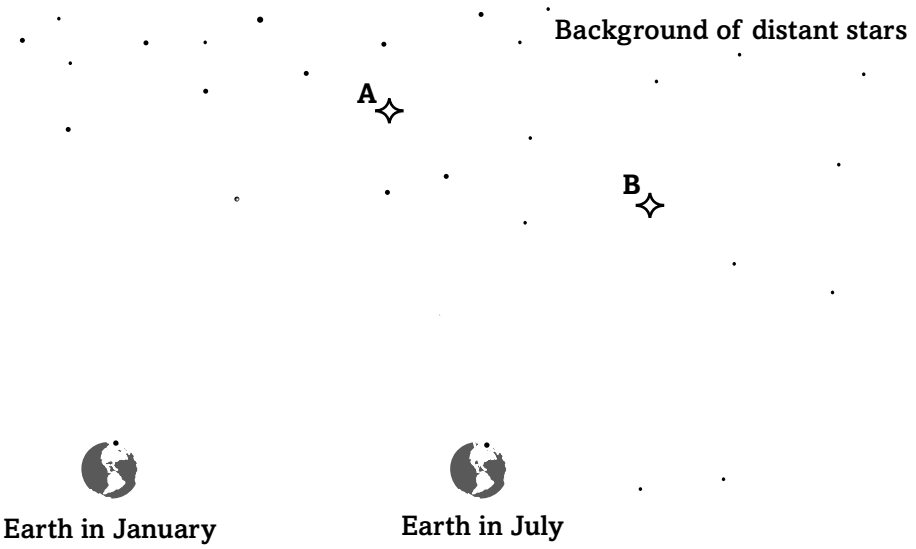
Main Idea

Measurement in Space

I found this information on page _____.

Details

Analyze *the diagram below. Draw lines to show the* parallax *angle of each star.*



Properties of Stars

I found this information on page _____.

Summarize *how astronomers use parallax.*

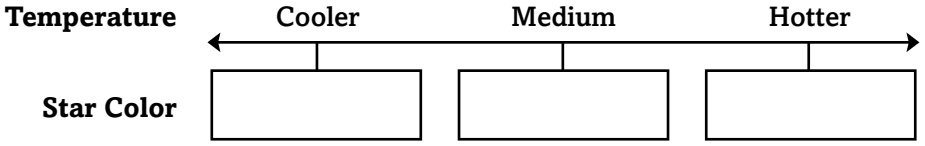
_____

_____

_____

_____

Sequence *the* colors of stars by temperature. *Complete the diagram by writing the correct color in each box.*



Synthesize It

A hot, blue-white star has brighter absolute magnitude than a cooler, red star. The red star appears brighter. What can you conclude about the two stars?

_____

_____

Name _____ **Date** _____

Stars and Galaxies

Section 2 The Sun

Benchmarks—SC.E.1.3.3: The student understands that our Sun is one of many stars in our galaxy.
Also covers: SC.D.1.3.5, SC.E.1.3.4, SC.H.1.3.7, SC.H.2.3.1

Skim *through Section 2 of your book. Write three questions that come to mind from reading the headings and examining the illustrations.*

1. _____

2. _____

3. _____

Review Vocabulary

Define cycle *to show its scientific meaning.*

cycle _____

New Vocabulary

Copy a sentence from your book in which each term appears.

photosphere _____

chromosphere _____

corona _____

sunspots _____

Academic Vocabulary

Use a dictionary to define nuclear *to show its scientific meaning. Use* nuclear *in an original sentence.*

nuclear _____

Name _____ **Date** _____

Section 2 The Sun (continued)

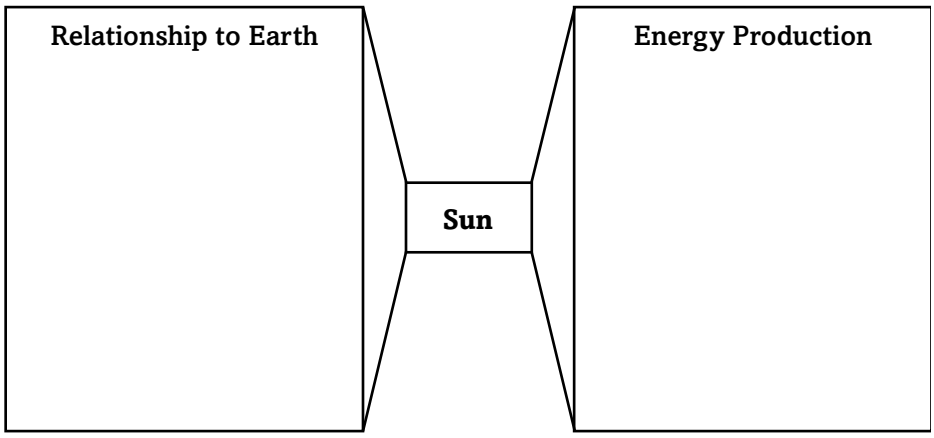
Main Idea

Details

The Sun's Layers

I found this information on page _____.

Summarize *basic information about the Sun. Complete the graphic organizer.*



The Sun's Atmosphere

I found this information on page _____.

Model the Sun, *including the following features. Include captions summarizing each feature.*

- chromosphere
- convection zone
- core
- corona
- photosphere
- radiation zone

Name _____ **Date** _____

Section 2 The Sun (continued)

Main Idea	Details
Surface Features *I found this information on page _____.*	**Organize** *information about the* Sun's surface *features.* **Sunspots:** _____ **Prominences:** _____ **Flares:** _____ **Coronal mass ejection (CME):** _____
The Sun in Space *I found this information on page _____.*	**Compare and contrast** ***the Sun with other stars. Complete the paragraph below.*** Compared with other stars, the Sun's _____, _____, _____, and _____ are about average. In contrast with other stars, the Sun _____ and _____.

CONNECT IT

Choose one characteristic you have learned about the Sun, such as its size, structure, or distance from Earth. Suppose that the characteristic was different. Predict how this would affect life on Earth.

_____

_____

_____

Name _____ **Date** _____

Stars and Galaxies

Section 3 Life Cycle of Stars

Benchmarks—SC.E.1.3.4: The student knows that stars appear to be made of similar chemical elements, although they differ in age, size, temperatures, and distance. Also covers: SC.H.1.3.1, SC.H.3.3.5

Scan *the headings of Section 3 to find three stages of the evolution of stars.*

1. _____

2. _____

3. _____

Review Vocabulary

Define gas. *Use the term in a sentence to show its scientific meaning.*

gas _____

New Vocabulary

Define the following terms. Write a sentence to show each term's scientific meaning.

nebula _____

white dwarf _____

neutron star _____

Academic Vocabulary

Use a dictionary to define enormous *to show its scientific meaning.*

enormous _____

Name _____ **Date** _____

Section 3 Life Cycle of Stars (continued)

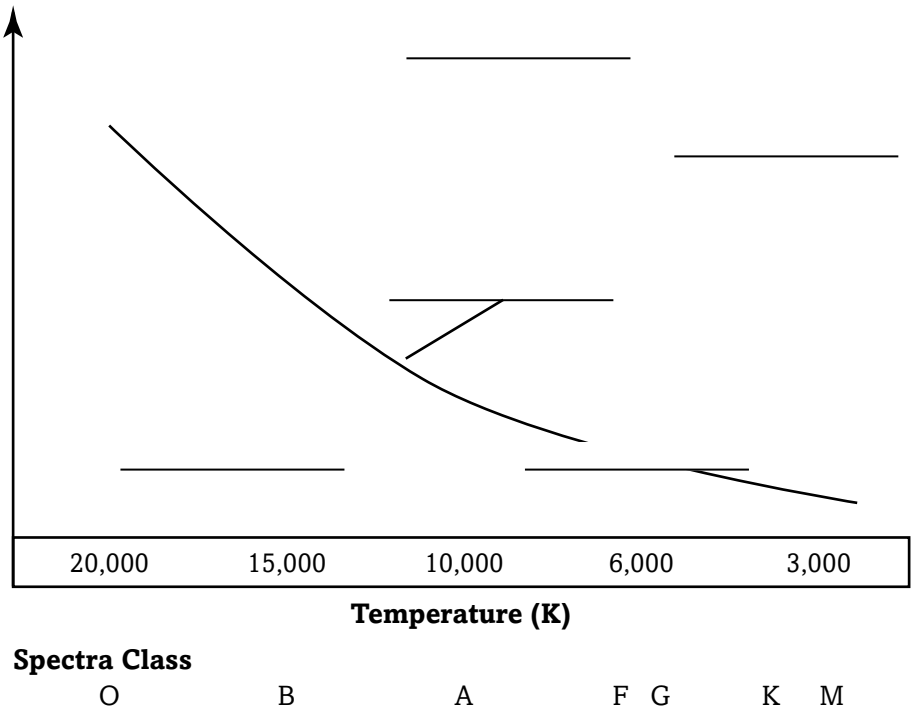
Main Idea

Details

Classifying Stars

I found this information on page _____.

Classify *stars using the* H-R diagram. *Label the diagram below to show where you would expect to find* white dwarfs, *the* main sequence, supergiants, giants, *and the* Sun.



How do stars shine?

I found this information on page _____.

Summarize *how* stars generate energy.

Name _____ **Date** _____

Section 3 Life Cycle of Stars (continued)

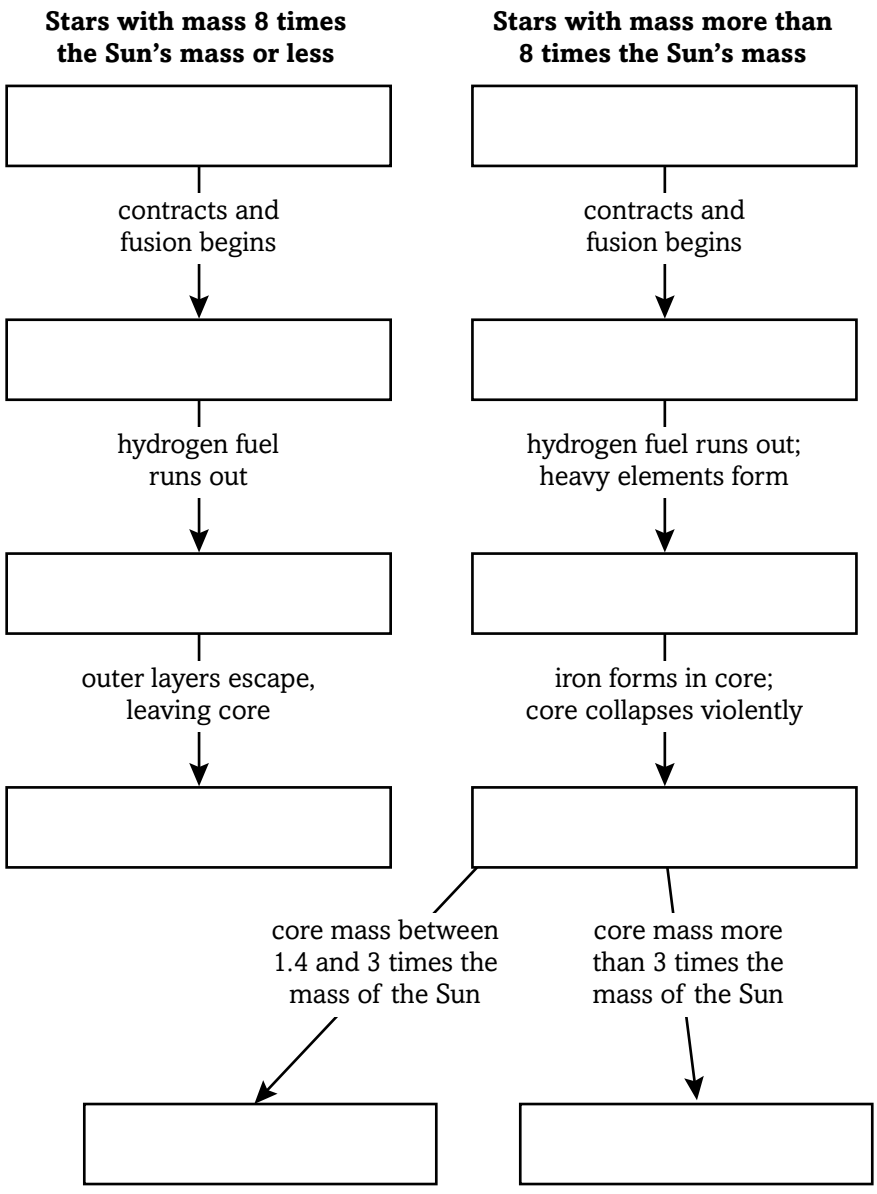
Main Idea

Evolution of Stars

I found this information on page _____.

Details

Sequence *the* evolution of stars. *Complete the flow chart.*



Connect It

Evaluate why supernovas are important to the existence of life on Earth.

_____

_____

_____

Name _____ **Date** _____

Stars and Galaxies

Section 4 Galaxies and the Universe

Benchmarks—SC.H.1.3.5: The student knows that a change in one or more variables may alter the outcome of an investigation. Also covers: SC.D.1.3.5, SC.E.1.3.3, SC.E.2.3.1, SC.H.2.3.1, SC.H.3.3.5

Preview *Section 4 of your book using the list below.*

- ☐ Read all section headings.
- ☐ Read all bold words.
- ☐ Look at all of the pictures.
- ☐ Think about what you already know about galaxies and the universe.

Write two facts that you discovered during your preview.

1. _____

2. _____

Review Vocabulary

Define universe *to reflect its scientific meaning.*

universe _____

New Vocabulary

Define the following key terms. Then write sentences to show the scientific meaning of each term.

galaxy _____

big bang theory _____

Academic Vocabulary

Define normal. *Write a sentence to show its scientific meaning.*

normal _____

Name _____ **Date** _____

Main Idea

Details

Galaxies

I found this information on page _____.

Classify *the 3 major* types of galaxies. *Complete the table.*

Galaxy Type	Description
	Spiral arms that wind outward from the center
	Does not look like the other two types of galaxies; many possible shapes

The Milky Way

I found this information on page _____.

Model *the* Milky Way galaxy.

- Draw a side view and overhead view of the Milky Way.
- Mark the Sun's position on both views.
- Label the size of the Milky Way and the distance from the center to the Sun's position on the overhead view.

Side view	Overhead view

Identify *three other facts about the Milky Way.*

_____

_____

_____

_____

_____

Name _____ **Date** _____

Section 4 Galaxies and the Universe (continued)

Main Idea	Details
Origin of the Universe *I found this information on page _____.*	**Contrast** *two models of the origin of the universe: the* steady state theory *and the* oscillating model. Steady state theory: _____ Oscillating model: _____
Expansion of the Universe *I found this information on page _____.*	**Analyze** *how scientists used the* Doppler shift *to reach a conclusion about whether the universe is expanding or contracting.* **Observation** → **Conclusion**
The Big Bang Theory *I found this information on page _____.*	**Summarize** *the* big bang theory *of the origin of the universe.*

SUMMARIZE IT

Describe your location in the universe as completely as you can.

Name _____ **Date** _____

Stars and Galaxies 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.

Stars and Galaxies	After You Read
• Modern astronomy divides the sky into 88 constellations.	
• The Sun is an ordinary star and is the center of our solar system.	
• All stars have the same brightness.	
• The Milky Way is a part of a cluster called the Local Group, made up of about 45 galaxies.	

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 Self Check at the end of each section.
- ☐ Look over the Chapter Review at the end of the chapter.

SUMMARIZE IT **After reading this chapter, identify three things that you have learned about stars and galaxies.**

_____

_____

_____

_____

Name _____ **Date** _____

Cell Reproduction

Sunshine State Standards—SC.F.1: The student describes patterns of structure and function in living things.
Also covers: SC.F.2

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.

Before You Read	Cell Reproduction
	• One-celled organisms reproduce through cell division.
	• Every living organism has a life cycle.
	• All organisms reproduce sexually.
	• Most of the cells formed in your body do not contain genetic material.

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

Science Journal

Write three things that you know about how and why cells reproduce.

Name _____ **Date** _____

Cell Reproduction

Section 1 Cell Division and Mitosis

Benchmarks—SC.F.1.3.3: The student knows that in multicellular organisms cells grow and divide to make more cells in order to form and repair various organs and tissues. Also covers: SC.F.1.3.1, SC.F.1.3.5, SC.F.2.3.1, SC.H.1.3.5, SC.H.1.3.6, SC.H.2.3.1

Skim *Section 1 of your book. Read the headings, illustrations, and captions. Write three questions that come to mind as you skim the section.*

1. _____
2. _____
3. _____

Review Vocabulary

Define nucleus *to show its scientific meaning.*

nucleus _____

New Vocabulary

Locate sentences in your book that use each of the following terms. Write each sentence here, and give the page on which you found it.

mitosis _____

chromosome _____

asexual reproduction _____

Academic Vocabulary

Use a dictionary to write a scientific definition of the term cycle. *Then find a sentence in this section that defines the* cell cycle, *and write it here.*

cycle _____

Name _____ **Date** _____

Section 1 Cell Division and Mitosis (continued)

Main Idea	Details
Why is cell division important? *I found this information on page _____.*	**Identify** *the 3 reasons* cell division *is important.* **1.** _____ **2.** _____ **3.** _____
The Cell Cycle *I found this information on page _____.*	**Summarize** *information about* interphase in eukaryotic cells *in the following paragraph.* Interphase is the _____ part of the cell cycle. During interphase, cells _____ and _____. During interphase, cells that are still dividing copy their _____ and prepare for _____. Cells no longer dividing are _____.
Mitosis *I found this information on page _____.*	**Sequence** *the steps of* mitosis, *and write a short description of what takes place in each phase.* **1.** _____ **2.** _____ **3.** _____ **4.** _____ **5.** _____ **6.** _____

Name _____ **Date** _____

Main Idea

Details

I found this information on page _____.

Compare ***mitosis in animals and plants. State if each feature exists in*** **plant cells, animal cells,** ***or*** **both.**

Feature	Cell Type
Centrioles	
Spindle fibers	
Cell plate	
Cell wall	

I found this information on page _____.

Organize ***important concepts about*** **mitosis.**

1. Mitosis is the division of a _____.
2. Mitosis produces two new nuclei that are identical both to _____ and to _____.
3. A nucleus with 46 chromosomes that undergoes mitosis will produce _____ nuclei, each with _____ chromosomes.

Asexual Reproduction

I found this information on page _____.

Identify ***the 3 forms of*** **asexual reproduction** ***described below.***

_____ the method by which bacteria reproduce

_____ new organism growing from body of the parent

_____ to regrow body parts that are lost or damaged

CONNECT IT

A strawberry farmer wants to increase her crop without spending large amounts of money for new seeds. How can she take advantage of asexual reproduction to increase her crop?

_____

_____

_____

Name _____ **Date** _____

Cell Reproduction

Section 2 Sexual Reproduction and Meiosis

Benchmarks—SC.F.2.3.1: The student knows the patterns and advantages of sexual and asexual reproduction in plants and animals. Also covers: SC.F.1.3.1, SC.F.2.3.2, SC.H.2.3.1

Skim *the headings and illustrations in Section 2. Write three things you think you will learn about in this section.*

1. _____

2. _____

3. _____

Review Vocabulary

Define organism *to show its scientific meaning.*

organism _____

_____

New Vocabulary

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

_____ in sexual reproduction, the joining of a sperm and egg

_____ new diploid cell formed when a sperm fertilizes an egg; will divide by mitosis and develop into a new organism

_____ sex cell formed in the female reproductive organs

_____ cell whose similar chromosomes occur in pairs

_____ reproductive process that produces haploid cells

_____ haploid sex cell formed in the male reproductive organs

_____ cells that have only half of each pair of chromosomes

_____ type of reproduction in which two sex cells join to form a zygote

Academic Vocabulary

Use a dictionary to write a definition of similar.

similar _____

_____

Name _____ **Date** _____

Section 2 Sexual Reproduction and Meiosis (continued)

Main Idea

Details

Sexual Reproduction

I found this information on page _____.

Compare *characteristics of human* diploid *and* haploid *cells in the table below. Give examples of each type of cell.*

Types of Human Cells		
	Diploid	Haploid
Number of chromosomes		
Process that produces them		
Examples		

Meiosis and Sex Cells

I found this information on page _____.

Model *the 4 stages of* meiosis *I in the spaces below. Use the figure in your book to help you.*

Meiosis I	
Prophase I	Metaphase I
Anaphase I	Telophase I

Name _____ **Date** _____

Section 2 Sexual Reproduction and Meiosis (continued)

Main Idea | **Details**

I found this information on page _____.

Model *what takes place inside a* cell nucleus *during the* meiosis II *by drawing the 4 phases in the spaces below.*

Meiosis II	
Prophase II	Metaphase II
Anaphase II	Telophase II

I found this information on page _____.

Summarize *differences between meiosis I and meiosis II by writing a* number, yes, *or* no *in each box of the chart.*

	Meiosis I	Meiosis II
How many cells result?		
Is a haploid cell formed?		
Do chromatids separate?		

SYNTHESIZE IT

Fruit flies have eight chromosomes in their body cells. Mice have 40. How many chromosomes are there in each sex cell of these organisms?

_____

_____

Name _____ **Date** _____

Cell Reproduction

Section 3 DNA

Benchmarks—SC.H.2.3.1: The student recognizes that patterns exist within and across systems.
Also covers: SC.F.1.3.5, SC.F.2.3.2, SC.H.1.3.2, SC.H.1.3.4, SC.H.1.3.6, SC.H.1.3.7, SC.H.3.3.5, SC.H.3.3.7

Scan *the list below to preview Section 3.*

- Read all section titles.
- Read all bold words.
- Look at all illustrations and their labels.
- Think about what you already know about DNA.

Review Vocabulary

Define **heredity** *to show its scientific meaning.*

heredity _____

_____

New Vocabulary

Write the correct vocabulary term next to each definition.

_____ deoxyribonucleic acid; a cell's heredity material; made up of two strands, each consisting of a sugar-phosphate backbone and nitrogen bases: adenine, thymine, guanine, and cytosine

_____ section of DNA that contains instructions for making specific proteins

_____ ribonucleic acid; type of nucleic acid that contains the sugar ribose, phosphates, and bases adenine, guanine, cytosine, and uracil

_____ any permanent change in a gene or chromosome of a cell; may be beneficial, harmful, or have little effect on an organism

Academic Vocabulary

The word **code** *can be used as a noun or as a verb. Write a definition for its use as a noun and as a verb.*

code

Noun: _____

_____

Verb: _____

_____

Name _____ **Date** _____

Section 3 DNA (continued)

Main Idea	Details

What is DNA?

I found this information on page _____.

Identify *the 4* nitrogen bases *found in* DNA.

1. _____ 3. _____
2. _____ 4. _____

I found this information on page _____.

Model *a section of a DNA molecule, showing its twisted-ladder structure. Label the the* nitrogen bases, sugar, *and* phosphates. *Make sure the nitrogen bases in your drawing are correctly paired.*

I found this information on page _____.

Summarize *how DNA copies itself.*

_____

_____

_____

_____

Genes

I found this information on page _____.

Complete *the following paragraph on the relationship of* proteins *and genes.*

Proteins are made up of long chains of _____. Genes determine the _____ of _____ in a protein. Changing the _____ of the amino acids makes a _____ protein.

Name _____ **Date** _____

Section 3 DNA (continued)

Main Idea

Details

I found this information on page _____.

Complete ***the table on the 3 main kinds of*** **RNA.**

Type of RNA	Function
	carries the code to make proteins from the nucleus to the cytoplasm
transfer RNA (tRNA)	
	type of RNA contained in ribosomes

I found this information on page _____.

Complete ***the steps of*** **protein production** ***within a cell.***

1. mRNA moves into the cytoplasm.
2. A(n) _____ attaches to it.
3. _____ molecules bring _____ to the ribosomes.
4. Nitrogen bases on the _____ temporarily _____ the nitrogen bases on the _____.
5. The same process occurs with another _____ molecule and the next portion of the _____ molecule.
6. The _____ attached to the two _____ molecules _____, beginning the formation of a protein.

Mutations

I found this information on page _____.

Describe ***how*** **mutations** ***can affect an organism.***

_____

_____

CONNECT IT

A man has a discolored area on the back of his hand. The doctor has assured him it is a harmless body cell mutation. Explain why the mutation probably will not appear in his children.

_____

_____

Name _____ **Date** _____

Tie It Together

Draw an animal cell with six chromosomes.
Follow the chromosomes as they go through the steps of meiosis.
Show the chromosomes duplicating and separating, and describe the final end products.
Name each step in the process.
Show one way that a mutation might occur during the process.

Name _____ **Date** _____

Cell Reproduction 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.

Cell Reproduction	After You Read
• One-celled organisms reproduce through cell division.	
• Every living organism has a life cycle.	
• All organisms reproduce sexually.	
• Most of the cells formed in your body do not contain genetic material.	

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 Self Check at the end of each section.
- ☐ Look over the Chapter Review at the end of the chapter.

SUMMARIZE IT

After reading this chapter, identify three things you have learned about cell reproduction.

_____

_____

_____

_____

Name _____ **Date** _____

Plant Reproduction

Sunshine State Standards—SC.H.2: The student understands that most natural events occur in comprehensible, consistent patterns. Also covers: SC.F.2

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.

Before You Read	Plant Reproduction
	• Both humans and plants need water, oxygen, energy, and food to grow.
	• Ferns and mosses reproduce by forming spores.
	• All seeds are produced by flowering plants.
	• Some seeds are spread by gravity.

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

Science Journal

List three plants that reproduce by forming seeds.

Name _____ **Date** _____

Plant Reproduction

Section 1 Introduction to Plant Reproduction

Benchmarks—SC.F.2.3.1: The student knows the patterns and advantages of sexual and asexual reproduction in plants and animals. Also covers: SC.F.1.3.1, SC.F.1.3.3, SC.F.2.3.2, SC.H.2.3.1

Scan *Section 1 of your book using the checklist below.*

- ☐ Read all section titles.
- ☐ Read all bold words.
- ☐ Read all charts and graphs.
- ☐ Look at all the pictures and read their captions.
- ☐ Think about what you already know about plant reproduction.

Write three facts that you discovered about plant reproduction as you scanned this section.

1. _____

2. _____

3. _____

Review Vocabulary

Define fertilization *in a sentence that shows its scientific meaning.*

fertilization _____

New Vocabulary

Use your book to define the following terms.

spore _____

_____

gametophyte stage _____

_____

sporophyte stage _____

_____

Academic Vocabulary

Use a dictionary to define identical.

identical _____

Name _____ **Date** _____

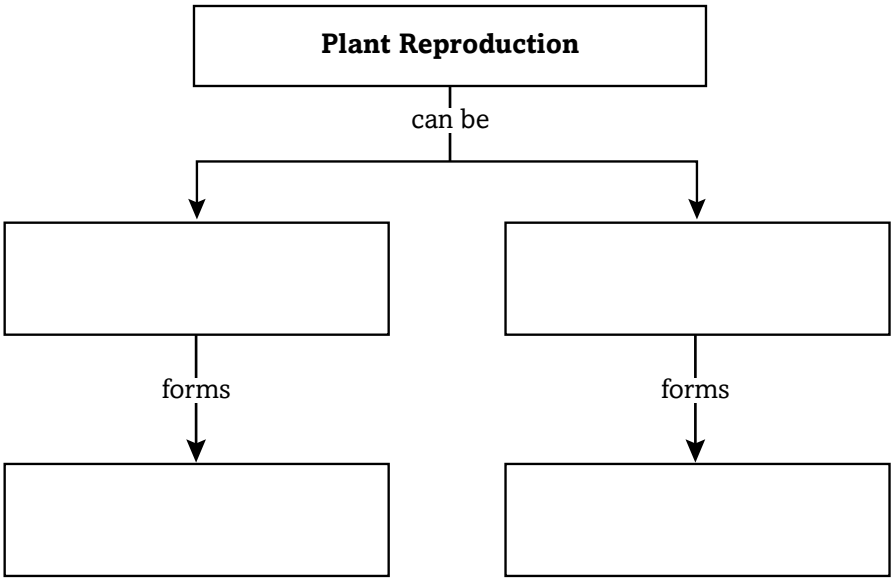
Section 1 Introduction to Plant Reproduction (continued)

Main Idea | **Details**

Types of Reproduction

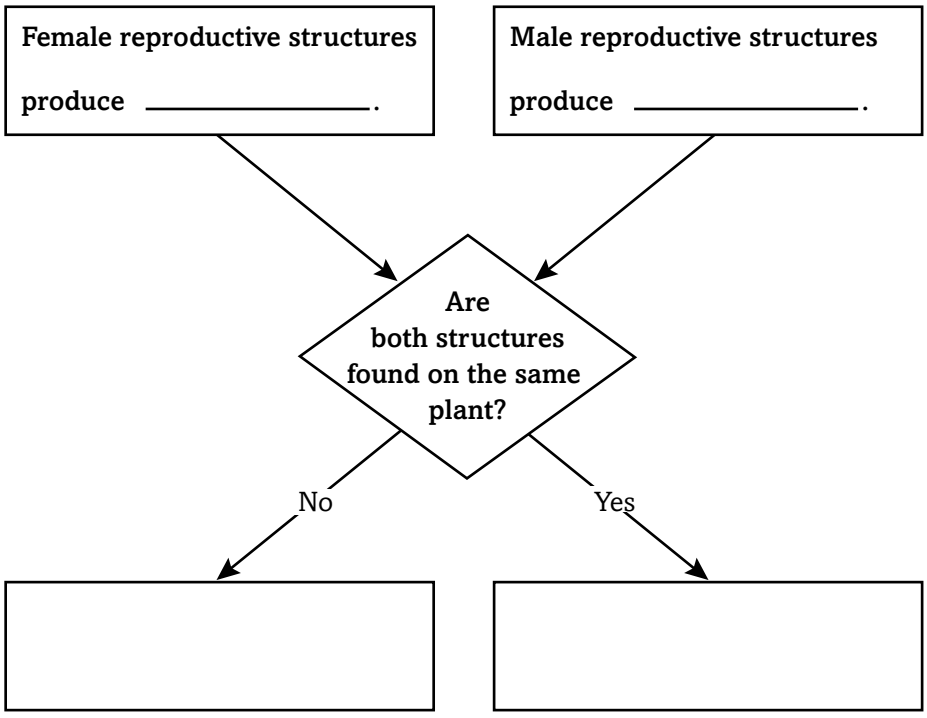
I found this information on page _____.

Compare and contrast *two ways that plants reproduce.*



I found this information on page _____.

Sequence *the steps in plant fertilization. Complete the flow chart.*



Name _____ **Date** _____

Section 1 Introduction to Plant Reproduction (continued)

Main Idea

Plant Life Cycles

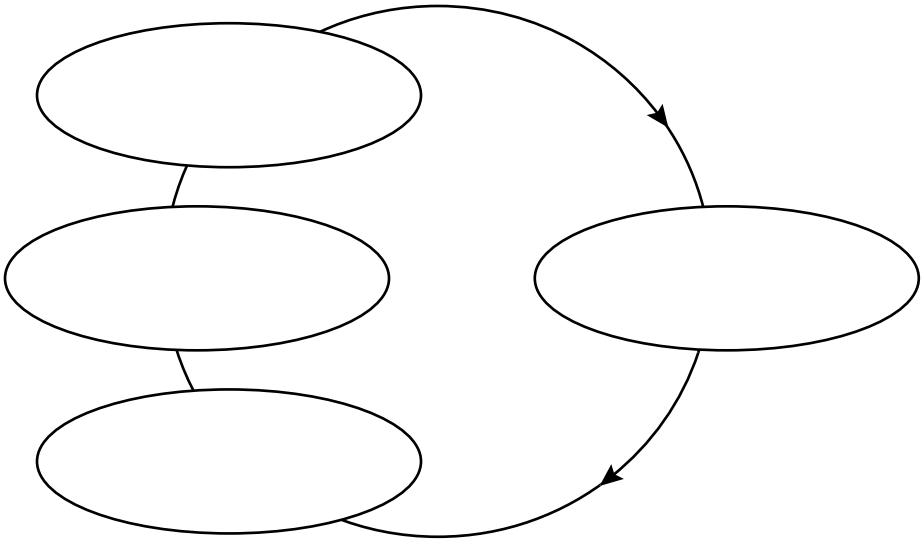
I found this information on page _____.

Details

Model *the two stages of a plant's life cycle by labeling the diagram below with the following terms.*

- gametophyte plant structures (*n*)
- sex cells (sperm and eggs) (*n*)
- sporophyte plant structures (*2n*)
- spores (*n*)

Fertilization



Contrast *the gametophyte and sporophyte stages of plant development. Complete the table.*

Stage	Cell type	Reproductive cells formed	How reproductive cells form
Gametophyte			
Sporophyte			

Connect It

A plant breeder wants to develop new varieties of roses that have different traits from the varieties he already has. Describe the type of reproduction the breeder is most likely to use and why.

_____

_____

_____

Name _____ **Date** _____

Plant Reproduction

Section 2 Seedless Reproduction

Benchmarks—SC.F.2.3.1: The student knows the patterns and advantages of sexual and asexual reproduction in plants and animals. Also covers: SC.F.1.3.1, SC.F.2.3.2, SC.H.2.3.1

Skim *Section 2 of your book. Read the headings and look at the illustrations. Write three questions that come to mind.*

1. _____

2. _____

3. _____

Review Vocabulary

Use your book or a dictionary to define photosynthesis.

photosynthesis _____

New Vocabulary

Use your book to define the following terms.

frond _____

rhizome _____

sori _____

prothallus _____

Academic Vocabulary

Use a dictionary to define widespread.

widespread _____

Name _____ **Date** _____

Section 2 Seedless Reproduction (continued)

Main Idea | **Details**

The Importance of Spores

I found this information on page _____.

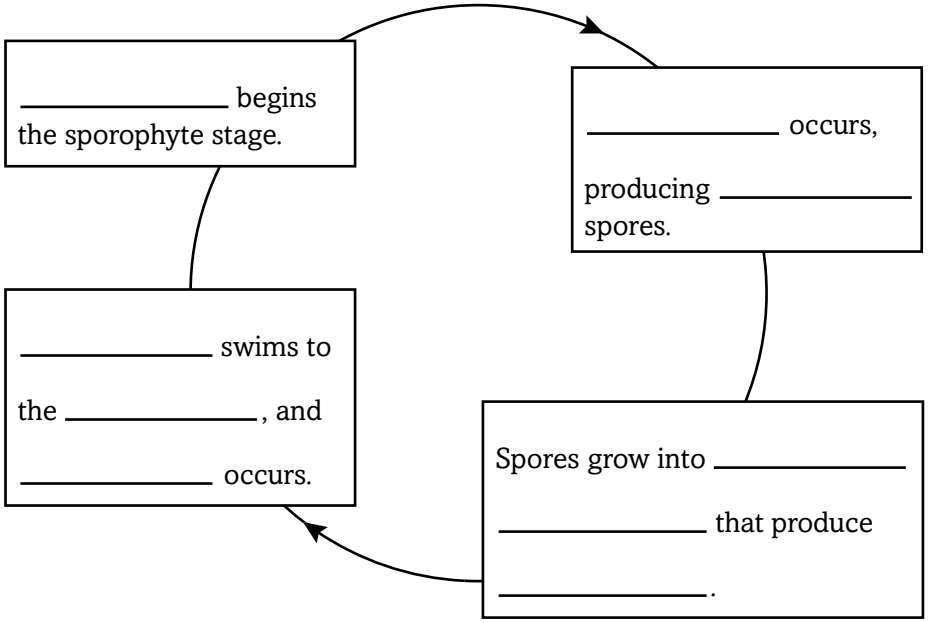
Summarize *the role of spores in plant reproduction.*

Spores are used by _____ _____ to reproduce. The _____ stage of the plant produces _____ spores in _____. These _____, and the spores are spread by _____. The spores grow into _____ that can produce _____.

Nonvascular Seedless Plants

I found this information on page _____.

Sequence *the life cycle of a moss. Complete the flow chart.*



I found this information on page _____.

Distinguish *two ways in which nonvascular plants reproduce asexually.*

Type of Plant	Asexual Reproduction Process
moss	
liverwort	

Name _____ **Date** _____

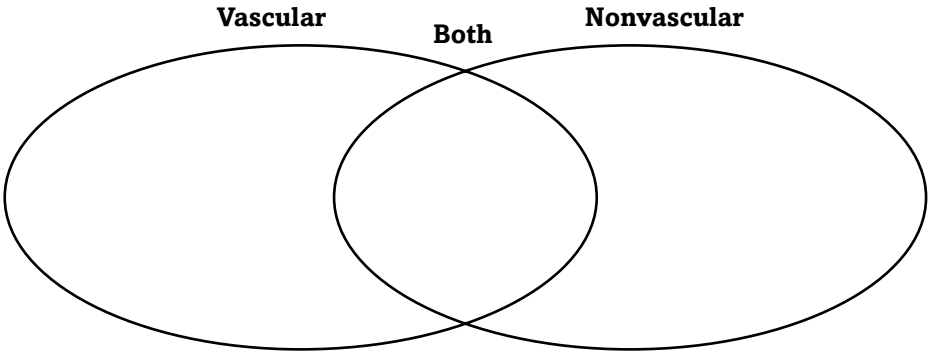
Section 2 Seedless Reproduction (continued)

Main Idea | **Details**

Vascular Seedless Plants

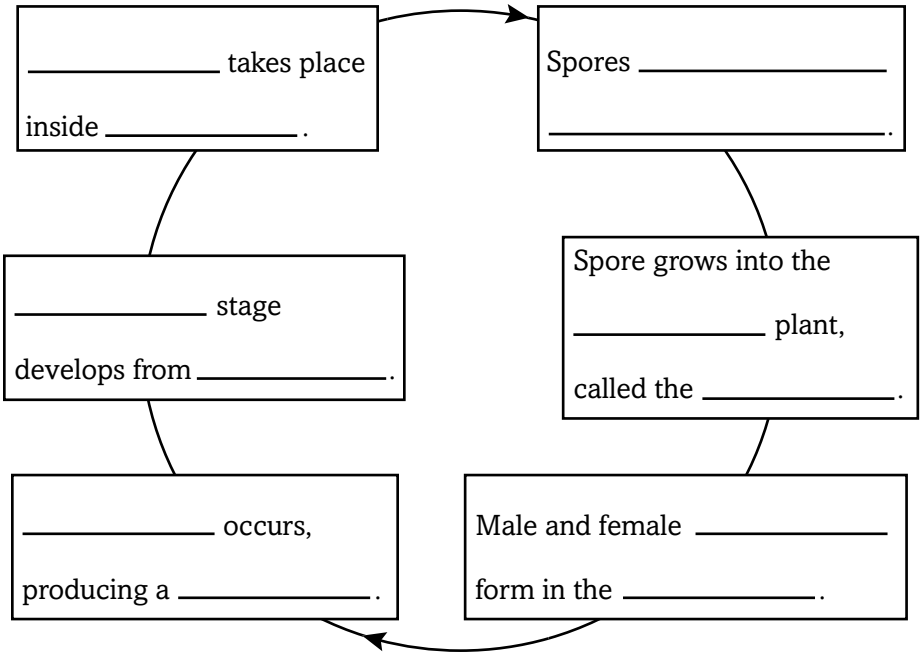
I found this information on page _____.

Contrast *vascular and nonvascular seedless plants. Complete the Venn diagram.*



I found this information on page _____.

Organize *the life cycle of a fern into a flow chart.*



CONNECT IT

Suppose that you are walking through a forest and you see some moss plants and ferns. Describe how you could know the stage of its life cycle each kind of plant is in.

_____

_____

_____

Name _____ **Date** _____

Plant Reproduction

Section 3 Seed Reproduction

Benchmarks—SC.F.2.3.1: The student knows the patterns and advantages of sexual and asexual reproduction in plants and animals. Also covers: SC.F.1.3.1, SC.F.1.3.3, SC.F.2.3.2, SC.G.1.3.2, SC.H.1.3.5, SC.H.1.3.6, SC.H.2.3.1, SC.H.3.3.1, SC.H.3.3.4, SC.H.3.3.6

Predict *three things that will be discussed in Section 3.*

1. _____

2. _____

3. _____

Review Vocabulary

Use your book or a dictionary to define **gymnosperms.**

gymnosperms _____

_____

_____

New Vocabulary

Match each vocabulary term to its definition.

_____ small structure produced by the male reproductive organs of a seed plant

_____ transfer of pollen grains to the female part of a seed plant

_____ series of events that results in the growth of a plant from a seed

_____ part of a plant that produces the egg

_____ male reproductive organ in a flower

_____ female reproductive organ in a flower

_____ part of a flower in which ovules are found

Academic Vocabulary

Use a dictionary to define **structure** *as it is used in science.*

structure _____

_____

_____

Name _____ **Date** _____

Section 3 Seed Reproduction (continued)

Main Idea

Details

The Importance of Pollen and Seeds

I found this information on page _____.

Summarize *key facts about pollen and pollination. Complete the outline.*

Pollen and Pollination in Seed Plants

I. Pollen grains

A. _____

B. _____

II. Pollination

A. _____

_____

B. _____

_____

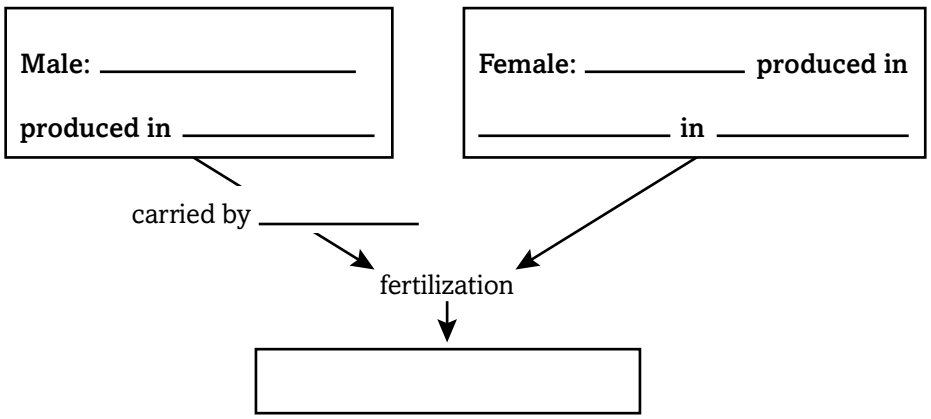
I found this information on page _____.

Model *a seed. Draw a seed and label the* stored food, embryo, *and* seed coat. *Identify the role of each part of the seed.*

Gymnosperm Reproduction

I found this information on page _____.

Sequence *steps of gymnosperm seed formation in the flow chart.*



Name _____ **Date** _____

Section 3 Seed Reproduction (continued)

Main Idea

Details

Angiosperm Reproduction

I found this information on page _____.

Model *a flower by drawing and labeling its parts. Then write a brief caption to identify the male and female reproductive organs and to describe how each organ functions during fertilization.*

Seed Dispersal

I found this information on page _____.

Sequence *the events of fertilization and germination in angiosperms.*

1. Flower is _____.
2. _____.
3. _____.
4. Seed is _____.
5. Conditions become right for _____.
6. _____.
7. _____.
8. Root grows from _____.
9. _____.
10. Photosynthesis begins.

CONNECT IT

The seeds of horse chestnut trees are covered with a prickly outer layer. Propose a way that you think these seeds might be dispersed.

_____

_____

Name _____ **Date** _____

Tie It Together

Describe a Plant

Suppose that you are an explorer who has discovered a new species of plant.

- *Draw and describe the plant below.*
- *Be sure to indicate whether your plant is vascular or nonvascular.*
- *If it does reproduce with seeds, identify it as an angiosperm or a gymnosperm.*
- *Include a diagram that shows the plant's life cycle.*
- *Draw a cross-section of the plant that identifies its reproductive structures.*

Name _____ **Date** _____

Plant Reproduction 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.

Plant Reproduction	After You Read
• Both humans and plants need water, oxygen, energy, and food to grow.	
• Ferns and mosses reproduce by forming spores.	
• All seeds are produced by flowering plants.	
• Some seeds are spread by gravity.	

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 Self Check at the end of each section.
- ☐ Look over the Chapter Review at the end of the chapter.

SUMMARIZE IT

After reading this chapter, identify three things you have learned about plant reproduction.

_____

_____

_____

_____

Name _____ **Date** _____

Human Regulation and Reproduction

Sunshine State Standards—SC.H.2: The student understands that most natural events occur in comprehensible, consistent patterns. Also covers: SC.H.1

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.

Before You Read	Human Regulation and Reproduction
	• Endocrine glands are tissues that produce hormones.
	• Testosterone is the male sex hormone and sperm is the male reproductive cell.
	• Identical twins are not always the same sex.
	• Adulthood is the final stage of human development.

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

Science Journal

Write a paragraph describing how an emergency call might be handled at a fire station.

Name _____ **Date** _____

Human Regulation and Reproduction

Section 1 The Endocrine System

Benchmarks—SC.F.1.3.1: The student understands that living things are composed of major systems that function in reproduction, growth, maintenance, and regulation. Also covers: SC.F.1.3.4, SC.F.1.3.7, SC.H.2.3.1

Scan *the headings, charts, and illustrations in Section 1. Find two glands of the endocrine system that are involved in regulating blood sugar levels and two glands that are involved in regulating calcium levels.*

Helps Regulate Blood Sugar Levels	Helps Regulate Calcium Levels

Review Vocabulary

Define organ *to show its scientific meaning. Then use the word in an original sentence.*

organ _____

New Vocabulary

Define hormone *to show its scientific meaning.*

hormone _____

Academic Vocabulary

Define transport *to show its scientific meaning. Then use the word in an original sentence.*

transport _____

Name _____ **Date** _____

Section 1 The Endocrine System (continued)

Main Idea | **Details**

Functions of the Endocrine System

I found this information on page _____.

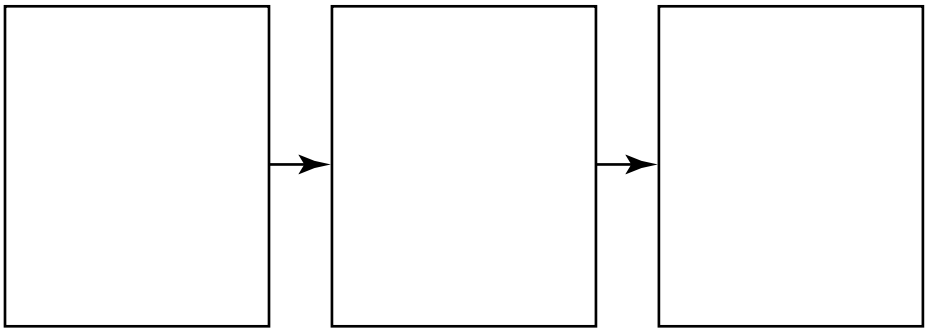
Organize *information about the body's control systems by completing the table below.*

Body System	Function	Body's Response Time

Endocrine Glands

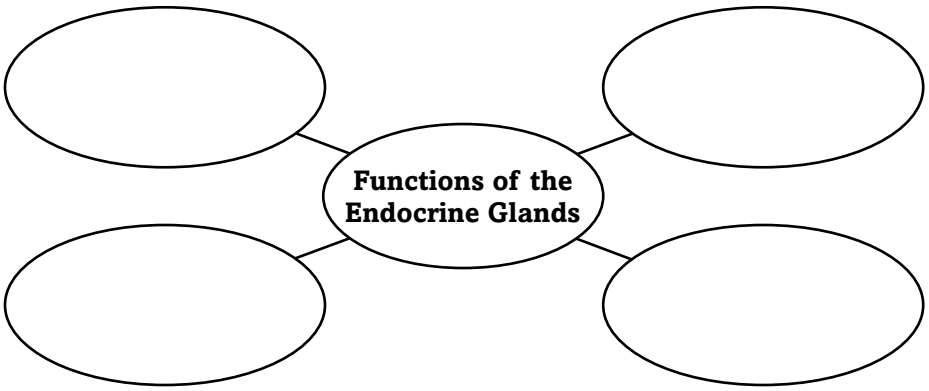
I found this information on page _____.

Sequence *the events that occur when a gland produces a hormone and sends it to a target tissue.*



I found this information on page _____.

Distinguish *the 4 main functions of the endocrine glands by completing the graphic organizer below.*



Name _____ **Date** _____

Section 1 The Endocrine System (continued)

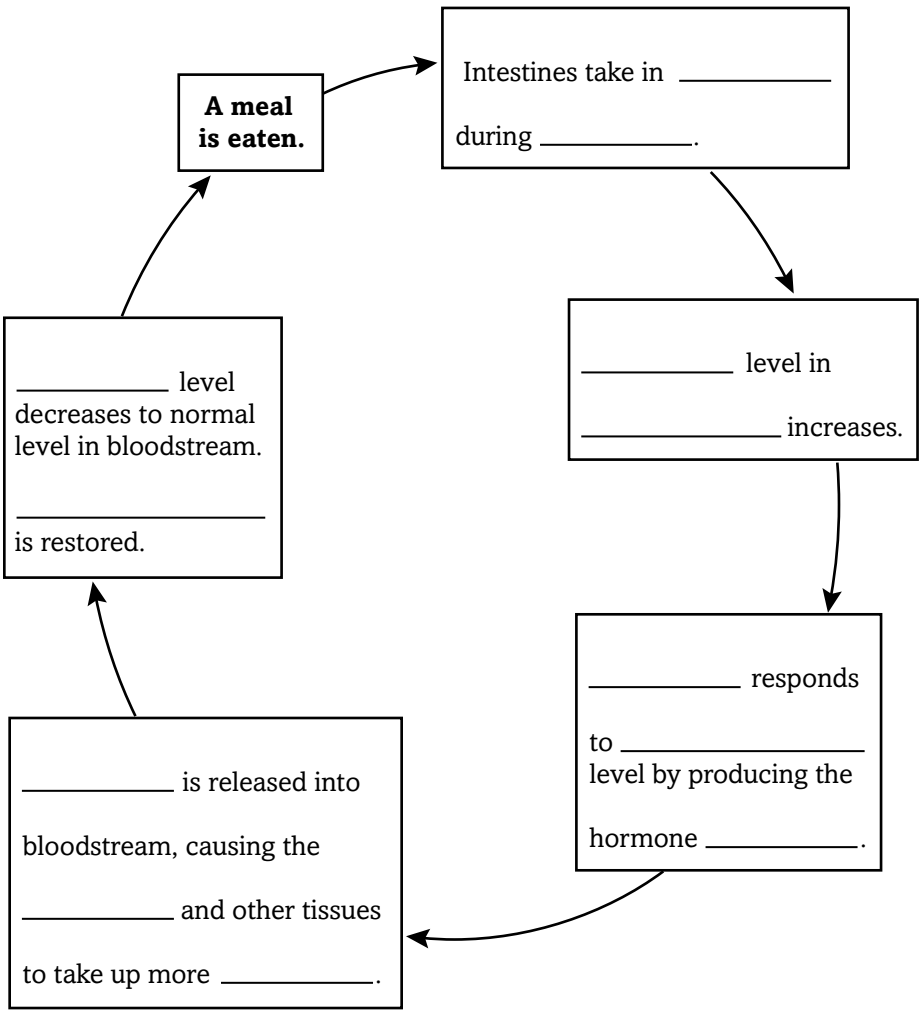
Main Idea

A Negative Feedback System

I found this information on page _____.

Details

Model *a negative-feedback system by completing the cycle chart below.*



CONNECT IT

Draw an outline of the human body on a separate sheet of paper. Label it *male* or *female*. Using information provided in your book, show where endocrine glands are located and then describe their functions.

_____

_____

_____

_____

Name _____ **Date** _____

Human Regulation and Reproduction

Section 2 The Reproductive System

Benchmarks—SC.H.2.3.1: The student recognizes that patterns exist within and across systems.
Also covers: SC.F.1.3.2, SC.F.1.3.4, SC.F.1.3.6, SC.F.1.3.7, SC.H.1.3.4

Predict *three things that might be discussed in Section 2 as you read the headings.*

1. _____

2. _____

3. _____

Review Vocabulary

Define cilia *as it relates to this section.*

cilia _____

_____

New Vocabulary

Identify the vocabulary terms that match the definitions.

_____ male organ that produces sperm and testosterone

_____ male reproductive cells

_____ mixture of sperm and a fluid that helps sperm move and supplies the sperm with an energy source

_____ in humans, female reproductive organ that produces eggs

_____ monthly release of an egg from an ovary in a hormone-controlled process

_____ hollow, pear-shaped, muscular organ in which a fertilized egg develops

_____ monthly flow of blood and tissue cells that occurs when the lining of the uterus breaks down and is shed

Academic Vocabulary

Define **adapt** *using its scientific meaning. Write a sentence that reflects this meaning.*

adapt _____

_____

Name _____ **Date** _____

Section 2 The Reproductive System (continued)

Main Idea

Details

Reproduction and the Endocrine System

I found this information on page _____.

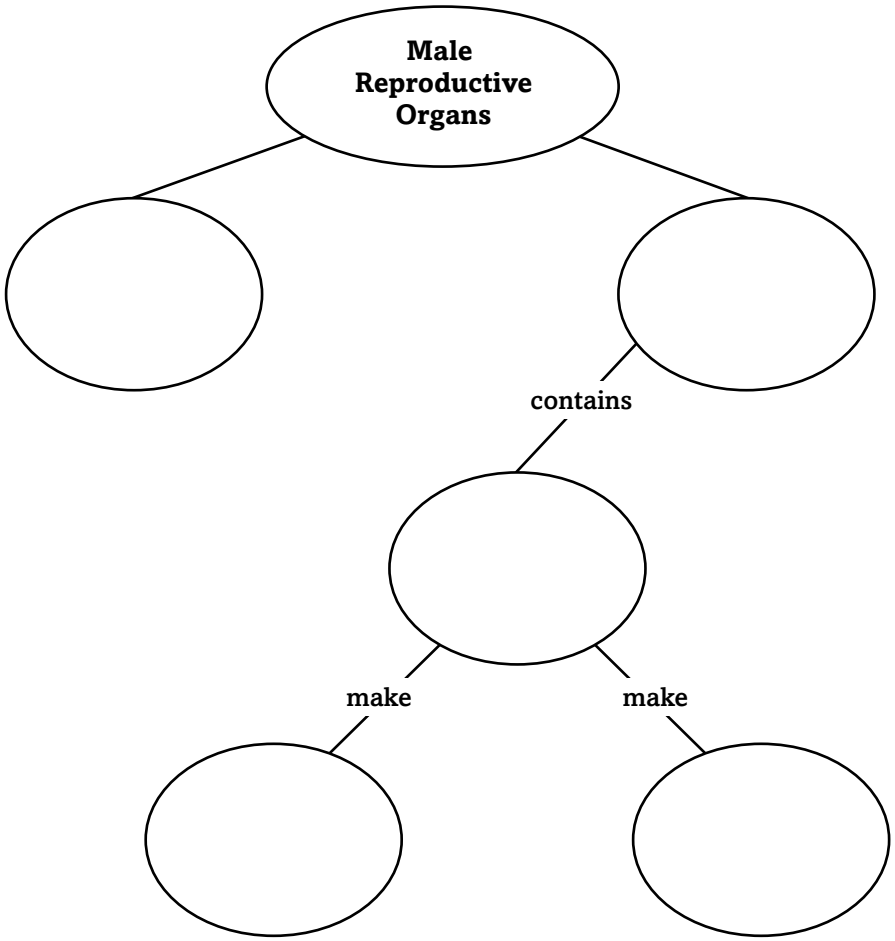
Complete *the graphic organizers below to differentiate the role of the* pituitary gland *in females and males.*

Pituitary Gland in Females →	produces:	→ stimulates:
Pituitary Gland in Males →	produces:	→ stimulates:

The Male Reproductive System

I found this information on page _____.

Summarize *information about the* male reproductive organs *in the graphic organizer below.*



Name _____ **Date** _____

Section 2 The Reproductive System (continued)

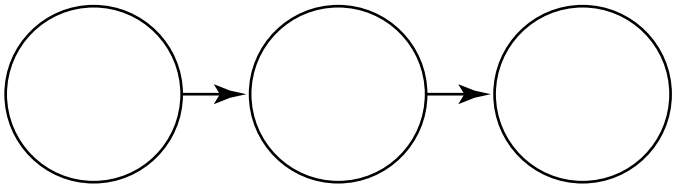
Main Idea

Details

The Female Reproductive System

I found this information on page _____.

Sequence *the steps through which an egg moves in the* female reproductive system.



The Menstrual Cycle

I found this information on page _____.

Analyze *the* phases of the menstrual cycle, *and then complete the table below.*

	Description	Duration
Phase 1		
Phase 2		
Phase 3 (if fertilized egg does not arrive)		

Connect It

Describe how the menstrual cycle would differ in phase 3 if the egg were fertilized. Then infer how future cycles would be affected.

Name _____ **Date** _____

Human Regulation and Reproduction

Section 3 Human Life Stages

Benchmarks—SC.H.1.3.5: The student knows that a change in one or more variables may alter the outcome of an investigation. Also covers: SC.H.1.3.6, SC.H.1.3.7

Skim *the headings in Section 3. Then write three questions that you have about the human life stages.*

1. _____
2. _____
3. _____

Review Vocabulary

Define nutrient *to show its scientific meaning.*

nutrient _____

New Vocabulary

Define the new vocabulary terms to show their scientific meaning.

embryo _____

amniotic sac _____

fetus _____

fetus stress _____

Academic Vocabulary

Define capable. *Use* capable *in an original sentence to show its scientific meaning.*

capable _____

Name _____ **Date** _____

Section 3 Human Life Stages (continued)

Main Idea — Details

Fertilization

I found this information on page _____.

Sequence *the events that result in the* formation of a zygote *by completing the following graphic organizer.*

Sperm enter the vagina and come in contact with chemical secretions in the vagina.

↓

↓

↓

Multiple Births

I found this information on page _____.

Classify *the following descriptions as applying to either* identical twins *or* fraternal twins. *Write* either *for a description that could fit both categories.*

_____ Two eggs are released and both are fertilized.

_____ A fertilized zygote divides into two separate zygotes.

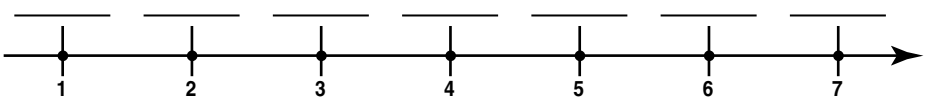
_____ Twins of the same sex are born.

_____ Twins with different sexes are born.

Development Before Birth

I found this information on page _____.

Create *a time line to indicate when the following events occur: a) embryo forms; b) amniotic sac forms; c) head forms; d) fingers and toes form. Not all weeks will be filled in.*



Weeks of Pregnancy

Name _____ **Date** _____

Section 3 Human Life Stages (continued)

Main Idea

Details

The Birthing Process

I found this information on page _____.

Sequence *the events that occur during the* birthing process. *The first one has been completed for you.*

1.	Contractions increase.
2.	
3.	
4.	
5.	

Stages After Birth

I found this information on page _____.

Summarize *information about the* stages after birth *using the table below.*

Stage	Period in Life	Changes That Occur
Infancy		
Childhood		
Adolescence		
Adulthood		
Older Adulthood		

Name _____ **Date** _____

Tie It Together

Synthesize It

Create a journal that reflects your own stages of development. Interview your parents to record information about your size at various ages (including birth weight and length) and when you learned certain skills such as the ability to crawl and walk, when you lost your baby teeth, and so on. Try to find pictures of yourself at various ages to include in your journal.

Name _____ **Date** _____

Human Regulation and Reproduction

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.

Human Regulation and Reproduction	After You Read
• Endocrine glands are tissues that produce hormones.	
• Testosterone is the male sex hormone and sperm is the male reproductive cell.	
• Identical twins are not always the same sex.	
• Adulthood is the final stage of human development.	

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 Self Check at the end of each section.
- ☐ Look over the Chapter Review at the end of the chapter.

SUMMARIZE IT **After reading this chapter, identify three things you have learned about human regulation and reproduction.**

_____

_____

_____

_____

Name _____ **Date** _____

Heredity

Sunshine State Standards—SC.F.2: The student understands the process and importance of genetic diversity.

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.

Before You Read	Heredity
	• Offspring of an organism always have the same traits as the parents.
	• There may be more than two forms of a gene.
	• Some traits are determined by more than one gene.
	• Traits from one type of organism can be introduced into another type of organism.

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

Science Journal

Write three traits that you have and how you would determine how those traits were passed to you.

Name _____ **Date** _____

Heredity

Section 1 Genetics

Benchmarks—SC.F.2.3.2: The student knows that the variation in each species is due to the exchange and interaction of genetic information as it is passed from parent to offspring. Also covers: SC.H.1.3.1, SC.H.1.3.2, SC.H.1.3.4, SC.H.1.3.6, SC.H.2.3.1, SC.H.3.35

Skim *Section 1 of the chapter. Write two questions that come to mind from reading the headings of this section.*

1. _____

2. _____

Review Vocabulary

Define meiosis.

meiosis _____

_____

New Vocabulary

Write a paragraph describing heredity. *Use the five vocabulary terms from the left in your paragraph.*

heredity _____

genetics _____

allele _____

dominant _____

recessive _____

Write a paragraph describing genotype. *Use the five vocabulary terms from the left in your paragraph.*

Punnett square _____

genotype _____

phenotype _____

homozygous _____

heterozygous _____

_____

Academic Vocabulary

Use a dictionary to define dominate.

dominate _____

Name _____ **Date** _____

Section 1 Genetics (continued)

Main Idea	Details
Inheriting Traits *I found this information on page* _____.	**Summarize** *what* alleles *are and how they are inherited.*
Mendel—The Father of Genetics *I found this information on page* _____.	**Identify** *three things Mendel did that made his work more useful than previous studies of heredity.* **1.** _____ **2.** _____ **3.** _____
Genetics in a Garden *I found this information on page* _____.	**Analyze** *one* trait *that Mendel studied.* • Identify the dominant and recessive forms of the trait. • Predict how an organism would look if it had two dominant alleles, two recessive alleles, or one of each allele.

Trait	
Dominant form	
Recessive form	
Two dominant alleles	
Two recessive alleles	
One of each allele	

Name _____ **Date** _____

Main Idea

Genetics in a Garden

I found this information on page _____.

I found this information on page _____.

Details

Complete *the* Punnett square *for black and blond fur in a dog.*

		Black dog	
		B	**b**
Blond dog	**b**		
	b		

Analyze *the Punnett square to complete the sentences.*

The black dog carries _____ black-fur traits. The blond dog carries _____ blond-fur traits. The chance that the offspring will have black fur is _____, or _____ in _____.

Summarize *Mendel's 3 principles of* heredity.

1. _____

2. _____

3. _____

CONNECT IT

A pea plant is heterozygous for purple flowers (Rr). A gardener crosses it with another pea plant with the same genotype. The recessive gene for this trait causes white flowers. Predict the possible genotypes and phenotypes for the offspring. Predict the percentage for each genotype and phenotype.

Name _____ **Date** _____

Heredity

Section 2 Genetics Since Mendel

Benchmarks—SC.F.2.3.2: The student knows that the variation in each species is due to the exchange and interaction of genetic information as it is passed from parent to offspring. Also covers: SC.H.1.3.6, SC.H.1.3.7, SC.H.2.3.1

Scan *the headings and illustrations in Section 2. Write two facts you learned about genetics as you scanned the section.*

1. _____

2. _____

Review Vocabulary

Define gene *to show its scientific meaning.*

gene _____

New Vocabulary

Define each vocabulary term.

incomplete dominance _____

polygenic inheritance _____

sex-linked gene _____

Academic Vocabulary

Use a dictionary to define intermediate. *Then rewrite the sentence below, using your definition.*

When the allele for white four-o'clock flowers and the allele for red four-o'clock flowers combined, the result was an intermediate phenotype—pink flowers.

intermediate _____

Name _____ **Date** _____

Section 2 Genetics Since Mendel (continued)

Main Idea	Details

Incomplete Dominance

I found this information on page _____.

Draw *a Punnett square for red and white four-o'clock flowers showing the possible offspring. Use* R *for the allele for red flowers and* R' *for the allele for white flowers. In each section of the square, write the* genotype *and* phenotype *of the offspring.*

		Red four-o'clock	
		R	R
White four-o'clock	R'		
	R'		

Summarize incomplete dominance.

_____

_____

I found this information on page _____.

Analyze *how a gene with multiple alleles can produce more than three phenotypes. Use blood types as an example.*

_____

_____

_____

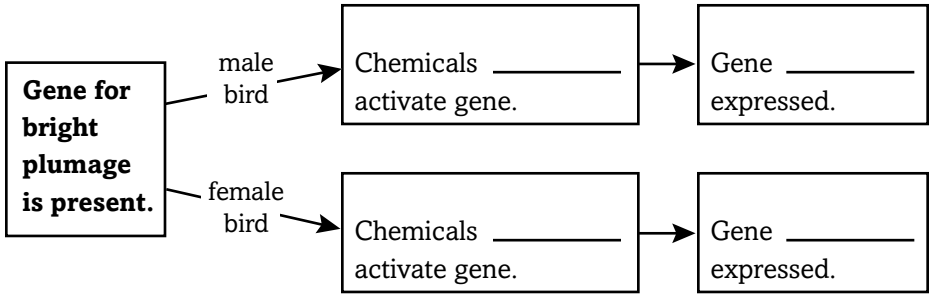
_____

_____

Polygenic Inheritance

I found this information on page _____.

Identify *how* internal environment *can affect the expression of a trait. Complete the flow chart.*



Name _____ **Date** _____

Section 2 Genetics Since Mendel (continued)

Main Idea	Details
Human Genes and Mutations *I found this information on page* _____.	**Analyze** *how chromosome disorders occur.* A chromosome disorder occurs as a result of a _____ _____. It causes an organism to have _____ chromosomes than normal.
Recessive Genetic Disorders *I found this information on page* _____.	**Model** *how two heterozygous parents who do not have a recessive disorder can have a child with the disorder. Use* C *for a dominant allele and* c *for a recessive allele.* **Mother's genotype:** _____ **Father's genotype:** _____ **Child's genotype:** _____
Sex-Linked Disorders *I found this information on page* _____.	**Complete** *the statements about sex-linked traits.* Sex-linked disorders usually result from _____ alleles on the _____ chromosome. A man will have the disorder when _____. A woman will have the disorder when _____ _____.
Pedigrees Trace Traits *I found this information on page* _____.	**Summarize** *why pedigrees are useful to geneticists.* _____ _____ _____

SYNTHESIZE IT

Choose a trait described in Section 2, such as color-blindness, calico patterns in cats, or cystic fibrosis. Choose genotypes for two parents. Draw a pedigree starting with these parents. Continue your pedigree for two generations. Use Punnett squares to help you predict possible offspring.

Name _____ **Date** _____

Heredity

Section 3 Advances in Genetics

Benchmarks—SC.F.2.3.2: The student knows that the variation in each species is due to the exchange and interaction of genetic information as it is passed from parent to offspring. Also covers: SC.H.1.3.5, SC.H.3.3.4

Preview *the section title and headings. Write three questions that you would ask a modern geneticist after your preview.*

1. _____

2. _____

3. _____

Review Vocabulary

Define DNA *in an original sentence to show its scientific meaning.*

DNA _____

New Vocabulary

Define genetic engineering.

genetic engineering _____

Academic Vocabulary

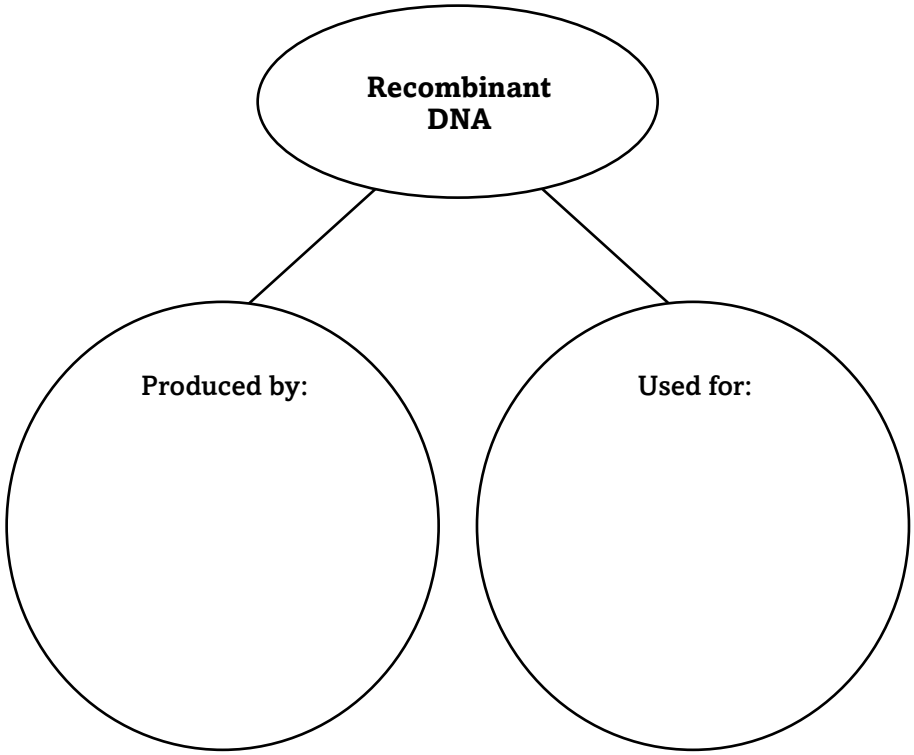
Use a dictionary to define insert *as a verb. Then find a sentence in Section 3 that uses the term or a form of the term.*

insert _____

Name _____ **Date** _____

Section 3 Advances in Genetics (continued)

Main Idea	Details
Genetic Engineering *I found this information on page _____.*	**Distinguish** *three uses for* genetic engineering. **1.** _____ **2.** _____ **3.** _____
I found this information on page _____.	**Organize** *information about* recombinant DNA. ***Complete the graphic organizer.***
I found this information on page _____.	**Summarize** *how* gene therapy *may be used in the future.* _____ _____ _____ _____



Name _____ **Date** _____

Section 3 Advances in Genetics (continued)

Main Idea

Details

Genetic Engineering

I found this information on page _____.

Create *a flow chart about gene therapy. Show how the gene gets into the body and what happens when it reaches the cells.*

Summarize *each step of gene therapy in your model above.*

1. _____
2. _____
3. _____

I found this information on page _____.

Evaluate *the benefits and potential risks of* genetic engineering *of crop plants.*

Benefits	Risks

CONNECT IT

Describe how viruses are useful tools in genetic engineering.

_____

_____

_____

_____

Name _____ **Date** _____

Tie It Together

Suppose that Gregor Mendel came to visit a modern genetics laboratory and you were asked to give him a tour. Write a report describing what you would show him and how you would explain modern genetics. Remember that he does not know the words gene *or* allele, *although he described "factors" that controlled traits.*

Name _____ **Date** _____

Heredity 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.

Heredity	After You Read
• Offspring of an organism always have the same traits as the parents.	
• There may be more than two forms of a gene.	
• Some traits are determined by more than one gene.	
• Traits from one type of organism can be introduced into another type of organism.	

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 Self Check at the end of each section.
- ☐ Look over the Chapter Review at the end of the chapter.

SUMMARIZE IT

After reading this chapter, identify three things you have learned about heredity.

_____

_____

_____

_____

Name _____ Date _____

Adaptations over Time

Sunshine State Standards—SC.G.1: The student understands the competitive, interdependent, cyclic nature of living things. Also covers: SC.F.2, SC.H.1

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.

Before You Read	Adaptations over Time
	• Traits acquired by an organism during its life can be passed on to its offspring.
	• Most evidence of evolution comes from fossils.
	• Organisms with traits best suited to their environment are more likely to survive and reproduce.
	• Humans share a common ancestor with other primates.

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

Science Journal

Pick a favorite plant or animal and list all the ways it is well-suited to its environment.

Name _____ **Date** _____

Adaptations over Time

Section 1 Ideas About Evolution

Benchmarks—SC.F.2.3.3: The student knows that generally organisms in a population live long enough to reproduce because they have survival characteristics. Also covers: SC.F.2.3.2, SC.F.2.3.4, SC.G.1.3.2, SC.H.1.3.1, SC.H.1.3.2, SC.H.1.3.6, SC.H.1.3.7, SC.H.2.3.1, SC.H.3.3.3, SC.H.3.3.5

Predict *three things that will be discussed in Section 1 as you scan the headings and illustrations.*

1. _____
2. _____
3. _____

Review Vocabulary

Define gene *to show its scientific meaning.*

gene _____

_____

_____

New Vocabulary

Write the correct vocabulary term next to its definition.

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

_____ change in inherited characteristics over time

_____ process by which organisms with traits best suited to their environment are more likely to survive and reproduce

_____ inherited trait that makes an individual different from other members of its species

_____ any variation that makes an organism better suited to its environment

Academic Vocabulary

Use a dictionary to define **hypothesis.**

hypothesis _____

_____

_____

Name _____ **Date** _____

Section 1 Ideas About Evolution (continued)

Main Idea	Details
Early Models of Evolution *I found this information on page _____.*	**Identify** *why* Lamarck's theory of evolution *was not accepted.* _____ _____ _____
Darwin's Model of Evolution *I found this information on page _____.*	**Analyze** *Darwin's explanation of the origins of the 13 species of Galápagos finches. Fill in the missing words.* The Galápagos finches _____ for food. Those that had _____ and _____ that allowed them to get food were able to _____ longer and _____ more. Over time, groups of finches became separate _____.
Natural Selection *I found this information on page _____.*	**State** *the 5 main principles of* natural selection. **1.** _____ **2.** _____ **3.** _____ **4.** _____ _____ **5.** _____ _____
Variation and Adaptation *I found this information on page _____.*	**Compare and contrast** *variations and adaptations.*

	Variation	Adaptation
Definition		
Examples		

Name _____ **Date** _____

Section 1 Ideas About Evolution (continued)

Main Idea

Details

Variation and Adaptation

I found this information on page _____.

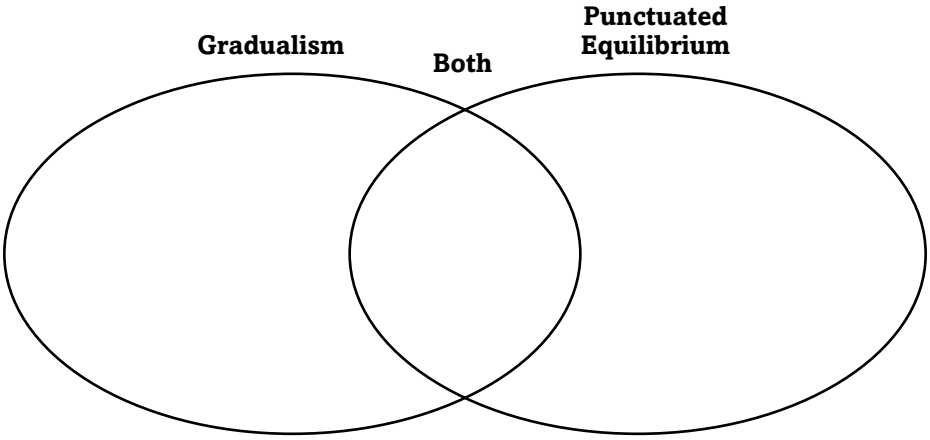
Complete *the table explaining factors that can lead to changes in a population.*

	What Happens	How It Leads to Change
Changes in gene sources		
Geographic isolation		

The Speed of Evolution

I found this information on page _____.

Compare and contrast gradualism *and* punctuated equilibrium. *Select ideas from your reading to fill in the Venn diagram.*



Synthesize It

Describe how natural selection can lead to the formation of a new species. Include factors such as migration and geographic isolation.

_____

_____

_____

_____

_____

Name _____ **Date** _____

Adaptations over Time

Section 2 Clues About Evolution

Benchmarks—SC.F.2.3.4: The student knows that the fossil record provides evidence that changes in the kinds of plants and animals in the environment have been occurring over time. Also covers: SC.H.1.3.6, SC.H.2.3.1

Scan *Section 2 of your book. Write two items in each of the boxes below.*

What I know about fossils	What I want to know about fossils

Review Vocabulary

Define epoch *to show its scientific meaning.*

epoch _____

_____

New Vocabulary

Write the correct vocabulary term next to each definition.

_____ a type of rock made from pieces of other rocks, minerals deposited from a solution, or plant and animal matter

_____ element that gives off a steady amount of radiation as it slowly changes to a nonradioactive element

_____ study of embryos and their development

_____ similar in structure, origin, or function

_____ structure that does not seem to have a function and that may once have functioned in the body of an ancestor

Academic Vocabulary

Use a dictionary to define **method** *to show its scientific meaning.*

method _____

_____

Name _____ **Date** _____

Section 2 Clues About Evolution (continued)

Main Idea

Details

Clues from Fossils

I found this information on page _____.

Create *a concept map to summarize information about the Green River formation. Include information about*

- where it is located
- where it was located in the past
- how fossils formed
- what scientists learn from the fossils there.

Types of Fossils

I found this information on page _____.

Summarize *the types of rock in which fossils are commonly found.*

Most fossils are found in _____ rock. They are most often found in _____.

Determining a Fossil's Age

I found this information on page _____.

Organize *information about how scientists determine the age of fossils. Complete the outline.*

I. Relative dating

A. _____

B. provides an estimate of a fossil's age by _____

_____

II. Radiometric dating

A. _____

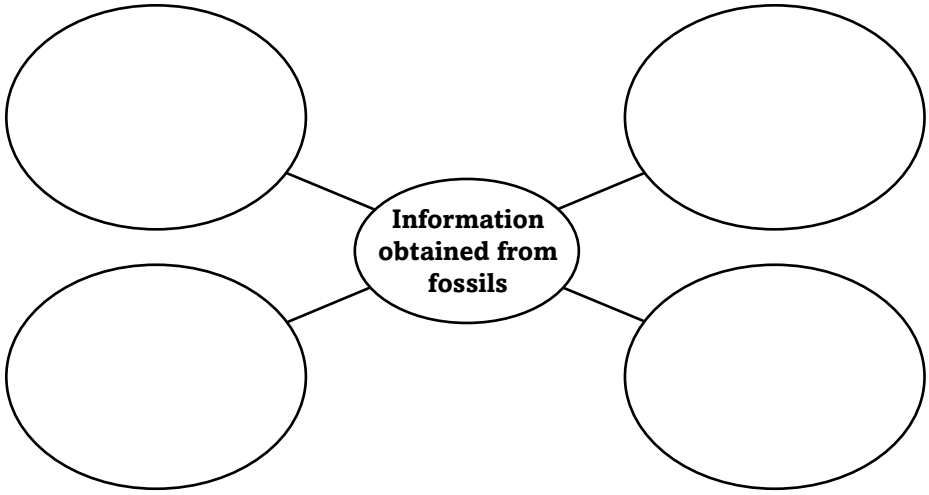
B. Scientists estimate age by _____

_____

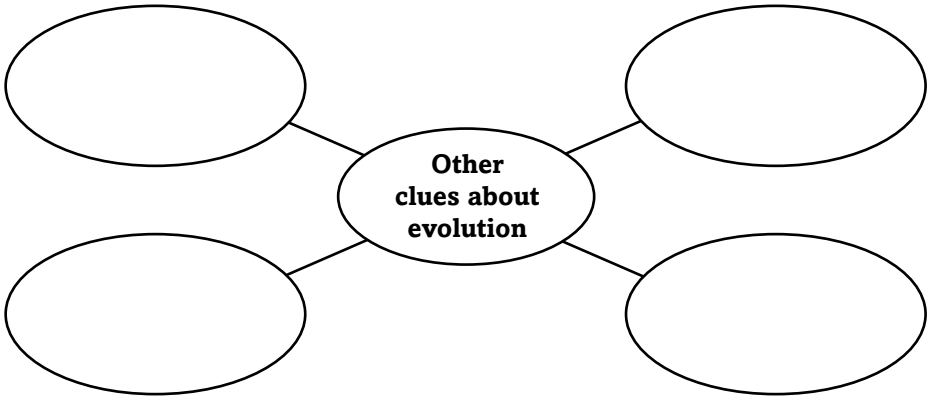
Name _____ **Date** _____

Section 2 Clues About Evolution (continued)

Main Idea	Details
Fossils and Evolution *I found this information on page _____.*	*Complete the graphic organizer to identify what scientists learn from fossils.*



More Clues About Evolution *I found this information on page _____.*	**Organize** *information about other clues scientists use to study evolution.*



SYNTHESIZE IT

A scientist discovers a new species of mammal. How could the scientist determine its evolutionary relationships to other animals? Explain how the scientist could use each type of evidence discussed in the section.

_____

_____

_____

_____

Name _____ **Date** _____

Adaptations over Time

Section 3 The Evolution of Primates

Benchmarks—SC.F.2.3.4: The student knows that the fossil record provides evidence that changes in the kinds of plants and animals in the environment have been occurring over time. Also covers: SC.G.1.3.1, SC.G.1.3.2, SC.G.1.3.3, SC.H.1.3.3, SC.H.1.3.5, SC.H.1.3.6, SC.H.1.3.7, SC.H.3.3.5

Skim *Section 3 of your book. Read the headings. Write three questions that come to mind.*

1. _____
2. _____
3. _____

Review Vocabulary

Define opposable *to show its scientific meaning.*

opposable _____

New Vocabulary

Define the following terms. Then use each term in a sentence.

primates _____

hominid _____

Homo sapiens _____

Academic Vocabulary

Use a dictionary to define similar.

similar _____

Name _____ **Date** _____

Section 3 The Evolution of Primates (continued)

Main Idea

Details

Primates

I found this information on page _____.

Analyze *adaptations that are common among primates by completing the table below. List three primate* adaptations *and the* functions *each allows.*

Adaptation	Function

I found this information on page _____.

Distinguish *the 3 main characteristics of* hominids.

1. _____

2. _____

3. _____

I found this information on page _____.

Sequence *the ancestors of early humans. Create a time line of hominids in the boxes below. Identify and describe the hominid that lived during each time period.*

Time period: 4 million to 6 million years ago
Hominid:
Characteristics:

Time period: 1.5 million to 2 million years ago
Hominid:
Characteristics:

Time period: 1.6 million years ago
Hominid:
Characteristics:

Name _____ **Date** _____

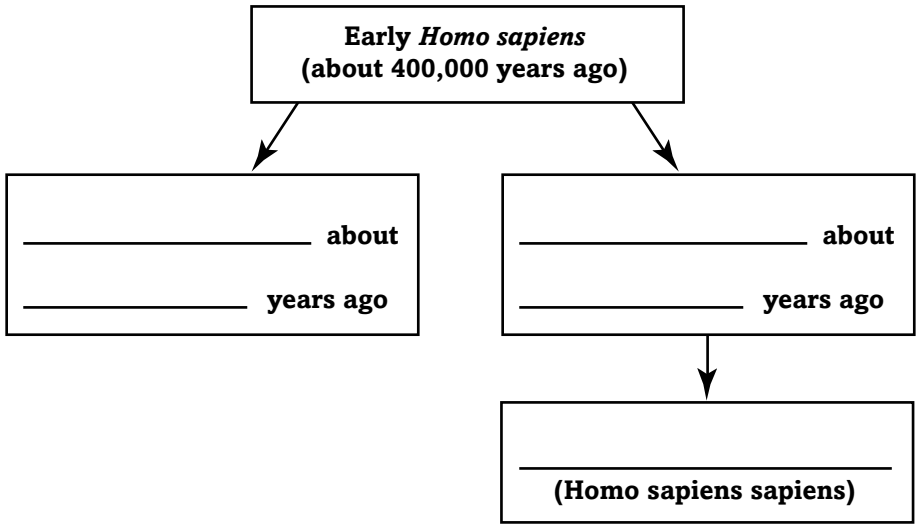
Section 3 The Evolution of Primates (continued)

Main Idea | **Details**

Humans

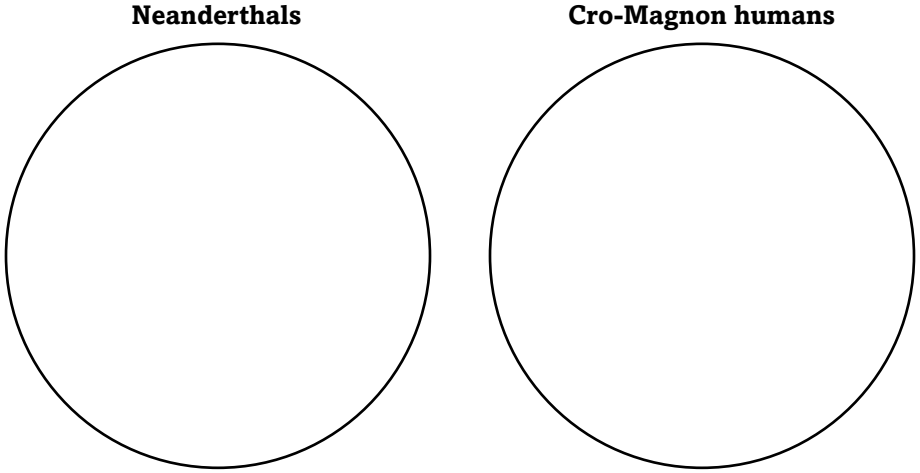
I found this information on page _____.

Organize *information about the origins of modern humans.*



I found this information on page _____.

Contrast *Neanderthals and Cro-Magnon humans by completing the diagram.*



CONNECT IT

Hypothesize how scientists might determine whether Neanderthals are ancestors of modern humans.

_____

_____

_____

Name _____ **Date** _____

Tie It Together

Make Fossils

With a partner, model a set of fossils that show how organisms can change over time. Draw or model three related organisms. One should be the original organism. The others should be descendants of the original organism. Record the adaptations shown by your fossils. What environmental changes might have led to the adaptations?

Trade fossils with another pair. Describe the fossils that you are given. What adaptations can you find?

Name _____ **Date** _____

Adaptations over Time 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 with these.

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

Adaptations over Time	After You Read
• Traits acquired by an organism during its life can be passed on to its offspring.	
• Most evidence of evolution comes from fossils.	
• Organisms with traits best suited to their environment are more likely to survive and reproduce.	
• Humans share a common ancestor with other primates.	

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 Self Check at the end of each section.
- ☐ Look over the Chapter Review at the end of the chapter.

SUMMARIZE IT

After reading the chapter, identify three things you have learned about adaptations of organisms over time.

_____

_____

_____

_____

Name _____ Date _____

Interactions of Living Things

Sunshine State Standards—SC.G.1: The student understands the competitive, interdependent, cyclic nature of living things. Also covers: SC.B.1, SC.G.2, SC.H.2

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.

Before You Read	Interactions of Living Things
	• Both living and nonliving factors affect the organisms in an ecosystem.
	• Some environments have no limiting factors.
	• Organisms interact only with other members of their species.
	• Energy flows from an organism that is being eaten to the organism that is eating.

FOLDABLES™ Study Organizer

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

Science Journal

Write a list of things you interact with each day.

Name _____ **Date** _____

Interactions of Living Things

Section 1 The Environment

Benchmarks—SC.G.1.3.4: The student knows that the interactions of organisms with each other and with the non-living parts of their environments result in the flow of energy and the cycling of matter throughout the system.
Also covers: SC.G.2.3.2, SC.G.2.3.3, SC.H.1.3.3, SC.H.1.3.6, SC.H.2.3.1, SC.H.3.3.4

Skim *through Section 1 of your book. Write three questions that come to mind from reading the headings and examining the illustrations.*

1. _____

2. _____

3. _____

Review Vocabulary

Define climate *to show its scientific meaning.*

climate _____

_____

New Vocabulary

Use your book to identify the terms. Write the correct term in front of its definition.

_____ study of all of the interactions among organisms and their environment

_____ nonliving part of the environment

_____ living part of the environment

_____ all members of one species that live in the same area at the same time

_____ group of populations that interact with one another in a given area

_____ the biotic community in a given area and the abiotic factors that affect it

_____ part of Earth that supports life—the top part of Earth's crust, all of the waters covering Earth's surface, and the surrounding atmosphere

Academic Vocabulary

Use a dictionary to define interact *to show its scientific meaning.*

interact _____

_____

Name _____ **Date** _____

Section 1 The Environment (continued)

Main Idea | **Details**

Ecology

I found this information on page _____.

Organize *the factors in the environment that influence organisms by completing the graphic organizer below.*

Abiotic Factors

I found this information on page _____.

Summarize *why the 5* abiotic factors *are important to organisms in a particular environment.*

Abiotic Factor	Importance
	All living things need water to survive. The bodies of most organisms are 50–95 percent water. Many important life processes need water in order to occur.
Sunlight	
Temperature	
Air	
	Nutrients, minerals, and moisture in soil determine what plants grow in an area. The types of plants in an area help determine which other organisms live there.

Name _____ **Date** _____

Section 1 The Environment (continued)

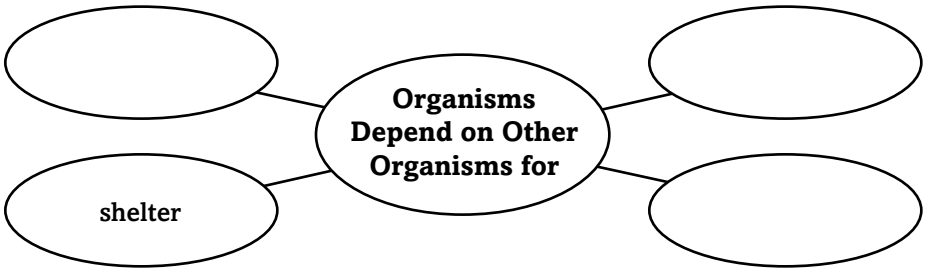
Main Idea

Details

Biotic Factors

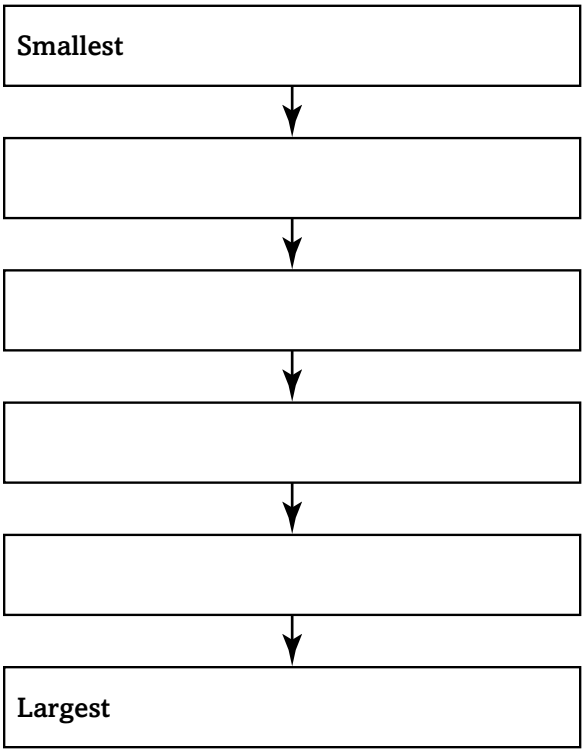
I found this information on page _____.

Identify *three things that organisms depend on one another for.*



I found this information on page _____.

Sequence *from smallest to largest the levels of organization in which organisms interact with one another and with abiotic factors.*



Synthesize It

The living world also can be organized into smaller levels. Working backwards from organism, describe four smaller levels arranged from largest to smallest.

_____

_____

Name _____ **Date** _____

Interactions of Living Things

Section 2 Interactions Among Living Organisms

Benchmarks—SC.G.1.3.4: The student knows that the interactions of organisms with each other and with the non-living parts of their environments result in the flow of energy and the cycling of matter. Also covers: SC.G.2.3.3, SC.H.2.3.1

Predict *three things that might be discussed in Section 2 as you read the headings.*

1. _____

2. _____

3. _____

Review Vocabulary

Define coexistence *to show its scientific meaning.*

coexistence

_____

_____

New Vocabulary

Use your book to identify the correct terms. Write them in the spaces provided.

_____ number of individuals in a population that occupy a definite area

_____ any biotic or abiotic factor that limits the number of individuals in a population

_____ any close interaction among two or more different species

_____ role of an organism in the ecosystem: including what it eats, how it interacts with other organisms, and how it gets its food

_____ place where an organism lives

Academic Vocabulary

Use a dictionary to define **regulate** *to show its scientific meaning.*

regulate

_____

_____

Name _____ **Date** _____

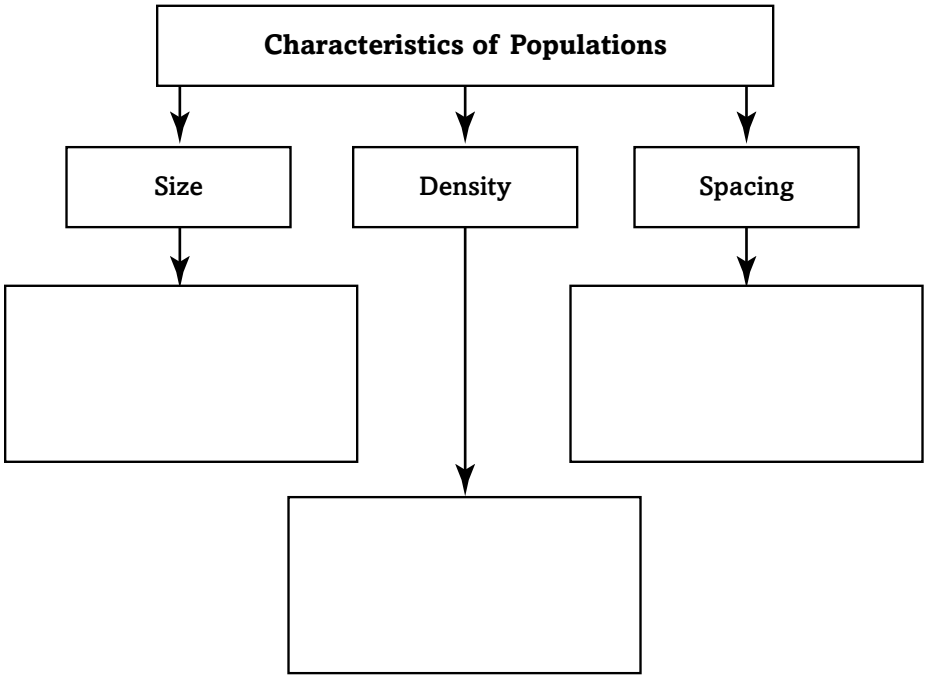
Main Idea

Details

Characteristics of Populations

I found this information on page _____.

Organize *information about the characteristics of* **populations.** *Fill in the definitions in the graphic organizer.*



I found this information on page _____.

Compare *the terms* **limiting factor** *and* **carrying capacity.**

Term	Description
Limiting factor	
Carrying capacity	

I found this information on page _____.

Define **biotic potential** *by filling in the missing terms.*

Biotic potential: The _____ rate at which a population _____ when there are no _____ or enemies, there is plenty of food and _____, and the weather is ideal.

Name _____ **Date** _____

Section 2 Interactions Among Living Organisms (continued)

Main Idea | **Details**

Symbiosis and Other Interactions

I found this information on page _____.

Distinguish *the types of* **symbiotic relationships** *by completing the table below.*

Symbiotic Relationship	Description
	Both organisms benefit.
Commensalism	
	One organism benefits and the other is harmed.

I found this information on page _____.

Analyze ***how predators may cause a prey population to grow more healthy and stronger over several generations.***

_____

_____

_____

_____

I found this information on page _____.

Summarize ***the difference between a*** **habitat** ***and a*** **niche.**

_____

_____

_____

_____

_____

SYNTHESIZE IT

Compare disease with predation as a limiting factor for human populations.

_____

_____

_____

Name _____ **Date** _____

Interactions of Living Things

Section 3 Matter and Energy

Benchmarks—SC.G.1.3.5: The student knows that life is maintained by a continuous input of energy from the sun and by the recycling of the atoms that make up the molecules of living organisms. Also covers: SC.B.1.3.4, SC.B.2.3.1, SC.D.1.3.2, SC.G.1.3.4, SC.H.1.3.4, SC.H.1.3.5, SC.H.2.3.1, SC.H.3.3.2

Scan *the headings and illustrations of Section 3 to identify two cycles that will be discussed.*

1. _____

2. _____

Review Vocabulary

Define consumer *to show its scientific meaning. Then write a sentence using the term.*

consumer _____

New Vocabulary

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

food chain _____

food web _____

water cycle _____

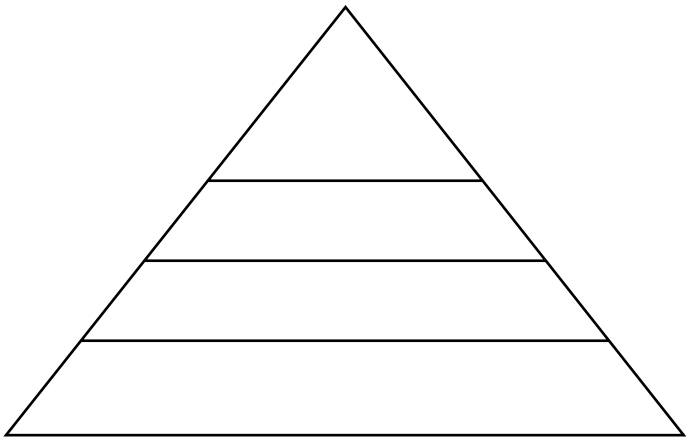
Academic Vocabulary

Use a dictionary to define transfer *to show its scientific meaning.*

transfer _____

Name _____ **Date** _____

Section 3 Matter and Energy (continued)

Main Idea	Details
Energy Flow Through Ecosystems *I found this information on page _____.*	**Complete** *a pond food chain such as the one shown in your book. Then describe what the arrows in the food chain show.* Aquatic plants → Insects → _____ → _____ → _____
I found this information on page _____.	**Define** *what a* food web *is and summarize why it is a more complete model than a food chain.*
I found this information on page _____.	**Identify** *organisms for each level of an ecological pyramid. Write the name of the organism inside the correct level of the pyramid. Then, label each level as consisting of* producers *or* consumers. _____ _____ _____ _____ 

Name _____ **Date** _____

Section 3 Matter and Energy (continued)

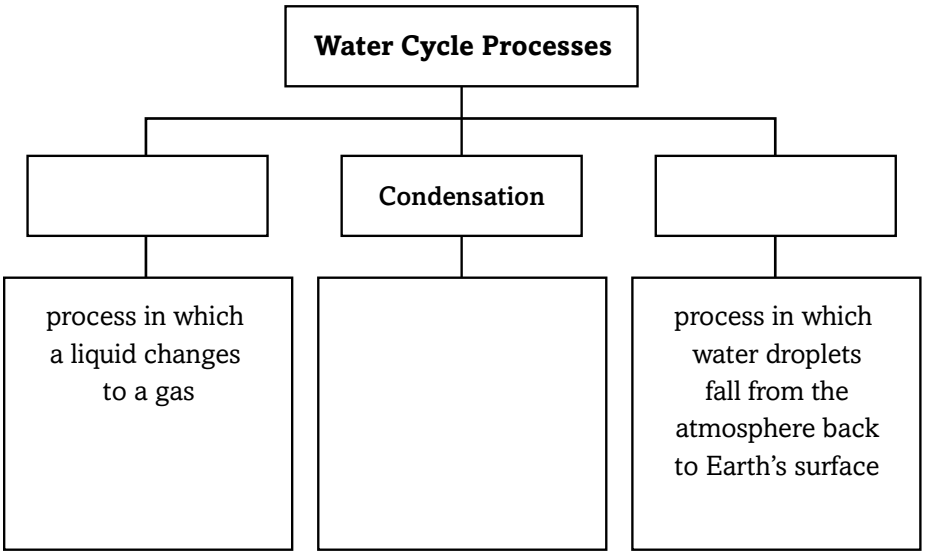
Main Idea

Details

The Cycles of Matter

I found this information on page _____.

Complete *the organizer about* water cycle processes.



I found this information on page _____.

Model *the* carbon cycle *in the space below. Draw a picture that shows how carbon moves among the atmosphere, organisms, and solid Earth.*

CONNECT IT

Describe two ways in which you are a part of the carbon cycle.

_____

_____

_____

Name _____ **Date** _____

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 was a producer or a consumer.
3. For each consumer, identify at least one food that it ate.
4. Then, create a food web that includes yourself.

Name _____ **Date** _____

Interactions of Living Things

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.

Interactions of Living Things	After You Read
• Both living and nonliving factors affect the organisms in an ecosystem.	
• Some environments have no limiting factors.	
• Organisms interact only with other members of their species.	
• Energy flows from an organism that is being eaten to the organism that is eating.	

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 Self Check at the end of each section.
- ☐ Look over the Chapter Review at the end of the chapter.

SUMMARIZE IT **After reading this chapter, identify three things that you have learned about interactions of living things.**

_____

_____

_____

Name _____ **Date** _____

Oceanography

Sunshine State Standards—SC.D.1: The student recognizes that processes in the lithosphere, atmosphere, hydrosphere, and biosphere interact to shape the Earth. Also covers: SC.D.2, SC.G.2, SC.H.1

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.

Before You Read	Oceanography
	• Sediment that originates on land rarely settles as far as the deep ocean floor.
	• Hot water streams out into surrounding seawater through holes and cracks along mid-ocean ridges.
	• The Sun is the source of nearly all of the energy used by organisms in the ocean.
	• Factories sometimes release chemicals into streams that eventually empty into the ocean.

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

Science Journal

Describe characteristics of three marine organisms you are familiar with.

Name _____ **Date** _____

Oceanography

Section 1 The Seafloor

Benchmarks—SC.D.1.3.2: The student knows that over the whole Earth, organisms are growing, dying, and decaying as new organisms are produced by the old ones. Also covers: SC.D.1.3.3, SC.D.1.3.5, SC.H.1.3.5

Predict *three things that might be discussed as you scan the headings and illustrations of Section 1.*

1. _____
2. _____
3. _____

Review Vocabulary

Define magma *using its scientific meaning.*

magma _____

New Vocabulary

Define the following terms.

abyssal plain _____

mid-ocean ridge _____

trench _____

Academic Vocabulary

Use a dictionary to find the scientific definition of derive.

derive _____

Name _____ **Date** _____

Section 1 The Seafloor (continued)

Main Idea

Details

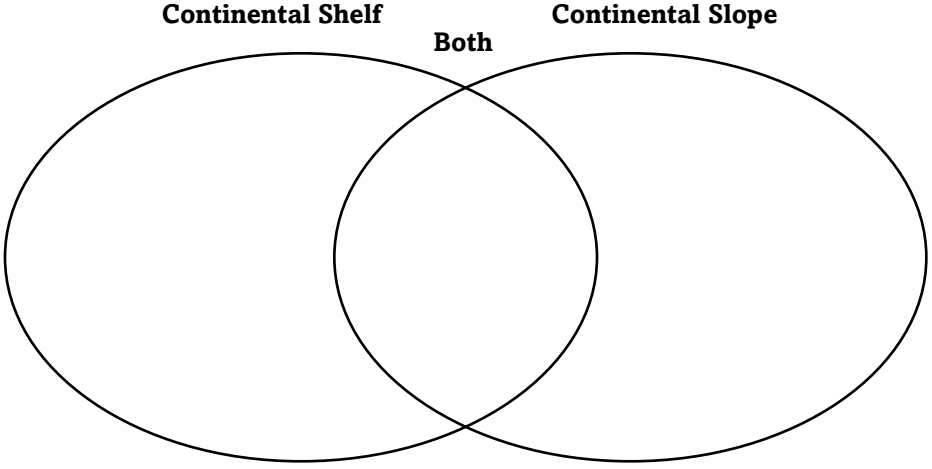
The Ocean Basins

I found this information on page _____.

Model *the* ocean basin. *Label each of the following features in your drawing.*

- abyssal plain
- continental shelf
- continental slope
- where new ocean crust forms
- where ocean crust is destroyed
- oceanic trench
- seamount
- volcanic island
- mid-ocean ridge

Distinguish *between the* continental shelf *and the* continental slope *by inserting one fact into each section of the Venn diagram.*



Name _____ **Date** _____

Section 1 The Seafloor (continued)

Main Idea

Details

Ridges and Trenches

I found this information on page _____.

Sequence *how seafloor is constantly forming and being destroyed.*

At Mid-Ocean Ridges	At Subduction Zones
	seafloor is destroyed
new ocean floor forms	

Mineral Resources from the Seafloor

I found this information on page _____.

Organize *resources that exist on the* continental shelf *and in the deep ocean by listing them below.*

Continental Shelf Deposits	Deep Ocean Water Deposits

Connect It

Infer why retrieving resources from deep water is such a challenge.

_____

_____

_____

Name _____ **Date** _____

Oceanography

Section 2 Life in the Ocean

Benchmarks—SC.D.1.3.2: The student knows that over the whole Earth, organisms are growing, dying, and decaying as new organisms are produced by the old ones. Also covers: SC.A.1.3.1, SC.B.1.3.3, SC.D.1.3.3, SC.F.1.3.1, SC.F.2.1.3, SC.G.1.3.4, SC.G.1.3.5, SC.G.2.3.2, SC.H.1.3.6

Skim *through Section 2 of your book. Read the headings and examine the illustrations. Write three questions that come to mind.*

1. _____

2. _____

3. _____

Review Vocabulary

Define nutrient *using its scientific meaning.*

nutrient _____

_____

New Vocabulary

Use your book to define each of the following terms. Then write a sentence to show its scientific meaning.

estuary _____

_____

_____

_____

reef _____

_____

_____

_____

Academic Vocabulary

Use a dictionary to define undergo. *Then write a sentence to show its scientific meaning.*

undergo _____

_____

Name _____ **Date** _____

Section 2 Life in the Ocean (continued)

Main Idea

Details

Life Processes

I found this information on page _____.

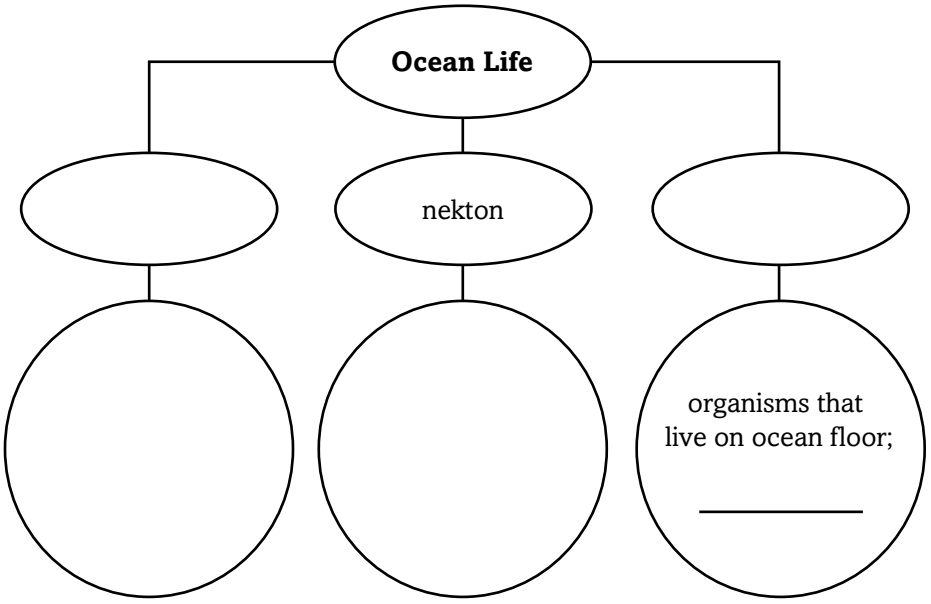
Summarize *the ways that* marine organisms *obtain energy by completing the chart below.*

Name of process used to make food	How food is made	Example of producers	Example of consumers
Photosynthesis			
Chemosynthesis			

Ocean Life

I found this information on page _____.

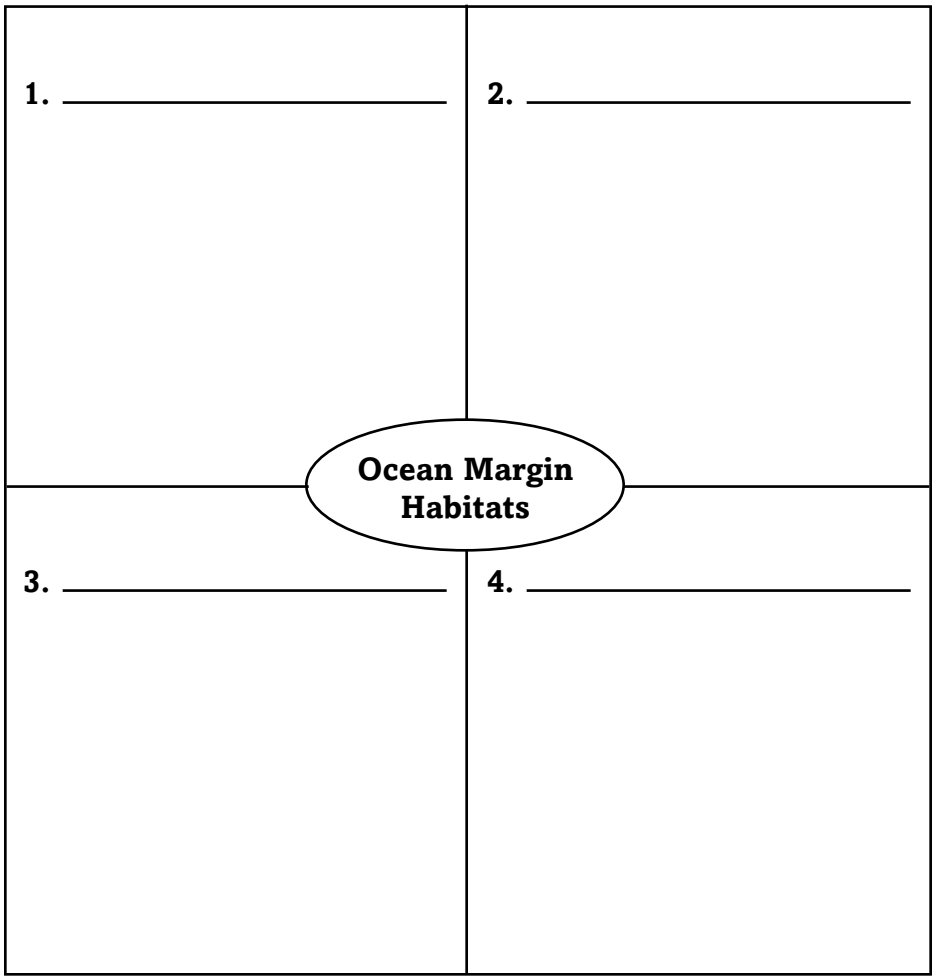
Classify *the types of plants and animals that live in the ocean. Complete the graphic organizer below to organize the types, include descriptions and examples of each type.*



Name _____ **Date** _____

Section 2 Life in the Ocean (continued)

Main Idea	Details
Ocean Margin Habitats *I found this information on page _____.*	**Compare and contrast** *ocean margin habitats. Identify 4 margin habitats and at least four examples of organisms that live in each one. Make a sketch of each habitat to help you remember.*



SYNTHESIZE IT

Compare and contrast food webs that rely on chemosynthesis with food webs that depend on photosynthesis.

_____

_____

_____

_____

_____

Name _____ **Date** _____

Oceanography

Section 3 Ocean Pollution

Benchmarks—SC.D.2.3.2: knows the positive and negative consequences of human action on the Earth's systems. Also covers: SC.D.1.3.3, SC.G.2.3.2, SC.G.2.3.3, SC.G.2.3.4, SC.H.1.3.1, SC.H.1.3.2, SC.H.1.3.3, SC.H.1.3.4, SC.H.1.3.6, SC.H.3.3.6, SC.H.3.3.7

Scan *Use the checklist below to preview Section 3 of your book.*

- ☐ Read all section titles.
- ☐ Read all bold words.
- ☐ Read all charts and graphs.
- ☐ Look at all of the pictures.
- ☐ Think about what you already know about ocean pollution.

Write three facts you discovered about ocean pollution.

1. _____
2. _____
3. _____

Review Vocabulary

Define runoff *using its scientific meaning.*

runoff _____

New Vocabulary

Use your book to define pollution. *Then identify three types of pollution with which you are already familiar.*

pollution _____

Academic Vocabulary

Use a dictionary to define phenomenon *using its scientific meaning.*

phenomenon _____

Name _____ **Date** _____

Section 3 Ocean Pollution (continued)

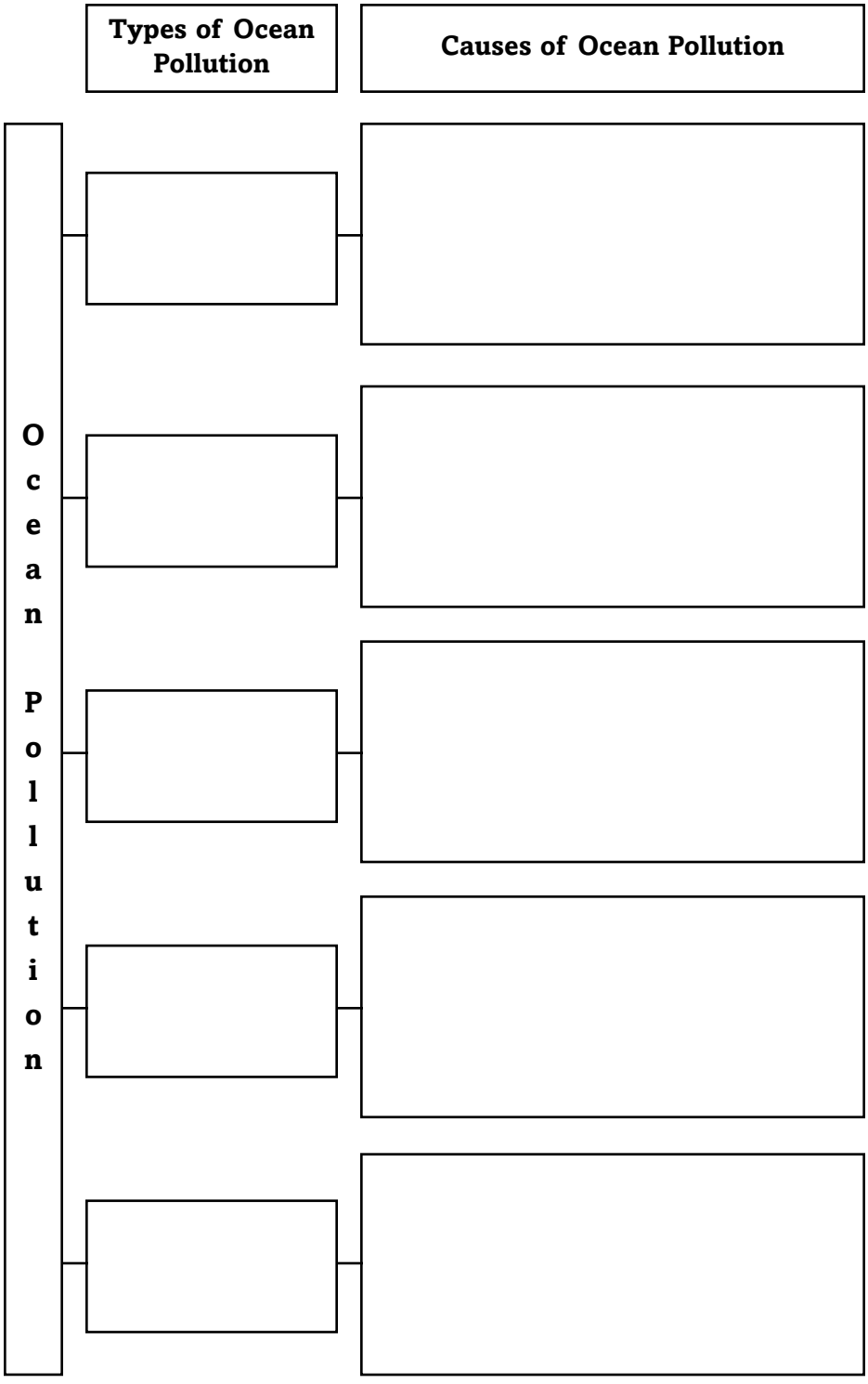
Main Idea

Sources of Pollution

I found this information on page _____.

Details

Complete *the graphic organizer to identify five types of* ocean pollution *and their causes or sources.*



Name _____ **Date** _____

Section 3 Ocean Pollution (continued)

Main Idea

Details

Effects of Pollution

I found this information on page _____.

Summarize *the effects of pollution by completing the outline below.*

Effects of Pollution

I. Delaware to North Carolina rivers and estuaries

A. Type of pollution— _____

B. Effects

1. have killed billions of fish

2. _____

_____

B. Florida

A. Type of pollution— _____

B. Effects

1. _____

2. _____

Controlling Pollution

I found this information on page _____.

List *five things you can do to reduce ocean pollution. Highlight the way you think would make the most impact.*

1. _____

2. _____

3. _____

4. _____

5. _____

CONNECT IT

Design a flow chart to show how pollution travels from your location to the ocean.

Name _____ **Date** _____

Tie It Together

Make a diagram of an ocean basin. Include

- the major features of the basin,
- the locations of continental shelf and deep-water resources,
- an example of a food chain,
- two examples of ocean pollution.

Name _____ **Date** _____

Oceanography 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.

Oceanography	After You Read
• Sediment that originates on land rarely settles as far as the deep ocean floor.	
• Hot water streams out into surrounding seawater through holes and cracks along mid-ocean ridges.	
• The Sun is the source of nearly all of the energy used by organisms in the ocean.	
• Factories sometimes release chemicals into streams that eventually empty into the ocean.	

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 Self Check at the end of each section.
- ☐ Look over the Chapter Review at the end of the chapter.

SUMMARIZE IT

After reading this chapter, identify three things you have learned about oceanography.

_____

_____

_____

_____

Name _____ **Date** _____

Resources

Sunshine State Standards—SC.D.2: The student understands the need for protection of the natural systems on Earth.
Also covers: SC.B.2, SC.G.2, SC.H.3

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.

Before You Read	Resources
	• In the United States, electrical power plants burn fossil fuels to provide energy for most homes and factories.
	• There is an unlimited supply of fossil fuels.
	• Sun and wind are nonpolluting alternative energy resources.
	• Less than one percent of Earth's water is freshwater available for human use.

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

Science Journal

Where does the energy used to run farm equipment come from?

Name _____ **Date** _____

Resources

Section 1 Energy Resources

Benchmarks—SC.B.2.3.2: The student knows that most of the energy used today is derived from burning stored energy collected by organisms millions of years ago. Also covers: SC.A.2.3.3, SC.G.2.3.1

Predict *3 things that might be discussed based on the title of the section.*

1. _____
2. _____
3. _____

Review Vocabulary

Define geologist.

geologist _____

New Vocabulary

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

fossil fuel _____

pollution _____

acid rain _____

nonrenewable _____

Academic Vocabulary

Use your book or a dictionary to define resource.

resource _____

Name _____ **Date** _____

Section 1 Energy Resources (continued)

Main Idea | **Details**

Generating Energy

I found this information on page _____.

Sequence *the steps in the formation of coal.*

1.	
2.	Microorganisms change the dead plant matter into peat.
3.	
4.	
5.	

I found this information on page _____.

Model ***oil and natural gas deposits in rock layers by drawing and labeling a diagram. Use the figure in your book to help you.***

I found this information on page _____.

Analyze ***how*** **hydrocarbons** ***get trapped below the surface.***

_____

_____

_____

_____

Name _____ **Date** _____

Section 1 Energy Resources (continued)

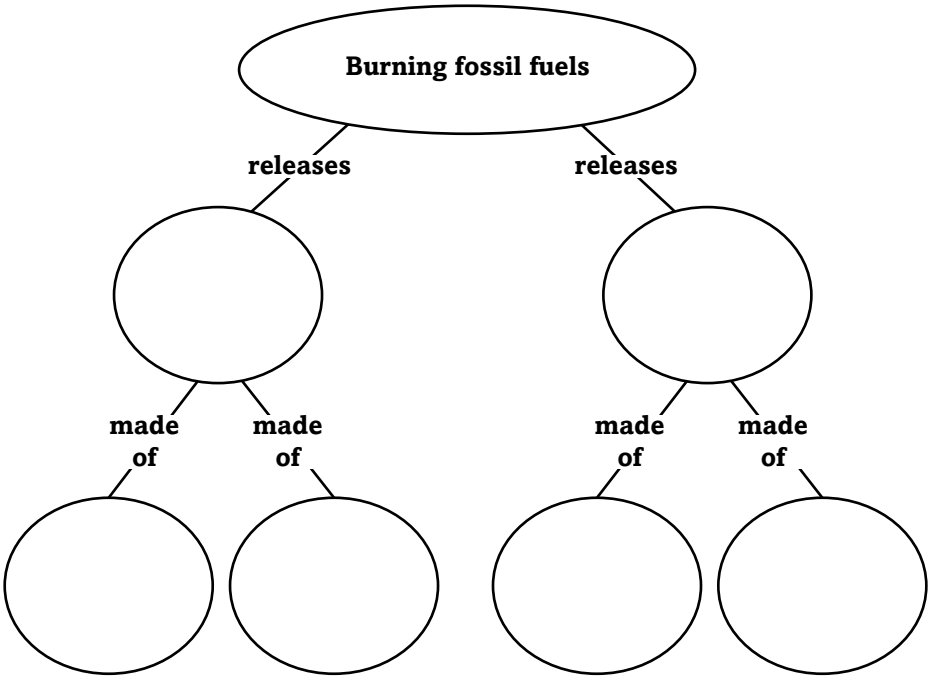
Main Idea

Details

Pollution and Fossil Fuels

I found this information on page _____.

Organize *information about how burning* fossil fuels *contributes to pollution in the concept map.*



Are fossil fuels running out?

I found this information on page _____.

Analyze *the information in the graph titled* "Reserves of Coal, Oil, and Natural Gas." *List the fossil fuels in the order in which they will probably be used up. Also write how many years it will probably be before the supply is depleted.*

1. _____
2. _____
3. _____

SYNTHESIZE IT

Suggest types of transportation that people could use to help reduce the use of fossil fuels.

_____

_____

_____

_____

Name _____ **Date** _____

Resources

Section 2 Alternative Energy Resources

Benchmarks—SC.D.2.3.2: knows the positive and negative consequences of human action on the Earth's systems.
Also covers: SC.A.2.3.3, SC.B.1.3.1, SC.D.2.3.1, SC.G.2.3.1, SC.G.2.3.4, SC.H.1.3.5, SC.H.3.3.4

Skim *through Section 2 of your book. Write three questions that come to mind after reading the headings.*

1. _____
2. _____
3. _____

Review Vocabulary

Define technology.

technology _____

_____

New Vocabulary

Use the following key terms in original scientific sentences that show their scientific meaning.

solar energy _____

_____

hydroelectric power _____

_____

geothermal energy _____

_____

nuclear energy _____

_____

Academic Vocabulary

Use a dictionary to define source.

source _____

_____

Name _____ **Date** _____

Section 2 Alternative Energy Resources (continued)

Main Idea

Details

Other Sources of Energy

I found this information on page _____.

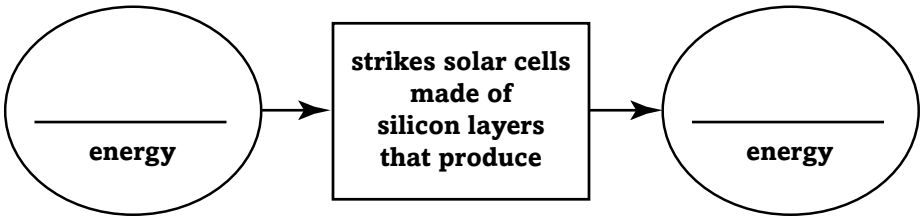
Identify *four sources of* renewable energy.

1. _____
2. _____
3. _____
4. _____

Solar Energy

I found this information on page _____.

Label *the blanks in the flowchart to trace the energy changes that take place in a* solar cell.



Energy from Wind

I found this information on page _____.

Contrast *the advantages and disadvantages of generating electricity from* wind energy.

Wind Energy as a Source of Electricity	
Advantages	Disadvantages

Name _____ **Date** _____

Section 2 Alternative Energy Resources (continued)

Main Idea	Details
Hydroelectric Power *I found this information on page _____.*	**Model** *a* hydroelectric power *plant. Use your book to help you.*
Energy from Earth *I found this information on page _____.*	**Identify** *two problems associated with* geothermal power.
Nuclear Energy *I found this information on page _____.*	**Sequence** *the steps in a* nuclear chain reaction.

1.	
2.	

1.	
2.	
3.	

CONNECT IT

Identify which alternative energy resource you think could best serve your community, and why you believe this is so.

_____

_____

_____

_____

Name _____ **Date** _____

Resources

Section 3 Water

Benchmarks—SC.D.2.3.1: The student understands that the quality of life is relevant to personal experience.
Also covers: SC.D.2.3.2, SC.G.2.3.4, SC.H.1.3.4, SC.H.1.3.7

Scan *Section 3 of your book using the checklist below.*

- ☐ Read all section titles.
- ☐ Read all bold words.
- ☐ Read all charts and graphs.
- ☐ Look at all of the pictures.
- ☐ Think about what you already know about water and its importance.

Write three facts that you discovered about water as you scanned the section.

1. _____

2. _____

3. _____

Review Vocabulary

Define microorganisms *in a sentence that shows its scientific meaning.*

microorganisms _____

_____

New Vocabulary

Read the definitions below. Write the key term on the blank in the left column.

_____ pollution that comes from a single, identifiable source

_____ water that soaks into the ground and collects in small spaces between bits of rock and soil

_____ pollution that cannot be traced back to an exact location

Academic Vocabulary

Use a dictionary to define **available.**

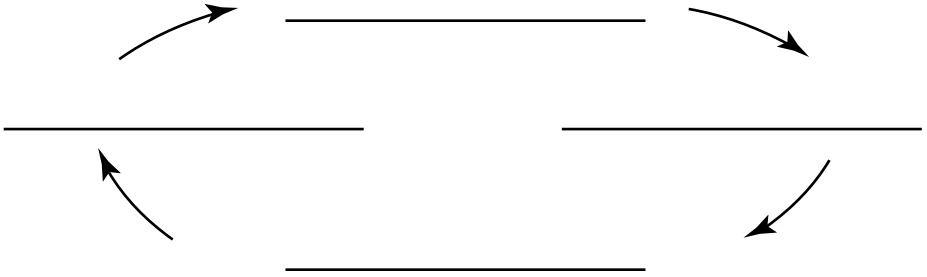
available _____

_____

Name _____ **Date** _____

Section 3 Water (continued)

Main Idea	Details
Water—A Vital Resource *I found this information on page _____.*	**Create** *a cycle map in the space below showing the processes of the water cycle. Include the terms* condensation, precipitation, evaporation, *and* runoff and groundwater *in your flowchart.*
Groundwater *I found this information on page _____.*	**Skim** *the* Groundwater *section. In the Question spaces, rewrite the bold headings as questions. Then answer your questions.*



Groundwater

Question: _____

Answer: _____

_____

_____

Surface Water

Question: _____

Answer: _____

_____

_____

Water Use

Question: _____

Answer: _____

_____

_____

Name _____ **Date** _____

Section 3 Water (continued)

Main Idea

Details

Water Pollution

I found this information on page _____.

Organize *information about sources and examples of* water pollution.

Type of Pollution	What is it?	Examples
Point source pollution		
Nonpoint source pollution		

Cleaning Up Water

I found this information on page _____.

Sequence *4 steps used to clean water at a* water purification *plant.*

1.	
2.	
3.	
4.	

Summarize It

Describe four ways that clean, fresh water is important to your daily life.

_____

_____

_____

_____

Name _____ **Date** _____

Resources

Section 4 Land

Benchmarks—SC.D.2.3.1: The student understands that the quality of life is relevant to personal experience.
Also covers: SC.D.2.3.2, SC.G.2.3.4, SC.H.1.3.4

Predict *three things that might be discussed in this section based on the headings that appear in it.*

1. _____
2. _____
3. _____

Review Vocabulary

Define habitat *in a scientific sentence.*

habitat _____

New Vocabulary

Use the following key terms in original scientific sentences.

conservation _____

_____

ore _____

_____

Academic Vocabulary

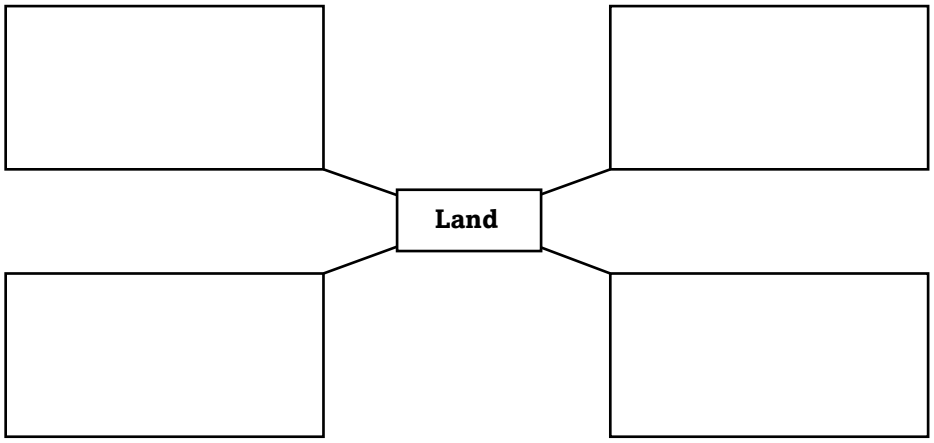
Use a dictionary to define require.

require _____

Land as a Resource

I found this information on page _____.

Identify *four reasons land is an important resource.*



Name _____ **Date** _____

Section 4 Land (continued)

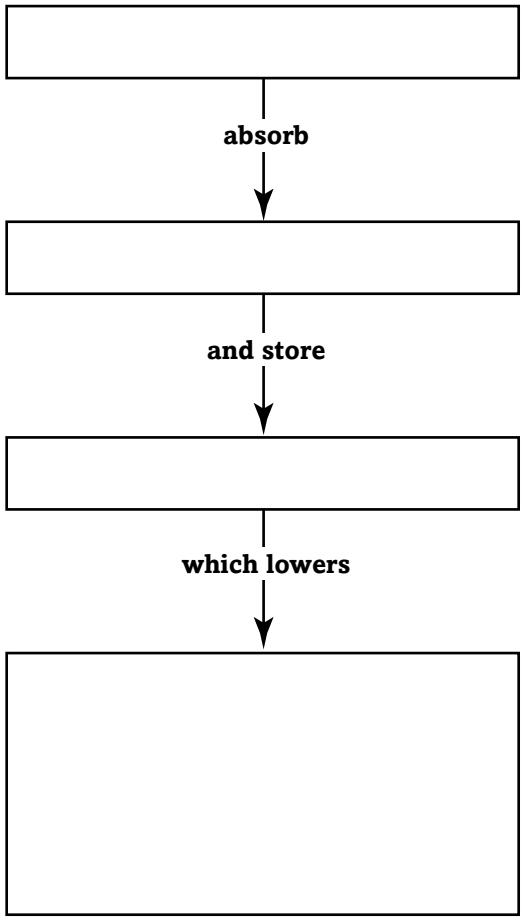
Main Idea

Details

Resources from Land

I found this information on page _____.

Analyze *information from your book to identify the effects that forests have on carbon dioxide in the atmosphere.*



Forest Conservation

I found this information on page _____.

Compare *trees with forests. Describe why trees can be considered renewable resources, but some forests are considered nonrenewable resources.*

Name _____ **Date** _____

Section 4 Land (continued)

Main Idea

Details

Mineral Resources

I found this information on page _____.

Organize *information from your book about ores and mining.*

Ores		
Definition	Uses	Problems
Ore is		

I found this information on page _____.

Analyze *how the way one resource is used can impact another resource. Give at least three ways.*

1. _____

2. _____

3. _____

Connect It

Give three examples of how land is important in your life.

_____

_____

_____

_____

Name _____ **Date** _____

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.

Resources	After You Read
• In the United States, electrical power plants burn fossil fuels to provide energy for most homes and factories.	
• There is an unlimited supply of fossil fuels.	
• Sun and wind are nonpolluting alternative energy resources.	
• Less than one percent of Earth's water is freshwater available for human use.	

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 Self Check at the end of each section.
- ☐ Look over the Chapter Review at the end of the chapter.

SUMMARIZE IT **After reading this chapter, identify three things that you have learned about resources.**

_____

_____

_____

_____

FCAT Vocabulary Glossary

abiotic an environmental factor not associated with the activities of living organisms

acceleration rate of change in velocity, usually expressed in meters per second; involves an increase or decrease in speed and/or a change in direction

air resistance force of air on moving objects

allele any of two or more alternate forms of a gene that an organism may have for a particular trait

amplitude in any periodic function (e.g., a wave) the maximum absolute variation of the function

asexual reproduction a form of reproduction in which new individuals are formed without the involvement of gametes

biodiversity the existence of a wide range of different species in a given area or specific period of time

biotic factors in an environment relating to, caused by, or produced by living organisms

calorie unit of energy; the amount of heat needed to raise one gram of water one degree Celsius at standard atmospheric pressure

chemical weathering the breakdown and alteration of rocks at or near Earth's surface as a result of chemical processes

circuit an interconnection of electrical elements forming a complete path for the flow of current

conduction the transmission of heat through a medium and without the motion of the medium

conservation of energy a fundamental principle stating energy cannot be created nor destroyed but only changed from one form to another

convection heat transfer in a gas or liquid by the circulation of currents from one region to another

crest the peak or highest point on a wave

crust outermost layer of Earth covering the mantle

dependent variable factor being measured or observed in an experiment

deposition the process by which sediment is carried by forces (e.g., wind, rain, or water currents) and left in a certain area

dominance tendency of certain (dominant) alleles to mask the expression of their corresponding (recessive) alleles

ecosystem an ecological community, together with its environment, functioning as a unit

efficiency the relative effectiveness of a system or device determined by comparing input and output

electromagnetic radiation the emission and propagation of the entire range of electromagnetic spectrum including: gamma rays, x-rays, ultraviolet radiation, visible light, microwaves, and radio waves

electron a stable elementary particle that is negatively charged and orbits the nucleus of an atom

entropy a measure of randomness or disorder of a closed system

erosion a combination of natural processes in which materials from Earth's surface are loosened, dissolved, or worn away and transported from one place to another

fossil fuels the remains of animal or plant life from past geologic ages that are now in a form suitable for use as a fuel (e.g., oil, coal, or natural gas)

frequency the number of cycles or waves per unit time

gene a specific part of a chromosome or sequence of DNA that determines a particular feature or characteristic in an organism

heterozygous cell or organism that has two different alleles for a particular trait

homozygous cell or organism that has identical rather than different alleles for a particular trait

independent variable the factor that is changed in an experiment in order to study changes in the dependent variable

inertia the property of an object, due to its mass, by which it resists any change in its position unless overcome by force

FCAT Vocabulary Glossary

magnetic field the region where magnetic force exists around magnets or electric currents

mass the amount of matter an object contains

meiosis the process of nuclear division in cells during which the number of chromosomes is reduced by half

mitosis a process of nuclear division in eukaryotic cells during which the nucleus of a cell divides into two nuclei, each with the same number of chromosomes

neap tide a twice-monthly tide of minimal range that occurs when the Sun, Moon, and Earth are at right angles to each other, thus decreasing the total tidal force exerted on Earth

neutral a particle, object, or system that lacks a net charge

neutron a subatomic particle having zero charge, found in the nucleus of an atom

nucleus the center region of an atom where protons and neutrons are located; also a cell structure that contains the cell's genetic material

ocean basin a depression on the surface of Earth occupied by water

plate tectonics theory of global dynamics in which Earth's crust is divided into a smaller number of large, rigid plates whose movements cause seismic activity along their borders

potential energy energy stored in an object due to the object's configuration and position

pressure the force exerted per unit area

prism a piece of glass with polished plane surfaces that disperses a beam of white light into its component colors

proton a subatomic particle having a positive charge and which is found in the nucleus of an atom

Punnett square a graphic checkboard used to determine results from a particular genetic cross

radiation emission of energy in the form of rays or waves

recessive an allele for a trait that will be masked unless the organism is homozygous for this trait

screw a type of simple machine that consists of an inclined plane wrapped around a cylinder

sexual reproduction reproduction involving the union of gametes producing an offspring with traits from both parents

spectroscope an instrument that uses a prism to separate and catalog light wavelengths

speed amount of distance traveled divided by time taken; the time-rate at which any physical process takes place

spring tide the tide of increased range that occurs twice monthly at the new and full phases of the Moon

thermal energy internal energy found by adding the kinetic energy of particles making up a substance

tropism the motion of an organism or part of an organism toward or away from an external stimulus

trough the lowest point on a wave

variable an event, condition, or factor that can be changed or controlled in order to study or test a hypothesis in a scientific experiment

velocity the time-rate at which a body changes its position; defined as displacement divided by the time of travel

vibration a repetitive movement around an equilibrium point

virus a noncellular, disease-causing particle that uses the genetic material from its host to reproduce

wavelength the distance between crests of a wave

wedge a type of simple machine that consists of an inclined plane used to separate two objects

wheel and axle a type of simple machine that consists of a rod driven through the center of a cylinder that is allowed to rotate freely, yielding a mechanical advantage equal to the cylinder's diameter

Florida Science Academic Vocabulary Glossary

accurate: free from error; close to the correct amount

achieve: to gain, accomplish, attain, reach

adapt: to change to fit new conditions; to change in order to make suitable

adjacent: near, close, or adjoining

adjust: to arrange the parts of something to make it work correctly

adult: fully developed; grown

affect: to bring about a change in

apparent: appearing to be but not necessarily so, seeming; readily seen, visible, readily understood or perceived; evident; obvious

approach: to come near

available: ready to use

capable: able to do things; fit

category: group or class of things; a division in a classification system

chart: a sheet that gives information about something in the form of a diagram, graph, or table

chemical: any substance used in or obtained by a chemical process

code: (noun) set of signals representing letters or numerals, used to send messages; (verb) to put in the form of symbols of a code

collapse: to fall together, shrink

communicate: to make known or give information

compensate: to make up for

component: part of a machine or system

compound: made up of individual parts; made of two or more separate parts or elements

concentrate: to bring or come close together in one place

constant: not changing; continuing

contact: the act or state of touching or meeting

contract: to draw together; shrink in size

controversy: argument or debate

convert: to change from one form or use to another; to alter the physical or chemical nature or properties of

coordinate: to cause to work well together

cycle: a repeating sequence of events

decline: to become less in health, power, value, or number

definite: clear; without doubt

derive: to get or receive from a source

device: tool or instrument designed for a particular purpose

differentiate: to tell or see the difference

displace: to take the place of or remove from the usual or proper place

dominate: to have a command place; to exert mastery control, or preeminence; to control or rule

eliminate: to get rid of

emerge: to come out; to appear

enable: to make possible; to make able; to give means or power to

encounter: to meet or experience

enormous: having great size

Florida Science Academic Vocabulary Glossary

erode: to wear away

estimate: (noun) an opinion of the value, quality, size, or cost of something; (verb) to form an opinion by reasoning

evaluate: to determine the significance of something

exclude: to restrict or stop the entrance of

expand: to get bigger

external: positioned outside; beyond

extract: to take, get, or pull out

factor: a substance that functions in a body system

feature: part, appearance, or characteristic of something

function: (noun) a specific job or purpose; (verb) to carry out a specific action

fundamental: original or basic

goal: objective or end that one strives to achieve

hierarchy: a ranked series or order

hypothesis: something that is suggested as being true for the purposes of argument or of further investigation

identical: exactly the same; same as

impact: a strong, immediate effect

indicate: to make known or show; to be or give a sign of; to point out

individual: being or characteristic of a single thing

initial: of or relating to the beginning; first

insert: to put or fit (something) into something else

interact: to act upon one another; to influence one another

intermediate: in the middle or being between

internal: of or on the inside

interval: space or time between things

investigate: to search into something in order to learn the facts

item: object or thing

layer: one thickness of something over another, horizon

likewise: in the same way

mechanism: part or piece of machinery

medium: substance through which a force or effect is transmitted

method: particular procedure, technique, or way to do something; a process

neutral: neither negative nor positive

normal: conforming to a type, standard, or regular pattern

nuclear: of or relating to the atomic nucleus

obtain: to get through effort; gain

occur: to happen; to take place

overlap: one thing extends over another

parallel: everywhere the same distance apart

passive: induced by an outside agent

perceive: to observe or become aware of through the senses

percent: in, to, or for every one hundred

period: a repeating interval; row of the periodic table

phenomenon: any fact, condition, or happening that can be seen, heard, etc. and described in a scientific way

Florida Science Academic Vocabulary Glossary

positive: real and numerically greater than zero

predict: to tell what one thinks will happen in the future; to foretell in advance on the basis of observation, experience, or scientific reason

principle: basic generalization that is accepted as true and that can be used as a basis for reasoning

process: series of changes by which something develops; series of changes that leads to a result

promote: to contribute to the growth of; to help bring into being

random: haphazard course; without definite aim, direction, rule, or method; lacking a definite plan, purpose, or pattern

ratio: relation of one thing to another in size or amount

react: to act because something has happened; to respond

recover: to get back something that has been lost

refine: to separate from impurities

regulate: to control according to rules or a system

reject: to refuse to accept or use

release: to set free; to let go

require: to be in need of

resource: something that lies ready for use or that can be drawn on for aid or to take care of a need

respond: to react to a stimulus

reveal: to make known; to show or display

rigid: not bending or moving; stiff and hard

section: one of several parts that together make up a whole

sequence: series; an order of events; one thing following another in a fixed order

series: a number of similar things coming one after another

significant: important; having meaning or effect

similar: having many but not all qualities in common; almost, but not exactly the same

source: that from which something comes into existence, develops, or derives; a thing or place from which something comes or is obtained

sphere: a round body, such as a ball, on which all points are the same distance from the center

stable: firmly established; not changing or fluctuating; not easily moved or changed

strategy: plan, scheme, or system

structure: arrangement of parts or the way parts are arranged

survey: to look at or study in detail

symbol: something that represents something else

technology: use of science for practical reasons, especially in engineering and industry

temporary: not permanent or lasting

theory: explanation of things or events based on scientific knowledge resulting from many observations and experiments; a group of ideas or principles that explain why or how something happens

transfer: to carry or send from one person, place, or position to another

Florida Science Academic Vocabulary Glossary

transform: to change the condition, nature, or function of; to convert

transport: to carry from one place to another

trend: a general movement or tendency

undergo: to go through; have happen to one

underlie: to lie beneath

unique: being the only one; unusual; remarkable

vary: to change; to make or become different

version: variant of an original

visible: able to be seen; perceptible with the eye

voluntary: acting, done, or given of one's own free will; by choice

widespread: widely scattered or prevalent