Sample Pages from

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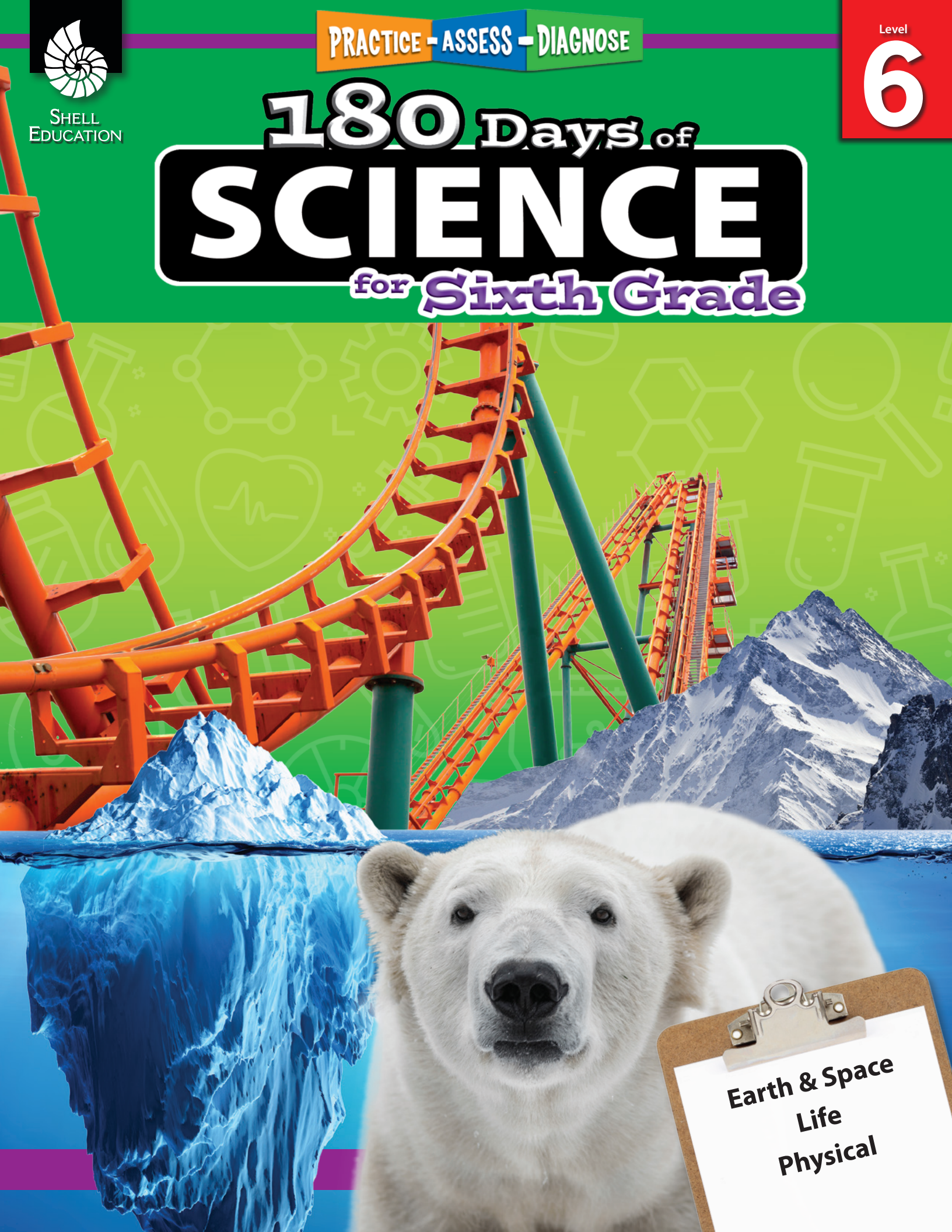
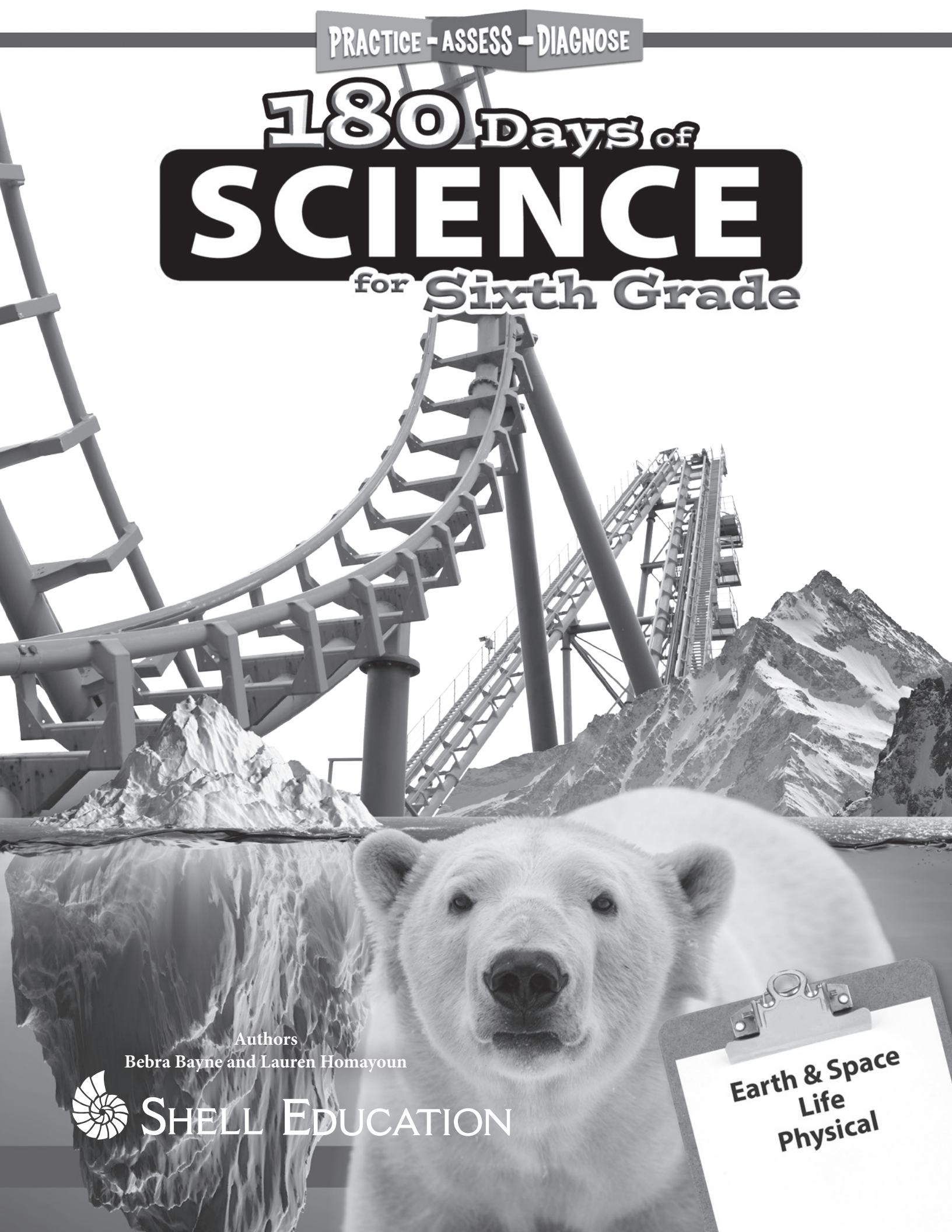

PRACTICE - ASSESS - DIAGNOSE
Level
6
SHELL EDUCATION
180 Days of
SCIENCE
for Sixth Grade
Earth & Space
Life
Physical

PRACTICE - ASSESS - DIAGNOSE

180 Days of SCIENCE for Sixth Grade



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SHELL EDUCATION

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Introduction

With today's science and technology, there are more resources than ever to help students understand how the world works. Information about science experiments you can do at home is widely available online. Many students have experience with physics concepts from games.

While students may be familiar with many of the topics discussed in this book, it is not uncommon for them to have misconceptions about certain subjects. It is important for students to learn how to apply scientific practices in a classroom setting and within their lives.

Science is the study of the physical and natural world through observation and experiment. Not only is it important for students to learn scientific facts, but it is important for them to develop a thirst for knowledge. This leads to students who are anxious to learn and who understand how to follow practices that will lead them to the answers they seek.

The Need for Practice

To be successful in science, students must understand how people interact with the physical world. They must not only master scientific practices but also learn how to look at the world with curiosity. Through repeated practice, students will learn how a variety of factors affect the world in which they live.

Understanding Assessment

In addition to providing opportunities for frequent practice, teachers must be able to assess students' scientific understandings. This allows teachers to adequately address students' misconceptions, build on their current understandings, and challenge them appropriately. Assessment is a long-term process that involves careful analysis of student responses from discussions, projects, or practice sheets. The data gathered from assessments should be used to inform instruction: slow down, speed up, or reteach. This type of assessment is called *formative assessment*.

How to Use This Book

Weekly Structure

All 36 weeks of this book follow a regular weekly structure. The book is divided into three sections: Life Science, Physical Science, and Earth and Space Science. The book is structured to give students a strong foundation on which to build throughout the year. It is also designed to adequately prepare them for state standardized tests.

Each week focuses on one topic. Day 1 sets the stage by providing background information on the topic that students will need throughout the week. In Day 2, students analyze data related to the topic. Day 3 leads students through developing scientific questions. Day 4 guides students through planning a solution. Finally, Day 5 helps students communicate results from observations or investigations.

Day 1—Learning Content: Students will read grade-appropriate content and answer questions about it.

Day 2—Analyzing Data: Students will analyze scientific data and answer questions about it.

Day 3—Developing Questions: Students will read a scenario related to the topic, answer questions, and formulate a scientific question about the information.

Day 4—Planning Solutions: Students will read a scenario related to the topic, answer questions, and develop a solution or plan an investigation.

Day 5—Communicating Results: Students accurately communicate the results of an investigation or demonstrate what they learned throughout the week.

Three Strands of Science

This book allows students to explore the three strands of science: life science, physical science, and earth and space science. Life science teaches students about the amazing living things on our planet and how they interact in ecosystems. Physical science introduces students to physics and chemistry concepts that will lay the groundwork for deeper understanding later in their education. Earth and space science familiarizes students with the wonders of the cosmos and the relationships between the sun, Earth, moon, and stars.

How to Use This Book *(cont.)*

Weekly Topics

The following chart shows the weekly focus topics that are covered during each week of instruction.

Unit	Week	Science Topic
Life Science	1	What are Living Things Made of?
	2	The Function of Cells
	3	The Role of Photosynthesis
	4	What Happens to Food After it is Consumed?
	5	Resources and Population
	6	Structure, Behavior, and Survival
	7	What Affects a Plant's Growth
	8	What Can Fossils Tell Us?
	9	Seeing Change Over Time in Fossils
	10	Unity in Organisms
	11	Genetics & Survival
	12	Population Levels
Physical Science	1	Models of Molecules
	2	Properties Before and After Reactions
	3	Synthetics from Natural Materials
	4	Mass Conservation in Chemical Reactions
	5	Car Crashes
	6	Balanced and Unbalanced Forces
	7	Is Earth a Magnet?
	8	Kinetic Energy
	9	Static Electricity
	10	Making a Solar Cooker
	11	Sound Waves and Energy
	12	Light Waves and Absorption
Earth and Space Science	1	Phases, Eclipses, and Seasons
	2	Gravity in the Solar System
	3	Objects in the Solar System
	4	Learning Earth's History
	5	Changes in Earth's Surfaces
	6	Plate Motions and Earth's History
	7	Cycles of Matter and Energy on Earth
	8	Effects of Weathering and Erosion of Natural Resources
	9	Ocean Temperatures and Weather Patterns
	10	Charting Human Activities and Climate Change
	11	Taking Care of Our Environment
	12	Population and Resource Conservation

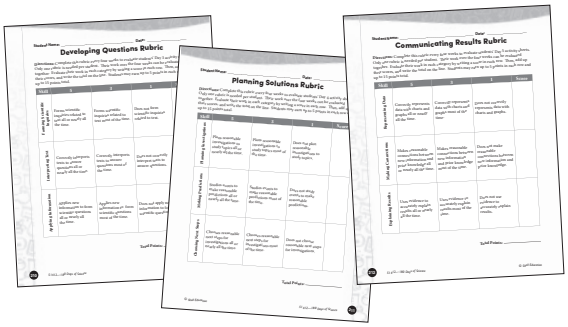
How to Use This Book *(cont.)*

Best Practices for This Series

- Use the practice pages to introduce important science topics to your students.
- Use the Weekly Topics chart on page 5 to align the content to what you're covering in class. Then, treat the pages in this book as jumping off points for that content.
- Use the practice pages as formative assessment of the science strands and key topics.
- Use the weekly themes to engage students in content that is new to them.
- Encourage students to independently learn more about the topics introduced in this series.
- Lead teacher-directed discussions of the vocabulary and concepts presented in some of the more complex weeks.
- Support students in practicing the varied types of questions asked throughout the practice pages.
- When possible, have students participate in hands-on activities to answer the questions they generate and do the investigations they plan.

Using the Resources

An answer key for all days can be found on pages 194–203. Rubrics for Day 3 (developing questions), Day 4 (planning solutions), and Day 5 (communicating results) can be found on pages 210–212 and in the Digital Resources. Use the answer keys and rubrics to assess students' work. Be sure to share these rubrics with students so that they know what is expected of them.

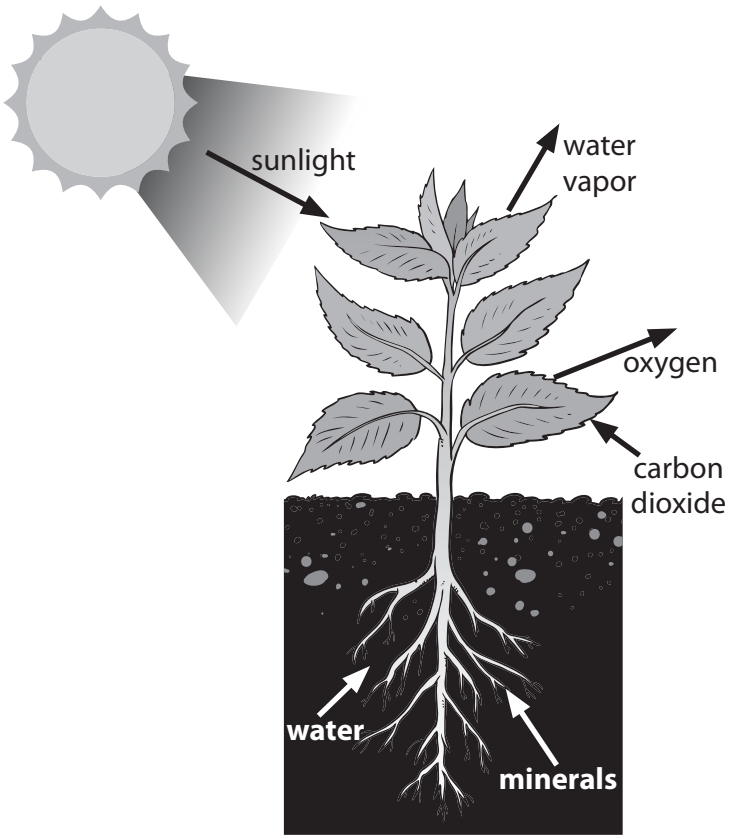


Name: _____ **Date:** _____

Directions: Read the text, and answer the questions.

Photosynthesis

Plants make the food they need through a process called photosynthesis. The process begins when the chlorophyll inside a plant's cells absorbs light energy, usually from the sun. At the same time, carbon dioxide enters the plant through its leaves, and its roots absorb water from the soil. The water, carbon dioxide, and light combine in the leaves to make sugar, which the plant uses to grow. Any sugar the plant doesn't need right away is stored as starch in the roots. Then the plants release oxygen and water vapor through their leaves. This release is called transpiration.



1. What do plants release through their leaves?

a. carbon dioxide and oxygen

b. oxygen and water vapor

c. sugar and water

d. carbon dioxide and sugar

2. What happens during photosynthesis?

a. Plants stop growing.

b. Plants store sugar in their roots.

c. Plants create the food they need.

d. both b and c

3. What happens during transpiration?

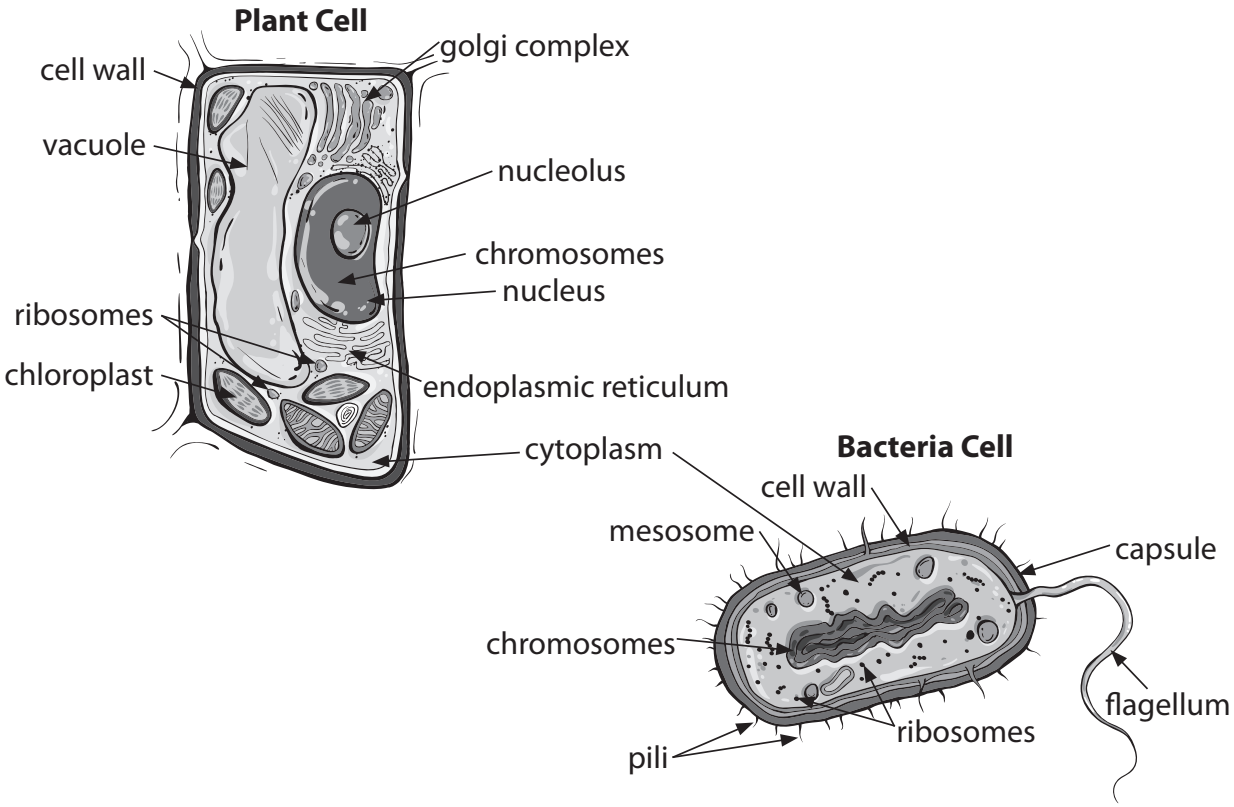
_____

_____

_____

Name: _____ **Date:** _____

Directions: Study the diagrams, and answer the questions.



1. What similarities do you see between the plant and bacteria cells?

a. cytoplasm in both

b. chromosomes in both

c. ribosomes in both

d. all of the above

2. Which cell does not have a golgi complex?

a. plant cell

b. bacteria cell

c. animal cell

d. both a and b

3. If you could look at a cell under a microscope, how would you know whether it was a plant cell or bacteria cell?

a. if there was no vacuole, it would be a bacteria cell

b. if there were flagella, it would be a bacteria cell

c. if there was chloroplast, it would be a plant cell

d. all of the above

Name: _____ **Date:** _____

Directions: Read the text, study the chart, and answer the questions.

To show the result of a chemical change, Mrs. Martine brought a rusted steel garbage can to class. The iron (Fe) in the metal combined with oxygen (O_2) in the atmosphere to create a new substance: iron oxide, or rust (Fe_2O_3).

She said that sometimes when a chemical change is taking place, there may be fizzy bubbles or a color change. An explosion might even happen. Chemical changes cannot be reversed.

Peggy asked Mrs. Martine for another example of a chemical change. Mrs. Martine said that baking a cake is a chemical change. Sugar, salt, milk, and butter are mixed and baked to become a cake. So they are no longer the individual ingredients they were.

Physical Changes	Chemical Changes
Aluminum foil is cut in half.	Milk goes sour.
Clay is molded into a new shape.	Jewelry tarnishes.
Butter melts on warm toast.	Bread becomes toast.
Water evaporates from the surface of the ocean.	Rust forms on a nail.

1. Chemical changes cannot be _____ .

a. completed **b.** difficult

c. easy **d.** reversed

2. A chemical change creates a _____ .

a. new substance **b.** bad result

c. good result **d.** messy substance

3. Write a question you might ask about physical or chemical changes.

_____

_____

_____

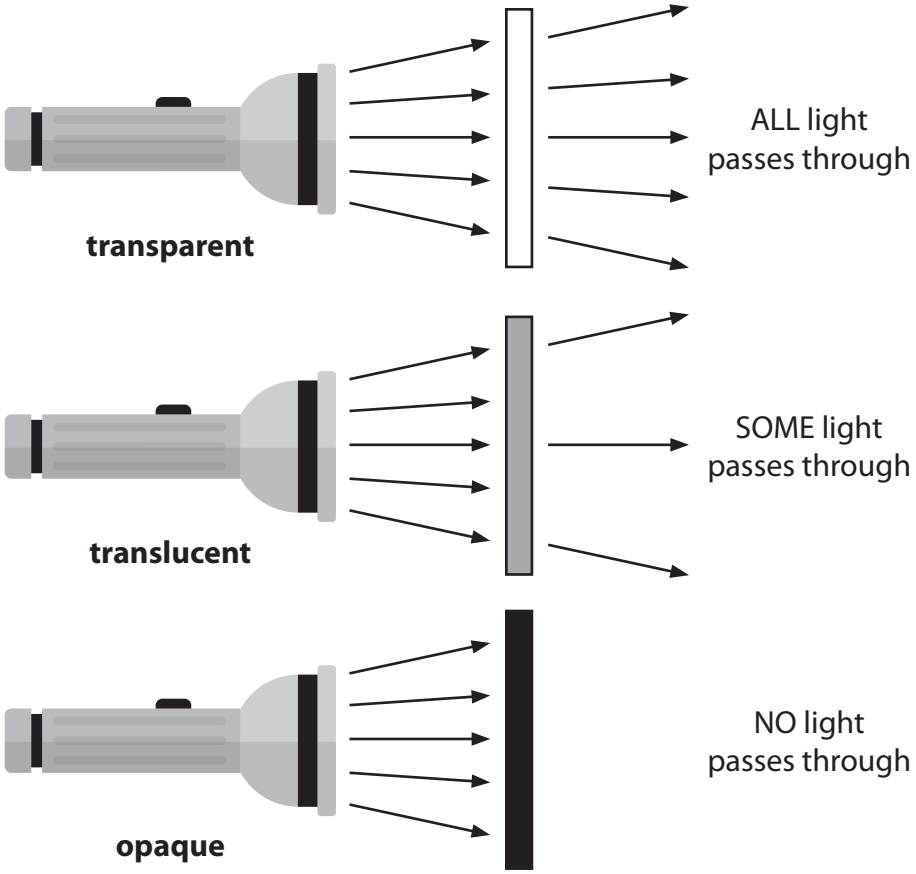
Name: _____ **Date:** _____

Directions: Read the text, and answer the questions.

Matt and Nick are in the backyard playing with their flashlights. Nick holds up his flashlight to a glass bottle and then to a piece of tissue paper. The light is transmitted through both of them.

Matt holds his flashlight up to a piece of wood. The light is absorbed by the wood. The wood is opaque.

Light transmits through objects that are translucent and is absorbed by objects that are opaque.



1. Light can be transmitted through which types of objects?

a. transparent or translucent

b. translucent or opaque

c. opaque or transparent

d. any of the above

2. How can Matt and Nick make a model to show what light transmission is?

_____

_____

Name: _____ **Date:** _____

Directions: Label the processes of weathering, erosion, and deposition.