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Shell Education

PRACTICE - ASSESS - DIAGNOSE

Level 2

180 Days of SCIENCE for Second Grade

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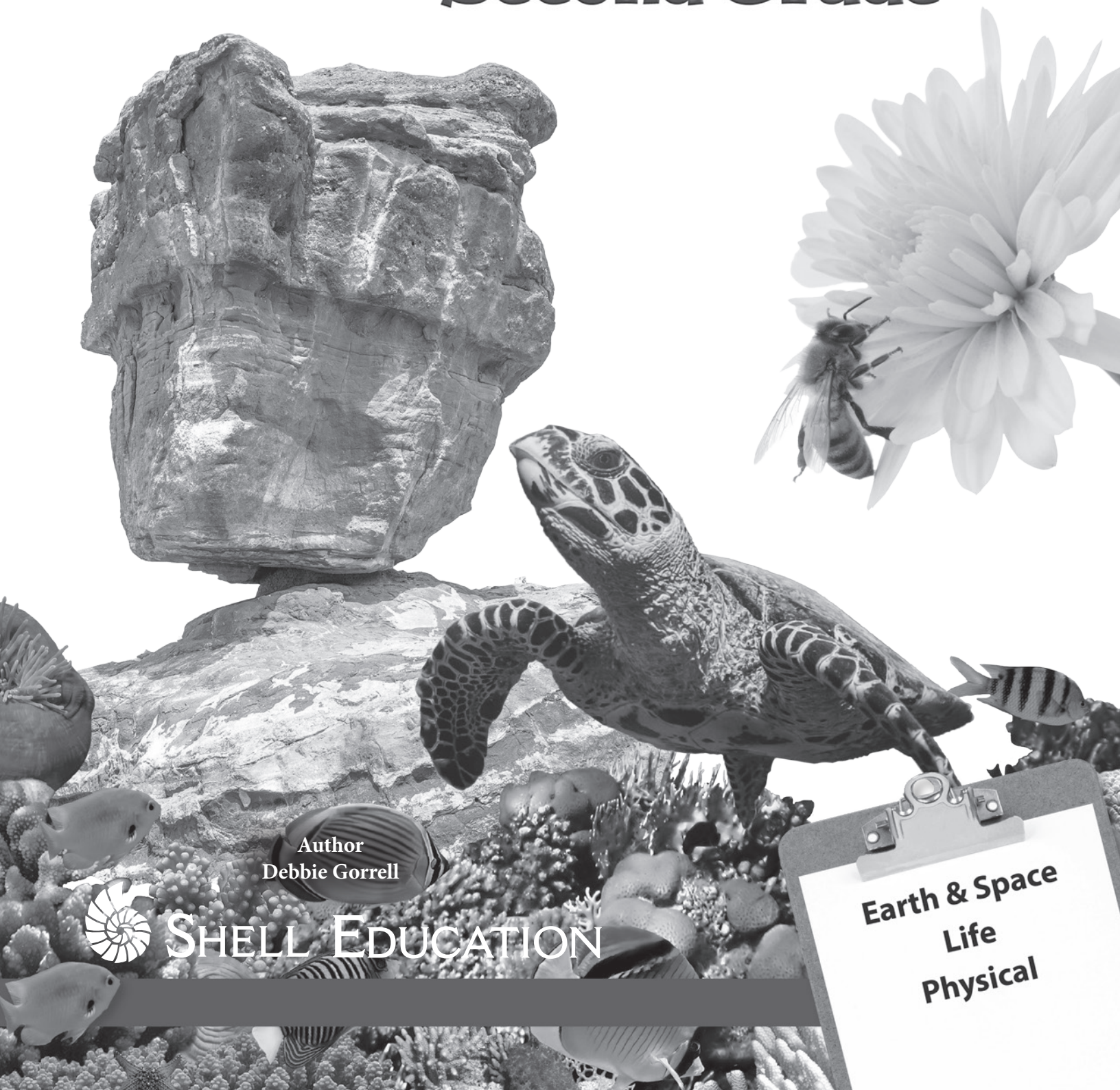
180 Days of SCIENCE for Second Grade



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SHELL EDUCATION

Table of Contents

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.

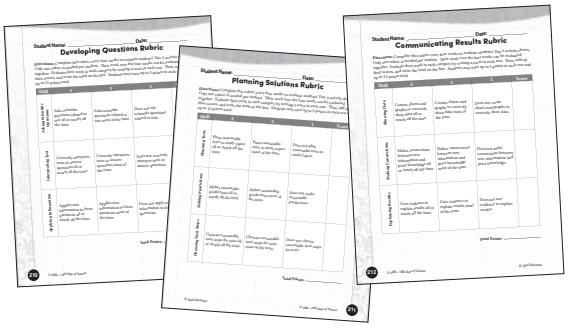
How to Use This Book *(cont.)*

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

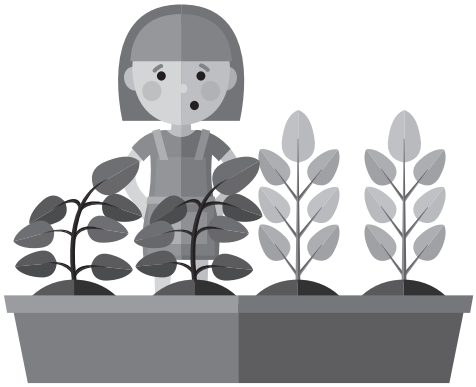
An answer key for all days can be found on pages 194–204. Rubrics for Day 3 (developing questions), Day 4 (planning solutions), and Day 5 (communicating results) can be found on pages 210–212 and in the Digital Resources. Use the answer keys and rubrics to assess students' work. Be sure to share these rubrics with students so that they know what is expected of them.



Name: _____ **Date:** _____

Directions: Read Olivia's notes about her garden. Complete the chart, and answer the question.

The plants on the left side of the garden are bent over and wilting. The plants on the right side are green and strong. Both sides of the garden get bright sunlight all day long. The plants on the right side get a lot of water. The plants on the left get a little water.



	Plants on the Left	Plants on the Right
How do the plants look?		
How much sunlight do the plants get?		
How much water do the plants get?		

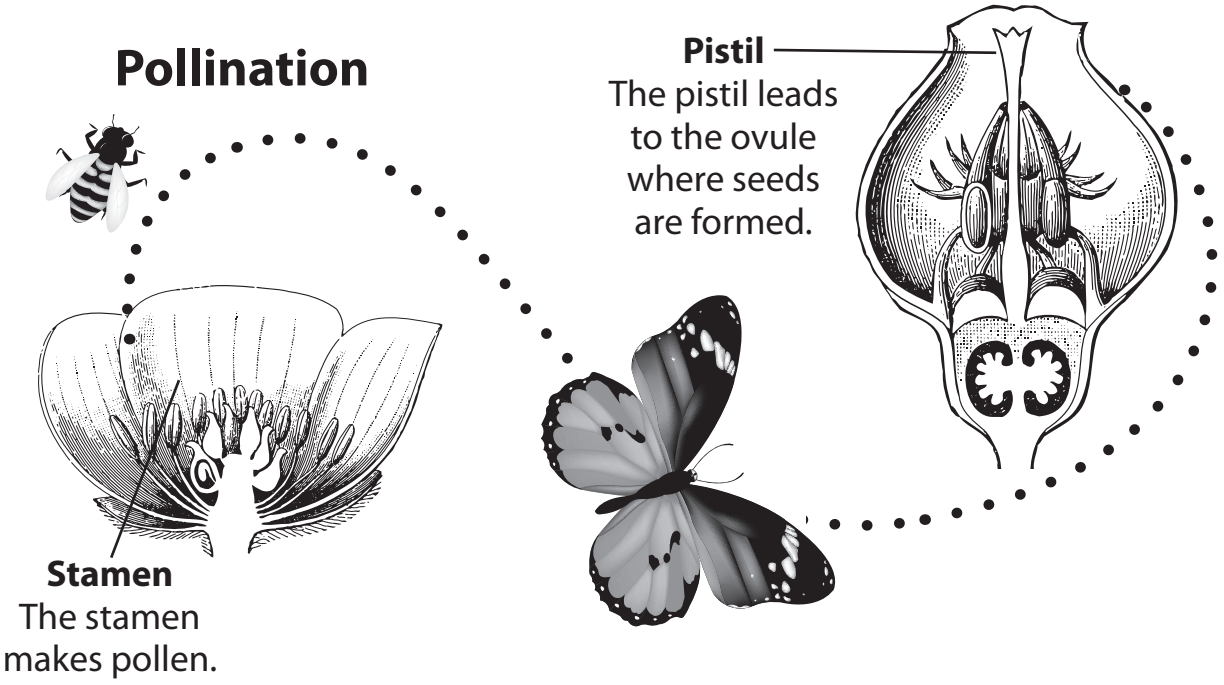
1. What should Olivia do to her garden to get the left side green and strong, based on her notes?

_____

_____

Name: _____ **Date:** _____

Directions: Look at the picture. Then answer the questions.



1. What part of the flower makes pollen?

a. pistil **b.** stamen

c. leaf **d.** petal

2. How does the pollen get from one flower to another in the picture?

a. A bee takes it. **b.** A butterfly takes it.

c. A worm carries it. **d.** both a and b

3. What might be another way for pollen to get from flower to flower?

_____

_____

_____

_____

Name: _____ **Date:** _____

Directions: Read the text. Answer the questions.

Carla is in a contest. She needs to build a tower. She must use all of the wood blocks in the picture. The tower must be a certain height.

1. What question will help Carla decide how to put the blocks together?

a. What colors are the blocks?

b. Why are the blocks made of wood?

c. How many blocks should be used?

d. How tall does the tower need to be?

2. What property do all the blocks have in common?

a. same color

b. same material

c. same size

d. same shape

3. What other question might Carla ask to help her decide how to build the tower?

_____

_____

Name: _____ **Date:** _____

Directions: Read the text, and answer the questions.

Heating and Cooling Water

Heating and cooling can change water. You can heat ice. This changes the water from a solid to a liquid. The water changes states. It changes its shape. It gets warmer.

Changing water from a solid to a liquid can be undone. You can cool the water. It will change from a liquid to a solid. Liquid water freezes and becomes ice when it is cold enough.

1. What happens when liquid water changes into ice?

a. The water freezes.
b. The water melts.
c. The water changes to gas.
d. The water is heated.

2. What happens when ice changes into liquid water?

a. The water freezes.
b. The water melts.
c. The water keeps its shape.
d. The water is cooled.

3. Ice melts and changes to a liquid. How can you undo this change?

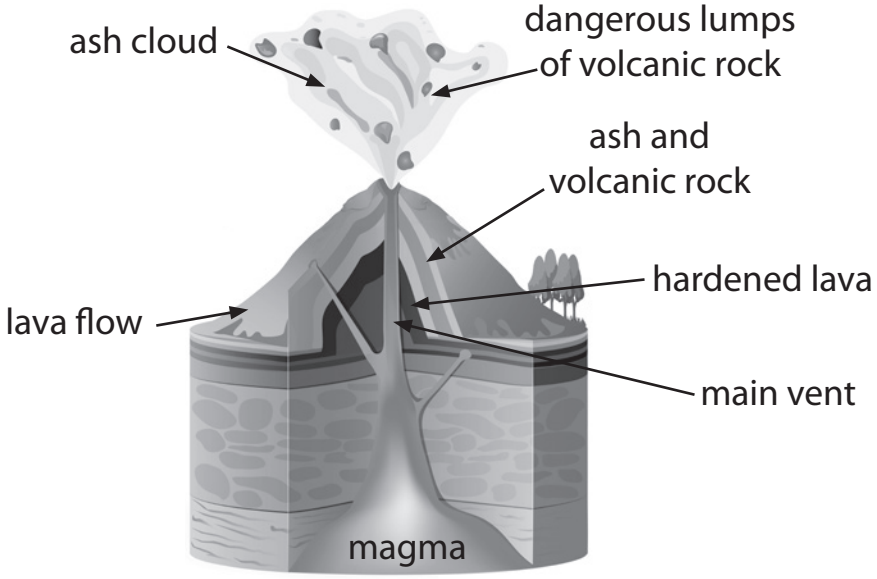
_____

_____

_____

Name: _____ Date: _____

Directions: Study the picture. Then answer the questions.



1. What carries magma to the top of a volcano?

a. lava flow

b. ash cloud

c. volcanic rock

d. main vent

2. What does the picture show about volcanoes?

a. They release dangerous materials.

b. They are found all over Earth.

c. They are not always erupting.

d. They are taller than other mountains.

3. Use the picture to help you write how magma moves from inside Earth to the top of the volcano.

_____

_____

Name: _____ **Date:** _____

Directions: Label each picture as a levee or a dam. Then write how each one works to stop flooding.

_____

_____