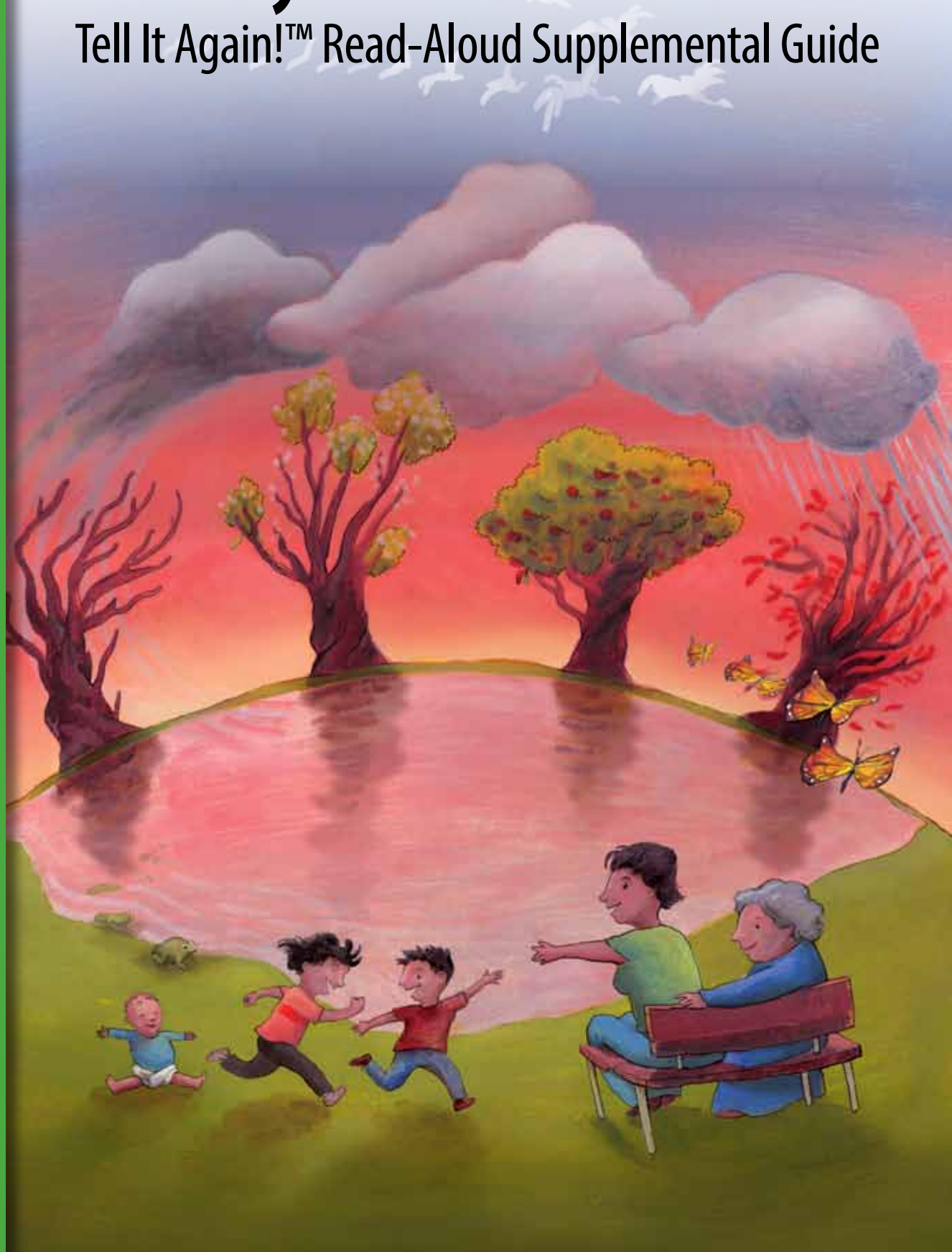




Cycles in Nature

Tell It Again!™ Read-Aloud Supplemental Guide





Cycles in Nature

Transition Supplemental Guide to the Tell It Again!™ Read-Aloud Anthology

Listening & Learning™ Strand
GRADE 2

Core Knowledge Language Arts®
New York Edition



Creative Commons Licensing

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License.



You are free:

- to Share** — to copy, distribute and transmit the work
- to Remix** — to adapt the work

Under the following conditions:

Attribution — You must attribute the work in the following manner:

This work is based on an original work of the Core Knowledge® Foundation made available through licensing under a Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License. This does not in any way imply that the Core Knowledge Foundation endorses this work.

Noncommercial — You may not use this work for commercial purposes.

Share Alike — If you alter, transform, or build upon this work, you may distribute the resulting work only under the same or similar license to this one.

With the understanding that:

For any reuse or distribution, you must make clear to others the license terms of this work. The best way to do this is with a link to this web page:

<http://creativecommons.org/licenses/by-nc-sa/3.0/>

Copyright © 2013 Core Knowledge Foundation
www.coreknowledge.org

All Rights Reserved.

Core Knowledge Language Arts, Listening & Learning, and Tell It Again! are trademarks of the Core Knowledge Foundation.

Trademarks and trade names are shown in this book strictly for illustrative and educational purposes and are the property of their respective owners. References herein should not be regarded as affecting the validity of said trademarks and trade names.

Table of Contents

Cycles in Nature

Transition Supplemental Guide to the
Tell It Again!™ Read-Aloud Anthology

Preface to the <i>Transition Supplemental Guide</i>	v
Alignment Chart for <i>Cycles in Nature</i>	xvii
Introduction to <i>Cycles in Nature</i>	1
Lesson 1: The Cycle of Daytime and Nighttime	14
Lesson 2: The Reasons for Seasons	31
Lesson 3: Four Seasons in One Year	52
Lesson 4: The Life Cycle of a Plant	71
Lesson 5: The Life Cycle of a Tree.	88
Pausing Point	103
Lesson 6: Which Came First, the Chicken or the Egg?	109
Lesson 7: The Life Cycle of a Frog	125
Lesson 8: The Life Cycle of a Butterfly.	141
Lesson 9: The Water Cycle	159
Domain Review	176
Domain Assessment	180
Culminating Activities	183
Appendix	189



Preface to the Transition Supplemental Guide

This preface to the *Transition Supplemental Guide* provides information about the guide's purpose and target audience, and describes how it can be used flexibly in various classroom settings.

Please note: The *Supplemental Guides* for the first three domains in Grade 2 contain modified read-alouds and significantly restructured lessons with regard to pacing and activities. These early *Supplemental Guides* provided step-by-step, scaffolded instruction with the intention that students receiving instruction from teachers using the *Supplemental Guide* for the first part of the year would be ready to participate in regular Listening & Learning lessons, and that teachers who have used the *Supplemental Guide* for the first part of the year would be equipped with the instructional strategies to scaffold the lessons when necessary. This shift from the full *Supplemental Guide* to the *Transition Supplemental Guide* affords teachers more autonomy and greater responsibility to adjust their execution of the lessons according to the needs of their classes and individual students.

Transition Supplemental Guides for the remaining domains will still contain Vocabulary Charts and *Supplemental Guide* activities such as Multiple Meaning Word Activities, Syntactic Awareness Activities, and Vocabulary Instructional Activities. However, the *Transition Supplemental Guides* do not have rewritten read-alouds and do not adjust the pacing of instruction; the pacing and read-aloud text included in each *Transition Supplemental Guide* is identical to the pacing and read-aloud text in the corresponding *Tell It Again! Read-Aloud Anthology*. We have, however, augmented the introductions and extensions of each lesson in the *Transition Supplemental Guides* so teachers have additional resources for students who need greater English language support. As a result, there are often more activities suggested than can be completed in the allotted time for the introduction or extension activities. Teachers will need to make informed and conscious decisions in light of their particular students' needs when choosing which activities to complete and which to omit. We strongly recommend that teachers preview the Domain Assessment prior to teaching this domain; this will provide an additional way to inform their activity choices.


Intended Users and Uses

This guide is intended to be used by general education teachers, reading specialists, English as a Second Language (ESL) teachers, special education teachers, and teachers seeking an additional resource for classroom activities. This guide is intended to be both flexible and versatile. Its use is to be determined by teachers in order to fit the unique circumstances and specific needs of their classrooms and individual students. Teachers whose students would benefit from enhanced oral language practice may opt to use the *Transition Supplemental Guide* as their primary guide for Listening & Learning. Teachers may also choose individual activities from the *Transition Supplemental Guide* to augment the content covered in the *Tell It Again! Read-Aloud Anthology*. For example, teachers might use the Vocabulary Instructional Activities, Syntactic Awareness Activities, and modified Extensions during small-group instruction time. Reading specialists and ESL teachers may find that the tiered Vocabulary Charts are a useful starting point in addressing their students' vocabulary learning needs.

The *Transition Supplemental Guide* is designed to allow flexibility with regard to lesson pacing and encourages education professionals to pause and review when necessary. A number of hands-on activities and graphic organizers are included in the lessons to assist students with learning the content presented in the lessons.

Transition Supplemental Guide Contents

The *Transition Supplemental Guide* contains tiered Vocabulary Charts, Multiple Meaning Word Activities, Syntactic Awareness Activities, and Vocabulary Instructional Activities. The Domain Assessments and Family Letters have been modified. In some instances, the activities in the Extensions as well as the activities in the Pausing Point, Domain Review, and Culminating Activities have been modified or rewritten. Please refer to the following sample At a Glance Chart to see how additional support is communicated to the teacher.

Exercise	Materials	Details
Introducing the Read-Aloud (10 minutes)		
Introductory Content	[Additional materials to help support this part of the lesson will be listed here.]	[A brief explanation about how the material can be used.]
Vocabulary Preview	[There will be one or two vocabulary preview words per lesson.]	
Purpose for Listening		
Presenting the Read-Aloud (15 minutes)		
Note: It is highly recommended that teachers preview the read-aloud, Flip Book images, and comprehension questions to determine when to pause during the read-aloud and ask guiding questions, especially before a central or difficult point is going to be presented (e.g., While we are reading this part of the read-aloud, I want to you think about . . .) and supplementary questions (e.g., Who/What/Where/When/Why literal questions) to check for understanding.		
Title of Read-Aloud	[Materials that may help scaffold the read-aloud will be listed here.]	
Discussing the Read-Aloud (15 minutes)		
Comprehension Questions		
Word Work		
 Complete Remainder of the Lesson Later in the Day		
Extensions (20 minutes)		
Extension Activities	[Additional Extension activities may include a Multiple Meaning Word Activity, a Syntactic Awareness Activity, a Vocabulary Instructional Activity, and modified existing activities or new activities.]	

The additional materials found in the *Transition Supplemental Guide* afford students further opportunities to use domain vocabulary and demonstrate knowledge of content. The lessons of this guide contain activities that create a purposeful and systematic setting for English language learning. The read-aloud for each story or nonfiction text builds upon previously taught vocabulary and ideas and introduces language and knowledge needed for the next more complex text. The *Transition Supplemental Guide's* focus on oral language in the earlier grades

addresses the language learning needs of students with limited English language skills. These students—outside of a school setting—may not be exposed to the kind of academic language found in many written texts.

Vocabulary Charts

Vocabulary Chart for [Title of Lesson]			
Core Vocabulary words are in bold . Multiple Meaning Word Activity word is <u>underlined</u> . Vocabulary Instructional Activity words have an asterisk (*). Suggested words to pre-teach are in <i>italics</i> .			
Type of Words	Tier 3 Domain-Specific Words	Tier 2 General Academic Words	Tier 1 Everyday-Speech Words
Understanding			
Multiple Meaning			
Phrases			
Cognates			

Vocabulary Charts at the beginning of each lesson categorize words into three tiers which are generally categorized as follows:

- Tier 1 words are words that are likely to appear in the basic repertoire of native English-speaking students—words such as *cloud*, *frog*, and *tree*.
- Tier 2 words are highly functional and frequently used general academic words that appear across various texts and content areas—words such as *process*, *reveal*, and *transformation*.
- Tier 3 words are content-specific and difficult words that are crucial for comprehending the facts and ideas related to a particular subject—words such as *germination*, *metamorphosis*, and *precipitation*.

English Language Learners and students with limited oral language skills may not necessarily know the meanings of all Tier 1 words, and may find Tier 2 and Tier 3 words confusing and difficult to learn. Thus, explicit explanation of, exposure to, and practice using Tier 1, 2, and 3 words are essential to successful mastery of content for these students (National Governors Association Center for Best Practices, Council of Chief State School Officers 2010 32–35).

In addition, the Vocabulary Chart indicates whether the chosen words are vital to understanding the lesson (labeled *Understanding*); have multiple

meanings or senses (labeled *Multiple Meaning*); are clusters of words that often appear together (labeled *Phrases*); or have a Spanish word that sounds similar and has a similar meaning (labeled *Cognates*). Words in the Vocabulary Chart were selected because they appear frequently in the text of the read-aloud or because they are words and phrases that span multiple grade levels and content areas. Teachers should be aware of and model the use of these words as much as possible before, during, and after each individual lesson. The Vocabulary Chart could also be a good starting point and reference for keeping track of students' oral language development and their retention of domain-related and academic vocabulary. These lists are not meant to be exhaustive, and teachers are encouraged to include additional words they feel would best serve their students.

Multiple Meaning Word Activities

Multiple Meaning Word Activities help students determine and clarify the different meanings of individual words. This type of activity supports a deeper knowledge of content-related words and a realization that many content words have multiple meanings associated with them. Students with strong oral language skills may be able to navigate through different meanings of some words without much effort. However, students with limited English language proficiency and minimal vocabulary knowledge may be less likely to disambiguate the meanings of words. This is why it is important that teachers have a way to call students' attention to words in the lesson that have ambiguous meanings, and that students have a chance to explore the nuances of words in contexts within and outside of the lessons.

Syntactic Awareness Activities

Syntactic Awareness Activities focus on sentence structure. During the early elementary grades, students are not expected to read or write lengthy sentences, but they might be able to produce complex sentences in spoken language when given adequate prompting and support. Syntactic Awareness Activities support students' awareness of the structure of written language, interrelations between words, and grammar. Developing students' oral language through syntactic awareness provides a solid foundation for written language development in the later elementary grades and beyond.

Vocabulary Instructional Activities

Vocabulary Instructional Activities are included to build students' general academic, or Tier 2, vocabulary. These words are salient because they appear across content areas and in complex written texts. These activities support students' learning of Tier 2 words and deepen their knowledge of academic words and the connections of these words to other words and concepts. The vocabulary knowledge students possess is intricately connected to reading comprehension, the ability to access background knowledge, express ideas, communicate effectively, and learn about new concepts.

English Language Learners and Students with Disabilities

The *Transition Supplemental Guide* assists education professionals who serve students with limited English language skills or students with limited home literacy experience, which may include English Language Learners (ELLs) and students with special needs. Although the use of this guide is not limited to teachers of ELLs and/or students with special needs, the following provides a brief explanation of these learners and the challenges they may face in the classroom, as well as teaching strategies that address those challenges.

English Language Learners

The *Transition Supplemental Guide* is designed to facilitate the academic oral language development necessary for English Language Learners (ELLs) and to strengthen ELLs' understanding of the core content presented in the domains.

When teaching ELLs, it is important to keep in mind that they are a heterogeneous group from a variety of social backgrounds and at different stages in their language development. There may be some ELLs who do not speak any English and have little experience in a formal education setting. There may be some ELLs who seem fluent in conversational English, but do not have the academic language proficiency to participate in classroom discussions about academic content. The following is a chart showing the basic stages of second language acquisition; proper expectations for student behavior and performance; and accommodations and support strategies for each stage. Please note that ELLs may have extensive language skills in their

first language and that they advance to the next stage at various rates depending on their acculturation, motivation, and prior experiences in an education setting.

Language Development Stage	Comprehension and Production	Accommodations and Support Strategies
Entering	<ul style="list-style-type: none"> • Produces little or no English • Responds in nonverbal ways • Has a minimal receptive vocabulary in English 	<ul style="list-style-type: none"> • Use predictable phrases for set routines • Use manipulatives, visuals, realia, props • Use gestures (e.g., point, nod) to indicate comprehension • Use lessons that build receptive and productive vocabulary, using illustrated pre-taught words • Use pre-taught words to complete sentence starters • Use simply stated questions that require simple nonverbal responses (e.g., “Show me . . . ,” “Circle the . . . ”) • Use normal intonation, emphasize key words, and frequent checks for understanding • Model oral language and practice formulaic expressions • Pair with another ELL who is more advanced in oral language skills for activities and discussions focused on the English language • Pair with same-language peers for activities and discussions focused on content
Emerging (Beginner)	<ul style="list-style-type: none"> • Responds with basic phrases • Includes frequent, long pauses when speaking • Has basic level of English vocabulary (common words and phrases) 	<ul style="list-style-type: none"> • Use repetition, gestures, and visual aids to facilitate comprehension and students’ responses • Use manipulatives, visuals, realia, props • Use small-group activities • Use lessons that expand receptive and expressive vocabulary, especially Tier 2 vocabulary • Use illustrated core vocabulary words • Use pre-identified words to complete cloze sentences • Use increasingly more difficult question types as students’ receptive and expressive language skills improve: <ul style="list-style-type: none"> • Yes/no questions • Either/or questions • Questions that require short answers • Open-ended questions to encourage expressive responses • Allow for longer processing time and for participation to be voluntary • Pair with another ELL who is more advanced in oral language skills for activities and discussions focused on the English language • Pair with same-language peers for activities and discussions focused on content

Transitioning (Intermediate)	<ul style="list-style-type: none"> • Speaks in simple sentences • Uses newly learned words appropriately • With appropriate scaffolding, able to understand and produce narratives • Has a much larger receptive than expressive vocabulary in English 	<ul style="list-style-type: none"> • Use more complex stories and books • Continue to focus on Tier 2 vocabulary • Introduce academic terms (e.g., making predictions and inferences, figurative language) • Use graphic organizers • Use increasingly difficult question types as students' receptive and expressive language skills improve: <ul style="list-style-type: none"> • Questions that require short sentence answers • <i>Why</i> and <i>how</i> questions • Questions that check for literal and abstract comprehension • Provide some extra time to respond • Pair with high-level English speakers for activities and discussions focused on the English language
Expanding (Advanced)	<ul style="list-style-type: none"> • Engages in conversations • Produces connected narrative • Shows good comprehension • Has and uses expanded vocabulary in English 	<ul style="list-style-type: none"> • Continue work with academic terms (e.g., making predictions and inferences, figurative language) • Use graphic organizers • Use questions that require opinion, judgment, and explanation • Pair with native English speakers
Commanding (Proficient)	<ul style="list-style-type: none"> • Uses English that nearly approximates the language of native speakers • Can maintain a two-way conversation • Uses more complex grammatical structures, such as conditionals and complex sentences. • Has and uses an enriched vocabulary in English 	<ul style="list-style-type: none"> • Build high-level/academic language • Expand figurative language (e.g., by using metaphors and idioms) • Use questions that require inference and evaluation • Pair with students who have a variety of skills and language proficiencies

(Adapted from Hirsch and Wiggins 2009, 362–364; New York Department of Education 2013; Smyk et al. 2013)

Students with Disabilities and Students with Special Needs

Students with disabilities (SWDs) have unique learning needs that require accommodations and modifications to the general education curriculum. When using the *Transition Supplemental Guide* with SWDs and students with special needs, it is important to consider instructional accommodations, tools, strategies, and Universal Design for Learning (UDL) Principles, which promote learning for all students through the use of multiple forms of representation, expression, and engagement (Hall, Strangman, and Meyer 2003).

Pacing

Pacing is the purposeful increase or decrease in the speed of instruction. Educators can break lessons into manageable chunks depending on needs of the class and follow the section with a brief review or discussion. This format of instruction ensures that students are not inundated with information. Additionally, you may want to allow students to move around the room for brief periods during natural transition points. When waiting for students to respond, allow at least three seconds of uninterrupted wait time to increase correctness of responses, response rates, and level of thinking (Stahl 1990).

Goals and Expectations

Make sure students know the purpose and the desired outcome of each activity. Have students articulate their own learning goals for the lesson. Provide model examples of desired end-products. Use positive verbal praise, self-regulation charts, and redirection to reinforce appropriate ways for students to participate and behave.

Directions

Provide reminders about classroom rules and routines whenever appropriate. You may assign a partner to help clarify directions. When necessary, model each step of an activity's instructions. Offering explicit directions, procedures, and guidelines for completing tasks can enhance student understanding. For example, large assignments can be delivered in smaller segments to increase comprehension and completion (Franzone 2009).

Instruction Format and Grouping

Use multiple instruction formats (e.g., small-group instruction, individual work, collaborative learning, and hands-on instruction). Be sure to group students in logical and flexible ways that support learning.

Instructional Strategies

The following evidence-based strategies can assist students with disabilities in learning content (Scruggs et al. 2010):

- **Mnemonic strategies** are patterns of letters and sounds related to ideas that enhance retention and recall of information. They can be used as a tool to encode information.
- **Spatial organizers** assist student understanding and recall of information using charts, diagrams, graphs, and/or other graphic organizers.
- **Peer mediation**, such as peer tutoring and cooperative learning groups, can assist in assignment completion and enhance collaboration within the classroom.
- **Hands-on learning** offers students opportunities to gain understanding of material by completing experiments and activities that reinforce content.
- **Explicit instruction** utilizes clear and direct teaching using small steps, guided and independent practice, and explicit feedback.
- **Visual strategies** (e.g., picture/written schedules, storymaps, task analyses, etc.) represent content in a concrete manner to increase focus, communication, and expression (Rao and Gagie 2006).


References

1. Biemiller, Andrew. 2010. *Words Worth Teaching*. Columbus: SRA/McGrawHill.
2. Franzone, Ellen L. 2009. "Overview of Task Analysis." Madison, WI: National Professional Development Center on Autism Spectrum Disorders, Waisman Center, University of Wisconsin.
3. Hall, Tracey, Anne Meyer and Nicole Strangman. 2003. "Differentiated Instruction and Implications for UDL Implementation." National Center on Accessing the General Curriculum.

4. Hirsch, Jr., E. D. and Alice K. Wiggins. 2009. *Core Knowledge Preschool Sequence and Teacher Handbook*. Charlottesville, VA: Core Knowledge Foundation.
5. National Governors Association Center for Best Practices, Council of Chief State School Officers. 2010. "Appendix A," in *Common Core State Standards: English Language Arts Standards*. Washington DC: National Governors Association Center for Best Practices, Council of Chief State School Officers.
6. New York Department of Education. 2013. *New York State Bilingual Common Core Initiative*. Accessed October 8. <http://www.engageny.org/resource/new-york-state-bilingual-common-core-initiative#progressions>.
7. Rao, Shaila M. and Brenda Gagie. 2006. "Learning Through Seeing and Doing: Visual Supports for Children with Autism." *Teaching Exceptional Children* 38 (6): 26–33.
8. Scruggs, Thomas E., Margo A. Mastropieri, Sheri Berkeley, and Janet E. Graetz. 2010. "Do Special Education Interventions Improve Learning of Secondary Content? A Meta-Analysis." *Remedial and Special Education* 31: 437–449.
9. Smyk, Ekaterina, M. Adelaida Restrepo, Joanna S. Gorin, and Shelley Gray. 2013. "Development and Validation of the Spanish-English Language Proficiency Scale (SELPS)." *Language, Speech, and Hearing Services in Schools* 44: 252–65.
10. Stahl, Robert J. 1990. "Using 'Think-Time' Behaviors to Promote Students' Information Processing, Learning, and On-Task Participation: An Instructional Module." Tempe, AZ: Arizona State University.

Alignment Chart for Cycles in Nature

The following chart contains core content objectives. It also demonstrates alignment between the Common Core State Standards and corresponding Core Knowledge Language Arts (CKLA) goals.

Alignment Chart for Cycles in Nature	Lesson								
	1	2	3	4	5	6	7	8	9
Core Content Objectives									
Explain that a cycle is a sequence of events that repeats itself again and again									
Recognize that the rotation of Earth causes daytime and nighttime	✓	✓							
Explain that it takes twenty-four hours for the earth to rotate once on its axis	✓	✓							
Recognize that living things have a life cycle	✓	✓	✓						
Demonstrate familiarity with the poem “Bed in Summer”		✓							
Recognize that Earth orbits the sun		✓							
Explain that it takes one year for Earth to orbit the sun		✓							
Describe the seasonal cycle: spring, summer, autumn, winter		✓	✓	✓	✓	✓	✓	✓	
Identify that the tilt of Earth’s axis in relation to the sun causes the seasons		✓	✓						
Explain effects of seasonal changes on plants and animals		✓	✓	✓	✓	✓	✓	✓	
Demonstrate familiarity with the poem “Bee! I’m expecting you!”			✓						
Describe animal processes in spring, summer, autumn, winter			✓						
Define the term <i>life cycle</i>				✓	✓	✓	✓	✓	
Identify the stages of the life cycle of a flowering plant (seed to seed)				✓					
Identify the stages of the life cycle of a tree (seed to seed)					✓				
Identify the stages of the life cycle of a chicken (egg to egg)						✓			
Identify the stages of the life cycle of a frog (egg to egg)							✓		

Alignment Chart for Cycles in Nature




Lesson

	1	2	3	4	5	6	7	8	9
Explain metamorphosis							✓	✓	
Identify the stages of the life cycle of a butterfly (egg to egg)								✓	
Define the term <i>water cycle</i>									✓
Explain that there is a limited amount of water on Earth									✓
Describe evaporation and condensation									✓
Identify forms and importance of precipitation									✓
Describe the formation of clouds									✓
Identify three types of clouds: cirrus, cumulus, and stratus									✓

Note: The Language Arts Objectives in the Lessons may change depending on teacher's choice of activities.



Reading Standards for Literature: Grade 2

Key Ideas and Details

STD RI.2.1		Ask and answer such questions as <i>who</i> , <i>what</i> , <i>where</i> , <i>when</i> , <i>why</i> , and <i>how</i> to demonstrate understanding of key details in a text.
CKLA Goal(s)	Ask and answer questions (e.g., <i>who</i> , <i>what</i> , <i>where</i> , <i>when</i> , <i>why</i> , <i>how</i>), orally or in writing, requiring literal recall and understanding of the details and/or facts of a nonfiction/informational read-aloud	
	Answer questions that require making interpretations, judgments, or giving opinions about what is heard in a nonfiction/informational read-aloud, including answering why questions that require recognizing cause/effect relationships	
STD RI.2.2		Identify the main topic of a multiparagraph text as well as the focus of specific paragraphs within the text.
CKLA Goal(s)	Identify the main topic of a multi-paragraph nonfiction/informational read-aloud as well as the focus of specific paragraphs within the text	

Alignment Chart for Cycles in Nature

Lesson

Alignment Chart for Cycles in Nature		1	2	3	4	5	6	7	8	9
STD RI.2.3	Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.									
CKLA Goal(s)	Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a nonfiction/informational read-aloud	✓	✓	✓				✓		
Craft and Structure										
STD RI.2.4	Determine the meaning of words and phrases in a text relevant to a Grade 2 topic or subject area.									
CKLA Goal(s)	Determine the meaning of unknown words and phrases in nonfiction/informational read-alouds and discussions									
Integration of Knowledge and Ideas										
STD RI.2.7	Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.									
CKLA Goal(s)	Interpret information from diagrams, charts, timelines, graphs, or other organizers associated with a nonfiction/informational read-aloud and explain how these graphics clarify the meaning of the read-aloud	✓	✓							
STD RI.2.9	Compare and contrast the most important points presented by two texts on the same topic.									
CKLA Goal(s)	Compare and contrast (orally or in writing) similarities and differences within a single nonfiction/informational read-aloud or between two or more nonfiction/informational read-alouds			✓	✓		✓		✓	
Range of Reading and Level of Text Complexity										
STD RI.2.10	By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the Grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.									
CKLA Goal(s)	Listen to and demonstrate understanding of nonfiction/informational read-alouds of appropriate complexity for Grades 2–4									

Alignment Chart for Cycles in Nature

Lesson

Alignment Chart for Cycles in Nature

	1	2	3	4	5	6	7	8	9	
Writing Standards: Grade 2										
Text Types and Purposes										
STD W.2.2	Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.									
CKLA Goal(s)	Plan and/or draft, and edit an informative/explanatory text that presents information from a nonfiction/informational read-aloud that introduces a topic, uses facts and definitions to develop points, and provides a concluding statement or section									
							✓			
Production and Distribution of Writing										
STD W.2.5	With guidance and support from adults and peers, focus on a topic and strengthen writing as needed by revising and editing.									
CKLA Goal(s)	With guidance and support from adults and peers, focus on a topic and strengthen writing as needed by revising and editing									
						✓	✓			
Speaking and Listening Standards: Grade 2										
Comprehension and Collaboration										
STD SL.2.1	Participate in collaborative conversations with diverse partners about Grade 2 topics and texts with peers and adults in small and large groups.									
STD SL.2.1a	Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).									
CKLA Goal(s)	Use agreed-upon rules for group discussions, e.g., look at and listen to the speaker, raise hand to speak, take turns, say “excuse me” or “please,” etc.					✓				
STD SL.2.1b	Build on others’ talk in conversations by linking their comments to the remarks of others.									
CKLA Goal(s)	Carry on and participate in a conversation over at least six turns, staying on topic, linking their comments to the remarks of others, with either an adult or another child of the same age					✓				
STD SL.2.1c	Ask for clarification and further explanation as needed about the topics and texts under discussion.									
CKLA Goal(s)	Ask questions to clarify information about the topic in a fiction or nonfiction/informational read-aloud					✓				


















Alignment Chart for Cycles in Nature

Lesson

		1	2	3	4	5	6	7	8	9
STD SL.2.2	Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.									
CKLA Goal(s)	Retell (orally or in writing) important facts and information from a fiction or nonfiction/informational read-aloud						✓			
	Summarize (orally or in writing) text content and/or oral information presented by others						✓			✓
STD SL.2.3	Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.									
CKLA Goal(s)	Ask questions to clarify directions, exercises, classroom routines and/or what a speaker says about a topic to gather additional information, or deepen understanding of a topic or issue			✓	✓			✓		
Presentation of Knowledge and Ideas										
STD SL.2.5	Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.									
CKLA Goal(s)	Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings						✓			✓
STD SL.2.6	Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification. (See Grade 2 Language)									
CKLA Goal(s)	Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification						✓			
Language Standards: Grade 2										
Vocabulary Acquisition and Use										
STD L.2.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on Grade 2 reading and content, choosing flexibly from an array of strategies.									
CKLA Goal(s)	Determine the meaning of unknown and multiple meaning words and phrases in fiction or nonfiction/informational read-alouds and discussions			✓	✓		✓		✓	

Alignment Chart for Cycles in Nature

Lesson

		1	2	3	4	5	6	7	8	9
STD L.2.5	Demonstrate understanding of word relationships and nuances in word meanings.									
STD L.2.5a	Identify real-life connections between words and their use (e.g., describe foods that are spicy or juicy).									
CKLA Goal(s)	Identify real-life connections between words and their use (e.g., describe foods that are spicy or juicy)									
STD L.2.6	Use words and phrases acquired through conversations, reading and being read to, and responding to texts, including using adjectives and adverbs to describe (e.g., <i>When other kids are happy, that makes me happy</i>).									
CKLA Goal(s)	Use words and phrases acquired through conversations, reading and being read to, and responding to texts, including using adjectives and adverbs to describe (e.g., <i>When other kids are happy, that makes me happy</i>)									
Additional CKLA Goals										
Prior to listening to a read-aloud, identify orally what students know and have learned about a topic										
Identify and express whether they are able to feel the rotation of the earth										
Discuss personal connections to given topics										
Use knowledge of the meaning of individual words to predict the meanings of compound words										
Sequence four to six pictures illustrating events from a nonfiction read-aloud										
Prior to listening to a read-aloud, make a prediction and then compare the actual outcome to the prediction										
Share writing with others										



These goals are addressed in all lessons in this domain. Rather than repeat these goals as lesson objectives throughout the domain, they are designated here as frequently occurring goals.



Cycles in Nature

Transition Supplemental Guide Introduction

This introduction includes the necessary background information to be used in teaching the *Cycles in Nature* domain. *Cycles in Nature* contains nine daily lessons, each of which is composed of two distinct parts, so that the lesson may be divided into smaller chunks of time and presented at different intervals during the day. The entire lesson will require a total of sixty minutes.

This domain includes one Pausing Point after Lesson 5. At the end of the domain, a Domain Review, a Domain Assessment, and Culminating Activities are included to allow time to review, reinforce, assess, and remediate content knowledge. **You should spend no more than thirteen days total on this domain.**

Week One									
Day 1	10#	Day 2	#	Day 3	10#	Day 4	10#	Day 5	10#
Lesson 1A: “The Cycle of Daytime and Nighttime” (40 min.)		Lesson 2A: “The Reasons for Seasons” (40 min.)		Lesson 3A: “Four Seasons in One Year” (40 min.)		Lesson 4A: “The Life Cycle of a Plant” (40 min.)		Lesson 5A: “The Life Cycle of a Tree” (40 min.)	
Lesson 1B: Extensions (20 min.)		Lesson 2B: Extensions (20 min.)		Lesson 3B: Extensions (20 min.)		Lesson 4B: Extensions (20 min.)		Lesson 5B: Extensions (20 min.)	
60 min.		60 min.		60 min.		60 min.		60 min.	

Week Two				
Day 6	Day 7	Day 8	Day 9	Day 10
Pausing Point (60 min.)	Lesson 6A: “Which Came First, the Chicken or the Egg?” (40 min.)	Lesson 7A: “The Life Cycle of a Frog” (40 min.)	Lesson 8A: “The Life Cycle of a Butterfly” (40 min.)	Lesson 9A: “The Water Cycle” (40 min.)
	Lesson 6B: Extensions (20 min.)	Lesson 7B: Extensions (20 min.)	Lesson 8B: Extensions (20 min.)	Lesson 9B: Extensions (20 min.)
60 min.	60 min.	60 min.	60 min.	60 min.

Week One		
Day 11	Day 12 ¹⁰ #	Day 13 ¹⁰ #
Domain Review (60 min.)	Domain Assessment (60 min.)	Culminating Activities (60 min.)
60 min.	60 min.	60 min.

Ⓢ Lessons include Student Performance Task Assessments

Lessons require advance preparation and/or additional materials; please plan ahead

Lesson Implementation

It is important to note that the interactive activities in the *Transition Supplemental Guide* count on the teacher as the “ideal reader” to lead discussions, model proper language use, and facilitate interactions among student partners.

It is highly recommended that teachers preview the read-aloud, Flip Book images, and comprehension questions to determine when to pause during the read-aloud and ask guiding questions. To check for understanding—especially before a difficult point is to be presented—you might say, “While we are reading this part of the read-aloud, I want you to think about...” or you could ask supplementary questions, such as Who/What/When/Where/Why literal questions.

Student Grouping

Teachers are encouraged to assign partner pairs prior to beginning a domain, and partners should remain together for the duration of the domain. If possible, English Language Learners should be paired with native English speakers, and students who have limited English oral language skills should be paired with students who have strong English language skills. Keep in mind that in some instances a group of three would benefit beginning ELLs and an older student or adult volunteer may be a better arrangement for some students with disabilities. Partnering in this way promotes a social environment where all students engage in collaborative talk and learn from one another.

In addition, there are various opportunities where students of the same home-language work together, fostering their first-language use and existing knowledge to construct deeper meanings about new information.

Graphic Organizers and Domain-Wide Activities

Several different organizers and domain-wide activities are included to aid students in their learning of the content in the *Cycles in Nature* domain.

- Response Cards for *Cycles in Nature* (one per cycle, eight total)—students will create their own response card for each cycle after they learn about that particular cycle. Teachers may wish to create review questions that students can answer by holding up their response cards or by pointing to specific parts of their response cards.

- Seasons Chart (Instructional Master 2A-1)—You may wish to use this chart to record information about the seasons during Lessons 2 and 3.
- Writing an Explanatory/Informational Paragraph (Instructional Master 7B-3)—This domain includes a writing activity in which students plan and write a paragraph about the life cycle of a frog and a paragraph about the life cycle of a butterfly. **Note:** You may need to spend extra time scaffolding and modeling how to write an explanatory/informational paragraph.
- There are numerous opportunities in the life cycle lessons to bring in real objects for students to see, touch, and smell to entice students to want to know more, and to reinforce the importance of what they are learning. For each life cycle, bring in a few central objects that can be placed at students' desks or in centers. For example, when teaching the life cycle of a flower, bring in flowers that children can touch and smell. When teaching the life cycle of a tree, there should be various types of tree branches, leaves, fruits, and seeds on tables or desks so that students can touch and feel them while learning the concepts. When teaching the life cycle of a chicken, there should be eggs to crack and explore. **Note:** Be sure to check with your school's policy regarding food distribution and allergies.
- Fun with Life Cycles—Preview the activities in the Pausing Point and Culminating Activities for activities that can be done throughout the domain to enhance content presented in the read-alouds.

Anchor Focus in Cycles in Nature

This chart highlights two Common Core State Standards as well as relevant academic language associated with the activities in this domain.

Anchor Focus	CCSS	Description of Focus and Relevant Academic Language
Writing	W.2.2	<i>Writing an Explanatory/Informational Paragraph</i> With proper modeling and scaffolding, students will plan and write a paragraph about the life cycle of a frog and a paragraph about the life cycle of a butterfly. Relevant academic language: <i>paragraph; sentences; explain; introduction/conclusion; First/Next/Then/Last</i>
Language	L.2.4d	Use knowledge of the meaning of individual words to predict the meaning of compound words.

Domain Components

Along with this *Transition Supplemental Guide*, you will need:

- *Tell It Again! Media Disk* or the *Tell It Again! Flip Book for Cycles in Nature*
- *Tell It Again! Image Cards for Cycles in Nature*
- * The *Tell It Again! Posters* and *Tell It Again! Multiple Meaning Word Posters for Cycles in Nature* are located in the back of the *Tell It Again! Flip Book*.

Recommended Resource:

- *Core Knowledge Grade 2 Teacher Handbook*, edited by E.D. Hirsch, Jr. and Souzanne A. Wright (Core Knowledge Foundation, 2005) ISBN 978-1890517748

Why Cycles in Nature Are Important

This domain will introduce your students to the many natural cycles that make life on Earth possible. Your students will increase their knowledge of cycles in nature by learning more about seasonal cycles, the life cycles of flowering plants and trees, animal life cycles, and the importance of the water cycle. Students will learn that all organisms experience the developmental stages of the life cycle. Students will also begin to understand how all organisms depend on Earth's limited water supply.

In addition, throughout this domain, students will gain exposure to poems by renowned authors Emily Dickinson and Robert Louis Stevenson.

What Students Have Already Learned in Core Knowledge Language Arts During Kindergarten and Grade 1

The following Kindergarten and Grade 1 domains are particularly relevant to the read-alouds your students will hear in *Cycles in Nature*. The background knowledge presented in these domains will greatly enhance your students' understanding of the read-alouds they are about to enjoy:

Plants (Kindergarten)

- Explain that seeds are the beginnings of new plants
- Explain that some plants produce fruit to hold seeds
- Compare and contrast fruits and seeds of different plants
- Explain the basic life cycle of plants
- Describe how bees collect nectar and pollen
- Describe the important role bees play in plant pollination
- Compare and contrast deciduous and evergreen plants
- Sequence the seasonal rhythm of planting, growing, and harvesting

Seasons and Weather (Kindergarten)

- Name the four seasons in cyclical order, as experienced in the United States, and correctly name a few characteristics of each season
- Characterize winter as generally the coldest season, summer as generally the warmest season, and spring and autumn as transitional seasons
- Describe any unique seasonal differences that are characteristic of their own locality (change of color and dropping of leaves in autumn; snow or ice in winter; increased rain and/or flooding in spring; etc.)
- Identify ways in which weather affects daily routines, such as dress, activities, etc.
- Describe daily weather conditions of their own locality in terms of temperature (hot, warm, cool, cold); cloud cover (sunny, cloudy); and precipitation (rain, snow, or sleet)
- Identify the four seasons, and name activities that are associated with those seasons
- Explain why weather prediction is important in their daily lives

Taking Care of the Earth (Kindergarten)

- Compare and contrast fresh water, salt water, and wastewater
- Explain that many living things, including humans, need

freshwater to survive, and that there is a limited supply of fresh water on Earth

- Explain why people have a special responsibility to take care of the earth

Astronomy (Grade 1)

- Identify the four phases of the moon—new, crescent, half, full
- State that the moon orbits the earth
- Explain that our solar system includes the sun and the planets that orbit the sun

Animals and Habitats (Grade 1)

- Explain why living things live in habitats to which they are specifically suited
- Classify water habitats as either freshwater or saltwater habitats
- Identify the characteristics of the freshwater habitat
- Explain that salt water covers most of Earth and is found in several oceans

Core Vocabulary for Cycles in Nature

The following list contains all of the core vocabulary words in *Cycles in Nature* in the forms in which they appear in the read-alouds or, in some instances, in the “Introducing the Read-Aloud” section at the beginning of the lesson. The inclusion of the words on this list does not mean that students are immediately expected to be able to use all of these words on their own. However, through repeated exposure throughout the lessons, they should acquire a good understanding of most of these words and begin to use some of them in conversation.

Lesson 1

axis
cycle
rotating
thrive

Lesson 2

equator
hemisphere
revolves
tilt

Lesson 3

absorbed
adapt
migrate
minimum
photosynthesis

Lesson 4

attracted
emerge
pollinators
protective
reproduce

Lesson 5

decomposers
dependent
flexible
germination

mature

Lesson 6

albumen
embryo
fertilize
replenished
yolk

Lesson 7

amphibian
burrow
gills
lungs
metamorphosis

Lesson 8

larva
molt
transparent

Lesson 9

evaporation
condensation
humidity
precipitation

In addition to this core vocabulary list, every lesson includes its own Vocabulary Chart. Words in this chart either appear several times in the Read-Aloud or are words and phrases that support broader language growth, which is crucial to the English language development of young students. Most words on the chart are part of the General Service list of the 2000 most common English words or part of the Dale-Chall list of 3000 words commonly known by Grade 4. Moreover, a conscious effort has been made to include words from the Primary Priority Words according to Biemiller's (2010) *Words Worth Teaching*. The words on the Vocabulary Chart are not meant to be exhaustive, and teachers are encouraged to add additional words they feel would best serve their group of students.

Vocabulary Chart for The Cycle of Daytime and Nighttime			
Core Vocabulary words are in bold . Multiple Meaning Word Activity word is <u>underlined</u> . Vocabulary Instructional Activity words have an asterisk (*). Suggested words to pre-teach are in <i>italics</i> .			
Type of Words	Tier 3 Domain-Specific Words	Tier 2 General Academic Words	Tier 1 Everyday-Speech Words
Understanding	axis horizon	affect continue seem survive thrive*	animal darkness daytime/nighttime Earth east/west life planet sky sun sunlight sunrise/sunset
Multiple Meaning	dawn reproduction	cycle* energy <i>rotate/rotating</i>	circle light spins
Phrases		explains why faces/faces away never-ending cycle over the course of	again and again around and around move across
Cognates	horizonte reproducción	afectar continuar sobrevivir ciclo* energía	animal este/oeste planeta círculo

Comprehension Questions

In the *Transition Supplemental Guide* for *Cycles in Nature*, there are three types of comprehension questions. Literal questions assess students' recall of key details from the read-aloud; these questions are text dependent, requiring students to paraphrase and/or refer back to the portion of the read-aloud in which the specific answer to the question is provided. These questions generally address Reading Standards for Literature 1 (RL.2.1) and Reading Standards for Informational Text 1 (RI.2.1).

Inferential questions ask students to infer information from the text and think critically; these questions are also text dependent, but require students to paraphrase and/or refer back to the different portions of the read-aloud that provide information leading to and supporting the inference they are making. These questions generally address Reading Standards for Literature 2–5 (RL.2.2–RL.2.5) and Reading Standards for Informational Text 2–4 and 6 (RI.2.2–RI.2.4; RI.2.6).

Evaluative questions ask students to build upon what they have learned from the text using analytical and application skills; these questions are also text dependent, but require students to paraphrase and/or refer back to the portion(s) of the read-aloud that substantiate the argument they are making or the opinion they are offering. Evaluative questions might ask students to describe how reasons or facts support specific points in a read-aloud, which addresses Reading Standards for Informational Text 8 (RI.2.8). Evaluative questions might also ask students to compare and contrast information presented within a read-aloud or between two or more read-alouds, addressing Reading Standards for Literature 9 (RL.2.9) and Reading Standards for Informational Text 9 (RI.2.9).

The *Transition Supplemental Guides* include complex texts, thus preparing students in these early years for the increased vocabulary and syntax demands aligned texts will present in later grades. As all of the readings incorporate a variety of illustrations, Reading Standards for Literature 7 (RL.2.7) and Reading Standards for Informational Text 7 (RI.2.7) are addressed as well.

Student Performance Task Assessments

In the *Transition Supplemental Guide* for *Cycles in Nature*, there are numerous opportunities to assess students' learning. These assessment opportunities range from informal observations, such as *Think Pair Share* and some Extension activities, to more formal written assessments. These Student Performance Task Assessments (SPTA) are identified with this icon: 10. There is also an end-of-domain summative assessment. Use the Tens Conversion Chart located in the Appendix to convert a raw score on each SPTA into a Tens score. On the same page, you will also find the rubric for recording observational Tens scores.

Above and Beyond

In the *Transition Supplemental Guide* for *Cycles in Nature*, there are numerous opportunities in the lessons and the Pausing Point to challenge students who are ready to attempt activities that are above grade level. These activities are labeled “Above and Beyond” and are identified with this icon: ↗.

Supplemental Guide Activities

The *Supplemental Guide* activities that may be particularly relevant to any classroom are the Multiple Meaning Word Activities and accompanying Multiple Meaning Word Posters; Syntactic Awareness Activities; and Vocabulary Instructional Activities. Several multiple-meaning words in the read-alouds are underlined to indicate that there is a Multiple Meaning Word Activity associated with them. These activities afford all students additional opportunities to acquire a richer understanding of the English language. *Supplemental Guide* activities are identified with this icon: ↔.

Recommended Resources for Cycles in Nature

The *Transition Supplemental Guide* includes a number of opportunities in Extensions, in the Pausing Point, and in the Culminating Activities for teachers to select trade books from the list to reinforce domain concepts through the use of authentic literature. In addition, teachers should consider other times throughout the day when they might infuse authentic domain-related literature.

If you recommend that families read aloud with their child each night, you may wish to suggest that they choose titles from this trade book list below to reinforce the domain concepts. You might also consider creating a classroom lending library, allowing students to borrow domain-related books to read at home with their families.

Trade Book List

Seasonal Cycles

1. *Earth Cycles*, by Michael Elsohn Ross (Millbrook Press, 2001) ISBN 978-0761319771
2. *Four Seasons Make a Year*, by Anne Rockwell (Walker & Company, 2004) ISBN 978-0802788832
3. *How Do Birds Find Their Way?*, by Roma Gans (Harper Collins, 1996) ISBN 978-0064451505
4. *The Reasons for Seasons*, by Gail Gibbons (Holiday House, 1995) ISBN 978-0823412389
5. *Red Leaf, Yellow Leaf*, by Lois Ehlert (Harcourt, Inc., 1991) ISBN 978-0152661977
6. *What Makes Day and Night*, by Franklyn Branley (Harper Collins, 1986) ISBN 978-0064450508

Plant and Animal Life Cycles

7. *Butterfly (How Does it Grow?)*, by Jinny Johnson (Smart Apple Media, 2010) ISBN 978-1599203522
8. *Frogs (How Does it Grow?)*, by Jinny Johnson (Smart Apple Media, 2010) ISBN 978-1599203553

9. *From Caterpillar to Butterfly (Let's-Read-and-Find-Out-Science)*, by Deborah Heiligman (Harper Collins Publishers, 1996) ISBN 978-0064451291
10. *From Seed to Plant*, by Gail Gibbons (Holiday House, 1991) ISBN 978-0823410255
11. *From Seed to Sunflower*, by Dr. Gerald Legg (Franklin Watts, 1998) ISBN 978-0531153345
12. *How a Seed Grows*, by Helene J. Jordan (Harper Collins, 2000) ISBN 978-0064451079
13. *The Life Cycle of an Oak Tree*, by Linda Tagliaferro (Capstone Press, 2007) ISBN 978-0736867115
14. *A Log's Life*, by Wendy Pfeffer (Aladdin Paperbacks, 1997) ISBN 978-1416934837
15. *Monarch Butterfly*, by Gail Gibbons (Holiday House, 1995) ISBN 978-0823409099
16. *A Nest Full of Eggs*, by Priscilla Belz Jenkins (Harper Collins, 1995) ISBN 978-0064451277
17. *One Bean*, by Anne Rockwell (Walker Publishing Company, 1998) ISBN 978-0802775726
18. *The Reason for a Flower*, by Ruth Heller (Penguin Putnam Books for Young Readers, 1999) ISBN 978-0698115590

Water Cycle

19. *Down Comes the Rain (Let's-Read-and-Find-Out-Science)*, by Franklyn M. Branley (Harper Collins Publishers, 1997) ISBN 978-0064451666
20. *The Snowflake: A Water Cycle Story*, by Neil Waldman (Milbrook Press, 2003) ISBN 978-0761323471
21. *Water (Nature's Cycles)* [Spanish & English], by Dana Meachen Rau (Marshall Cavendish Corporation, 2010) ISBN 978-0761447924
22. *The Water Cycle*, by Helen Frost (Pebble Books, 2000) ISBN 978-0736804097

23. *The Water Cycle*, by Rebecca Olien (Capstone Press, 2005)
ISBN 978-0736851824
24. *Water, Water Everywhere*, Mark J. Rauzon and Cynthia Overbeck Bix (Sierra Club Books for Children, 1994) ISBN 978-0871563835

Websites and Other Resources

Student Resources

1. **Interactive Earth Rotation**
http://www.bbc.co.uk/schools/scienceclips/ages/9_10/earth_sun_moon.shtml
2. **Creature Feature: American Bullfrog**
<http://kids.nationalgeographic.com/kids/animals/creaturefeature/american-bullfrog>
3. **Creature Feature: Penguin**
<http://kids.nationalgeographic.com/kids/animals/creaturefeature/adelie-penguin>
4. **Caterpillar to a Butterfly**
<http://www.youtube.com/watch?v=5Tvl6wz7e9M>
5. **Water Cycle Song**
<http://www.youtube.com/watch?v=KQ8KRznrXiA>
6. **How Water Changes**
<http://www.youtube.com/watch?v=oaCUyZw4Tjo>

Teacher Resources

1. **The Water Cycle**
<http://www.sciencekids.co.nz/sciencefacts/weather/thewatercycle.htm>
2. *March of the Penguins* DVD, with Morgan Freeman (Warner Bros., 2005) ASIN: B000NJUYHM



The Cycle of Daytime and Nighttime

1

☑ Lesson Objectives

Core Content Objectives

Students will:

- ✓ Explain that a cycle is a sequence of events that repeats itself again and again
- ✓ Recognize that the rotation of Earth causes daytime and nighttime
- ✓ Explain that it takes twenty-four hours for Earth to rotate once on its axis

Language Arts Objectives

The following language arts objectives are addressed in this lesson. Objectives aligning with the Common Core State Standards are noted with the corresponding standard in parentheses. Refer to the Alignment Chart for additional standards addressed in all lessons in this domain.

Students will:

- ✓ Identify the main topic of “The Cycle of Daytime and Nighttime” (RI.2.2)
- ✓ Describe the connection between the earth’s rotation and daytime and nighttime (RI.2.3)
- ✓ Interpret information from a diagram of the earth’s rotation using the read-aloud “The Cycle of Daytime and Nighttime” (RI.2.7)
- ✓ Prior to listening to “The Cycle of Daytime and Nighttime,” identify orally what they know about the differences between daytime and nighttime
- ✓ Identify and express whether they are able to feel the rotation of Earth

Core Vocabulary

axis, n. A line through the middle of something

Example: The axis of Earth is an imaginary line drawn through the North and South Poles.

Variation(s): axes

cycle, n. Something that repeats, in the same order, over and over again

Example: The cycle of the seasons is winter, spring, summer, and autumn.

Variation(s): cycles

rotating, v. Turning or spinning in circles

Example: As I pedal my bike, the tires are rotating to keep the bike moving.

Variation(s): rotate, rotates, rotated


thrive, v. To grow and develop well

Example: With plenty of green grass to eat, the sheep will thrive; without enough grass, the sheep will not thrive.

Variation(s): thrives, thrived, thriving

Vocabulary Chart for The Cycle of Daytime and Nighttime			
Core Vocabulary words are in bold . Multiple Meaning Word Activity word is <u>underlined</u> . Vocabulary Instructional Activity words have an asterisk (*). Suggested words to pre-teach are in <i>italics</i> .			
Type of Words	Tier 3 Domain-Specific Words	Tier 2 General Academic Words	Tier 1 Everyday-Speech Words
Understanding	axis horizon	affect continue seem survive thrive*	animal darkness daytime/nighttime Earth east/west life planet sky sun sunlight sunrise/sunset
Multiple Meaning	dawn reproduction	cycle* energy <i>rotate/rotating</i>	circle light spins
Phrases		explains why faces/faces away never-ending cycle over the course of	again and again around and around move across
Cognates	horizonte reproducción	afectar continuar sobrevivir ciclo* energía	animal este/oeste planeta círculo

Note: Introducing the Read-Aloud and Extensions may have activity options that exceed the time allocated for that part of the lesson. To remain within the time periods allocated for each portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

Exercise	Materials	Details
<i>Introducing the Read-Aloud (10 minutes)</i>		
Domain Introduction	large monthly calendar; school's calendar of events	Use the large monthly calendar to show students the cycle of the days of the week and the cycle of the months of the year. You may also wish to point out the cycle of events in a school year (e.g., back to school, Thanksgiving break, winter holiday, New Year's, spring break, Memorial Day, summer break, back to school . . .)
Essential Background Information or Terms		
What Do We Know?	chart paper to make Daytime/ Nighttime T-Chart	Write down student responses on a T-Chart; refer to the T-Chart during the read-aloud.
Vocabulary Preview: Axis, Rotate	Images 1A-3 and 1A-4	
Purpose for Listening		
<i>Presenting the Read-Aloud (15 minutes)</i>		
The Cycle of Daytime and Nighttime	Daytime/Nighttime T-Chart; globe	
<i>Discussing the Read-Aloud (15 minutes)</i>		
Comprehension Questions		
Word Work: Thrive		
 Complete Remainder of the Lesson Later in the Day		
<i>Extensions (20 minutes)</i>		
Syntactic Awareness Activity: Compound Words Using time	index cards: one per student	

Exercise	Materials	Details
Vocabulary Instructional Activity: Cycle	chart paper	
Sequencing the Cycle of Daytime and Nighttime	Instructional Master 1B-1, drawing tools	
Demonstration of Earth's Rotation	pencil; globe; flag or pin; flashlight	
Take-Home Material		
Family Letter	Instructional Masters 1B-2–4	

Advance Preparation

Make a copy of Instructional Master 1B-1 for each student. Students will create their own Response Card for the cycle of daytime and nighttime.

Prepare a Daytime/Nighttime T-Chart on a large piece of chart paper. Refer to this chart during the read-aloud.

Prepare a compound word display with the word *time* written on an index card and an empty space in front of *time*. Students will write their own words that can go in front of *time* to make a compound word.

Note to Teacher

If possible, locate and borrow several globes so that small groups of students have access to a globe for the first three read-alouds.

Image 1A-2: Living things and their young is not used in today's read-aloud. You may wish to show this image when your class begins to talk about the life cycles of animals, beginning in Lesson 6.



The Cycle of Daytime and Nighttime

1A

Note: Introducing the Read-Aloud may have activity options which exceed the time allocated for this part of the lesson. To remain within the time periods allocated for this portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

Introducing the Read-Aloud

10 minutes

Domain Introduction

5 minutes

Note: Students who have participated in the Core Knowledge Language Arts program in Kindergarten and Grade 1 will already be familiar with certain cycles in nature from the Kindergarten *Plants, Seasons and Weather*, and *Taking Care of the Earths* domains, and Grade 1 *Astronomy* and *Animals and Habitats* domains.

Tell students that when something repeats, or happens over and over again in the same order, it is called a cycle. Discuss with students that there are cycles happening all around them, all of the time. In all cycles, there is a starting point. Things in a cycle always come back to the starting point before beginning, or starting over, again.

Have students share some examples of events they are familiar with that repeat, or occur over and over again, in the same order, such as the days of the week or even the cycle of school years. Cycles are series of events that repeat again and again in the same order.

Essential Background Information or Terms

5 minutes

Tell students that in this lesson they will learn about a cycle that is related to the movement of their planet, Earth. Ask students if they can feel the earth moving. Tell them that even though they cannot feel the earth moving, it is moving very quickly in two different

ways. Lead students in a discussion about what they remember about the two ways that Earth moves from the Grade 1 *Astronomy* domain: Earth rotates, or spins around, its axis; Earth also orbits, or moves in a path around, the sun. Tell students that over the next few lessons, they will learn how these two types of movement are directly related to the cycle of daytime and nighttime as well as to the cycle of the four seasons.

What Do We Know?

5 minutes

There are several different kinds of cycles that occur in nature. Explain to students that some of nature's cycles repeat quickly, whereas other cycles take longer to repeat. Some cycles take place every day and night! Discuss with students what they experience when it is daytime and when it is nighttime. Have them use their five senses to describe the differences between daytime and nighttime.

Vocabulary Preview

5 minutes

Axis



◀ Show image 1A-3: Spinning

1. In today's read-aloud you will hear that Earth spins around an imaginary line called an *axis*.
2. Say *axis* with me three times.
3. An axis is a line through the middle of an object. [Point to the axis of the sphere to the right.]
4. Earth's axis goes from the North Pole to the South Pole. Earth spins around its axis.



◀ Show image 1A-4: Earth rotating on its axis

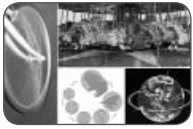
5. Where is Earth's axis in this image? What does Earth do around its axis?

Rotate

1. In today's read-aloud you will hear that it takes twenty-four hours for Earth to *rotate* one time on its axis.
2. Say the word *rotate* with me three times.
3. To rotate means to spin around.
4. When you pedal your bike, the wheels of your bike rotate.
5. What else can you think of that rotates? [Suggestions: Ferris wheel, merry-go-round, toy top, car tire, ballet dancer, basketball spinning on your finger, spinning coin, etc.]

Purpose for Listening

Tell students to listen carefully so they will be able to identify the main topic and explain how daytime and nighttime take place on Earth.



The Cycle of Daytime and Nighttime

◀ Show image 1A-1: Things that go round and round

- 1 [Point to the bicycle wheel and carousel.] Can you think of other things that go around and around? (spinning top, hands on a clock, tire swings, etc)
- 2 Here are two examples of cycles: the life cycle of a frog and Earth's rotation that causes the cycle of daytime and nighttime.

There are many, many things around us that go around and around.¹ A **cycle** is a sequence of events that repeats itself again and again. Just like there are circular objects that go around and around, there are also many natural cycles that occur on Earth that happen again and again, too.²



◀ Show image 1A-3: Spinning

- 3 The earth is constantly moving. Can we feel the earth moving?
- 4 The sun is a giant star that provides light, heat, and energy for the earth.

Earth spins around and around, a never-ending cycle that influences everything we do here on Earth.³ As Earth turns around, part of it faces the sun and part of it faces away from the sun.⁴ Can you guess what cycle happens when our part of Earth faces the sun and then rotates to face away from the sun? Did you guess the cycle of daytime and nighttime?

The cycle of daytime and nighttime is the result of our planet **rotating**, or spinning, around on an imaginary line called an **axis**. What's an axis? Well, imagine a spinning basketball turning around and around. Then try to picture an imaginary line running through the basketball, from the bottom to the top. That imaginary line is what we call an axis.⁵ Earth's axis passes through the North and South Poles. It takes twenty-four hours for Earth to rotate, or spin, one time on its axis.



◀ Show image 1A-4: Earth rotating on its axis

Rotation is the movement of Earth on its axis. This movement makes the cycle of daytime and nighttime. Earth takes twenty-four hours to turn, or rotate, back to its starting position. So as the earth rotates, we go from daytime to nighttime, and back to daytime again, at the very beginning of the cycle.

- 6 Describe one thing that people usually do during the daytime, and one thing that people usually do at nighttime.



← **Show image 1A-5: Sunrise**

- 7 [Show students which way east and west are in your classroom.]

- 8 Is the sun really moving? (No! The earth is moving, but to us it looks like the sun is moving.)



← **Show image 1A-6: Sunset**

- 9 Is the sun really going down? Why can't we see it anymore?

- 10 Have you seen a sunset recently? How would you describe it?

As Earth rotates, light from the sun falls on one half of Earth. We call this daytime. The other half of Earth is in darkness, and we call this nighttime. As Earth continues to rotate, the part of Earth that had sunlight moves into darkness, and the part that had darkness moves into the sunlight. This is a never-ending cycle of daytime and nighttime.⁶

The cycle begins at daytime with sunrise in the early morning. Sunlight hits our planet and moves across Earth from east to west.⁷ When we see the sun rising in the east in the morning and setting in the west in the evening, it is because of the earth rotating, or spinning. For people on Earth, it makes sense to say that the sun rises in the morning. Each morning at dawn, the sun appears in the eastern sky on the horizon. The horizon is the line we see in the distance where the ground meets the sky. At dawn, some people say, “Look! The sun is coming up!”⁸ This first appearance of the sun above the eastern horizon is called sunrise.

Over the course of the day, the sun seems to move across the sky, gradually following its path from east to west. In the evening, the sun sets in the west. Ever so slowly, it gets lower in the sky and disappears below the horizon. That’s when people say, “The sun is going down.”⁹ This disappearance of the sun below the western horizon is called sunset.

Based on what we can see from where we live on Earth, it seems sensible to say that the sun moves across the sky each day—rising, or moving up, in the east; and setting, or sinking down, in the west. But that’s not actually true. It is the daily rotation, or spin, of the earth that makes the sun seem to rise and set each day.¹⁰



← **Show image 1A-7: Children sleeping and children waking up**

This daily rotation explains why there is always daytime and nighttime some place on Earth. As it spins, certain parts of Earth's surface face the sun, receiving its heat and light. When it is light on one side of Earth, it is dark on the other side. So, if it is daytime where you are right now, then on the other side of the earth it is nighttime, and the children there are sound asleep. And, when you are nestled in your bed tonight, children on the other side of the planet will be waking up to a bright new day.¹¹

How does the cycle of daytime and nighttime affect living things on Earth? The sun is extremely important to life on Earth. All plants, animals, and people rely on the sun in order to **thrive**, or grow well. The sun's energy gives life to plants, which in turn nourish animals and people.¹² The sun's heat keeps the surface of Earth warm enough for plants and animals to survive. In the next few lessons, we will learn all about how the sun affects living things throughout the four seasons.

11 [Show students where they live on a globe.] Is it day or night right now where we live? [Show students a location on the other side of the globe.] Is it day or night right now on the other side of the world?

12 When you nourish something, you provide it with what it needs to grow.

Discussing the Read-Aloud

15 minutes

Comprehension Questions

10 minutes

If students have difficulty responding to questions, reread pertinent passages of the read-aloud and/or refer to specific images. If students give one-word answers and/or fail to use read-aloud or domain vocabulary in their responses, acknowledge correct responses by expanding students' responses using richer and more complex language. Ask students to answer in complete sentences by having them restate the question in their responses.

1. *Literal* What is the main topic of the read-aloud? (The main topic of the read-aloud is the cycle of daytime and nighttime.)
2. *Literal* What is a cycle? (A cycle is a sequence of events that happens over and over again.)
3. *Literal* What causes daytime and nighttime? (Rotation of Earth causes daytime and nighttime.)

4. *Inferential* How does the rotation of Earth cause daytime and nighttime? (During rotation, the earth spins on its axis. It is daytime for the part of Earth that faces the sun. It is nighttime for the part of Earth that faces away from the sun.)
5. *Inferential* If it is daytime on our side of Earth, is it daytime or nighttime on the other side of Earth? (It is nighttime.) Why? (If the sun is shining on one side of Earth, it cannot be shining on the other side of Earth at the same time.)

[Please model the *Think Pair Share* process for students, as necessary, and scaffold students in their use of the process.]

I am going to ask a question. I will give you a minute to think about the question, and then I will ask you to turn to your neighbor and discuss the question. Finally, I will call on several of you to share what you discussed with your partner.

6. *Evaluative Think Pair Share:* How would life on Earth be different if Earth did not rotate? (Answers may vary.)
7. After hearing today's read-aloud and questions and answers, do you have any remaining questions? [If time permits, you may wish to allow for individual, group, or class research of the text and/or other resources to answer these questions.]

Word Work: Thrive

5 minutes

1. In the read-aloud you heard, "All plants, animals, and people rely on the sun in order to *thrive*, or grow well."
2. Say the word *thrive* with me.
3. *Thrive* means to grow and develop.
4. When a living thing receives the things it needs to grow and develop, it will thrive.
5. Can you think of a specific thing you need in order to thrive? Use the word *thrive* when you talk about it.
[Ask two or three students. If necessary, guide and/or rephrase the students' responses: "I need _____ to thrive."]
6. What's the word we've been talking about? What part of speech is the word *thrive*? How do you know that it is an action word?

Use a *Making Choices* activity for follow-up. Directions: I will name a plant, animal, or person, and then I will name an item. If the plant, animal, or person needs that item to thrive, say, “[Plant, animal, or person] needs [item] to thrive.” If the plant, animal, or person does not need that item to thrive, say, “[Plant, animal, or person] doesn’t need [item] to thrive.”

- oak tree/sun (An oak tree needs the sun to thrive.)
- rabbit/burrow (or home) (A rabbit needs a burrow to thrive.)
- children/water (Children need water to thrive.)
- children/television (Children do not need television to thrive.)
- crops/rain (Crops need rain to thrive.)
- cat/ball of yarn (A cat does not need a ball of yarn to thrive.)



Complete Remainder of the Lesson Later in the Day



The Cycle of Daytime and Nighttime

1B

Note: Extensions may have activity options that exceed the time allocated for this part of the lesson. To remain within the time periods allocated for this portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

Extensions

20 minutes

↔ Syntactic Awareness Activity

10 minutes

Compound Words Using –time

Note: The purpose of these syntactic activities is to help students understand the direct connection between grammatical structures and the meaning of text. These syntactic activities should be used in conjunction with the complex text presented in the read-alouds. There may be variations in the sentences created by your class. Allow for these variations, and restate students' sentences so that they are grammatical. If necessary, have students repeat the sentence after you.

Directions: Today we are going to practice making and using compound words. When two words are added together to form a new word, it is called a compound word. If you know the meaning of the two words, you will most likely be able to tell the meaning of the new compound word.

1. In today's read-aloud we heard several compound words. Listen to my sentences and raise your hand if you hear a compound word. Remember, compound words are two words added together to make a new word. Tell me which two words make a compound word. Then, try to guess the meaning of the compound word based on what you know about the two words that make up the compound word.
 - As Earth rotates, light from the sun falls on one half of Earth. We call this *daytime*. (day+time = the time during the day when one part of the Earth is facing the sun)

- The other half of Earth is in darkness, and we call this *nighttime*. (night+time = the time during the night when one part of the Earth is facing away from the sun)
2. [Give each student an index card.] Think of a compound word that uses the word *time* in it. Write the word that goes before *time* on your index card. You may also wish to draw a picture of your compound word on the back of your index card. Make up a sentence using your compound word.
Suggestions: bedtime, naptime, snacktime, dinnertime, lunchtime, breaktime, lifetime, wintertime
 3. [Invite students to come up to the display and put their index card in front of *time*.] What compound word did you make? What does your compound word mean? Can you use it in a sentence?

Vocabulary Instructional Activity

5 minutes

Word Work: Cycle

1. In the read-aloud you heard, “A cycle is a sequence of events that repeats itself again and again”
2. Say the word *cycle* with me three times.
3. A cycle is something that repeats, in the same order, over and over again. [Use your arms to do a circular motion for *cycle*, and have students do the same.]
4. Today we heard about the cycle of daytime and nighttime.
5. What causes the cycle of daytime and nighttime to happen? (Earth’s rotation on its axis so that half of the Earth is facing the sun and the other half is facing away from the sun)
[Ask two or three students. If necessary, guide and/or rephrase the students’ responses: “The cycle of daytime and nighttime happens because . . .”]
6. What’s the word we’ve been talking about?

Use a *Brainstorming* activity for follow-up. Directions: What other things happen in a cycle? I will write down your answers on this piece of chart paper. Throughout this domain, we will see if any of the lessons are about the cycles you have mentioned.

10 Sequencing the Cycle of Daytime and Nighttime (Instructional Master 1B-1)

15 minutes

- Have students think about what they learned from today's read-aloud. If necessary, review specific Flip Book images that show daytime and nighttime.
- Give students Instructional Master 1B-1. Tell them that this is Response Card 1; it shows the cycle of daytime and nighttime. **[Note:** This Response Card should be held and viewed using landscape orientation.]
- Have students draw a picture on the right of something that happens during the nighttime. Have students draw a picture on the left of something that happens during the daytime.
- When students have finished their drawings, have them share their Response Cards in small groups or with home-language peers.

Demonstration of Earth's Rotation

10 minutes

Rotation: Day and Night

- Show students a globe, pointing out the United States and the state in which you live. Point to the tips of the globe's axis and ask: "Who remembers the name of the imaginary central line around which the earth spins, or rotates?" (axis)
- Spin the globe counterclockwise. Remind students that the earth's axis is tilted and always points in the same direction. Ask: "Who remembers which cycle is caused by the rotation of the earth on its axis?" (daytime and nighttime)
- Using a flag or pin, mark the approximate location of your town on the globe. Tell students that the globe represents Earth and the flag or pin is where they live on Earth. Hold up a flashlight; tell students that the light from the flashlight represents the sun.
- Darken the room. Ask a volunteer to point the flashlight at the globe while you hold it steady. Explain that when the marked area is lighted by the flashlight (the sun), it is daytime in your town. Explain that when it is daytime in your town, it is nighttime on the opposite side of the globe or Earth. Point to the area on the globe directly opposite your town.

- Then slowly spin the globe counterclockwise until the marked area is not lighted by the sun. Ask students if they can guess whether it is daytime or nighttime in your town when the sun is shining on the opposite side of the globe.
- Now continue slowly spinning the globe counterclockwise until the marked area is once again illuminated by the beam of light. Ask students if they can guess whether it is daytime or nighttime in your town when the sun is shining on the marked area of the globe.
- Review with students:
 1. How many hours have passed when the earth spins all the way around its axis one time? (twenty-four hours)
 2. What cycle does the rotation of the earth cause? (the cycle of daytime and nighttime)
 3. If it is daytime where we live, what is it on the opposite side of Earth? (nighttime)

Extending the Activity

- You may wish to extend the activity by inviting three students to come to the front of the the classroom. Two of the students will represent Earth, and one student will hold the flashlight. Have the two students face outward and link hands. Then help them to rotate counterclockwise.
- Have the student holding the flashlight shine the light at chest-level as the other two students rotate. Have the two students say whether they are in daytime or nighttime.
- In addition, when one of the students representing Earth first sees the light of the flashlight, have him or her say “sunrise.” Then, as one of the students rotates away from the light, have him or her say “sunset.”

Take-Home Material

Family Letter

Send home Instructional Masters 1B-2-4.



The Reasons for Seasons

2

✓ **Lesson Objectives**

Core Content Objectives

Students will:

- ✓ Explain that a cycle is a sequence of events that repeats itself again and again
- ✓ Recognize that the rotation of Earth causes daytime and nighttime
- ✓ Explain that it takes twenty-four hours for Earth to rotate once on its axis
- ✓ Recognize that living things have a life cycle
- ✓ Recognize that Earth orbits the sun
- ✓ Explain that it takes one year for Earth to orbit the sun
- ✓ Describe the seasonal cycle: spring, summer, autumn, winter
- ✓ Identify that the tilt of Earth's axis in relation to the sun causes the seasons
- ✓ Explain effects of seasonal changes on plants and animals
- ✓ Demonstrate familiarity with the poem "Bed in Summer"

Language Arts Objectives

The following language arts objectives are addressed in this lesson. Objectives aligning with the Common Core State Standards are noted with the corresponding standard in parentheses. Refer to the Alignment Chart for additional standards addressed in all lessons in this domain.

Students will:

- ✓ Identify the main topic of "The Reasons for Seasons" (RI.2.2)
- ✓ Describe the connection between the tilt of the earth as it orbits the sun and the seasons (RI.2.3)

- ✓ With assistance, create and interpret a chart on characteristics of seasons, and connect it to information learned in “The Reasons for Seasons” (RI.2.7)
- ✓ Prior to listening to “The Reasons for Seasons,” identify orally what they know and have learned about the rotation of the earth
- ✓ Discuss personal responses to seasonal activities they participate in, and connect those to the seasons

Core Vocabulary

equator, *n.* An imaginary line that divides Earth in half between the North Pole and South Pole

Example: The United States is north of the equator.

Variation(s): none

hemisphere, *n.* One half of Earth as divided, for example, north and south by the equator

Example: We live in the Northern Hemisphere because we are north of the equator.

Variation(s): hemispheres

revolves, *v.* Moves in a circular path around an object

Example: Earth revolves around the sun.

Variation(s): revolve, revolved, revolving

tilt, *v.* To slant


Example: Jonah had to tilt the cookie jar to reach the crumbs at the bottom.

Variation(s): tilts, tilted, tilting

Vocabulary Chart for The Reasons for Seasons			
<p>Core Vocabulary words are in bold.</p> <p>Multiple Meaning Word Activity word is <u>underlined</u>.</p> <p>Vocabulary Instructional Activity words have an asterisk (*).</p> <p>Suggested words to pre-teach are in <i>italics</i>.</p>			
Type of Words	Tier 3 Domain-Specific Words	Tier 2 General Academic Words	Tier 1 Everyday-Speech Words
Understanding	axis counterclockwise dormant equator hemisphere hibernate migrate	halves increased intense measures receive revolves rotation tilt*	Earth east/west longest/shortest planet rising/setting sun sunlight warmth winter/spring/ summer/fall year
Multiple Meaning	angle orbit revolution season	cycle divided	moving
Phrases	leap year North/South Pole Northern/ Southern Hemisphere spring/autumn equinox summer/winter solstice		over and over again to catch it up to twenty-four hours
Cognates	durmiente ecuador hemisferio hibernar migrar ángulo órbita revolución	intenso(a) medir recibir rotación ciclo dividido	este/oeste planeta

Note: Introducing the Read-Aloud and Extensions may have activity options which exceed the time allocated for that part of the lesson. To remain within the time periods allocated for each portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

Exercise	Materials	Details
Introducing the Read-Aloud (10 minutes)		
What Have We Already Learned?		
Essential Background Information or Terms	create “sun hat”	Have the student representing the sun wear the “sun hat.”
		<p>Note: For this activity, choose up to four students to demonstrate Earth’s revolution, you may wish to have students slowly pace around the sun. This demonstration can also be done in pairs, with one student acting as the sun and the other acting as Earth. Be sure that students are clear about the difference between Earth’s rotation/ spinning around its axis for daytime and nighttime, and Earth’s revolution/orbit around the sun for the seasons. Be sure they are clear that the terms <i>rotation</i> and <i>revolution</i> are not the same. (There is an extension activity demonstrating Earth’s revolution in more detail.)</p>
Seasons Chart	Instructional Master 2A-1 (optional); chart paper, chalkboard, or whiteboard	<p>Note: You will introduce the Seasons Chart here. By the end of the read-aloud, you should have information to fill in the first two rows. Continue this chart in Lesson 3.</p>
Vocabulary Preview: Equator, Hemisphere	Image 2A-3; globe	
Purpose for Listening		
Presenting the Read-Aloud (15 minutes)		
The Reasons for Seasons	Seasons Chart; globe	You may wish to fill in relevant parts of the chart during the read-aloud.

Exercise	Materials	Details
Discussing the Read-Aloud (15 minutes)		
Comprehension Questions		
Word Work: Tilt	globe	
 Complete Remainder of the Lesson Later in the Day		
Extensions (20 minutes)		
Seasons Chart	Seasons Chart; Image Cards 1–4, Cycles Poster 1	You should be able to fill in the first two rows of the chart.
Demonstration of Earth’s Revolution/Orbit	globe; large Hula Hoop™	
	video clips of Earth’s tilt and orbit to explain the seasons	You may wish to show a short video clip about how the Earth’s tilt and orbit around the sun causes the seasons.
“Bed in Summer” by Robert Louis Stevenson		
Domain-Related Trade Book	trade book about the cycle of the seasons	

Advance Preparation

Create a “sun hat,” and bring in a large Hula Hoop™.
 [To create the “sun hat,” print out a large outline of the sun onto yellow cardstock. Attach it to a baseball cap, or simply have the student hold it up.]

Create a Seasons Chart using Instructional Master 2A-1 as a guide. As a class, use information from the read-aloud to fill in the chart. You will continue to use this chart in Lesson 3.

✈ Above and Beyond: Prepare a copy of Instructional Master 2A-1 for students who are able to fill in their own charts.

You may wish to find age-appropriate video clips showing how Earth’s tilt and orbit causes the seasons.

Find a trade book about the cycle of the seasons to read aloud to the class.

Note to Teacher

By the end of the lesson, be sure that students are clear that the terms *rotation* and *revolution* are not the same. Rotation involves spinning around Earth's axis to create the cycle of daytime and nighttime (You may wish to have students stand in place and spin around.) Revolution involves Earth's orbit or circling around the sun to create the cycle of the seasons (You may wish to have students walk around the "sun.")



The Reasons for Seasons

2_A

Note: Introducing the Read-Aloud may have activity options which exceed the time allocated for this part of the lesson. To remain within the time periods allocated for this portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

Introducing the Read-Aloud

10 minutes

What Have We Already Learned?

5 minutes

Review with students that a cycle is a sequence of events that repeats again and again. Daytime and nighttime happen over and over again, so they are events that are part of a cycle that repeats again and again. In fact, the daytime and nighttime cycle is one of the most important cycles in nature. Daytime and nighttime give living things just the right amount of time to be active and time to rest. Remind students that it takes twenty-four hours, or one whole day and one whole night, for Earth to rotate once on its axis. Daytime happens when the part of Earth you live on faces the sun; nighttime happens when the part of Earth you live on faces away from the sun.

Essential Background Information or Terms

5 minutes

Earth moves in two ways. The first way, rotation, causes daytime and nighttime. Have students demonstrate rotation. For this activity, one student should stand in the center and be the sun. You may wish to create a “sun hat” for this student to wear! The other students can be little Earths. For rotation, have students stand up and turn themselves around in a circle. When students face the sun, they should say, “Daytime!” When their backs are to the sun, they should say, “Nighttime!” Reinforce to students that the sun does not move during the cycle of daytime and nighttime; instead, the earth is rotating, or spinning.

The second way that Earth moves is called revolution. The earth moves, or revolves, in an almost circular path around the sun. Earth makes one revolution, or orbit, around the sun about every 365 days, or every year.

Seasons Chart

5 minutes

Note: Students are not expected to fill in the chart at this point in the lesson. This activity is to get students familiar with the format (columns and rows) of a chart.

Have students identify the four seasons depicted on the cover illustration of the Flip Book. Have students name the four seasons with you—*spring, summer, autumn, winter*. Point out the columns for each of the seasons on the chart. Then read the topics of each row. Explain that they will listen to the next two read-alouds to find out information about each season to fill in this chart.

Tell students that they might already know some information to put on this chart. Begin to fill in the chart with what students already know about the seasons from prior grades. Students should listen carefully to the read-aloud so they can complete the chart during the Extension activity.

	Spring	Summer	Autumn (or Fall)	Winter
Date Season Begins in the Northern Hemisphere				
Amount of Sunshine				
Temperature in the Northern Hemisphere				
Plants				
Animals				
People’s Activities/Clothing				



Equator

◀ **Show image 2A-3: Orange cut into halves and Earth cut into hemispheres**

1. In today's read-aloud you will hear that our planet is divided in half by an imaginary line called the *equator*.
2. Say *equator* with me three times.
3. The equator is an imaginary line that divides Earth into two halves between the North and South Poles. [Point to the equator in the image.]
4. The United States is north of the equator. [Point to the equator and then to the United States on a globe.]
5. Who can point out the North Pole and South Pole? Who can find the imaginary line that is the equator on your globe? [Invite several students to point out the North and South Poles and the line for the equator on the globe.]

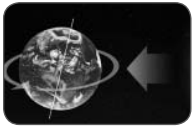
What does the equator do? (splits the Earth in half between the North and South Poles)

Hemisphere

1. In today's read-aloud you will hear that Earth is divided into *hemispheres*.
2. Say the word *hemispheres* with me three times.
3. Hemisphere is one half of Earth.
4. We live in the Northern Hemisphere because we are north of the equator. [Invite a student to point to the United States on a globe.]
5. What are the names of some other countries that are part of the Northern Hemisphere? What are the names of some countries that are part of the Southern Hemisphere? [Help students locate a few countries in each hemisphere. Tell students to listen carefully to learn how the seasons are different in the different hemispheres.]

Purpose for Listening

Tell students to listen carefully to hear about the main topic of the read-aloud: how the tilt of the earth affects the amount of sunshine we receive as it orbits the sun. Tell students they are going to hear more about how the seasons are created by the way the tilted earth orbits the sun.



The Reasons for Seasons

◀ Show image 2A-1: Earth rotating on its axis

- 1 Counterclockwise means to move in the opposite direction from the hands on a clock. [Demonstrate counterclockwise for students.]
- 2 [Show students which way is east and which way is west in your classroom.]
- 3 Stand up and turn or rotate one time moving in a counterclockwise direction. Your full rotation models the earth's rotation as it completes one full twenty-four hour cycle.

Right now, Earth is moving! Even though you cannot feel it, Earth is always moving in space in two ways. We have already heard about one way the earth moves. It is called rotation. Rotation is the movement of Earth around its axis. This controls the cycle of daytime and nighttime. The Earth takes twenty-four hours to turn, or rotate, once on its axis. The earth rotates in a counterclockwise direction from daytime to nighttime and back to daytime again.¹ During rotation, the part of Earth that is facing the sun changes. When it is daytime where you are, that means that the part of the earth on which you are standing is facing the sun. Sunlight hits our planet and moves across it from east to west. This is why we see the sun rising in the east and setting in the west.² Sunset eventually occurs when certain parts of Earth turn, or rotate, away from the sun, and nighttime begins. This cycle continues over and over again.³



◀ Show image 2A-2: Diagram of Earth revolving around the sun

The second way the earth moves is called revolution. Earth **revolves**, or orbits, around the sun in an almost circular path. Therefore, since you live on Earth, you are traveling around the sun, too. It takes Earth about 365 days—or one year—to complete one revolution, or orbit.

Earth is tilted as it orbits the sun. **Tilt**, or slant, your head to one side. The earth remains at this same angle and points in the same direction throughout its entire orbit. Now let's find out more about how Earth's tilt causes the seasonal cycle.



◀ Show image 2A-3: Orange cut into halves and Earth cut into hemispheres

Earth is divided into **hemispheres**, or halves. Just like an orange can be cut in half through the center from side to side. Earth can also be divided into two parts. Our planet is divided

in half into the northern and southern hemispheres by an imaginary line on its surface called the **equator**. The equator is the same distance from the North Pole as it is from the South Pole. The United States, where we live, is located in the Northern Hemisphere.



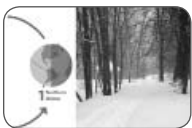
← **Show image 2A-4: Northern summer**

4 [Shine a light on the tilted globe to demonstrate the more direct angle of intense sunlight.]

When the Northern Hemisphere is tilted toward the sun during Earth's revolution around the sun, it receives more intense light from the sun at a more direct angle.⁴ During this time it is summer in the Northern Hemisphere. Around June 21 each year, the sun reaches its highest point overhead in the Northern Hemisphere. This is called the summer solstice and is referred to as the longest day of the year. That means that there is daylight for a longer period of time on that day than on any other day of the year.

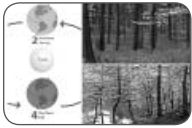
People in the Southern Hemisphere are experiencing winter while people in the Northern Hemisphere are experiencing summer. On June 21 in the Southern Hemisphere, that part of Earth is tilted away from the sun, with the sun at a low angle in the sky. The sunlight is not as strong or as intense, and there is less of it, so that part of Earth receives less light and less energy than the Northern Hemisphere. June 21 is the winter solstice, or shortest day of the year, in the Southern Hemisphere. It is the opposite of the Northern Hemisphere.⁵

5 North and south are opposites, just like summer and winter are opposites.



← **Show image 2A-5: Northern winter**

As Earth revolves around the sun, the seasons begin to change depending on which hemisphere is tilted most directly toward the sun. This depends on where Earth is on its revolution, or orbit, around the sun. One revolution takes one year, and each hemisphere is tilted directly in the sun for part of the year. Six months after the longest day in the Northern Hemisphere, the shortest day occurs. The winter solstice in the Northern Hemisphere is on December 21. This is, of course, the longest day of the year, or summer solstice, in the Southern Hemisphere. They are opposites!



← **Show image 2A-6: Northern spring and fall**

When Earth is halfway between the two solstices, both hemispheres receive the same amount of sunlight. This means that the hours of daylight and of darkness are the same in each hemisphere. The days that are equal are called equinoxes. The spring equinox occurs at the beginning of spring on March 21. The autumn equinox occurs at the beginning of autumn on September 21.

The cycle of one complete orbit or revolution of Earth around the sun marks or measures one year. Living things respond to the changes in sunlight and warmth throughout the four seasons of the year. With increased sunlight and warmth during spring and summer, many living things tend to grow well. Animals are born and plants grow. With decreased sunlight during autumn and winter, some plants are ready to be harvested, whereas others die. Some become dormant—or become inactive, and stop growing and making new leaves for the winter—and wait for the sunlight to return. You will see that most trees do this in the fall and winter. Some animals, to avoid the winter chill, hibernate or migrate. When animals migrate, they move to warmer environments.⁶

6 Think of two words that describe each season.



← **Show image 2A-7: Light hitting Earth**

Not every part of Earth experiences four different seasons, though. Different areas of Earth have different types of weather. This is partly because of the shape and tilt of our planet. This means that different parts of Earth receive different amounts of sunlight and warmth. The area around the equator receives the greatest amount of direct intense sunlight, so some of the warmest parts of Earth are located near the equator. The North and South Poles are at opposite ends of our planet and they receive the least direct sunlight. In fact, although they are so far apart, they have the same kind of weather as each other. It is always cold in the North and South Poles, and both places are usually covered with ice.



← **Show image 2A-8: Four seasons**

In the next lesson you will learn more about the cycle involving the four seasons and how each season brings with it an ever-changing landscape. Which season is your favorite?

Discussing the Read-Aloud

15 minutes

Comprehension Questions

10 minutes

If students have difficulty responding to questions, reread pertinent passages of the read-aloud and/or refer to specific images. If students give one-word answers and/or fail to use read-aloud or domain vocabulary in their responses, acknowledge correct responses by expanding students' responses using richer and more complex language. Ask students to answer in complete sentences by having them restate the question in their responses.

1. *Literal* Name the four seasons in order. (Spring, summer, autumn, and winter repeat again and again in the same order.)
2. *Literal* How long does it take Earth to orbit or revolve around the sun? (It takes Earth one year to revolve around the sun.)
3. *Literal* The equator divides Earth into which two hemispheres? (The equator divides Earth into the Northern and Southern Hemispheres.)
4. *Inferential* The first day of summer is called the summer solstice. What is special about this particular day? (It is the day with the greatest number of daylight hours during the year.) The first day of winter is called the winter solstice. What is special about this particular day? (It is the day with the least number of daylight hours during the year.)
5. *Inferential* What do the first day of spring and the first day of autumn have in common? (On both of these days, or equinoxes, there is an equal amount of daylight and darkness over the entire Earth.)
6. *Inferential* How are plants and animals affected by the seasonal cycle? (With more sunshine and food in spring and summer, plants and animals thrive. In autumn, as the weather cools, many plants are harvested. As winter approaches,

some plants die or become inactive, while some animals hibernate or migrate.)

7. *Literal* Does the part of the earth near the equator experience four different seasons? (No, this part of the earth receives the most amount of intense sunshine. It is almost always warm.)
8. *Literal* Do the North and South poles experience four seasons? (No, they do not. They are on the opposite ends of our planet, are almost always cold, and often covered with ice.)

[Please continue to model the *Think Pair Share* process for students, as necessary, and scaffold students in their use of the process.]

I am going to ask a couple of questions. I will give you a minute to think about the questions, and then I will ask you to turn to your neighbor and discuss the questions. Finally, I will call on several of you to share what you discussed with your partner.

9. *Evaluative Think Pair Share:* What activities have you participated in during a particular season? Would it be possible to do these activities during a different season? Why or why not? (Answers may vary.)
10. After hearing today's read-aloud and questions and answers, do you have any remaining questions? [If time permits, you may wish to allow for individual, group, or class research of the text and/or other resources to answer these questions.]

Word Work: Tilt

5 minutes

1. In the read-aloud you found out how Earth's *tilt* causes the seasonal cycle.
2. Say the word *tilt* with me.
3. *Tilt* means to slant.
4. Andrea will have to tilt her water bucket so that every drop can spill out onto her plants.
5. [Hold up the globe.] Do you see the tilt on this globe? Can you tilt your head in a similar way? Can you tilt your head to the right? Can you tilt your head to the left? [You may wish to have several students tell the class to tilt something to the left or right.]
6. What's the word we've been talking about? What part of speech is the word *tilt*? How do you know that it is an action word?

Use a *Discussion* activity for follow-up. Directions: Describe other objects that you tilt when you use them. [Suggestions: computer screen, cell phone games, seesaw, drawbridges, chairs, measuring cups, etc.]



Complete Remainder of the Lesson Later in the Day



The Reasons for Seasons

2_B

Note: Extensions may have activity options that exceed the time allocated for this part of the lesson. To remain within the time periods allocated for this portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

Extensions

20 minutes

Seasons Chart

10 minutes

Continue the class Seasons Chart you started in the lesson introduction. Ask students if they can add any new information they learned from the read-aloud about each season in the first two rows. You may wish to use Image Cards 1–4 and Cycles Poster 1. You may wish to use the following chart as a guide:

	Spring	Summer	Autumn (or Fall)	Winter
Date Season Begins in the Northern Hemisphere	Spring Equinox; on March 21	Summer Solstice; on June 21	Autumn Equinox; on September 21	Winter Solstice; on December 21
Amount of Sunshine	Roughly the same number of daylight and dark hours	longer daylight; it stays light out later.	Roughly the same number of daylight and dark hours	shorter daylight; it gets dark earlier.
Temperature in the Northern Hemisphere				
Plants				
Animals				
People Activities/Clothing				

Continue filling in this chart in Lesson 3.

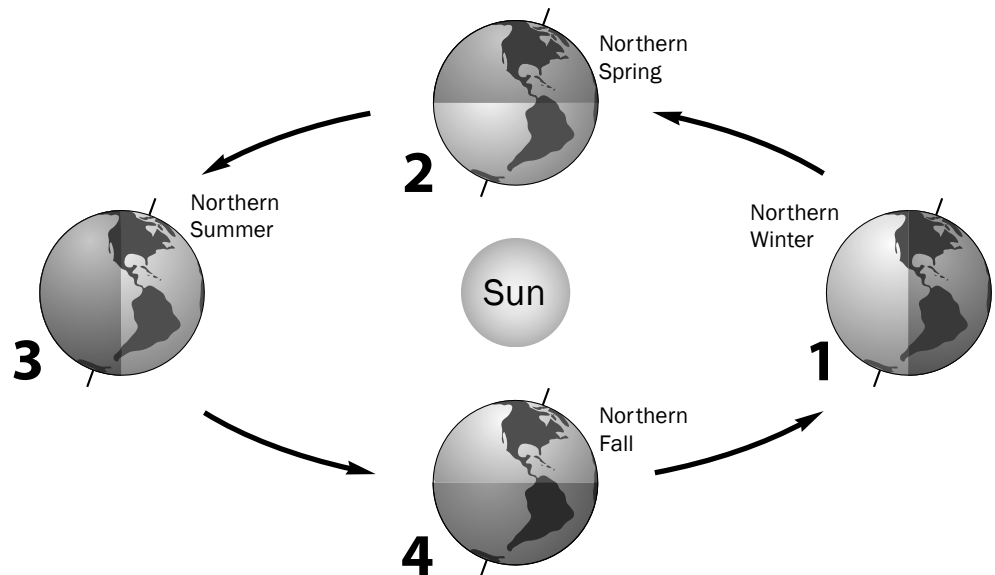
Demonstration of Earth's Revolution/Orbit

10 minutes

Revolution and Tilt: One Year/Four Seasons

- If you haven't done so already, using a flag or pin, mark the approximate location of your town on the globe, and ask: "Do we live north or south of the equator?" (north)

- Tell students that you are going to show them how the orbit of the tilted earth causes the seasons where they live.
- Place a large Hula Hoop™ on the floor, and tell students that this hoop represents the sun. Explain that the sun is much larger than the earth—much larger than the difference between the large hoop and the globe.
- Remind students that the earth does not just rotate, or spin in place on its axis; it also travels around, or orbits, the sun at the same time. Walk counterclockwise around the large hoop while holding and rotating the globe counterclockwise. Be sure to keep the tilt of the globe facing in the same direction (i.e., toward the same wall or corner of the room). Point out the tilt of the globe and ask: “Who remembers the word that means slanted, or placed at an angle?” (tilted)
- Remind students that the tilt of the earth in relation to the sun causes the seasons.
- Darken the room to begin the demonstration. **[Note:** You may wish to explain that even though you will stop several times during this demonstration to explain something, the earth never stops moving as it rotates on its axis and orbits around the sun.]



- [Northern Winter] Ask a volunteer to stand in the middle of the large hoop and point the flashlight at the globe while you hold it steady in Position 1 (Northern Winter). Say: “When the North Pole is tilted away from the sun, the northern half of the earth does not receive as much direct sunlight; we have fewer daylight hours. When our daylight hours decrease, the temperatures become colder. Which season is it when we have fewer daylight hours and colder temperatures?” (winter)
- [Northern Spring] Ask another volunteer to stand in the middle of the large hoop and point the flashlight at the globe, turning and keeping the light on the globe while you revolve counterclockwise a quarter of the way around and stop at Position 2 (Northern Spring). Say: “The tilted earth has continued to orbit the sun, and it is now spring. The daylight hours begin to increase. When daylight hours increase, the temperatures become warmer. Which season follows winter when we begin to have more daylight hours and warmer temperatures?” (spring)
- [Northern Summer] Ask another volunteer to stand in the middle of the large hoop and point the flashlight at the globe, turning and keeping the light on the globe while you revolve counterclockwise a quarter of the way around and stop at Position 3 (Northern Summer). Say: “The tilted earth has continued to orbit the sun, and now it is summer. The North Pole is tilted toward the sun, and the northern half of the earth receives more direct sunlight. When daylight hours increase, the temperatures become hotter. Which season follows spring when we have more daylight hours and hotter temperatures?” (summer)
- [Northern Fall] Ask another volunteer to stand in the middle of the large hoop and point the flashlight at the globe, turning and keeping the light on the globe while you revolve counterclockwise another quarter of the way around and stop at Position 4 (Northern Fall). Say: “The tilted earth has continued to orbit the sun, and now it is fall. The amount of daylight begins to decrease. When daylight hours decrease, the temperatures become cooler. Which season follows summer when we begin to have fewer daylight hours and cooler temperatures?” (autumn or fall)

- Ask another volunteer to stand in the middle of the large hoop and point the flashlight at the globe, turning and keeping the light on the globe while you revolve counterclockwise another quarter of the way around and stop back at Position 1 (Northern Winter). Say: “So how much time has passed now that Earth has orbited the sun one time? (one year) What season follows autumn and begins another seasonal cycle?” (winter)



“Bed in Summer” by Robert Louis Stevenson

15 minutes

◀ Show image 2B-1: Bed in Summer

Tell students that you are now going to read a poem titled “Bed in Summer,” by Robert Louis Stevenson. Tell them to listen carefully to find out how this poem relates to the tilt of the earth and to what they have learned about the seasonal cycle.

Bed in Summer

by Robert Louis Stevenson

*In winter I get up at night
And dress by yellow candle-light.
In summer, quite the other way,
I have to go to bed by day.*

*I have to go to bed and see
The birds still hopping on the tree,
Or hear the grown-up people’s feet
Still going past me in the street.*

*And does it not seem hard to you,
When all the sky is clear and blue,
And I should like so much to play,
To have to go to bed by day?*

Discuss with students how the tilt of the earth changes the amount of sunlight we get in each season. Do we get more sunlight in the summer or in the winter? You may wish to ask the following questions:

- Why does Robert Louis Stevenson say, “In winter I get up at night”?
- Why does he say, “In summer, quite the other way, I have to go to bed by day”?
- How does the poet feel about going to bed in summer?
- Have you ever gone to bed while it was still light outside? If yes, was it easy or hard to fall asleep?
- Does your family let you stay up later during the summer, or do you have to go to bed during daylight hours like the poet did?

Share with students that this poem was written in the 1800s, when people did not have electricity like we do today. Explain that when it became dark at night (earlier in seasons other than summer), people could not do as many things with just the light of candles, so they often went to bed earlier.

Domain-Related Trade Book

20 minutes

- Refer to the list of recommended trade books in the Introduction at the front of this *Supplemental Guide*, and choose one trade book about the cycle of the seasons to read aloud to the class.
- Explain to students that the person who wrote the book is called the author. Tell students the name of the author. Explain to students that the person who makes the pictures for the book is called an illustrator. Tell students the name of the illustrator. Show students where they can find this information on the cover of the book or on the title page.
- As you read, use the same strategies that you have been using when reading the read-aloud selections—pause and ask occasional questions; rapidly clarify critical vocabulary within the context of the read-aloud; etc.
- After you finish reading the trade book aloud, lead students in a discussion as to how the story or information in this book relates to the read-alouds in this domain.



Four Seasons in One Year

3

✓ **Lesson Objectives**

Core Content Objectives

Students will:

- ✓ Explain that a cycle is a sequence of events that repeats itself again and again
- ✓ Recognize that living things have a life cycle
- ✓ Describe the seasonal cycle: spring, summer, autumn, winter
- ✓ Identify that the tilt of Earth's axis in relation to the sun causes the seasons
- ✓ Explain effects of seasonal changes on plants and animals
- ✓ Describe animal processes in spring, summer, autumn, winter
- ✓ Demonstrate familiarity with the poem "Bee! I'm expecting you!"

Language Arts Objectives

The following language arts objectives are addressed in this lesson. Objectives aligning with the Common Core State Standards are noted with the corresponding standard in parentheses. Refer to the Alignment Chart for additional standards addressed in all lessons in this domain.

Students will:

- ✓ Identify the main topic in "Four Seasons in One Year" (RI.2.2)
- ✓ Describe the connection between the tilt of the earth as it orbits the sun and the seasons (RI.2.3)
- ✓ Compare and contrast the amount of sunlight the Northern Hemisphere receives during the summer with the amount of sunlight the Northern Hemisphere receives during the winter and the effects of both on plant and animal life (RI.2.9)

- ✓ Ask and answer *why* questions orally to gather information or deepen understanding of the information contained in “Four Seasons in One Year” (SL.2.3)
- ✓ Identify new meanings for the word *buds*, and apply them accurately (L.2.5a)
- ✓ Use knowledge of the meaning of individual words to predict the meanings of compound words

Core Vocabulary

absorbed, v. Soaked up; taken in

Example: Sunlight and water are absorbed by plants.

Variation(s): absorb, absorbs, absorbing

adapt, v. To adjust or change in different situations and environments

Example: Animals that live in very cold places adapt to the weather by growing thicker fur.

Variation(s): adapts, adapting, adapted

migrate, v. To move from one area to another

Example: The geese prepare to migrate south before the first snow of each winter.

Variation(s): migrates, migrated, migrating

minimum, n. The smallest or least amount possible

Example: Every day our class needs to read for a minimum of _____ minutes.

Variation(s): none


photosynthesis, n. The process in which green plants are able to use light from the sun to turn water and air into food for the plant

Example: Plants use photosynthesis to make their own food.

Variation(s): none

Vocabulary Chart for Four Seasons in One Year			
Core Vocabulary words are in bold . Multiple Meaning Word Activity word is <u>underlined</u> . Vocabulary Instructional Activity words have an asterisk (*). Suggested words to pre-teach are in <i>italics</i> .			
Type of Words	Tier 3 Domain-Specific Words	Tier 2 General Academic Words	Tier 1 Everyday-Speech Words
Understanding	deciduous/ evergreen dormant equator hemisphere hibernate migrate photosynthesis	absorbed adapt* increase intense* minimum <i>region</i> specific temperature tilted	animal begin daylight food grow spring/summer/ autumn/winter sunlight tree warmer year
Multiple Meaning	buds harvest season	change cycle energy young	color fall leaves plant
Phrases	“April showers bring May flowers” Northern Hemisphere tropical/polar/ temperate regions		give birth
Cognates	durmiente ecuador hemisferio hibernar migrar fotosíntesis	absorber adaptarse* intenso(a)* mínimo <i>región</i> específico(a) temperatura ciclo energía joven	animal color planta

Note: Introducing the Read-Aloud and Extensions may have activity options that exceed the time allocated for that part of the lesson. To remain within the time periods allocated for each portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

Exercise	Materials	Details
Introducing the Read-Aloud (10 minutes)		
What Have We Already Learned?	“sun hat”; globe	Note: You may wish to have up to four students at a time do this activity. This demonstration can also be done in pairs with one student acting as the sun and the other acting as Earth.
	Seasons Chart	Review the information you have on the chart so far.
Vocabulary Preview: Tropical/ Polar/ Temperate Regions	globe; images or short video clips of tropical/polar/temperate regions	
Purpose for Listening		
Presenting the Read-Aloud (15 minutes)		
Four Seasons in One Year	Seasons Chart	You may wish to fill in relevant parts of the chart during the read-aloud.
Discussing the Read-Aloud (15 minutes)		
Comprehension Questions		
Word Work: Adapt		
 Complete Remainder of the Lesson Later in the Day		
Extensions (20 minutes)		
Multiple Meaning Word Activity: Buds	Poster 2M (Buds)	
Syntactic Awareness Activity: Seasonal Compound Words	words written on index cards, tape	
Vocabulary Instructional Activity: Intense	long strip of chart paper; index cards	
Seasons Chart	Seasons Chart; Image Cards 1–4	You should be able to fill in the remainder of the chart. Invite students to fill in the last row with their own answers.

Exercise	Materials	Details
Sequencing the Cycle of the Seasons	Instructional Master 3B-1, drawing tools	
"Bee! I'm expecting you!" by Emily Dickinson		

Advance Preparation

Make a copy of Instructional Master 3B-1 for each student. Students will create their own Response Card for the cycle of the seasons.

Bring in images or find short video clips of tropical, polar, and temperate regions for students to see and to talk about the differences among these regions.

For Syntactic Awareness Activity, write the two parts of the compound words on separate index cards. Give each student one part of a compound word, and tape the other part of the compound word on the board. Students will try to match their word with a word on the board to create a compound word. (See reference chart in the Syntactic Awareness Activity for seasonal compound word suggestions. Be sure that there is a match on the board for each part of a compound word given to students.)

Create a horizontal word wall for the vocabulary word *intense*. Write the following words on index cards: (in red) *intense*, *strong*, *fierce*, *powerful*, *great*; (in green) *weak*, *gentle*, *low*, *calm*.



Four Seasons in One Year

3_A

Note: Introducing the Read-Aloud may have activity options which exceed the time allocated for this part of the lesson. To remain within the time periods allocated for this portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

Introducing the Read-Aloud

10 minutes

What Have We Already Learned?

Review with students the cycles that take place because of Earth's two movements, rotation and revolution. Have students demonstrate rotation, the movement of Earth that causes daytime and nighttime. For this activity, one student should stand in the center and be the sun. You may wish to create a "sun hat" for this student to wear! The other students can be little Earths. For rotation, have students stand up and turn themselves around in a circle. When students face the sun, they should say, "Daytime!" When their backs are to the sun, they should say, "Nighttime!" Ask students how long it takes Earth to make one rotation.

The second way that Earth moves is called revolution. Revolution is the action of moving around something in a path that is similar to a circle. Earth makes one revolution around the sun about every 365 days, or every year. Have students demonstrate the revolution of Earth around the sun. Have another student stand in the center and be the sun. The other students can be little Earths, stand up, and walk around the sun. Students should tilt their heads to one side as they walk around the sun to demonstrate the earth's tilt that causes seasons. Ask students how long it takes the earth to make one revolution.

Have students identify the names and characteristics of the four seasons. Use the Seasons Chart from the previous lesson to review. Now, review with students that a hemisphere is a half of the earth, and that they live in the Northern Hemisphere.

Vocabulary Preview

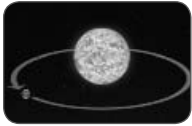
10 minutes

Tropical/Polar/Temperate Regions

1. In today's read-aloud you will hear about three regions on Earth: the *tropical*, *polar*, and *temperate regions*.
2. [Show an image of each region as students repeat the name of the region with you.]
Say tropical region with me three times.
Say polar region with me three times.
Say temperate region with me three times.
3. A region is an area of land that is different from other areas of land.
4. [Show each region on a globe as you talk about it.]
The United States is located in a temperate region on Earth.
The North Pole is located in a polar region on Earth.
Central America is located in a tropical region on Earth.
5. [Show different images of each region, and ask which type of region the image represents. Invite partner pairs to describe what the weather might be like in each region.]

Purpose for Listening

Tell students to listen carefully to find out the main topic of today's read-aloud: the causes of the seasons and the characteristics of each season. In particular, pay attention to the effect that intense sunlight has on all living things.



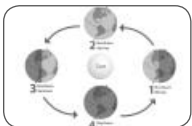
Four Seasons in One Year

← Show image 3A-1: Earth revolving around the sun¹

- 1 [Refer students to the image.] How long does it take for the earth to complete one full orbit around the sun? (It takes the earth 365¼ days, or one year, to complete one full orbit around the sun.)
- 2 When an animal migrates, it leaves to spend winter in a warmer place. When an animal hibernates, it finds a special place to rest until spring.
- 3 [Locate the equator and tropical regions on the globe for students.]
- 4 [Locate the North Pole, South Pole, and polar regions on the globe for students.]
- 5 [Locate the temperate regions and the United States on the globe for students.]

Do you know why many plants grow more rapidly during the summer and more slowly, or not at all, during the winter? Or why some animals migrate, whereas others hibernate during the winter?²

Only certain parts of our planet have four different seasons. This is because of the shape and tilt of Earth. The region around the equator receives the greatest amount of direct, intense sunlight. This region of Earth is called a tropical region because it is almost always hot and humid.³ The North and South Poles receive the least amount of direct sunlight. They are the polar regions of Earth. Generally, they remain cold and dry. In recent years, however, as Earth's overall climate has changed and has become warmer, the polar regions are warming up too, and some of the ice caps in this region have been melting.⁴ The region between the poles, on either side of the equator, is called the temperate region. In this region of the world, where we live, most places experience all four seasons of the year.⁵



← Show image 3A-2: Four seasons in Northern Hemisphere

- 6 [Have students locate the Northern Hemisphere and Southern Hemisphere on the globe. Remind them that we live in the Northern Hemisphere.]

Remember, during the time of year when the Northern Hemisphere is tilted toward the sun, this part of our world receives more daylight and more intense sunlight. This means it is summertime in the Northern Hemisphere. At the same time, the Southern Hemisphere is tilted away from the sun, so it is winter there.⁶ That's why, as Earth revolves around the sun, and is tilted on an axis, the seasons change. Now let's discover more information about each specific season.

As each year passes in the temperate region of the world, changes occur in the weather. These weather cycles have been divided up into what we call the seasons. Each season brings with it incredible changes in the world around us.



← Show image 3A-3: Spring

In spring, daylight hours increase and the sunlight becomes much stronger. With warmer weather, more rain begins to fall. With increased light, warmth, and rain, plants begin to grow again. Seeds resting in the soil begin to take root. The warmth from the sun and the rainfall enables plant seeds to germinate, or begin to grow into plants.

You have probably heard the saying “April showers bring May flowers.”⁷ New plants emerge, and plants that have been inactive for the winter become active and start growing again. As buds and leaves form, water **absorbed**, or taken in, by the plant travels up the stem to the leaves.⁸ Plants use water and sunlight to make their own food, as well as oxygen for us to breathe. This process is called **photosynthesis**. It is during springtime that this great burst of life and energy occurs.⁹

Springtime also sees the return of animals that had migrated, or moved to warmer places during the wintertime. It is also the time when some animals wake up from their winter hibernation. Spring is when many animals give birth to their young. Animals give birth either by bearing live young or by laying eggs. Animals that give birth to live young have nourished their young inside their bodies.¹⁰ Animals that hatch from eggs have been nourished by a yolk within the egg.

7 We learned this saying in the *Seasons and Weather* domain in Kindergarten.

8 Here, the word *buds* means small parts that grow on trees and develop into flowers. The word *buds* also means friends.

9 Name some flowers that we typically see in spring.

10 What do we call animals that give birth to live young? (Animals that give birth to live young are called *mammals*.)



← Show image 3A-4: Summer

Because the Northern Hemisphere receives more intense sunlight from the sun at a more direct angle in the summer, temperatures are usually at their highest during these months. With the increase of light and heat in the summer, plants grow big and strong. Young animals are born and grow strong during this fruitful time, as well.¹¹

11 What kinds of baby animals do we often see in spring and summer?



← Show image 3A-5: Autumn

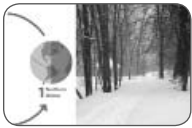
As the earth revolves, and summer turns to autumn, both the temperature and the environment begin to change again. In autumn, while it is still warm, light from the sun is not as intense, and the growth and development of plants and animals begins to slow down.

In many places in the Northern Hemisphere, autumn is a time to harvest the crops that have grown and ripened beneath the summer sun. Grass crops are harvested, and grapes are picked from the vines. Fruits such as apples, pears, and pumpkins are ready to be eaten. As the amount of daylight lessens, and the temperature continues to drop, the leaves of many trees change color. During this time in many parts of the Northern Hemisphere, a world of copper, bronze, red, and orange leaves is a sight to behold.

Leaves change color in autumn because deciduous trees receive less sunshine than they need to produce food, and photosynthesis stops. When photosynthesis stops, these leaves begin to die and fall off.¹² Therefore, deciduous trees are trees that have leaves that change color and fall off.¹³

12 The word *deciduous* comes from the Latin word *decidere*, meaning to fall down, or fall off.

13 What other kinds of trees are there? (evergreen)



← **Show image 3A-6: Northern winter**

When winter arrives, it means that this part of Earth is now tilted away from the sun and temperatures and sunlight are at a **minimum**.¹⁴ It also means that summer has arrived in the Southern Hemisphere. Because conditions are less favorable for living things in winter, growth and development slows down, and even stops.

During winter, deciduous trees rely on the food they previously produced and converted into energy. This food supply is stored in their roots. During winter, deciduous trees, as well as many other plants, enter a dormant state.

14 Minimum is the smallest amount possible.



← **Show image 3A-7: Animals in winter**

In winter, some animals whose food source is affected by the change in climate **migrate**, or leave for warmer places. These animals sense the change in daylight and temperature and begin their annual migration. Migration is part of a yearly cycle of changes. Some birds, for example, travel long distances to their winter homes. They prepare for their migration by eating lots of food they can store as energy to use on their journey. Mammals such as caribou and elk migrate across vast expanses of land, and even fish migrate in winter in search of warmth and food.

15 Can you name some animals that hibernate and some animals that migrate?



← Show image 3A-8: Spring again

Like many plants that lay dormant in winter, there are animals that hibernate. Hibernation is a kind of deep sleep. Like the deciduous trees, animals that hibernate rely on the food they have stored in their bodies to get them through the winter months.¹⁵

There are also animals that stay in their natural habitat through the colder months and survive as best they can. Animals such as foxes, deer, and rabbits search for food on the frozen land. Some build snug homes to keep out the cold. They have learned to **adapt**, or adjust, to their ever-changing environment. People adapt, too. They prepare for the cold months ahead by wearing warmer clothes and even changing the foods they eat. How do you prepare for autumn and winter?

We are all part of this never-ending cycle. When spring returns, the cycle of growth will begin all over again and new life will appear on the earth.

Discussing the Read-Aloud

15 minutes

Comprehension Questions

10 minutes

If students have difficulty responding to questions, reread pertinent passages of the read-aloud and/or refer to specific images. If students give one-word answers and/or fail to use read-aloud or domain vocabulary in their responses, acknowledge correct responses by expanding students' responses using richer and more complex language. Ask students to answer in complete sentences by having them restate the question in their responses.

1. *Literal* What is the main topic of today's read-aloud? (The main topic of today's read-aloud is the seasonal cycle/cycle of the seasons.)
2. *Inferential* Why do plants grow more rapidly during the summertime than during other seasons? (Plants grow more rapidly in summertime than during other seasons because it is the warmest time of the year and there is more intense sunlight.)

3. *Inferential* Why do only some parts of our planet have four different seasons? (Only some parts of our planet have seasons because of the shape and tilt of the earth. The region around the equator is always hot and humid and does not have four different seasons.)
4. *Literal* If it is summer in the Northern Hemisphere, what season is it in the Southern Hemisphere? (If it is summer in the Northern Hemisphere, it is winter in the Southern Hemisphere.)
5. *Inferential* Why do some animals migrate south in the fall and return north in the spring? (Some animals migrate south in the fall to escape the cold of winter.)
6. *Literal* In which season do most animals give birth to their young? (Most animals give birth to their young in the spring.)
7. *Literal* In which season are many crops harvested? (Many crops are harvested in autumn.)
8. *Inferential* Why do some trees shed their leaves? (Deciduous trees shed their leaves in the autumn and use stored energy during the cold winter months. They go into a dormant, or inactive, state until spring arrives and it becomes warmer.)
9. *Evaluative* How do people adapt to winter and summer? (Answers may vary.)

[Please model the *Question? Pair Share* process for students, as necessary, and scaffold students in their use of the process.]

10. *Evaluative Why? Pair Share:* Asking questions after a read-aloud is one way to see how much everyone has learned. Think of a question you can ask your neighbor about the read-aloud that starts with the word *why*. For example, you could ask, “Why is there more sunlight in the summer?” Turn to your neighbor and ask your *why* question. Listen to your neighbor’s response. Then your neighbor will ask a new *why* question, and you will get a chance to respond. I will call on several of you to share your questions with the class.
11. After hearing today’s read-aloud and questions and answers, do you have any remaining questions? [If time permits, you

may wish to allow for individual, group, or class research of the text and/or other resources to answer these questions.]

Word Work: Adapt

5 minutes

1. In the read-aloud you heard, “[Animals] have learned to *adapt* . . . to their ever-changing environment.”
2. Say the word *adapt* with me.
3. The word *adapt* means to adjust or change in different situations or environments.
4. Animals living in cold areas adapt to the weather by growing thicker fur.
5. How else can living things adapt to cold weather? Use the word *adapt* when you tell about it.
[Ask two or three students. If necessary, guide and/or rephrase the students’ responses: “ _____ adapts to cold weather by . . .”]
6. What’s the word we’ve been talking about? What part of speech is the word *adapt*? How do you know that it is an action word?

Use a *Discussion* activity for follow-up. Directions: Talk to your partner about how you adapt to the different seasons, in particular, the winter and the summer. How do you adapt to the cold winter weather? (wear thicker clothes, turn on the heater, wear extra layers to sleep, cover with extra blankets, stay indoors)

How do you adapt to the hot summer weather? (wear shorts, wear sunglasses, use sunblock, drink extra water, use a fan or air conditioning, stay indoors if it is too hot)



Complete Remainder of the Lesson Later in the Day



Four Seasons in One Year

3_B

Note: Extensions may have activity options which exceed the time allocated for this part of the lesson. To remain within the time periods allocated for this portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

Extensions

20 minutes

↔ Multiple Meaning Word Activity

5 minutes

Context Clues: Buds

Note: You may choose to have students hold up one, two, or three fingers to indicate which image shows the meaning being described, or have a student walk up to the poster and point to the image being described.

1. [Show Poster 2M (Buds).] In the read-aloud you heard, “As *buds* and leaves form, water absorbed . . . by the plant travels up the stem to the leaves.” Here *buds* means parts of a plant that will grow into flowers, leaves, or new branches. Which picture shows this kind of *buds*?
2. *Buds* can also mean something else. *Buds* also means your friends or pals. Which picture shows this kind of *buds*?
3. *Buds* are also the small spots on your tongue that you use to taste. Which picture shows this kind of *buds*?
4. I’m going to say some sentences with the word *buds*. Hold up one finger if my sentence tells about *buds* in picture one; hold up two fingers if my sentence tells about *buds* in picture two; and hold up three fingers if my sentence tells about *buds* in picture three.
 - The taste buds on my tongue are tiny.
 - In early spring, we can see the buds on the tree.

- I wonder if the buds will turn into leaves or flowers?
- I like to play with my buds during recess.
- Taste buds can tell the differences between sweet, salty, sour, and bitter tastes.
- I'm going to invite my buds over to my apartment to play.

Syntactic Awareness Activity

10 minutes

Seasonal Compound Words

Teacher Reference Chart			
Winter		Spring	
ear	muff	butter	fly
fire	place	grass	hopper
frost	bite	flower	pot
ginger	bread	rain	bow
ice	berg	rain	coat
over	coat	rain	fall
snow	ball	butter	cup
ice	skate	spring	time
snow	flake	blue	bird
snow	man	dragon	fly
Summer		Autumn	
base	ball	apple	sauce
fire	fly	corn	stalk
honey	bee	hay	ride
sea	side	scare	crow
sea	shell	foot	ball
sun	burn	school	house
sun	screen	Thanks	giving
water	slide	black	bird
sun	glasses	sun	flower
water	melon	wheel	barrow

Note: The purpose of these syntactic activities is to help students understand the direct connection between grammatical structures and the meaning of text. These syntactic activities should be used in conjunction with the complex text presented in the read-alouds. There may be variations in the sentences created by your class.

Allow for these variations, and restate students' sentences so that they are grammatical. If necessary, have students repeat the sentence after you.

Directions: Today we are going to practice making and using compound words. When two words are added together to form a new word, it is called a compound word. If you know the meaning of the two words, you will most likely be able to tell the meaning of the new compound word.

1. In today's read-aloud we heard several compound words. Listen to my sentences and raise your hand if you hear a compound word. Remember, compound words are two words added together to make a new word. Tell me which two words make a compound word. Then, try to guess the meaning of the compound word based on what you know about the two words that make up the compound word.
 - In spring, *daylight* hours increase, and the *sunlight* becomes much stronger. (day+light = the light shining during the day; sun+light = the light from the sun)
 - *Springtime* sees the return of animals that moved to warmer places during the *wintertime*. (spring+time = the time of year that is spring; winter+time = the time of year that is winter)
2. [Give each student an index card with part of a compound word written on it.] I have given you one half of a compound word. Try to find the match for your word on the board. Make up a sentence using your compound word.
3. [Invite students to come up to the board and put their index card next to a word on the board to create a compound word.] What compound word did you make? What does your compound word mean? Can you use it in a sentence?

Extending the Activity

Ask students whether they notice the seasonal themes with the compound words. Have them group the compound words according to seasonal theme.

↔ Vocabulary Instructional Activity

5 minutes

Horizontal Word Wall: Intense

1. In the read-aloud you heard, “[W]hen the Northern Hemisphere is tilted toward the sun, [it] receives more daylight and more *intense* sunlight. This means it is summertime in the Northern Hemisphere.”
2. Say the word *intense* with me three times.
3. When something is intense it is very strong.
4. We will make a Horizontal Word Wall for *intense*.
5. [Place *weak* to the left and place *strong* to the right. Now hold up *intense*.] Should *intense* be placed closer to *weak* or *strong*?
6. [Hold up the rest of the cards (*fierce, powerful, great, gentle, calm, low*), and ask where they should be placed on the Horizontal Word Wall.]
7. With your partner, choose two opposite words—or antonyms—and make a sentence for each word.

[Throughout this domain, encourage students to continue thinking about this Horizontal Word Wall, and add additional words to the word wall.]

Seasons Chart

15 minutes

Finish the class Seasons Chart you started in the previous lesson. Ask students if they can add any new information they learned from the read-aloud about each season in the next three rows. You may wish to use Image Cards 1–4. Finally, have students tell you about their activities and clothing for each season. You may wish to use the following chart as a guide:

	Spring	Summer	Autumn (or Fall)	Winter
Date Season Begins in the Northern Hemisphere	Spring Equinox; on March 21	Summer Solstice; on June 21	Autumn Equinox; on September 21	Winter Solstice; on December 21
Amount of Sunshine	Roughly the same number of daylight and dark hours	Longer daylight; it stays light out later.	Roughly the same number of daylight and dark hours	Shorter daylight; it gets dark earlier.
Temperature in the Northern Hemisphere	Warmer	Hotter	Cooler	Colder
Plants	Plants begin to grow/sprout; seeds are planted	Plants and crops grow	Leaves change color and begin to fall; farmers harvest crops	Leaves shed from deciduous trees; many plants die.
Animals	Animals wake up or return; many animals have babies	Animals grow	Animals prepare for winter	Many animals hibernate or migrate
People Activities/Clothing	[Starting a garden; flying kites; etc.]	[Lighter clothing; swimming; picnics; etc.]	[Back to school; harvesting crops; etc.]	[Heavier clothing; ice skating; skiing; etc.]

10 Sequencing the Cycle of the Seasons (Instructional Master 3B-1)

15 minutes

- Have students think about what they have learned in the last two read-alouds. If necessary, review specific Flip Book images that show the different seasons).
- Give students Instructional Master 3B-1. Tell them that this is Response Card 2; it shows the cycle of the seasons.
- Have students write the name of each season in its correct space. [Write *winter*, *spring*, *summer*, *autumn* and *fall* on the board.]
- When students have finished filling in the seasons, have them talk about the cycle of the seasons using their Response Cards in small groups or with home-language peers.



"Bee! I'm expecting you!" by Emily Dickinson

15 minutes

◀ Show image 3B-1: Bee

Tell students that you are going to read a poem by Emily Dickinson entitled "Bee! I'm expecting you!" Discuss with students the meaning of *expecting*. When you are expecting someone, you are

waiting for them to arrive, or come. Tell students that the following poem is written in the form of a letter. Tell students that the title of the poem tells them that the letter is written to a bee. Review with students that they met a honeybee named Polly in the *Plants* domain in Kindergarten.

Bee! I'm expecting you!
by Emily Dickinson

Bee! I'm expecting you!
Was saying Yesterday
To Somebody you know
That you were due—

The Frogs got Home last Week—
Are settled, and at work—
Birds, mostly back—
The Clover warm and thick—

You'll get my Letter by
The Seventeenth; Reply
Or better, be with me—
Yours, Fly.

Ask students who is speaking in the poem. Ask: “Why is the fly expecting the bee? What season is coming?” (spring) Help students make the connection between the word *expecting* and the repeating aspect of the seasonal cycle.



The Life Cycle of a Plant

4

☑ Lesson Objectives

Core Content Objectives

Students will:

- ✓ Explain that a cycle is a sequence of events that repeats itself again and again
- ✓ Describe the seasonal cycle: spring, summer, autumn, winter
- ✓ Explain effects of seasonal changes on plants and animals
- ✓ Define the term *life cycle*
- ✓ Identify the stages of the life cycle of a flowering plant (seed to seed)

Language Arts Objectives

The following language arts objectives are addressed in this lesson. Objectives aligning with the Common Core State Standards are noted with the corresponding standard in parentheses. Refer to the Alignment Chart for additional standards addressed in all lessons in this domain.

Students will:

- ✓ Identify the main topic of “The Life Cycle of a Plant” (RI.2.2)
- ✓ Compare and contrast the amount of sunlight and temperatures during summer and winter and the effects of both on plant and animal life (RI.2.9)
- ✓ Ask and answer *what* questions orally to gather information or deepen understanding of the information contained in “The Life Cycle of a Plant” (SL.2.3)
- ✓ Identify new meanings for the word *bats*, and apply them accurately (L.2.5a)
- ✓ Sequence four to six pictures illustrating the life cycle of a sunflower

Core Vocabulary

attracted, v. Caused interest in something or someone

Example: The bright, colorful signs attracted customers to the bake sale.

Variation(s): attract, attracts, attracting

emerge, v. To come out; to come into view or be visible

Example: At the beginning of spring, bears emerge from their long, winter hibernation.

Variation(s): emerges, emerged, emerging

pollinators, n. Animals and insects that carry pollen from plant to plant

Example: Insects are the most common pollinators.

Variation(s): pollinate, pollinating, pollination

protective, adj. Used for protection

Example: Many nuts have a protective outer layer called a shell.

Variation(s): none


reproduce, v. To make babies or new plants

Example: Plants need pollen from other plants in order to reproduce, or make seeds for new plants.

Variation(s): reproduces, reproduced, reproducing

Vocabulary Chart for The Life Cycle of a Plant			
<p>Core Vocabulary words are in bold.</p> <p>Multiple Meaning Word Activity word is <u>underlined</u>.</p> <p>Vocabulary Instructional Activity words have an asterisk (*).</p> <p>Suggested words to pre-teach are in <i>italics</i>.</p>			
Type of Words	Tier 3 Domain-Specific Words	Tier 2 General Academic Words	Tier 1 Everyday-Speech Words
Understanding	germinate hummingbirds nectar oxygen photosynthesis pollen <i>pollinators/</i> <i>pollination</i> reproduce seedling wildflowers	attracted dispersed emerge especially process* protective* renewed	adult animal bird butterflies day/month/year grow honeybees insects seed sticky water wind
Multiple Meaning		cycle directions follows shape soil transfer	<u>bat</u> color flower plant
Phrases	cycle of life flowering plant seed dispersal	the right conditions various ways	
Cognates	germinar néctar oxígeno fotosíntesis polen <i>polinizadora/</i> <i>polinizar</i> reproducirse	atraído dispersado especialmente proceso* protector(ora)* renovado ciclo dirección transferir	

Note: Introducing the Read-Aloud and Extensions may have activity options that exceed the time allocated for that part of the lesson. To remain within the time periods allocated for each portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

Exercise	Materials	Details
Introducing the Read-Aloud (10 minutes)		
What Have We Already Learned?	Image Cards 1–4; Response Card 2	
Vocabulary Preview: Pollinator/Pollination, Reproduce	Images 4A-5 and 4A-6	
Purpose for Listening		
Presenting the Read-Aloud (15 minutes)		
The Life Cycle of a Plant		Note: You may wish to conclude the read-aloud with a short video clip that shows the life cycle of a flowering plant.
Discussing the Read-Aloud (10 minutes)		
Comprehension Questions		
Word Work: Protective		
 Complete Remainder of the Lesson Later in the Day		
Extensions (20 minutes)		
Multiple Meaning Word Activity: Bats	Poster 3M (Bats)	
Syntactic Awareness Activity: Plant-related Compound Words	words written on index cards; images/samples of flowers and fruits	
Vocabulary Instructional Activity: Process		
Sequencing the Life Cycle of a Flowering Plant	Image Cards 5–9; Cycles Poster 2 (Flowering Plant Life Cycle); Instructional Masters 4B-1 and 4B-2, scissors, glue	

Advance Preparation

Make copies of Instructional Masters 4B-1 and 4B-2 for each student. Students will create their own Response Card for the life cycle of a plant.

Find short age-appropriate video clips of the life cycle of a flowering plant to reinforce read-aloud content.

For Syntactic Awareness Activity, write the two parts of the compound words on separate index cards. Give each student one part of a compound word, and tape the other part of the compound word on the board. Students will try to match their word with a word on the board to create a compound word. (See reference chart in the Syntactic Awareness Activity for plant-related compound word suggestions. Be sure that there is a match on the board for each part of a compound word given to students.) You may also wish to find images and/or bring in samples of the flowers and fruits. **Note:** Be sure to check with your school's policy regarding food distribution and allergies.



The Life Cycle of a Plant

4_A

Introducing the Read-Aloud

10 minutes

What Have We Already Learned?

5 minutes

Remind students that during the last few lessons they learned about the seasonal cycle. Have students identify characteristics of the four seasons, including which plants and animals they see most often during each season. Show students Image Cards 1–4 to help guide the students' discussions and to help them formulate answers. You may wish to have students sequence Image Cards 1–4. Tell students that in today's lesson they are going to learn about another cycle in nature.

Vocabulary Preview

5 minutes

Pollinator/Pollination



◀ **Show image 4A-5: Insect pollinators**



◀ **Show image 4A-6: Mammal and bird pollinators**

1. In today's read-aloud you will hear that flowering plants need *pollinators* to help them with *pollination*.
2. Say *pollinator* with me three times.
Say *pollination* with me three times.
3. A pollinator is something that carries pollen—or powder made from flowers—from plant to plant.
Pollination happens when a pollinator carries the pollen—or powder—from one plant to another plant so that the other plant can make seeds.
4. Insects are the number-one pollinators. Insects help with the pollination of flowering plants.

5. Can you name some pollinators in these pictures? (honeybee, butterfly, hummingbird)
What is the job of a pollinator? (help with pollination)

Reproduce

1. Today we will learn how plants grow and *reproduce*.
2. Say *reproduce* with me three times.
3. To reproduce means to make babies or new plants.
4. Plants reproduce by making seeds that can grow into new plants.
5. What do sunflower seeds reproduce? (sunflowers)
What do humans reproduce? (humans)
What do oak trees reproduce? (oak trees)
What do chickens reproduce? (chickens)

Purpose for Listening

Remind students that each of the four seasons has different characteristic temperatures and amounts of sunlight. Plants and animals are affected by the temperatures and sunlight in each season. Ask students to listen carefully to today's read-aloud to find out about the main topic: the life cycle of a flowering plant.



The Life Cycle of a Plant

← Show image 4A-1: New plant life

- 1 Name the four seasons in order.
- 2 Some living things have longer life spans than others. Some flies only live for a few days, but people can live to be over one hundred years old!

All living things pass through stages from birth to adult called a life cycle. For many living things, the cycle of life follows the four seasons of the year.¹ For some living things, the cycle of life is short and is completed in just days, months, or a single year. For other living things, the cycle of life continues for many, many years.²



← Show image 4A-2: Flowering plants

Today you will learn about the life cycle of a flowering plant. Just think about all the flowering plants you see in the parks, yards, gardens, fields, and meadows. Our world is awash with colorful, vibrant flowering plants. How do these plants grow and **reproduce**, or make seeds for new plants? Let's find out.



← Show image 4A-3: Germination

A flowering plant begins its life cycle as a seed. Seeds need special conditions to germinate, or begin to grow. Spring provides seeds with the right conditions to grow. Therefore, the life cycle of a flowering plant begins in spring.

In spring, there is more sunlight and temperatures are warmer.³ Seeds need just the right amount of light from the sun, nutrients from the soil, and water in order to grow. Once the seed germinates, or sprouts, it grows and develops into a young plant with roots, a stem, and leaves.⁴ The first leaves unfold to allow photosynthesis to begin. Photosynthesis is the process by which plants make their own food, as well as oxygen. Plants use sunlight and water to make food in the form of glucose, a type of sugar.

- 3 Why is there more sunlight and warmth in spring? (Temperatures begin to increase in spring because wherever this season is occurring, that part of earth is now facing the sun and receiving more sunlight.)
- 4 Roots, stem, and leaves are the three main parts of a young plant.



← **Show image 4A-4: Interior of flower**

5 The word *emerge* means to become visible, or able to be seen.

In the warmth of spring and summer, plants continue to grow. The young plant is called a seedling. Gradually, a plant's stem will grow taller and true leaves will **emerge**.⁵ Once the plant matures, or become an adult plant, flowers appear.

In order for a flowering plant to reproduce, or produce seeds that will make new flowering plants, it must be pollinated. Pollination is when pollen from one flower mixes with the pollen of another flower so that the plant can make seeds.

But how is pollen transferred from one place to another? In other words, how does pollination occur? Flowering plants need **pollinators** to help them with pollination. Pollinators are insects, birds, and other animals that are **attracted** to the shape, fragrance, or color of a flower. Without pollinators, most flowering plants would not produce seeds and fruit.⁶

6 Remember, plants need pollen from other plants in order to make seeds. Pollinators carry pollen from flower to flower.



← **Show image 4A-5: Insect pollinators**

There are many types of pollinators, such as birds and small mammals, but insects are the number-one pollinators of flowering plants. The flowers of a flowering plant are designed to attract various pollinators, especially insects. The shape, fragrance, and color of the flower, as well as the sweet-tasting nectar contained within the flower itself, attract many different kinds of insects. As insects move from flower to flower, the sticky substance called pollen clings to their bodies and is transferred, not only within a flower, but from flower to flower.⁷

7 Honeybees, bumblebees, ants, moths, beetles, and flies are just some of the insect pollinators.

Honeybees are the most common pollinators. They carry out more pollination than any other insect. Some scientists think that bees are attracted to bright blue and violet-colored flowers, whereas butterflies like fragrant yellow, pink, red, and orange flowers. Butterflies also like wide petals so that they can settle on them while they drink the sweet nectar.



← **Show image 4A-6: Mammal and bird pollinators**

8 [Point out the shape of each bird's beak in the image. Show students a tube in your classroom for reference.]

Birds are important pollinators, too, especially of wildflowers. For example, hummingbirds have perfectly designed beaks that can reach the nectar inside long, tubular-shaped flowers.⁸ There are more than 2,000 different kinds of birds in the world that feed on nectar. Birds have a poor sense of smell and help to pollinate unscented flowering plants because they are attracted by the color and shape of the flowers.

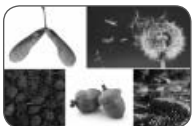
A variety of small mammals pollinate flowering plants. Mice, shrews, and rats—even tree-dwelling animals such as lemurs and small monkeys—can help to transfer pollen. People also help the pollination process. Often, when people are working in their flower gardens, the sticky pollen is accidentally carried from flower to flower.

9 Here, the word *bats* means a small, furry animal with wings. The word *bats* also means to hit a baseball.

For some plants, pollination does not just occur during the daytime. Some scented flowers attract nighttime pollinators such as bats and moths.⁹

Although ninety percent of flowering plants are pollinated by animals, especially insects, the wind and even water can play a part, too. Pollen is carried by the wind. Flowering plants that live in water, such as lilies, can be pollinated as the water carries the pollen from one plant to another.

10 Most seeds are dispersed in late summer and fall.



← **Show image 4A-7: Seed dispersal**

Once pollen has been transferred and reaches the new plant, the flower produces seeds. The next part of the process is called seed dispersal. This is the process of carrying the seeds away from the parent plant so that the flowering plant life cycle can begin all over again.¹⁰

Just like pollination, there are various ways that seeds can be dispersed, or spread apart in different directions. Many flowering plant seeds are carried away from the parent plant by the wind. As the wind blows, the seeds are carried up into the air. Some flowering plants have pods, or capsules, that explode, sending

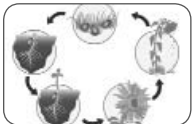
11 Why might it be important for seeds to be dispersed, or spread apart from each other?

12 This protective layer keeps the seed safe.

forth a burst of tiny seeds into the air. Other flowering plants drop their seeds into rivers and streams, and the seeds are carried along to their new home.¹¹

Sometimes animals carry seeds from place to place without knowing it. Some seeds contained within a **protective** casing can attach themselves to the fur of passing animals.¹² The protective casing will eventually fall off the animal and rest in the soil, ready to begin the life cycle process.

Some seeds are contained within a fruit that animals like to eat. Animals either spit the seeds out, or they eat them, and the seeds reach the earth in the animal droppings that are left behind. Once on the ground, they rest in the soil until the germination process can begin again the following spring.



◀ **Show image 4A-8: Seed to seed**

All of this is happening around us in spring, summer, and early autumn. The potential for new life is being created as flowering plants are pollinated and seeds are dispersed. Across the world, the life cycle of flowering plants is renewed, or happens again, each year.

Discussing the Read-Aloud

15 minutes

Comprehension Questions

10 minutes

If students have difficulty responding to questions, reread pertinent passages of the read-aloud and/or refer to specific images. If students give one-word answers and/or fail to use read-aloud or domain vocabulary in their responses, acknowledge correct responses by expanding students' responses using richer and more complex language. Ask students to answer in complete sentences by having them restate the question in their responses.

1. *Literal* What is the main topic of the read-aloud? (The main topic of the read-aloud is the life cycle of a flowering plant.)
2. *Literal* What is the first stage of the life cycle of a flowering plant? (The first stage of the life cycle of a flowering plant is as a seed.)

3. *Inferential* What happens after a seed is planted? (Once the seed has germinated, it grows and develops into a young plant with roots, a stem, and leaves.)
4. *Inferential* Which one of the four seasons is the best time for planting seeds? (spring) Why? (In spring there is more sunlight and there are warmer temperatures, as well as enough water. These conditions allow seeds to germinate.)
5. *Inferential* How do flowering plants attract pollinators? (Flowering plants use their fragrance, shape, and color to attract pollinators.)
6. *Inferential* How does a hummingbird's beak help it to pollinate flowers? (A hummingbird's beak is perfectly designed to reach nectar inside long, tubular-shaped flowers and therefore helps to pollinate them.)
7. *Literal* Besides animals, what other ways can plants be pollinated? (The wind and water can help to pollinate plants.) How? (Pollen is carried by the wind. Flowering plants that live in water can have their pollen carried from flower to flower by the water.)
8. *Literal* Name three kinds of seed dispersal, or ways seeds are spread in different directions. (Three kinds of seed dispersal are animals, the wind, and water.)

[Please model the *Question? Pair Share* process for students, as necessary, and scaffold students in their use of the process.]

9. *Evaluative* *What? Pair Share:* Asking questions after a read-aloud is one way to see how much everyone has learned. Think of a question you can ask your neighbor about the read-aloud that starts with the word *what*. For example, you could ask, "What are the three main parts of a young plant?" Turn to your neighbor and ask your *what* question. Listen to your neighbor's response. Then your neighbor will ask a new *what* question, and you will get a chance to respond. I will call on several of you to share your questions with the class.
10. After hearing today's read-aloud and questions and answers, do you have any remaining questions? [If time permits, you may wish to allow for individual, group, or class research of the text and/or other resources to answer these questions.]

Word Work: Protective

5 minutes

1. In the read-aloud you heard, “Some seeds contained within a *protective* casing can attach themselves to the fur of passing animals.”
2. Say the word *protective* with me.
3. *Protective* means something that is intended to shelter or keep something or someone safe.
4. An umbrella is a *protective* cover or shelter from the rain.
5. Can you think of other items that are designed to be *protective* or provide a means of protection? For example, a helmet is a protective cover for the head, and a shin guard is a protective cover for the shins.
[Ask two or three students. If necessary, guide and/or rephrase the students’ responses: “A _____ is a protective cover for _____.”]
6. What’s the word we’ve been talking about?

Use a *Making Choices* activity for follow-up. Directions: I am going to read several sentences. If what I describe is something that is protective, say, “That is protective.” If what I describe is something that is not protective, say, “That is not protective.” Remember to answer in complete sentences.

1. using bug spray to keep mosquitoes away (That is protective.)
2. wearing a helmet when you ride your bike (That is protective.)
3. eating pizza (That is not protective.)
4. using an umbrella when it rains (That is protective.)
5. climbing a tree (That is not protective.)
6. wearing shin guards when you play soccer (That is protective.)



Complete Remainder of the Lesson Later in the Day



The Life Cycle of a Plant

4_B

Note: Extensions may have activity options that exceed the time allocated for this part of the lesson. To remain within the time periods allocated for this portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

Extensions

20 minutes

↔ Multiple Meaning Word Activity

5 minutes

Sentence in Context: Bat

Note: You may choose to have students hold up one, two, three, or four fingers to indicate which image shows the meaning being described, or have a student walk up to the poster and point to the image being described.

1. [Show Poster 3M (Bats).] In the read-aloud you heard, “Some scented flowers attract nighttime pollinators such as *bats*.” Here *bat* is a small, flying animal that is awake at night. Which picture shows an animal that is a bat?
2. *Bat* can also mean something else. *Bat* also means to hit a ball using a bat. Which picture shows somebody about to bat?
3. *Bat* also means to close and open your eyes very quickly. Which picture shows a boy batting his eyes?
4. A bat is also something used in baseball to hit the ball. Which picture shows a baseball bat?
5. Now with your partner, make a sentence for each meaning of *bat*. Remember to be as descriptive as possible and use complete sentences. I will call on some of you to share your sentences. [Call on a few student pairs to share one or all of their sentences. Have them point to the part of the poster that relates to their use of *bat*.]

↔ Syntactic Awareness Activity

10 minutes

Plant-related Compound Words

Teacher Reference Chart			
Plant-related Compound Words			
Flowers		Fruit/Food	
bell	flower	black	berry
butter	cup	blue	berry
blue	bell	straw	berry
rose	bud	grape	fruit
sun	flower	pepper	mint
water	lilly	pine	apple
fox	glove	sea	weed
holly	hock	soy	bean
sweet	pea	water	melon
Pollinators			
honey	bee	horse	fly
butter	fly	lady	bug
humming	bird	sun	bird

Note: The purpose of these syntactic activities is to help students understand the direct connection between grammatical structures and the meaning of text. These syntactic activities should be used in conjunction with the complex text presented in the read-alouds. There may be variations in the sentences created by your class. Allow for these variations, and restate students' sentences so that they are grammatical. If necessary, have students repeat the sentence after you.

Directions: Today we are going to practice making and using compound words. When two words are added together to form a new word, it is called a compound word. If you know the meaning of the two words, you will most likely be able to tell the meaning of the new compound word.

1. In today's read-aloud we heard several compound words. Listen to my sentences, and raise your hand if you hear a compound word. Remember, compound words are two words added together to make a new word. Tell me which two words make a compound word. Then, try to guess the meaning of the compound word based on what you know about the two words that make up the compound word.

- *Honeybees* are the most common pollinators. (honey+bee = a bee that makes honey)
 - *Butterflies* like fragrant yellow, pink, red, and orange flowers. (butter+flies = insects with colorful wings that can fly)
2. [Give each student an index card with part of a compound word written on it.] I have given you one half of a compound word. Try to find the match for your word on the board. Make up a sentence using your compound word.
 3. [Invite students to come up to the board and put their index card next to a word on the board to create a compound word.] What compound word did you make? What does your compound word mean? Can you use it in a sentence?

[If you have examples or samples of any of the compound words, show them to the class as the word is being presented.]

Extending the Activity

Ask students whether they notice the any themes with the compound words (e.g., fruits, flowers, and pollinators). Have them group the compound words according to theme.

↔ Vocabulary Instructional Activity

5 minutes

Word Work: Process

1. In the read-aloud you heard, “Photosynthesis is the *process* by which plants make their own food, as well as oxygen.”
2. Say the word *process* with me three times.
3. The word *process* means a series of actions that create something.
4. The writing process includes the steps you take to write a paragraph.
5. Do you remember the steps to the writing process? (plan, draft, edit) [Ask two or three students. If necessary, guide and/or rephrase the students’ responses: “The steps of the writing process are . . . ”]
6. What’s the word we’ve been talking about?

Use a *Discussion* activity for follow-up. Directions: Tell your partner about the process of getting ready for school in the morning. Mention at least three steps in the process as you talk to your partner. [Encourage the use of temporal words: *First*, *Next*, and *Last*.]

10 Sequencing the Life Cycle of a Flowering Plant (Instructional Masters 4B-1 and 4B-2)

15 minutes

- Show students Image Cards 5–9, and have them explain and sequence the life cycle of a flowering plant. You may wish to show students Cycles Poster 2 (Flowering Plant Life Cycle) and have them once again identify the five stages of the life cycle of a flowering plant. (seed, sprout/germination, seedling, adult flower, seed dispersal)
- Give students Instructional Masters 4B-1 and 4B-2. Tell them that they will create Response Card 3; it will show the life cycle of a sunflower. [**Note:** This Response Card should be held and viewed using landscape orientation.]
- First, have students cut out the images of the stages in the life cycle of a sunflower plant on Instructional Master 4B-1.
- Next, have them put the images in the correct order of the life cycle of the sunflower plant.
- Then, students should glue or tape the images in the correct blanks on Instructional Master 4B-2.
- Finally, have students describe the life cycle of a sunflower plant to their partner or home-language peers.



The Life Cycle of a Tree

5

☑ **Lesson Objectives**

Core Content Objectives

Students will:

- ✓ Explain that a cycle is a sequence of events that repeats itself again and again
- ✓ Describe the seasonal cycle: spring, summer, autumn, winter
- ✓ Explain effects of seasonal changes on plants and animals
- ✓ Define the term *life cycle*
- ✓ Identify the stages of the life cycle of a tree (seed to seed)

Language Arts Objectives

The following language arts objectives are addressed in this lesson. Objectives aligning with the Common Core State Standards are noted with the corresponding standard in parentheses. Refer to the Alignment Chart for additional standards addressed in all lessons in this domain.

Students will:

- ✓ Identify the main topic of “The Life Cycle of a Tree” (RI.2.2)
- ✓ Prior to listening to “The Life Cycle of a Tree,” identify orally what they know and have learned about the life cycle of a plant

Core Vocabulary

decomposers, *n.* Living things that help turn dead plants and animals into smaller parts that will eventually become part of the soil

Example: Worms are common decomposers, helping to make the soil rich in nutrients.

Variation(s): decomposer

dependent, *adj.* Needing something or someone else's support

Example: Children are dependent on their parents.

Variation(s): none

flexible, *adj.* Able to bend and move easily

Example: We can touch our toes to see how flexible we are.

Variation(s): none

germination, *n.* Growing or sprouting of a seed

Example: We saw the germination of the pea seed in a clear, plastic cup.

Variation(s): none


mature, *adj.* Fully grown; adult

Example: Mature apple trees produce apples we can pick in the fall.

Variation(s): maturer, maturest

Vocabulary Chart for The Life Cycle of a Tree			
<p>Core Vocabulary words are in bold.</p> <p>Multiple Meaning Word Activity word is <u>underlined</u>.</p> <p>Vocabulary Instructional Activity words have an asterisk (*).</p> <p>Suggested words to pre-teach are in <i>italics</i>.</p>			
Type of Words	Tier 3 Domain-Specific Words	Tier 2 General Academic Words	Tier 1 Everyday-Speech Words
Understanding	deciduous/ evergreen decomposers/ <i>decompose</i> embryo germination oxygen seedling/sapling	conditions enable main nutrients	breathe egg grow sunshine tree warmth water wood
Multiple Meaning	bark root sprout	cycle dependent* flexible mature shed soil	branch leaves trunk
Phrases	carbon dioxide greenhouse gas soil erosion	dependent on	all year long full size
Cognates	<i>descomponerse</i> embrión germinación oxígeno dióxido de carbono	condición nutrientes ciclo dependiente* flexible maduro(a)	

Note: Introducing the Read-Aloud and Extensions may have activity options that exceed the time allocated for that part of the lesson. To remain within the time periods allocated for each portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

Exercise	Materials	Details
Introducing the Read-Aloud (10 minutes)		
What Have We Already Learned?	Image Cards 5–9; Response Card 3	
Vocabulary Preview: Decomposers/Decompose; Germination	images of decomposers (various bacteria, fungi, and worms)	
	Images 5A-5	Note: At a separate time or during the Pausing Point, you may wish to do a seed germination demonstration.
Purpose for Listening		
Presenting the Read-Aloud (15 minutes)		
The Life Cycle of a Tree	images of different kinds of trees around the school	At a later time, you may wish to walk around school grounds, identify the different trees, and have students determine whether they are deciduous or evergreen trees.
		Note: You may wish to conclude the read-aloud with a short video clip that shows the life cycle of a tree (e.g., apple tree).
Discussing the Read-Aloud (15 minutes)		
Comprehension Questions		
Word Work: Dependent		
 Complete Remainder of the Lesson Later in the Day		
Extensions (20 minutes)		
Sequencing the Life Cycle of a Tree	Cycles Poster 3 (Life Cycle of a Tree); Instructional Masters 5B-1 and 5B-2, scissors, glue	
Domain-Related Trade Book	trade book about the life cycle of a tree	

Advance Preparation

Make copies of Instructional Masters 5B-1 and 5B-2 for each student. Students will create their own Response Card for the life cycle of a tree.

Bring in images of different decomposers (e.g., bacteria, fungi, and worms) for students to see.

Bring in images of different kinds of trees around the school.

Find short, age-appropriate video clips of the life cycle of a tree, specifically an apple tree, to reinforce read-aloud content.

Find a trade book about the life cycle of a tree to read aloud to the class.

Note to Teacher

Watching seeds sprout and grow can be an exciting experience for young children. You may wish to do a seed germination demonstration with students. Consider using seeds that germinate rather quickly (5–10 days) such as daisy, sunflower, zinnia, or marigold seeds; or vegetable seeds such as corn, cucumber, tomato, or watermelon seeds. Place seeds in potting soil or inside a zip-top bag on a damp paper towel. Be sure to keep the seeds in a damp and warm environment for seeds to germinate.



The Life Cycle of a Tree

5_A

Introducing the Read-Aloud

10 minutes

What Have We Already Learned?

5 minutes

Review with students that a cycle is a sequence of events that repeats itself again and again. A life cycle includes the stages of a living thing's life, from seed to adult. Remind students that a plant's life cycle begins with a seed. Have students identify the stages of the life cycle of a plant, using image 4A-8. (seed, sprout/germination, seedling, adult flower, seed dispersal) Show students Image Cards 5–9 to help guide their discussion and to help them formulate answers. You may also wish to have students refer back to their sequenced plant life cycles from the Extension in Lesson 4.

Vocabulary Preview

5 minutes

Decomposers/Decompose

1. In today's read-aloud you will hear that decomposers—such as earthworms, bacteria, and fungi—help to *decompose* dead trees.
2. Say *decomposers* with me three times.
Say *decompose* with me three times.
3. Decomposers are living things that help to break down dead plants and animals into small pieces.
To decompose means to break down into little pieces, usually to return to the soil.
4. [Show images of different decomposers.] Earthworms, bacteria, and fungi are examples of decomposers.
Decomposers help to decompose dead plants so that the plants become part of the soil again.
5. Have you ever seen a decomposer in real life?
What is the job of a decomposer? (to help decompose dead plants and animals)



Germination

◀ **Show image 5A-5: Close-up of germinated tree seed**

1. Today we will learn that *germination* is when a seed begins to grow.
2. Say *germination* with me three times.
3. Germination is the growing or sprouting of a seed. It is the very beginning of the life cycle of a plant.
4. If you plant a seed in a clear cup, you might be able to see the germination process.
5. How can you tell that there is germination happening to this seed in the picture?

Is germination at the beginning, middle, or end of a plant's life cycle?

Does germination happen to flowers, leaves, or seeds?

For a seed to sprout or germinate, it needs water and warmth.
What time of year do you think germination happens—winter or spring?

Purpose for Listening

Have students listen carefully to learn how a tree's life cycle may be similar to or different from that of other types of plants. Tell students to listen carefully to the main topic of the read-aloud: the life cycle of a tree.



The Life Cycle of a Tree

◀ Show image 5A-1: Trees

There are certain things on Earth that make life possible. We need water to live, just as we need the air that we breathe. Have you ever thought about where the air that you breathe comes from? The air that you breathe is totally **dependent** on, or supported by, the existence of trees. Without trees, humans could not live on Earth.

There are thousands of different kinds of trees in the world. There are towering Sequoia trees and tiny dwarf willows. There are noble oak trees and scented pines. They all help to make life possible on this planet.



◀ Show image 5A-2: Tree taking in carbon dioxide and emitting oxygen

Trees provide us with many things and perform tasks that you might not even be aware of. For example, trees provide us with oxygen to breathe. Trees also take in carbon dioxide through their leaves. Carbon dioxide is a greenhouse gas, meaning that if too much of it builds up in Earth's atmosphere, our planet will heat up. Therefore, trees help to manage Earth's climate and keep it livable for us. Tree roots help to fight soil erosion and flooding by holding the soil together and absorbing water from the soil.¹ Finally, we use trees, or the wood that comes from trees, all over the world for all kinds of things. Can you think of three things that the wood from trees is used for?²

1 Tree roots help stop the soil from wearing away over time.

2 [Pause for student responses.]



◀ Show image 5A-3: Tree parts

Let's review the different parts of a tree.³ Do you remember what the main stem of a tree is called? The main stem of a tree is called the trunk. All the branches of the tree grow out of the trunk. Tree leaves grow on the branches. The roots hold the tree in the ground. They not only hold the tree in the ground, they help to feed the tree, too. Roots absorb water and nutrients from the

3 We learned all about tree parts in the *Plants* domain in Kindergarten.

- 4 *Absorb* means to take in, just like a sponge absorbs water.
- 5 Tree leaves produce food through photosynthesis, just like the leaves of flowering plants.
- 6 Bacteria are very small living things that often cause disease.



← **Show image 5A-4: Tree seeds**

ground.⁴ The water and nutrients travel up from the roots through the trunk and into the branches. Do you know why leaves are such an important part of a tree? Leaves are important because they enable the tree to produce food.⁵ Another important part of the tree is the outside layer called the bark. The bark protects the tree from outside forces such as heat, cold, insects, and bacteria.⁶

Trees follow the same life cycle as other plants. Just like that of a flower, a tree's life cycle begins with a seed. Tree seeds can be as large as tennis balls, or as tiny as freckles. They come in various shapes and sizes, too. They can be flat, smooth, bumpy, long, or thin. Tree seeds have three main parts. They are the embryo, or egg; the stored food inside the egg, which enables the seed to grow and change; and the seed coat, which eventually falls off.

Most seeds are carried away from the parent tree that produced them. Do you remember how seeds are dispersed, or spread apart? They are dispersed in various ways. They are carried by animals, people, wind, and water. Wherever they land, they rest in the soil until germination begins.

Germination is when a seed begins to grow, or sprout. Certain conditions are required for germination to happen. We have learned that in the temperate parts of the world, the seasons affect the life cycle of living things, especially plants. Therefore, when there is enough warmth and direct sunlight, as well as water from rain, the seed splits open and germination begins. This usually occurs in spring when there is sufficient warmth and rain.⁷

← **Show image 5A-5: Close-up of germinated tree seed**



- 7 This is why April (rain) showers do indeed bring May flowers!

- 8 The word *groundwater* is a compound word made of the word *ground* and the word *water*. It means water that is underground.

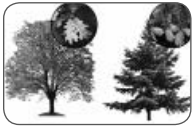
Once germination begins, the seed produces roots that search for groundwater.⁸ As they find water, the roots hold fast in the ground and a stem grows up towards the sunlight. Tiny seed leaves open and use the sun and water to make food. The seed has become a seedling, or young plant. Seedlings need just the right amount of water, warmth, and sunshine to grow. With the



right conditions, seedlings develop into young trees with roots, a trunk, branches, and leaves. Young trees are called saplings.

← **Show image 5A-6: Tree sapling**

- 9 When something is flexible, it means it can bend or move quite easily. Stand up and bend to touch your toes to see how flexible you are.



Tree saplings are much smaller than **mature** trees, or adult trees. Usually, trees are called saplings when they are between three and fifteen years of age. A tree sapling's bark is smooth, and its trunk is **flexible**—meaning it can bend more easily than a mature tree can.⁹ Once a tree is considered mature, it may flower and produce fruits, nuts, or cones. Some trees simply produce seeds.

← **Show image 5A-7: Deciduous and evergreen trees**

- 10 What are some names of deciduous trees? (maple, oak, birch, etc.)

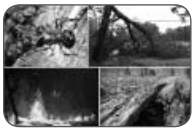
There are two types of trees: deciduous and evergreen. Deciduous trees shed their leaves.¹⁰ Deciduous trees tend to have wide, flat leaves, whereas evergreen tree leaves tend to be narrow and thin like needles. During the cold winter months, deciduous trees shed their leaves and become inactive for the winter, much like hibernating animals do during the wintertime. In fact, this is what keeps them alive during the coldest part of the year.

To prepare for this time of rest, deciduous trees stop using their leaves to make food, and instead they shed these leaves. Then, during the cold winter months, they save their energy until spring returns. In the spring, they will use their energy to produce new leaves.

- 11 What are some names of evergreen trees? (spruce, pine, fir, etc.)

Evergreen trees, on the other hand, shed and reproduce their leaves throughout the year, so there are always green leaves on evergreen trees all year long.¹¹ The cones of evergreen trees are its flowers. Unlike deciduous trees, evergreen trees do not shed all of their leaves at the end of fall. Instead, they use their leaves to make food all winter.

How long does it take for a tree to grow to its full size? Well, this depends on a number of things. Different kinds of trees grow at different speeds. In tropical parts of the world, where there is constant intense sunshine and rainfall, a tree can reach maturity, or become an adult, in thirty years. In colder regions of the world it can take a hundred years or more.

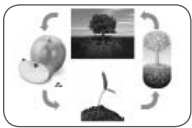


← **Show image 5A-8: Tree destruction**

12 An infestation occurs when a large number of something harmful enters an area.

The length of a tree's life depends on many things. It will always depend on the tree having enough sunshine and water, but other factors can affect its growth and lifespan, too. The condition of the soil in which the tree is growing, and diseases such as insect infestations and bacteria, can alter the natural lifespan of a tree.¹² Accidents such as fires and natural disasters such as hurricanes and floods can have an effect too. Also, people cut trees down so that they can be used to make a variety of products.

13 Fungi are living things such as molds, mushrooms, and yeasts that live on dead or decaying things.



← **Show image 5A-9: Life Cycle of an Apple Tree**

When a tree lives for a long time and then dies, it is not totally at the end of its journey. **Decomposers**, like earthworms, bacteria, and fungi, take over the dead tree.¹³ Through the decomposition process, they help to slowly break down the tree into a rich nutrient that feeds the soil and enables new tree seeds to grow.

And there you have it, the life cycle of a tree.

Discussing the Read-Aloud

15 minutes

Comprehension Questions

10 minutes

If students have difficulty responding to questions, reread pertinent passages of the read-aloud and/or refer to specific images. If students give one-word answers and/or fail to use read-aloud or domain vocabulary in their responses, acknowledge correct responses by expanding students' responses using richer and more complex language. Ask students to answer in complete sentences by having them restate the question in their responses.

1. *Literal* What is the main topic of the read-aloud? (The main topic of the read-aloud is the life cycle of a tree.)
2. *Literal* What are several things that make trees an important part of life on earth? (Trees provide us with oxygen; trees help to clean up the soil by absorbing or changing harmful chemicals; trees take in carbon dioxide and therefore help to manage Earth's climate; trees help to fight soil erosion; trees are used in the manufacture of many things; etc.)

3. *Literal* What are the stages of a tree's life cycle? (The stages of a tree's life cycle are seed, germination, sapling, and adult.) With what does a tree's life cycle begin? (A tree's life cycle begins with a seed.)
4. *Literal* When does a tree's seed germinate or sprout? (A tree's seed germinates during the spring when the temperatures are warmer and the amount of daylight is greater.)
5. *Literal* When does a tree begin to produce flowers and fruits? (A tree begins to produce flowers and fruits when it has reached maturity or the adult stage.)
6. *Evaluative* What is the difference between deciduous trees and evergreen trees? (The leaves of deciduous trees change color and fall off in the autumn. Evergreen trees shed and make new leaves all the time.)
7. *Literal* What are the different ways that seeds are dispersed or spread apart that help ensure that a tree's life cycle repeats every year? (The tree's seeds are scattered away from the parent tree by animals, people, wind, and water.)

[Please continue to model the *Think Pair Share* process for students, as necessary, and scaffold students in their use of the process.]

I am going to ask a question. I will give you a minute to think about the question, and then I will ask you to turn to your neighbor and discuss the question. Finally, I will call on several of you to share what you discussed with your partner.

8. *Evaluative Think Pair Share:* Would it be easier for you to observe the complete life cycle of a sunflower plant or a tree? Why? (It would be easier to observe the shorter life cycle of a sunflower plant; many trees have a longer life cycle than people.)
9. After hearing today's read-aloud and questions and answers, do you have any remaining questions? [If time permits, you may wish to allow for individual, group, or class research of the text and/or other resources to answer these questions.]

Word Work: Dependent

5 minutes

1. In the read-aloud you heard, “The air that [we] breathe is totally *dependent* on the existence of trees.”
2. Say the word *dependent* with me.
3. To be dependent means to need the help and support of something or someone else.
4. Having enough oxygen to breathe is dependent on having enough trees to create the oxygen.

Young children are dependent on their parents.

5. Are you dependent on something or someone? Tell your partner about who or what you are dependent on.

[Ask two or three students. If necessary, guide and/or rephrase the students’ responses: “I am dependent on _____.”]

6. What’s the word we’ve been talking about?

Use a *Making Choices* activity for follow-up. Directions: I am going to read several pairs. If what I say first is dependent on what I say second, say, “[First item] is dependent on [second item].” If what I say first is not dependent on what I say second, say, “[First item] is not dependent on [second item].”

1. baby/mother (A baby is dependent on his mother.)
2. number of days in a year/number of sunny days (The number of days in a year is not dependent on the number of sunny days.)
3. change in seasons/Earth’s orbit and tilt (Change in seasons is dependent on Earth’s orbit and tilt.)
4. having enough oxygen/trees (Having enough oxygen is dependent on trees.)
5. growth of a plant/ sunshine and water (The growth of a plant is dependent on sunshine and water.)
6. germination/pollinators (Germination is not dependent on pollinators.)



Complete Remainder of the Lesson Later in the Day



The Life Cycle of a Tree

5_B

Note: Extensions may have activity options that exceed the time allocated for this part of the lesson. To remain within the time periods allocated for this portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

Extensions

20 minutes

10 Sequencing the Life Cycle of a Tree (Instructional Masters 5B-1 and 5B-2)

15 minutes

- Tell students that an example of a flowering tree is the apple tree. Show students Cycles Poster 3 (Life Cycle of a Tree), and have them identify each stage of the apple tree's life cycle. (apple seed, germination and seedling, sapling, mature tree with apples)
- Give students Instructional Masters 5B-1 and 5B-2. Tell them that they will create Response Card 4; it will show the life cycle of a tree. **[Note:** This Response Card should be held and viewed using landscape orientation.]
 - First, have students cut out the images of the stages of the life cycle of an apple tree on Instructional Master 5B-1.
 - Next, have them put the images in the correct order of the life cycle of the apple tree.
 - Then, students should glue or tape the images in the correct blanks on Instructional Master 5B-2.
 - Finally, have students describe the life cycle of an apple tree to their partner or home-language peers.

Domain-Related Trade Book

20 minutes

- Refer to the list of recommended trade books in the Introduction at the front of this *Supplemental Guide*, and choose one trade book about the life cycle of a tree to read aloud to the class.

- Explain to students that the person who wrote the book is called the author. Tell students the name of the author. Explain to students that the person who makes the pictures for the book is called an illustrator. Tell students the name of the illustrator. Show students where they can find this information on the cover of the book or on the title page.
- As you read, use the same strategies that you have been using when reading the read-aloud selections—pause and ask occasional questions; rapidly clarify critical vocabulary within the context of the read-aloud; etc.
- After you finish reading the trade book aloud, lead students in a discussion as to how the story or information in this book relates to the read-alouds in this domain.



Pausing Point

PP

Note to Teacher

You should pause here and spend one day reviewing, reinforcing, or extending the material taught thus far.

You may have students do any combination of the activities listed below, but it is highly recommended you use the Mid-Domain Student Performance Task Assessment to assess students' knowledge of cycles in nature. The other activities may be done in any order. You may also choose to do an activity with the whole class or with a small group of students who would benefit from the particular activity.

Core Content Objectives Up to This Pausing Point

Students will:

- ✓ Explain that a cycle is a sequence of events that repeats itself again and again
- ✓ Recognize that the rotation of Earth causes day and night
- ✓ Explain that it takes twenty-four hours for Earth to rotate once on its axis
- ✓ Recognize that living things have a life cycle
- ✓ Recognize that Earth orbits the sun
- ✓ Explain that it takes one year for Earth to orbit the sun
- ✓ Describe the seasonal cycle: spring, summer, autumn, winter
- ✓ Identify that the tilt of Earth's axis in relation to the sun causes the seasons
- ✓ Explain effects of seasonal changes on plants and animals
- ✓ Describe animal processes in spring, summer, autumn, winter
- ✓ Describe plant processes in spring, summer, autumn, winter

- ✓ Define the term *life cycle*
- ✓ Identify the stages of the life cycle of a flowering plant (seed to seed)
- ✓ Identify the stages of the life cycle of a tree (seed to seed)
- ✓ Demonstrate familiarity with the poem “Bed in Summer”
- ✓ Demonstrate familiarity with the poem “Bee! I’m expecting you!”

Student Performance Task Assessment

10 Numbering Stages in the Life Cycle of a Sunflower or the Life Cycle of an Apple Tree (Instructional Master PP-1 or PP-2)

Note: You may wish to have students complete one or both of the worksheets.

Have students identify which life cycle the images on their worksheet represent. Tell students to number the stages in the life cycle, beginning with the number “1” for the stage of the seed.

After students have finished numbering the stages of the life cycle, have them complete the sentence: The life cycle of a sunflower/ an apple tree begins with a _____. On the lines underneath, have students write a sentence about something interesting they learned about that life cycle.

Activities

Image Card Review

Materials: Image Cards 1–9

In your hand, hold Image Cards 1–9 fanned out like a deck of cards. Ask a student to choose a card but to not show it to anyone else in the class. The student must then perform an action or give a clue about the picture s/he is holding. For example, for a sprouting seed, a student may pretend to be very small and gradually grow taller. The rest of the class will guess what is being described. Proceed to another card when the correct answer has been given.

Sequence Review

Materials: Cycles Posters 1–3; Image Cards 1–9; Response Cards 2–4

Use Cycles Posters 1–3, Image Cards 1–9, and Response Cards 2–4 to review with students the seasonal cycle, the flowering plant life cycle, and the life cycle of a tree. Have students explain and sequence each stage of the cycles. Remind students that trees have a sapling stage in their life cycle, unlike the life cycle of a plant.

Domain-Related Trade Book or Student Choice

Materials: Trade book

Read a trade book to review a particular cycle. Refer to the list in the Introduction. You may also choose to have the students select a read-aloud to be heard again.

Exploring Student Resources

Materials: Domain-related student websites

Pick appropriate websites from the Internet for further exploration of daytime/nighttime, cycle of the seasons, life cycles of a flowering plant, and life cycle of a deciduous tree.

Videos of Life Cycles

Materials: Videos of Life Cycles

Carefully peruse the Internet for short (5-minute), age-appropriate videos related to the life cycles your students have heard.

Prepare some questions related to the content presented in the videos.

Discuss how watching a video is the same as and different from listening to a storybook or read-aloud.

Have students ask and answer questions using question words *who*, *what*, *when*, *where*, and *why* regarding what they see in the videos.

Class Book: Plant Life Cycle Encyclopedia

Materials: Drawing paper, drawing tools

Tell students they are going to make a class book to help them remember what they have learned in this domain about the life cycle of a flowering plant and a tree.

Have students brainstorm names of flowers and trees they would like to learn more about. Assign a particular flower or tree to a partner pair or small group, and give them a set of resources (e.g., trade books, websites, realia, picture-based reference books) to research about its life cycle. Have students draw a picture of one idea from their research, and ask them to write a caption for their picture. Bind the pages to make a class book to put in the class library for students to read again and again.

Riddles for Core Content

Ask students riddles such as the following to review core content:

- I am a sequence of events that repeats over and over again in the same order. What am I called? (a cycle)
- I am an imaginary central line running through the North and South Poles around which planet Earth rotates. What am I? (an axis)
- I am a word that describes the movement of the earth around the sun over the course of one year. Which word am I? (orbit or revolve)
- I am a word that describes how the earth's axis is on a slant or at an angle and am the reason we have a change in seasons. Which word am I? (tilt or tilted)
- I am a word that describes what a seed does when it starts to grow. Which word am I? (germinates)
- I am a young plant with a stem, roots, and leaves; I am grown from a seed. What am I? (a seedling)
- I am a young tree that is taller than most of your parents or caregivers. What am I? (a sapling)

- We have the important job of helping to carry pollen from one flower to another so an adult plant can reproduce, or make more of its own kind. What are we? (pollinators—insects, birds, small mammals, water, the wind, etc.)

Compare/Contrast

Materials: Chart paper, chalkboard, or whiteboard

Tell students that there are many things to compare and contrast in the read-alouds they have heard so far. Remind students that *compare* means to tell how things are similar, and *contrast* means to tell how things are different. Have students choose a topic from the following list to compare/contrast on a chart. You may do this individually or as a class.

- Earth's rotation and Earth's orbit
- the four seasons
- a sunflower plant and a tree

You may wish to extend this activity by using the chart as a prewriting tool and ask students to write two paragraphs, one describing similarities and the other describing differences.

Writing Prompts

Students may be given an additional writing prompt such as the following:

- Flowers are important to the life cycle of some plants because . . .
- The four seasons of the year are considered parts of a cycle because . . .
- My favorite season is _____ because . . .

Using a Map

Materials: World map or globe

On a world map or globe, review the location of the equator and the North and South Poles. Have students talk about the amount of sunlight in these locations and how Earth's tilt is the cause of this.

Seed Observation

Materials: Dried lima beans; small containers; small, plastic knife (optional); drawing paper, drawing tools

Have students place several dried lima bean seeds in small, water-filled containers to soak overnight. The next day, split the seed halves of the bean apart using your fingers or a small plastic knife. Give each student or group of students the seed halves, and have them observe the plant embryos inside. Ask students why the plant embryos are important to the life cycle of a plant. Have students draw a picture of the plant embryo and write a caption about how baby plants germinate from a bean seed embryo.

Seed Samples

Materials: Variety of fresh and/or dried foods and spices (e.g., sunflower seeds, pomegranates, pumpkin seeds)

Note: Be sure to follow your school's policy regarding food distribution and allergies.

Display the variety of foods on a table for students to investigate some seeds and plants that humans use for food. Have students examine each item and give examples of how they think humans may use each of these foods. For example, sunflower seeds can be used to grow new sunflower plants, but they are also a food that people can eat.

Seed Germination Demonstration

Materials: quick sprouting seeds; paper towels and clear zip-top bags or potting soil and clear plastic cups

Watching seeds sprout and grow can be an exciting experience for young children. For this demonstration, use seeds that germinate rather quickly (5–10 days) such as daisy, sunflower, zinnia, or marigold seeds; or vegetable seeds such as corn, cucumber, tomato, or watermelon seeds. Place seeds in potting soil or inside a zip-top bag on a damp paper towel. Be sure to keep the seeds in a damp and warm environment for seeds to germinate. Check the seeds daily to see if they have germinated. You may wish to keep a class journal, or have students keep individual journals, to record what happens to the seeds.



Which Came First, the Chicken or the Egg?

6

☑ Lesson Objectives

Core Content Objectives

Students will:

- ✓ Explain that a cycle is a sequence of events that repeats itself again and again
- ✓ Describe the seasonal cycle: spring, summer, autumn, winter
- ✓ Explain effects of seasonal changes on plants and animals
- ✓ Define the term *life cycle*
- ✓ Identify the stages of the life cycle of a chicken (egg to egg)

Language Arts Objectives

The following language arts objectives are addressed in this lesson. Objectives aligning with the Common Core State Standards are noted with the corresponding standard in parentheses. Refer to the Alignment Chart in the Introduction for additional standards addressed in all lessons in this domain. Students will:

- ✓ Identify the main topic of “Which Came First, the Chicken or the Egg?” (RI.2.2)
- ✓ Compare and contrast images of a chicken and a tyrannosaurus rex (RI.2.9)
- ✓ Compare and contrast the life cycle of a plant and the life cycle of a chicken (RI.2.9)
- ✓ With guidance and support from adults and peers, focus on information presented in “Which Came First, the Chicken or the Egg?” and strengthen writing as needed by revising and editing (W.2.5)
- ✓ Summarize in writing the content of “Which Came First, the Chicken or the Egg?” (SL.2.2)

- ✓ Add drawings to a summary of the information contained in “Which Came First, the Chicken or the Egg?” to clarify ideas, thoughts, and feelings (SL.2.5)
- ✓ Identify new meanings for the word *stage* and apply them accurately (L.2.5a)
- ✓ Prior to listening to “Which Came First, the Chicken or the Egg?”, orally predict whether the chicken or the egg came first, and then compare the actual outcomes to predictions
- ✓ Share writing with others

Core Vocabulary

albumen, n. The white part inside an egg

Example: The albumen, or egg white, is the part of the egg used in some recipes, such as angel food cake.

Variation(s): none

embryo, n. An unborn or unhatched animal or person

Example: A developing embryo must receive nutrients and oxygen from its mother.

Variation(s): embryos

fertilize, v. To make an egg able to grow and develop into a baby

Example: The chicken egg needs to be fertilized before it can become a baby chicken.

Variation(s): fertilizes, fertilized, fertilizing

replenished, v. Replaced or refilled

Example: The cookie jar was empty, so Mom replenished it with cookies.

Variation(s): replenish, replenishes, replenishing


yolk, n. The yellow part inside an egg

Example: Tina dropped an egg on the floor, and the yellow yolk spilled out.

Variation(s): yolks

Vocabulary Chart for Which Came First, the Chicken or the Egg?			
<p>Core Vocabulary words are in bold.</p> <p>Multiple Meaning Word Activity word is <u>underlined</u>.</p> <p>Vocabulary Instructional Activity words have an asterisk (*).</p> <p>Suggested words to pre-teach are in <i>italics</i>.</p>			
Type of Words	Tier 3 Domain-Specific Words	Tier 2 General Academic Words	Tier 1 Everyday-Speech Words
Understanding	eggshell embryo oxygen pullets yolk/albumen	accelerates develop fluffy lovely replenished*	air bird chick/chicken egg feathers female/male hen/rooster inside tiny yellow/white
Multiple Meaning	fertilize hatch scratch	cycle <u>stage</u> supply	fly shell warm wing
Phrases		to develop into	
Cognates	embrión oxígeno albumen	acelerarse ciclo	aire

Note: Introducing the Read-Aloud and Extensions may have activity options that exceed the time allocated for that part of the lesson. To remain within the time periods allocated for each portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

Exercise	Materials	Details
<i>Introducing the Read-Aloud (10 minutes)</i>		
What Have We Already Learned?	Image Cards 5–9; Cycles Posters 2 and 3; Response Cards 3 and 4	You may wish to have half the class review the life cycle of a flowering plant and the other half review the life cycle of a deciduous tree. Then have each group present their assigned life cycle. Be sure that students understand that the life cycle of plants is from seed to seed.
Making Predictions About the Read-Aloud		You may wish to take a quick class tally for chicken or egg.
Vocabulary Preview: Embryo, Fertilize	Image 6A-4; additional images of animal embryos	
Purpose for Listening		
<i>Presenting the Read-Aloud (15 minutes)</i>		
Which Came First, the Chicken or the Egg?	fresh egg; clear, glass jar	You may wish to show students the inside of a fresh egg and to identify the parts of the egg.
	magnifying glasses; eggshells	You may wish to have students look through the magnifying glass to see where oxygen passes in and out of the tiny holes on the shell.
		Note: You may wish to conclude the read-aloud with a short video clip that shows the life cycle of a chicken.
<i>Discussing the Read-Aloud (15 minutes)</i>		
Comprehension Questions		
Word Work: Replenished		
 Complete Remainder of the Lesson Later in the Day		

Exercise	Materials	Details
Extensions (20 minutes)		
Multiple Meaning Word Activity: Stage	Poster 1M (Stage)	
Sequencing the Life Cycle of a Chicken	Image Cards 10–12; Cycles Poster 4 (Life Cycle of a Chicken); Instructional Masters 6B-1 and 6B-2, scissors, glue	
Interactive Illustrations	drawing paper, drawing tools	
Domain-Related Trade Book	trade book about the life cycle of a chicken	
Take-Home Material		
Family Letter	Instructional Masters 6B-3 and 6B-4	

Advance Preparation

Make copies of Instructional Masters 6B-1 and 6B-2 for each student. Students will create their own Response Card for the life cycle of a chicken.

Bring in images of different animal embryos (be sure that images are accurate and age-appropriate), several magnifying glasses, eggshells, a fresh egg, and a clear jar. **Note:** Be sure to check with your school's policy regarding food distribution and allergies. Do not allow students to touch the fresh egg.

Find short, age-appropriate video clips of the life cycle of a chicken to reinforce read-aloud content.

Find a trade book about the life cycle of a chicken to read aloud to the class.

Note to Teacher

As you show the inside of a fresh egg, students may wonder why there was not a baby chick inside. Explain that the inside of this egg did not become a chick because it was not fertilized by a rooster. If an egg is not fertilized, it can never grow into a baby chick.



Which Came First, the Chicken or the Egg?

6_A

Note: Introducing the Read-Aloud may have activity options which exceed the time allocated for this part of the lesson. To remain within the time periods allocated for this portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

Introducing the Read-Aloud

10 minutes

What Have We Already Learned?

10 minutes

Review with students that a cycle is a sequence of events that repeats itself again and again. In the previous lesson, students learned that the stages in the life cycles of flowering plants and trees are both from seed to seed. The life cycles begin with seeds and end with the plants and trees producing new seeds.

Show students Image Cards 5–9, and have them identify and sequence the stages of a flowering plant’s life cycle. You may wish to ask the following questions:

- Which Image Card shows the first stage of the life cycle? (seeds in Image Card 5)
- Which stage of the life cycle do Image Cards 6 and 7 show? (germination/seedling)
- Image Card 8 shows a mature flowering plant. When a plant reaches maturity, it flowers and produces fruit. This will start the life cycle over again, once seeds are dispersed as in Image Card 9.

You may also wish to reference Cycles Poster 2 (Flowering Plant Life Cycle) and Poster 3 (Life Cycle of a Tree).

Review with students how the seasonal cycle affects the life cycle of deciduous trees. Tell students that they have now learned about the seasonal cycle, the life cycle of a flowering plant, and

the life cycle of a tree. Ask students what all of these things have in common. Remind them that all living things—plants, animals, and even people—journey through differing stages from birth to adult called a *life cycle*. Explain to students that they are going to continue learning about the life cycle as experienced by a very familiar bird.

Making Predictions About the Read-Aloud

5 minutes

Ask students to think about the title of the read-aloud to predict whether the chicken or the egg comes first.

Vocabulary Preview

5 minutes

Embryo



◀ **Show image 6A-4: Diagram of developing chicken embryo**

1. In today's read-aloud you will see a tiny chicken *embryo* growing inside of an egg.
2. Say *embryo* with me three times.
3. An embryo is an unborn animal or person.
4. This is an embryo of a chicken. The embryo is inside the chicken egg; the chick has not hatched yet. [Show additional images of animal embryos, and see if students can tell which animal the embryo will become.]
5. Is an embryo at the beginning, middle, or end of an animal's life cycle?

Fertilize

1. Today we will learn that a rooster, or a male chicken, must *fertilize* a hen's, or female chicken's, eggs before the hen lays the eggs.
2. Say *fertilize* with me three times.
3. To fertilize an egg means to make an egg able to grow into a baby animal. Eggs that are not fertilized do not become baby animals.
4. The roosters on a farm help to fertilize the hen's eggs.
5. If an egg is not fertilized, can it become a baby chick? (no)

Purpose for Listening

Tell students to listen carefully to find out whether or not their predictions are correct and to learn all about the main topic of today's read-aloud: the life cycle of a chicken.



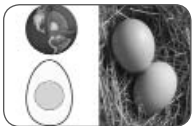
Which Came First, the Chicken or the Egg?

◀ Show image 6A-1: Chicken and Tyrannosaurus Rex

A chicken is a type of bird. Did you know that there are more chickens in our world than any other type of bird? In fact there are more chickens on Earth than people. Scientists believe that chickens are the closest living relative of the Tyrannosaurus Rex, one of the largest dinosaurs that ever lived. Can you see why? ¹

Like all birds, chickens have feathers and wings, and they lay eggs. Chickens can fly, but not very far. Have you ever heard the question, “Which came first, the chicken or the egg?” Listen carefully to this lesson on the life cycle of a chicken, and you’ll see why that question is so difficult to answer!

All living things go through a sequence of stages from birth to adult called a life cycle. The life cycles of plants and trees begin with seeds; the life cycles of chickens begin with eggs!



◀ Show image 6A-2: Egg

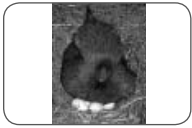
Have you ever cracked an egg open? The outer layer that you crack is called the eggshell. Eggshells can be many different colors, including white, light brown, speckled, pale blue, or even green. Inside the shell, the egg consists of a yellow **yolk**, which is made mostly of fat, and a white part, called the **albumen**. ²

Do you know what a female chicken is called? A female chicken is called a hen. Do you know what a male chicken is called? A male chicken is called a rooster. Hens lay eggs. Not all eggs become baby chickens, or chicks. In order to produce chicks, a rooster must **fertilize** the eggs before the hen lays them. ³ Eggs that are not fertilized do not become baby chickens. They are sent to stores so that people can buy them and eat them.

1 [Have students compare and contrast the images in 6A-1.]

2 [Point to image 6A-2.] Many people compare the layers of the earth to the layers of an egg. How are they similar? How are they different?

3 Fertilization is similar to pollination: just like flowers need pollen from another flower in order to make seeds, hens need roosters in order for their eggs to become baby chickens, or chicks.



← **Show image 6A-3: Hen sitting on eggs**

As soon as a hen lays her fertilized eggs, she will begin to care for them. The hen will sit on the eggs and even turn the eggs to make sure that the eggs stay warm. The eggs need to stay warm for twenty-one days in order to develop into chicks.⁴ Let's find out what happens inside the egg during this time!

4 Twenty-one days is three weeks.



← **Show image 6A-4: Diagram of developing chicken embryo**

Inside the fertilized egg, great changes are happening. A tiny **embryo** is developing inside the egg.⁵ The embryo needs food, water, and oxygen to grow and develop. Within forty-eight hours of fertilization, tiny, red blood vessels spread out from the embryo to the yolk and to the inside of the shell. Directly under the shell are two membranes, or air sacs, containing oxygen. As the embryo develops and grows into a chick, it uses this oxygen. This supply of oxygen is **replenished**, or replaced, as oxygen passes through the shell of the egg. How does oxygen pass through the shell of an egg? If you look at an eggshell under a magnifying glass, you will see that it has tiny holes called pores that allow oxygen in, and carbon dioxide out.⁶

5 An *embryo* is an animal in the early stages of life before it is born or has hatched.

6 Humans have millions of pores. Pores are the openings on our skin out of which hair grows.

The parts of the egg inside the shell contain all the food the growing embryo needs to develop into a fully formed chick. The yellow yolk provides the food necessary for the embryo to grow big and strong. The white of the egg, or albumen, surrounds the yolk and provides the growing embryo with more food and water.

The first part to develop is the chick's nervous system. Then the brain starts to form, and then the heart starts to beat. After five days, the wings and the legs begin to develop. After seven days, the embryo is fully formed but is quite tiny. Around the tenth day, feathers begin to develop and the growth of the fully formed embryo into a chick accelerates, or speeds up.⁷

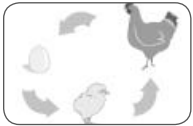
7 Look at the image. What is the difference between Day 8 and Day 20 in terms of the chick's development?

As the chick grows, it uses up its food supply. After twenty days inside the egg, the chick pierces, or makes a hole in, the air sac and begins to breathe air with its own lungs for the first time. This means that the chick is ready to hatch out of the egg. The chick begins to chirp to let its mother know that it will soon be in the



8 Have you ever seen newborn chicks? Where did you see them?

9 Chicks know how to scratch around for food without being taught to do so.



outside world. On the twenty-first day, the chick uses its egg tooth to chip a circle around the inside of the shell. It pushes against the sides of the egg with its body to break open the shell.

← **Show image 6A-5: Newly hatched chicks**

When the chick first emerges, it is tired from the effort of breaking out of its shell. It is also wet. Before long, however, the feathers dry out and become lovely and fluffy.⁸

The mother hen, having cared for her eggs, continues to care for her chicks. She will shelter them under her wings to keep them warm and dry. Chicks know instinctively how to scratch around in the dirt for food.⁹ For the first two weeks, the chicks stay close to their mother.

← **Show image 6A-6: Chicken life cycle diagram**

Chicks grow quickly in the first months of their lives. When a female is about six months old, she will start to lay eggs. These first eggs will be quite small, though. Interestingly, females are called pullets, not hens, until they are one year old. Roosters are able to fertilize eggs at a similar age.

And so the life cycle begins all over again. A rooster fertilizes eggs before a hen lays them. The hen will care for the fertilized eggs and keep them warm. After twenty-one days, the eggs will hatch and new chicks will emerge.

Now that you know more about the life cycle of a chicken, which do you think came first—the chicken or the egg?

Discussing the Read-Aloud

15 minutes

Comprehension Questions

10 minutes

1. *Evaluative* Were your predictions correct about which comes first, the chicken or the egg? Why or why not? (Answers may vary. Both answers are correct.)
2. *Literal* What is the main topic of the read-aloud? (The main topic of the read-aloud is the life cycle of a chicken.)

3. *Literal* How does the life cycle of a chicken begin? (The life cycle of a chicken begins as an egg.)
4. *Literal* What three parts make up an egg? (The three parts that make up an egg are the shell, the albumen, and the yolk.)
5. *Inferential* Do all eggs develop into baby chicks or go through a complete life cycle? (No, an egg must be fertilized by a rooster to produce baby chicks.)
6. *Inferential* How does the mother hen help her chicks grow inside the eggs? (The mother hen covers the eggs with her body to keep them warm; she turns the eggs over so that they are warm on all sides.)
7. *Literal* What does a growing chick use for food before it hatches? (A growing chick uses the yolk and the albumen as a source of food before it hatches.)
8. *Literal* What does a baby chick do to break out of its shell when it hatches? (A baby chick uses its egg tooth to chip a circle around the inside of the shell; it pushes against the sides of the egg with its body to break open the shell.)
9. *Literal* What are the three stages of the life cycle of a chicken? (The three stages of the life cycle of a chicken are the egg, the chick, and the adult.)

[Please continue to model the *Think Pair Share* process for students, as necessary, and scaffold students in their use of the process.]

I am going to ask a couple of questions. I will give you a minute to think about the questions, and then I will ask you to turn to your neighbor and discuss the questions. Finally, I will call on several of you to share what you discussed with your partner.

10. *Evaluative Think Pair Share:* How is the life cycle of a chick similar to the life cycle of a flowering plant? How is it different? (Answers may vary.)
11. After hearing today's read-aloud and questions and answers, do you have any remaining questions? [If time permits, you may wish to allow for individual, group, or class research of the text and/or other resources to answer these questions.]

Word Work: Replenished

5 minutes

1. In the read-aloud you heard, “This supply of oxygen is *replenished*, or replaced, as oxygen passes through the shell of the egg.”
2. Say the word *replenished* with me.
3. The word *replenished* means to replace, restore, or refill.
4. The refrigerator was almost empty and the groceries needed to be replenished.
5. Can you think of items that need to be replenished? Try to use the word *replenished* when you tell about it. [Ask two or three students. If necessary, guide and/or rephrase the students’ responses: “. . . needs to be replenished. Suggestions: water bottle, scratch paper pile, pencil jar, pet’s food bowl, cereal box.]
6. What’s the word we’ve been talking about? What part of speech is the word *replenished*? How do you know that it is an action word?

Use a *Making Choices* activity for follow-up. Directions: I am going to read a list of several things to you. If what I read describes something that can be replenished, say, “That can be replenished.” If what I read describes something that cannot be replenished, say, “That cannot be replenished.” Remember to answer in complete sentences.

1. an almost empty glass of water (That can be replenished.)
2. an almost empty gas tank (That can be replenished.)
3. snacks for school (That can be replenished.)
4. a bubble when it has burst (That cannot be replenished.)
5. the flavor in a piece of gum after you have chewed it (That cannot be replenished.)



Complete Remainder of the Lesson Later in the Day



Which Came First, the Chicken or the Egg?

6_B

Note: Extensions may have activity options that exceed the time allocated for this part of the lesson. To remain within the time periods allocated for this portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

Extensions

20 minutes

↔ Multiple Meaning Word Activity

5 minutes

Associated Phrase: Stage

Note: You may choose to have students hold up one or two fingers to indicate which image shows the meaning being described or have a student walk up to the poster and point to the image being described.

1. [Show Poster 1M (Stage).] In the read-aloud you learned that the first stage of the life cycle of a chicken is an egg. Which image shows this kind of *stage*?
2. *Stage* can also mean something else. *Stage* also means a raised platform on which people sing, dance, and act. Which picture shows this kind of *stage*?
3. [Point to the image of *stage* that shows a theater stage.] With your partner, talk about what you think of when you see this kind of *stage*. I will call on a few partners to share. (When I see this kind of *stage*, I think of going to see a play with my grandma, acting in the school play, musicals, etc.)
4. [Point to the image of *stage* that shows times in the growth or development of something.] With your partner, talk about what you think of when you see this kind of *stage*. I will call on a few partners to share. (When I see this kind of *stage*, I think of babies growing into adults, times in someone's life, etc.)

10 Sequencing the Life Cycle of a Chicken (Instructional Masters 6B-1 and 6B-2)

15 minutes

- Show students Image Cards 10–12, and have them explain and sequence the chicken's life cycle. You may wish to show students Cycles Poster 4 (Life Cycle of a Chicken) and have them once again identify the three stages of the chicken's life cycle. (egg, baby chick, adult chicken)
- Give students Instructional Masters 6B-1 and 6B-2. Tell them that they will create Response Card 5; it will show the life cycle of a chicken. **[Note:** This Response Card should be held and viewed using landscape orientation.]
 - First, have students cut out the images of the stages of the life cycle of a chicken on Instructional Master 6B-1.
 - Next, have them put the images in the correct order of the life cycle of a chicken.
 - Then, students should glue or tape the images in the correct blanks on Instructional Master 6B-2.
 - Finally, have students describe the life cycle of a chicken to their partner or home-language peers.

Interactive Illustrations

15 minutes

Explain to students that they will all get to be authors and illustrators in the next activity. Give each student a sheet of paper folded in half. On one half of the paper, have each student write a sentence about the life cycle of a chicken from egg to egg. Pair them with a partner. Ask them to read their sentence aloud to their partner and then trade papers. Using the second section on their partner's paper, have each student draw a picture that goes with his or her partner's sentence. Then have students hand the paper back to the original author. Encourage the author to add descriptive words to his or her original sentence using carets, and hand the papers back to the illustrators to draw more details into the illustration.

Allow several students to share their drawings and sentences. Have them discuss how their partners' illustrations differed from the pictures they had imagined in their heads when they wrote their sentences. As the students discuss the illustrations,

remember to repeat and expand upon each response using richer and more complex language, including, if possible, any domain-related vocabulary.

Domain-Related Trade Book

20 minutes

- Refer to the list of recommended trade books in the Introduction at the front of this *Supplemental Guide*, and choose one trade book about the life cycle of a chicken to read aloud to the class.
- Explain to students that the person who wrote the book is called the author. Tell students the name of the author. Explain to students that the person who makes the pictures for the book is called an illustrator. Tell students the name of the illustrator. Show students where they can find this information on the cover of the book or on the title page.
- As you read, use the same strategies that you have been using when reading the read-aloud selections—pause and ask occasional questions; rapidly clarify critical vocabulary within the context of the read-aloud; etc.
- After you finish reading the trade book aloud, lead students in a discussion as to how the story or information in this book relates to the read-alouds in this domain.

Take-Home Material

Family Letter

Send home Instructional Masters 6B-3 and 6B-4.



The Life Cycle of a Frog

7

✓ Lesson Objectives

Core Content Objectives

Students will:

- ✓ Explain that a cycle is a sequence of events that repeats itself again and again
- ✓ Describe the seasonal cycle: spring, summer, autumn, winter
- ✓ Explain effects of seasonal changes on plants and animals
- ✓ Define the term *life cycle*
- ✓ Identify the stages of the life cycle of a frog (egg to egg)
- ✓ Explain metamorphosis

Language Arts Objectives

The following language arts objectives are addressed in this lesson. Objectives aligning with the Common Core State Standards are noted with the corresponding standard in parentheses. Refer to the Alignment Chart for additional standards addressed in all lessons in this domain.

Students will:

- ✓ Identify the main topic of “The Life Cycle of a Frog” (RI.2.2)
- ✓ Write an informational paragraph explaining the stages of the life cycle of a frog (W.2.2)
- ✓ With guidance and support from adults and peers, focus on information presented in “The Life Cycle of a Frog” and strengthen writing as needed by revising and editing (W.2.5)
- ✓ Ask and answer *what* questions orally to gather information or deepen understanding of the information contained in “The Life Cycle of a Frog” (SL.2.3)

- ✓ Prior to listening to “The Life Cycle of a Frog,” identify orally what they know and have learned about the life cycles of plants, trees, and chickens
- ✓ Share writing with others

Core Vocabulary

amphibian, n. An animal that can live on both land and in water

Example: My pet frog is an amphibian, so I have water and land in his tank.

Variation(s): amphibians

burrow, v. To make a hole or pathway underground or under something

Example: My dog loves to burrow under the blankets on my bed.

Variation(s): burrows, burrowed, burrowing

gills, n. The parts of an animal that allow it to breathe underwater

Example: The fish’s gills open to take in water.

Variation(s): gill

lungs, n. Organs used for breathing that remove carbon dioxide and add oxygen to the blood

Example: Sometimes if you run too hard in the cold weather, it can make your lungs hurt.

Variation(s): lung

metamorphosis, n. The process by which some young animals completely change the way they look as they become adults

Example: After the young insect goes through its metamorphosis to become an adult insect, it looks nothing like it once did.

Variation(s): metamorphoses

Vocabulary Chart for The Life Cycle of a Frog			
Core Vocabulary words are in bold . Multiple Meaning Word Activity word is <u>underlined</u> . Vocabulary Instructional Activity words have an asterisk (*). Suggested words to pre-teach are in <i>italics</i> .			
Type of Words	Tier 3 Domain-Specific Words	Tier 2 General Academic Words	Tier 1 Everyday-Speech Words
Understanding	<i>amphibian</i> camouflage embryo froglet frogspawn gills lungs metamorphosis oxygen predators tadpole	avoid develop disappears nourished survive transformation*	adult animal back/front breathe egg frogs hop leg pond spring/winter swim water
Multiple Meaning	<i>burrow</i> fertilize hatch tongues	change cycle search stage	land skin tail
Phrases		survival techniques	
Cognates	<i>anfibio</i> camuflaje embrión metamorfosis oxígeno predador(ora)	desaparecer sobrevivir transformación* ciclo	adulto(a) animal

Note: Introducing the Read-Aloud and Extensions may have activity options that exceed the time allocated for that part of the lesson. To remain within the time periods allocated for each portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

Exercise	Materials	Details
Introducing the Read-Aloud (10 minutes)		
What Have We Already Learned?	Image Cards 10–12; Cycles Posters 4 (Life Cycle of a Chicken); Response Card 5	
Vocabulary Preview: Amphibian, Burrow	Image 7A-1; additional images of amphibians	
	images of frog burrow	
Purpose for Listening		
Presenting the Read-Aloud (15 minutes)		
The Life Cycle of a Frog	dime	
		Note: You may wish to conclude the read-aloud with a short video clip that shows the life cycle of a frog.
Discussing the Read-Aloud (15 minutes)		
Comprehension Questions		
Word Work: Transformation	short videos or images of amphibian metamorphosis	
 Complete Remainder of the Lesson Later in the Day		
Extensions (20 minutes)		
Sequencing the Life Cycle of a Frog	Image Cards 13–16; Cycles Poster 5 (Life Cycle of a Frog); Instructional Masters 7B-1 and 7B-2, scissors, glue	
Writing an Explanatory/ Informational Paragraph: Life Cycle of a Frog	Cycles Poster 5 (Life Cycle of a Frog); Instructional Master 7B-3; chart paper, chalkboard, or whiteboard	

Advance Preparation

Make copies of Instructional Masters 7B-1 and 7B-2 for each student. Students will create their own Response Card for the life cycle of a frog.

Bring in images of amphibians (e.g., caecilians, salamanders, newts, mudpuppies, frogs, and toads), frog burrows, and age-appropriate videos and images of amphibian metamorphosis to help students understand core vocabulary.

Find short, age-appropriate video clips of the life cycle of a frog to reinforce read-aloud content.

Prepare a paragraph planning chart on a large piece of chart paper, chalkboard, or whiteboard, using Instructional Master 7B-3 as a guide. Make a copy of Instructional Master 7B-3 for each student. Students will write their explanatory/informational paragraph about the life cycle of frog on this worksheet.

Note to Teacher

Students will write an explanatory/informational paragraph for the life cycle of a frog. It is recommended that all students participate in this activity. Scaffold and modify the instructions to this activity as necessary. You may wish to spend more time on this activity or work with small groups of students at separate times.



The Life Cycle of a Frog

7_A

Introducing the Read-Aloud

10 minutes

What Have We Already Learned?

5 minutes

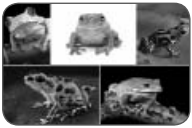
Review with students that a life cycle includes the stages a living thing goes through from birth to adult. Ask students about the life cycles they have learned about so far. Plants and trees begin their life cycles as seeds. Chickens begin their life cycles as eggs.

Have students retell the life cycle of a chicken. You may wish to prompt responses by using Image Cards 10–12. You may also wish to have students sequence Image Cards 10–12 using Cycles Poster 4 (Life Cycle of a Chicken).

Vocabulary Preview

5 minutes

Amphibian



◀ Show image 7A-1: Frogs

1. In today's read-aloud you will learn that frogs are *amphibians*.
2. Say *amphibian* with me three times.
3. An amphibian is an animal that can live on both land and in water.
4. When amphibians are in water, they breathe through gills. When amphibians are on land, they breathe with lungs. Marleen has both water and land in the tank for her pet frog, which is an amphibian.
5. [Show images and name the different types of amphibians.] Describe this amphibian to your partner. What color is it? Does it look like it has rough skin or smooth skin? Does it have webbed feet?

Burrow

1. Today we will learn that many frogs *burrow* in the winter.
2. Say *burrow* with me three times.
3. *To burrow* means to dig a hole or pathway underground.
4. Frogs burrow in the ground to keep warm.
My dog likes to burrow under my blankets.
5. [Show images of frog burrows.] Can you find the frog? Why would the frog burrow underground?

Purpose for Listening

Tell students that today they are going to hear about the life cycle of a frog. Explain that a frog undergoes a transformation in its life cycle. A transformation is a major change in the way something looks. Tell students to listen and watch carefully to learn all about this transformation during the main topic of today's read-aloud: the life cycle of a frog.



The Life Cycle of a Frog

← Show image 7A-1: Frogs¹

1 What sound do frogs make? (Frogs make croaking sounds, like *ribbet*.)

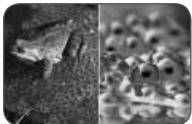
2 [Show students a dime for reference.]

3 [Have students describe the frogs in the image.]

Did you know that there are thousands of different kinds of frogs in the world? Frogs don't all look alike either. Frogs can be all different sizes and colors. The smallest frog in the world was recently discovered in Papua New Guinea. It is smaller than a dime!² The largest frog in the world is the Goliath frog from Africa. It can grow up to three feet long and weigh seven pounds.³

Frogs live on every continent in the world except Antarctica. Why do you think they don't live in Antarctica? Frogs don't live in Antarctica because it is too cold, although there is a frog that lives just inside the Arctic Circle. Do you know what a group of frogs is called? A group of frogs is called an army. Okay, now that you know some cool facts about frogs, let's find out about their life cycles.

Just like a chicken, a frog's life cycle includes birth, growth, reproduction, and death. The reproduction stage creates new life so that the cycle repeats over and over again.



← Show image 7A-2: Frogspawn

4 [Have students describe the image.]

Have you ever stood at the edge of a pond or stream in the spring and spotted a jelly-like substance floating in the water? If so, you have seen the first stage of a frog's life cycle. The first stage of a frog's life cycle is the egg. That jelly-like substance is frogspawn, which is hundreds of soft, jelly-like eggs. In the center of each egg is a tiny black dot. Each black dot is a tiny embryo that will become a tadpole soon.⁴ A developing young frog is called an embryo at the early stages and a tadpole at the later stages.

The mother frog lays her eggs in water in spring, when the cold winter months are over and the water is warm enough for her eggs to survive. The mother frog lays hundreds of eggs at one time.

Female frogs lay hundreds of eggs at one time because not all of the eggs survive. Unlike hens, frogs do not usually stay with their eggs, so fish, birds, and water insects are more likely to eat some of the eggs. Some of the eggs will survive and eventually develop into tadpoles.

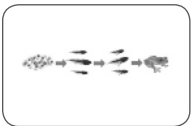


← **Show image 7A-3: Tadpoles**

Just as a developing chick is nourished by the yolk of an egg as it grows, a developing frog is also nourished by yolk-like material in the egg. Within a few days or weeks of its development, depending on the type of frog, the embryo develops into a tadpole with a head and tail. Soon after that, when its **gills** are formed, it is ready to hatch out of the egg. Gills allow the tadpole to breathe underwater. Fish have gills, too.⁵

Once it hatches, a tadpole lives in water. A tadpole has a long, flat tail which it uses to swim. Its gills allow it to get oxygen from the water. Tadpoles swim about in search of food. Although they still feed from the leftovers of the eggs, they also search for small, green, water plants. Tadpoles grow very quickly, especially in warm water.

5 People cannot breathe underwater because people do not have gills. Instead, we hold our breath when we go underwater.



← **Show image 7A-4: Tadpole metamorphosis**

After some time, the tadpole begins its transformation into a frog. When a living thing undergoes a huge change in shape, this process is called **metamorphosis** (met-uh-MOR-fuh-sis).⁶ Tadpoles change quite dramatically from fish-like creatures with gills, into four-legged land creatures with **lungs**.⁷ Let's find out more about this remarkable transformation.

After the appearance of the head and the tail, the tadpole grows its back legs. Gradually, lungs develop inside its body, and its gills begin to disappear inside its body. Because it has lungs, the tadpole can now breathe air. Next, front legs begin to grow. As a tadpole's legs grow, its tail gets smaller. The tadpole uses its tail and its legs to swim through the water. It also begins to use its legs to climb onto plants in the water.

6 You will hear a great deal about this word in the next lesson, "The Life Cycle of a Butterfly."

7 Frogs can breathe air because they have lungs, just like people. Lungs are the body parts that we use to breathe air.

8 That's roughly the size of your thumb.

Gradually, the tadpole's legs grow longer, and its tail disappears completely. At this stage, the tadpole is a young frog that can leave its watery home and use its lungs to breathe. For many types of frogs, all of this has happened in about twelve weeks. At this stage of its development, the young frog is about an inch long.⁸ Very young frogs are often called froglets.

Young frogs leave the pond to find other tasty treats to eat on land. They do not go too far away from their watery home, though. On land they search for small insects, worms, and slugs. They catch their food with their long, sticky tongues. They have to be very careful though, as lots of animals, such as snakes, lizards, and birds, eat young frogs.



← **Show image 7A-5: Frog skin**

Do you know what you call an animal that can live in water and on land? An animal that can live in water and on land is called an **amphibian**. Frogs are amphibians.

9 or somewhat wet

Although frogs spend a lot of time on land, they stay fairly close to water. Frogs need to keep their skin damp.⁹ Instead of drinking water, they absorb it through their skin. Frogs breathe through their skin when they are in water, but they breathe through their lungs when they are on land. They also seek out water when they want to cool down. If water is not nearby, they sit in the shade. They sit in the sun when they want to warm up.¹⁰ In the winter, many frogs hibernate. Often they **burrow**, or dig a hole in mud at the bottom of ponds. If they can't find a pond, they seek out a damp place, such as a pile of logs, in which to spend the winter.

10 How do you heat up and cool down?



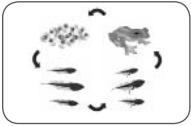
← **Show image 7A-6: Frog camouflage**

The young frog has to survive until it is two or three years old to become a parent. Frogs have various characteristics that help them survive.¹¹ Their skin is often the color of their natural habitat. This helps them to blend into the background and avoid hungry predators. This is a form of camouflage. Frogs can hop quickly out of reach. They are also excellent swimmers. They can jump

11 A technique is a way of doing something using special knowledge or skill.

into the nearest pond or river to avoid danger. Some frogs have poisonous skin to protect them from predators. All frogs have large, bulging eyes. This helps them to more easily find their own food and avoid becoming dinner for some other creature.

When a frog is between two and three years old, it will return to the pond where it was born. At this stage, the frog is now considered an adult. In spring, male frogs croak loudly to let the females know that they are ready to mate. As with chickens, the eggs must be fertilized by a male frog or else they will not develop into baby frogs.



◀ **Show image 7A-7: Frog Life Cycle**

And so the life cycle begins all over again. Each spring, a jelly-like substance appears in ponds and rivers. It is frogspawn, or hundreds of small eggs containing tiny embryos. In time, many will hatch into tadpoles. And a little while later, these tadpoles will turn into frogs that will live for seven years or more. It is amazing that frogs change their appearance so dramatically throughout their life cycle, from egg to tadpole to adult. Next, we will learn about the incredible transformation in another creature's life cycle. Stay tuned!

Discussing the Read-Aloud

15 minutes

Comprehension Questions

10 minutes

1. *Literal* What is the main topic of the read-aloud? (The main topic of the read-aloud is the life cycle of a frog.)
2. *Literal* What is the first stage of a frog's life cycle? (The first stage of a frog's life cycle is the egg.)
3. *Literal* What hatches from the egg? (A tadpole hatches from the egg.)
4. *Inferential* How do tadpoles breathe underwater? (Tadpoles, like fish, have gills so that they can breathe underwater.)
5. *Inferential* How do tadpoles prepare for the cold of winter? (Tadpoles burrow under the mud at the bottom of the pond and hibernate.)

6. *Literal* When is a tadpole finally a young frog? (A tadpole is a young frog when its tail disappears completely and it breathes on land with lungs.)
7. *Literal* What is it called when a living thing undergoes a huge change in shape and appearance, like the frog does from tadpole to adult frog—germination or metamorphosis? (It is called metamorphosis.)
8. *Literal* In which season do adult female frogs lay their eggs so that the life cycle can begin again? (Adult female frogs lay their eggs in the spring.)
9. *Literal* What are the stages of the frog's life cycle? (The three stages of the frog's life cycle are egg, tadpole, froglet, and adult frog.)

[Please continue to model the *Question? Pair Share* process for students, as necessary, and scaffold students in their use of the process.]

10. *Evaluative What? Pair Share:* Asking questions after a read-aloud is one way to see how much everyone has learned. Think of a question you can ask your neighbor about the read-aloud that starts with the word *what*. For example, you could ask, "What did you learn about in today's read-aloud?" Turn to your neighbor and ask your *what* question. Listen to your neighbor's response. Then your neighbor will ask a new *what* question, and you will get a chance to respond. I will call on several of you to share your questions with the class.
11. After hearing today's read-aloud and questions and answers, do you have any remaining questions? [If time permits, you may wish to allow for individual, group, or class research of the text and/or other resources to answer these questions.]

Word Work: Transformation

5 minutes

1. In the read-aloud you heard, “After some time, the tadpole begins its *transformation* into a frog.”
2. Say the word *transformation* with me.
3. A transformation is a complete and total change into something different.
4. The children were amazed to see the transformation of a tadpole into a frog.
5. What other animals do you think go through a transformation in their life cycle? Use the word *transformation* when you tell about the change. [Ask two or three students. If necessary, guide and/or rephrase the students’ responses: “A _____ goes through a transformation.”]
6. What’s the word we’ve been talking about?

Use a *Word to World* activity for follow-up. Directions: [Show short video clips of amphibian metamorphosis.] Tell your partner about the transformation that took place. What happened? What changed?



Complete Remainder of the Lesson Later in the Day



The Life Cycle of a Frog

7_B

Note: Extensions may have activity options that exceed the time allocated for this part of the lesson. To remain within the time periods allocated for this portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

Extensions

20 minutes

10 Sequencing the Life Cycle of a Frog (Instructional Masters 7B-1 and 7B-2)

15 minutes

- Show students Image Cards 13–16, and have them explain and sequence the frog’s life cycle. You may wish to show students Cycles Poster 5 (Life Cycle of a Frog) and have them once again identify the four stages of the frog’s life cycle. (egg, tadpole, young frog, adult frog)
- Give students Instructional Masters 7B-1 and 7B-2. Tell them that they will create Response Card 6; it will show the life cycle of a frog. [**Note:** This Response Card should be held and viewed using landscape orientation.]
 - First, have students cut out the images of the stages of the life cycle of a frog on Instructional Master 7B-1.
 - Next, have them put the images in the correct order of the life cycle of a frog.
 - Then, students should glue or tape the images in the correct blanks on Instructional Master 7B-2.
 - Finally, have students describe the life cycle of a frog to their partner or home-language peers.

Writing an Explanatory/Informational Paragraph: Life Cycle of a Frog (Instructional Master 7B-3)

20+ minutes

- Show students Cycles Poster 5 (Life Cycle of a Frog), and have them identify each stage of the life cycle of the frog.
- Tell students that they are going to write a paragraph to explain the stages of the life cycle of a frog. Emphasize that the life cycle of a frog goes from “egg to egg.”
- Tell students that they are going to write a paragraph explaining what they learned about the life cycle of a frog. This type of paragraph is called an *informational paragraph*. Ask students why this kind of paragraph is called an *informational paragraph*.
- Refer to the paragraph planning chart you have created. Point out each part of the planning chart. Model this planning step of the writing process on the planning chart. [You may also wish to write sentence starters or complete sentences that students have suggested on the chart for students.]
 - **Introduction**—This sentence tells the reader what the paragraph is about.
Suggestions: *There are four stages in the life cycle of a frog.*
The life cycle of a frog is from egg to egg.
Today I learned about the life cycle of a frog.
 - **First**—Tell about the first stage in the life cycle.
Suggestions: *First, eggs are laid in spring.*
First, adult frogs lay eggs in the pond.
 - **Next**—Tell about the second stage in the life cycle.
Suggestions: *Next, tadpoles hatch.*
Next, tadpoles with long tails hatch in the spring.
 - **Then**—Tell about the third stage in the life cycle.
Suggestions: *Then, tadpoles grow legs and lungs.*
Then, tadpoles go through a big change and become a young frog.
 - **Finally**—Tell about the fourth stage in the life cycle.
Suggestions: *Finally, young frogs become adult frogs.*
 - **Conclusion**—This sentence finishes and wraps up the paragraph.

Suggestions: *The adult frogs lay eggs and the cycle starts over again.*

These are the four stages of the life cycle of a frog.

- After modeling the planning step, have students write their sentences on Instructional Master 7B-3. Remind students to use capital letters at the beginning of their sentences and the correct punctuation at the end.
- Allow students to share their paragraphs with their partner or with home-language peers.
- If time allows, you may wish to have students complete the editing step of the writing process.



The Life Cycle of a Butterfly

8

✓ Lesson Objectives

Core Content Objectives

Students will:

- ✓ Explain that a cycle is a sequence of events that repeats itself again and again
- ✓ Describe the seasonal cycle: spring, summer, autumn, winter
- ✓ Explain effects of seasonal changes on plants and animals
- ✓ Define the term *life cycle*
- ✓ Identify the stages of the life cycle of a butterfly (egg to egg)
- ✓ Explain metamorphosis

Language Arts Objectives

The following language arts objectives are addressed in this lesson. Objectives aligning with the Common Core State Standards are noted with the corresponding standard in parentheses. Refer to the Alignment Chart in the Introduction for additional standards addressed in all lessons in this domain.

Students will:

- ✓ Identify the main topic of “The Life Cycle of a Butterfly” (RI.2.2)
- ✓ Compare and contrast the life cycle of a chicken to the life cycle of a frog (RI.2.9)
- ✓ Identify new meanings for the word *round* and apply them accurately (L.2.5a)
- ✓ Make and describe a personal connection to how outgrowing one’s clothes resembles a caterpillar molting its skin.
- ✓ Sequence four to six pictures illustrating the life cycle of a butterfly

Core Vocabulary

larva, n. A baby insect before it changes into an adult insect

Example: A larva goes through many stages of growth before becoming an adult insect.

Variation(s): larvae

molt, v. To shed an outer layer

Example: When snakes molt, they shed all their scales or skin at once.

Variation(s): molts, molted, molting

transparent, adj. Clear; able to see through

Example: Judy planted her seeds in a large, transparent, plastic cup so she could watch the roots develop beneath the soil.

Variation(s): none

Vocabulary Chart for The Life Cycle of a Butterfly

Core Vocabulary words are in **bold**.


Multiple Meaning Word Activity word is underlined.

Vocabulary Instructional Activity words have an asterisk (*).

Suggested words to pre-teach are in *italics*.

Type of Words	Tier 3 Domain-Specific Words	Tier 2 General Academic Words	Tier 1 Everyday-Speech Words
Understanding	chrysalis/pupa creature larva <i>metamorphosis</i> molt	appreciate complete delicate extraordinary outgrow repeatedly reveal* transforms transparent*	body butterfly caterpillar eat egg female ready
Multiple Meaning	hatch fertilize pumped shed	change cycle inch <u>round</u> shape stage	garden leaves park place skin
Phrases	find a mate Monarch butterfly outer skin		choose carefully
Cognates	crisálida/pupa criatura larva <i>metamorphosis</i>	apreciar completer delicado(a) extraordinario(a) repetidamente reveler* transformar transparente*	jardín parque

Note: Introducing the Read-Aloud and Extensions may have activity options that exceed the time allocated for that part of the lesson. To remain within the time periods allocated for each portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

Exercise	Materials	Details
Introducing the Read-Aloud (10 minutes)		
What Have We Already Learned?	Cycles Posters 2 and 3; Cycles Poster 4 and 5	Emphasize that the life cycle of a plant and tree is from seed to seed. Emphasize that the life cycle of a chicken and frog is from egg to egg.
	Image Cards 10–16; Response Cards 5 and 6	You may wish to create a Venn diagram to compare and contrast the life cycles of a chicken and frog.
Vocabulary Preview: Metamorphosis	Image 8A-13; additional images of butterfly metamorphosis	
Purpose for Listening		
Presenting the Read-Aloud (15 minutes)		
The Life Cycle of a Butterfly	U.S. map; ruler	
		Note: You may wish to conclude the read-aloud with a short video clip that shows the life cycle of a butterfly.
Discussing the Read-Aloud (15 minutes)		
Comprehension Questions		
Word Work: Transparent		
 Complete Remainder of the Lesson Later in the Day		
Extensions (20 minutes)		
Multiple Meaning Word Activity: Round	Poster 4M (Round)	
Syntactic Awareness Activity: Compound Words Review	words written on index cards; samples of food-related compound words	
Vocabulary Instructional Activity: Reveal		

Exercise	Materials	Details
Sequencing the Life Cycle of a Butterfly	Image Cards 17–20; Cycles Poster 6 (Life Cycle of a Butterfly); Instructional Masters 8B-1 and 8B-2, scissors, glue	
Writing an Explanatory/ Informational Paragraph: Life Cycle of a Butterfly	Cycles Poster 6 (Life Cycle of a Butterfly); Instructional Master 7B-3; chart paper, chalkboard, or whiteboard	

Advance Preparation

Make copies of Instructional Masters 8B-1 and 8B-2 for each student. Students will create their own Response Card for the life cycle of a butterfly.

Bring in images of butterfly metamorphosis.

Find short, age-appropriate video clips of the life cycle of a butterfly to reinforce read-aloud content.

For Syntactic Awareness Activity, write the two parts of the compound words on separate index cards. Give each student one part of a compound word, and tape the other part of the compound word on the board. Students will try to match their word with a word on the board to create a compound word. (See reference chart in the activity for food-related compound word suggestions. Be sure that there is a match on the board for each part of a compound word given to students.) You may also wish to find samples of food-related compound words. **Note:** Be sure to check with your school's policy regarding food distribution and allergies.

Prepare a paragraph planning chart on a large piece of chart paper, chalkboard, or whiteboard, using Instructional Master 7B-3 as a guide. Make a copy of Instructional Master 7B-3 for each student. Students will write their explanatory/informational paragraph about the life cycle of butterfly on this worksheet.

Note to Teacher

Students will write an explanatory/informational paragraph for the life cycle of a butterfly. It is recommended that all students participate in this activity. Scaffold and modify the instructions to this activity as necessary. You may wish to spend more time on this activity or work with small groups of students at separate times.



The Life Cycle of a Butterfly

8A

Note: Introducing the Read-Aloud may have activity options which exceed the time allocated for this part of the lesson. To remain within the time periods allocated for this portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

Introducing the Read-Aloud

10 minutes

What Have We Already Learned?

10 minutes

Review with students that a cycle is a sequence of events that repeats itself again and again. A life cycle includes all the stages a living thing goes through from birth to adult. Discuss with students how the seasonal cycle affects the life cycles of living things: most new life occurs in the spring, when there is more sunlight and temperatures are warmer.

Remind students that when a living thing becomes an adult, it is then able to reproduce, or make more of its own kind, to begin the life cycle again. In the case of plants and trees, remind students that we can describe their life cycles as going from “seed to seed.” Remind students that as they have discovered with chickens and frogs, animals also journey through stages from egg to adult called a life cycle.

Have students use Image Cards 10–16 to help them compare and contrast the life cycle of a chicken and a frog. How do the life cycles of chickens and frogs begin?

Vocabulary Preview

5 minutes

Metamorphosis (met-uh-MOR-fuh-sis)

◀ Show image 8A-13: Butterfly Life Cycle

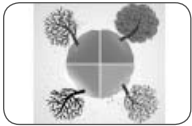
1. In today’s read-aloud we will learn about a life cycle of another animal that also goes through a stage called *metamorphosis*.



2. Say *metamorphosis* with me three times.
3. Metamorphosis is the process by which some young animals completely change the way they look as they become adults.
4. Look at the image, can you guess which animal also goes through metamorphosis?
After the caterpillar goes through metamorphosis to become a butterfly, it looks completely different.
5. [Show images of butterfly metamorphosis.] Tell your partner about what changed in this picture. Does the adult insect look anything like the young insect?

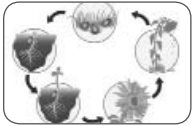
Purpose for Listening

Explain to students that they are going to continue learning about another life cycle—the life cycle of a butterfly. Tell students to listen for the main topic in today’s read-aloud: the changes that occur in the butterfly’s life cycle from egg to adult butterfly. Tell them to listen carefully for the word *metamorphosis* and its role in the life cycle of this animal.

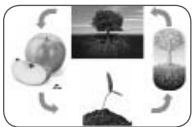


The Life Cycle of a Butterfly

← Show image 8A-1: Seasonal Cycle



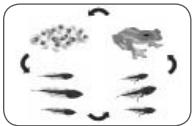
← Show image 8A-2: Plant Life Cycle



← Show image 8A-3: Tree Life Cycle



← Show image 8A-4: Chicken Life Cycle



← Show image 8A-5: Frog Life Cycle

1 [Use images 8A-1 through 8A-5 to help students review these cycles.]

2 At what time of the year do we see butterflies? (We usually see butterflies during spring and summer. If it is warm enough we might see them in early fall too.)



← Show image 8A-6: Butterflies

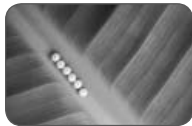
3 [Use a ruler to show students these lengths.]

You have already learned about five cycles!¹ You have learned about the seasonal cycle, the life cycle of a flowering plant, the life cycle of a tree, the life cycle of a chicken, and the life cycle of a frog. Today you will learn about the life cycle of a butterfly. Similar to the life cycle of a frog, a butterfly's life cycle also includes a stage called metamorphosis. Metamorphosis is a process in which a living thing changes or transforms from one shape into another. This means that it literally changes its entire appearance. Let's hear more about the extraordinary life cycle of those beautiful creatures called butterflies.²

Did you know that there are about 25,000 different kinds of butterflies in the world? Butterflies vary in size from about one-eighth of an inch, to almost twelve inches in size.³ The largest butterfly in the world is the Queen Alexandra Birdwing. Its wingspan is twelve inches wide! It lives in the rainforests of Papua New Guinea. The smallest butterfly is the Western Pygmy Blue from Africa.

4 85°F is the temperature on a warm, summer day.

5 55°F is the temperature on a chilly day.



← **Show image 8A-7: Butterfly eggs**

6 Here, the word *round* refers to the shape of the eggs. The word *round* also can mean to go or pass around something.

7 [Show students something that is cylinder-shaped in your classroom for reference.]



← **Show image 8A-8: Butterfly larva**

8 Let's try to move like caterpillars!

9 What happens when you outgrow your clothes?

Incredibly, butterflies can only fly when their bodies are warm enough. The butterfly's body temperature must be 85°F for them to take to the air.⁴ When they do, the fastest butterflies can fly at 12 mph. They cannot move at all if their body temperature drops below 55°F.⁵ Well, now that you know some interesting facts about butterflies, it's time to find out about their life cycle.

A butterfly begins its life as an egg that has been produced by its mother. Butterfly eggs can be round or oval.⁶ There are even some that are cylindrical in shape.⁷ The shape of the egg often depends on the kind of butterfly that laid the egg.

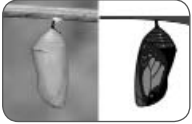
Female butterflies lay their eggs on the leaves of plants. They do this so that when their young hatch, there is food right there for them to eat. They choose these leaves carefully, selecting only the leaves that their young will eat. Depending on the kind of butterfly, it can take from six days to twenty days for the eggs to hatch.

Can you guess what hatches out of a butterfly egg? Well, it isn't a butterfly. It is actually a tiny caterpillar, also called a **larva**. A caterpillar is a small creature that moves by squeezing its muscles. It squeezes its muscles starting at the back end of its body and moving up to its head. This movement pushes the caterpillar forward.⁸

A caterpillar also uses its muscles to eat. The caterpillar's job is to eat as much as it can. A caterpillar eats the egg that sheltered it. Then it begins to eat the leaf on which it was born. The tiny caterpillar keeps on eating, devouring all the leaves around it. Caterpillars don't sleep, so they eat during the day and at nighttime, too. They grow very quickly.

Because caterpillars grow so quickly, they outgrow their skin. This means that because their skin does not grow with them the way yours does, they **molt**, or shed, their outer skin to reveal new skin underneath. They do this repeatedly until they are fully grown. Some caterpillars even eat their own old skin!⁹

A caterpillar is usually fully grown somewhere between nine and twenty days. At this stage, the caterpillar will leave its food supply and go in search of a safe, leafy place to enter into the next stage of its life cycle. Once in this safe place, it attaches itself to a twig or small branch by making a silk pad on the bottom of the branch or twig. The caterpillar then hooks itself onto the silk pad.



◀ **Show image 8A-9: Pupa in chrysalis**

In the next stage, the caterpillar forms a protective outer casing called a pupa, or chrysalis. The formation of the chrysalis is the final stage of molting, or shedding outer skin. When it molts for the final time, the new skin becomes the outer shell of the chrysalis.

Inside the chrysalis something incredible happens. The caterpillar transforms from one thing into another in the process called metamorphosis.



◀ **Show image 8A-10: Newly hatched butterfly**

Think about what a caterpillar looks like when it is fully grown, just before metamorphosis. It is small and round. When it emerges from the chrysalis, it is no longer a caterpillar but a delicate, beautifully colored butterfly with wings. The caterpillar's body has completely changed. (For some butterflies it is sometimes possible to tell when the butterfly is fully transformed and ready to emerge because its chrysalis becomes **transparent**, or see-through.) The butterfly does not look anything like the small, round-bodied creature it used to be. Instead of mouthparts that chew, the butterfly has a straw-like tube that can suck nectar from sweet-tasting flowers. It has antennae. This metamorphosis takes between ten to fourteen days to complete.

At first, the butterfly's wings are very delicate. They are quite soft and are folded up, not yet ready to carry the butterfly up into the air. It will take several hours before the butterfly is ready to take to the sky. During this time, a fluid is being pumped all around the butterfly's body, especially into the wings. When the butterfly is ready to fly, it is also ready to find a mate.



← **Show image 8A-11: Butterfly body parts**

Butterflies use their eyes to find a mate. Male butterflies send out special scents to attract female butterflies. Male butterflies fertilize the eggs of female butterflies. The life cycle begins all over again as female butterflies search for the right places to lay their eggs.

Amazingly, female butterflies use their feet to find the best place to lay their eggs. The butterfly “tastes” various leaves using her feet to find just the right home for her young. She knows that when her eggs hatch, they will need an instant food supply.



← **Show image 8A-12: Migration**

Did you know that butterflies do not live for a very long time? Many butterflies live for just about one month. There are even some that live for just a matter of days. However, there are a few, such as the Monarch butterfly, that can live for almost a year and in the fall migrate thousands of miles.¹⁰

10 What does the word *migrate* mean again?



← **Show image 8A-13: Butterfly Life Cycle**

During their lifetime, butterflies help to pollinate our flowering plants. Because they are cold-blooded and like only warm weather, we only see them in the late spring and summer. But when we do, they are a beautiful sight to see in our gardens and parks. Perhaps now that you know all about the life cycle of a butterfly, when you next see one, you will appreciate them even more.

Discussing the Read-Aloud

15 minutes

Comprehension Questions

10 minutes

1. *Literal* What is the main topic of the read-aloud? (The main topic of the read-aloud is the life cycle of a butterfly.)
2. *Literal* How does a butterfly begin its life? (A butterfly begins its life as an egg.)
3. *Literal* What hatches out of the egg? (A caterpillar or larva hatches out of the egg.)

4. *Literal* Caterpillars grow so quickly that they outgrow their skin. What does a caterpillar do with the skin it outgrows? (A caterpillar will molt or shed the skin it outgrows.)
5. *Literal* What is the next stage called when the caterpillar forms a protective case? (When a caterpillar forms a protective case, this is called the chrysalis or pupa stage.)
6. *Literal* What comes out of the chrysalis or pupa? (An adult butterfly comes out of the chrysalis or pupa.)
7. *Evaluative* [You may wish to have students refer to Cycles Poster 6 as they answer the following question.] What are the four stages in the life cycle of a butterfly? (The four stages in the life cycle of a butterfly are egg, larva/caterpillar, chrysalis/pupa, and adult).
8. *Evaluative* After metamorphosis, does the adult animal look like it did when it was younger? (After metamorphosis, the adult does not look like it did when it was younger.)
9. *Inferential* Why do some butterflies migrate? (For those butterflies that live longer, they cannot stay in cold, wet conditions. When temperatures fall below 55°F, they cannot move. If it is very cold, they will die, and so in order to survive, they must migrate.)

[Please continue to model the *Think Pair Share* process for students, as necessary, and scaffold students in their use of the process.]

I am going to ask a question. I will give you a minute to think about the question, and then I will ask you to turn to your neighbor and discuss the question. Finally, I will call on several of you to share what you discussed with your partner.

10. *Evaluative Think Pair Share:* The life cycle of a flowering plant could be described as going from seed to seed, and the life cycles of a frog and a chicken, from egg to egg. How would you describe the life cycle of a butterfly? (Using that example, the life cycle of a butterfly could be described as going from egg to egg. When the adult butterfly lays an egg, the life cycle begins. The larva/caterpillar hatches from the egg; the larva/caterpillar molts several times as it grows; the chrysalis/pupa forms; and finally the chrysalis/pupa splits open so the adult butterfly can emerge. The adult butterfly is then able to reproduce, and the female lays eggs on a leaf to begin the life cycle again.)

11. After hearing today's read-aloud and questions and answers, do you have any remaining questions? [If time permits, you may wish to allow for individual, group, or class research of the text and/or other resources to answer these questions.]

Word Work: Transparent

5 minutes

1. In the read-aloud you heard, "For some butterflies it is sometimes possible to tell when the butterfly is fully transformed and ready to emerge because its chrysalis becomes *transparent*, or see-through."
2. Say the word *transparent* with me.
3. *Transparent* means see-through.
4. Mike's water bottle is transparent, so he is able to see how much water he has left.
5. What are things you have seen that are transparent? Try to use the word *transparent* when you tell about it. [Ask two or three students. If necessary, guide and/or rephrase the students' responses: "_____ is transparent."]
6. What's the word we've been talking about?

Use a *Making Choices* activity for follow-up. Directions: I am going to name several things. If what I name is transparent, say, "_____ is transparent." If what I name is not transparent, say, "_____ is not transparent." Remember to answer in complete sentences.

1. a window (A window is transparent.)
2. a brown paper bag (A brown paper bag is not transparent.)
3. a classroom pet tank (A classroom pet tank is transparent.)
4. a book (A book is not transparent.)
5. the lenses in a pair of glasses (The lenses in a pair of glasses are transparent.)
6. clear plastic wrap (Clear plastic wrap is transparent.)



Complete Remainder of the Lesson Later in the Day



The Life Cycle of a Butterfly

8_B

Note: Extensions may have activity options that exceed the time allocated for this part of the lesson. To remain within the time periods allocated for this portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

Extensions

20 minutes

↔ Multiple Meaning Word Activity

5 minutes

Context Clues: Round

Note: You may choose to have students hold up one, two, or three fingers to indicate which image shows the meaning being described, or have a student walk up to the poster and point to the image being described.

1. [Show Poster 4M (Round).] In the read-aloud you heard, “Butterfly eggs can be *round* or oval.” Here *round* means shaped like a circle or ball. Which picture shows round shapes?
2. *Round* can also mean something else. *Round* means to go or pass around something. Which picture shows somebody rounding the base?
3. *Round* means many of the same event or things. Which picture shows people giving a round of applause?
4. I’m going to say some sentences using the word *round*. Hold up one finger if my sentence uses *round* in picture one; hold up two fingers if my sentence uses *round* in picture two; and hold up three fingers if my sentence uses *round* in picture three.
 1. The dogs round the corner of the yard when they hear their owner coming home.
 2. Baseballs are round.

3. We will watch round three of the basketball game.
4. This is our second round of reading this story.
5. Can you think of something that has a round shape?

↔ Syntactic Awareness Activity

10 minutes

Compound Words Review

Teacher Reference Chart			
Compound Words by Topic			
People		Animals	
any	body	black	bird
class	mate	bob	cat
cow	boy/girl	butter	fly
fire	fighter	dragon	fly
fisher	man	earth	worm
goal	keeper	grass	hopper
mail	man	jelly	fish
police	man/woman	lady	bug
story	teller	rattle	snake
super	man/woman	silk	worm
Food		Clothing	
apple	sauce	bath	robe
corn	bread	back	pack
cheese	cake	brief	case
dough	nut	ear	ring
egg	plant	eye	glasses
meat	ball	hand	bag
pan	cake	neck	tie
oat	meal	over	alls
pop	corn	shoe	lace
cup	cake	under	wear

Note: The purpose of these syntactic activities is to help students understand the direct connection between grammatical structures and the meaning of text. These syntactic activities should be used in conjunction with the complex text presented in the read-alouds. There may be variations in the sentences created by your class. Allow for these variations, and restate students' sentences so that they are grammatical. If necessary, have students repeat the sentence after you.

Directions: Today we are going to practice making and using compound words.

1. What are compound words? (two words added together to form a new word)
How can you figure out the meaning of a compound word? (If you know the meaning of the two words, you will most likely be able to tell the meaning of the new compound word.)
2. In today's read-aloud we heard several compound words. Listen to my sentences and raise your hand if you hear a compound word. Tell me which two words make a compound word. Then, try to guess the meaning of the compound word based on what you know about the two words that make up the compound word.
 - A *butterfly* begins its life as an egg. (butter+fly = an insect with colorful wings that can fly)
 - The largest butterfly's *wingspan* is twelve inches wide! (wing+span = the length or span of an animal's wing)
 - During their *lifetime*, butterflies help to pollinate our flowering plants. (life+time = the length of time someone or something is alive)
3. [Give each student an index card with part of a compound word written on it.] I have given you one half of a compound word. Try to find the match for your word on the board. Make up a sentence using your compound word.
4. [Invite students to come up to the board and put their index card next to a word on the board to create a compound word.] What compound word did you make? What does your compound word mean? Can you use it in a sentence?

[If you have samples of any of the compound words, give them to the class as the word is being presented.]

Extending the Activity

Ask students whether they notice any themes with the compound words (e.g., people, animals, food, and clothing). Have them group the compound words according to theme. Invite students to think of their own compound words for these categories.

↔ Vocabulary Instructional Activity

5 minutes

Word Work: Reveal

1. In the read-aloud you heard, “[Caterpillars] shed their outer skin to *reveal* new skin underneath.”
2. Say the word *reveal* with me three times.
3. To reveal means to show or make known.
4. The eager children waited for the magician to reveal the rabbit hiding in her black hat.
Our teacher will reveal the plans for our field trip on Wednesday.
5. If reveal means to show or make known, what do you think is the antonym, or opposite, of *reveal*? [Accept accurate antonyms.]
6. What’s the word we’ve been talking about?

Use a *Synonyms* and *Antonyms* activity for follow-up. Directions: A synonym is a word that means the same thing as another word. What are some synonyms for the word *reveal*? (Answers may vary, but may include *tell*, *expose*, *inform*, *show*, *announce*, *proclaim*, *give away*, etc.)

Antonyms are words that are the opposite of another word. What are some antonyms, or opposites, of *reveal*? (Answers may vary, but may include *hide*, *conceal*, *deny*, *keep quiet*, *cover*, etc.)

10 Sequencing the Life Cycle of a Butterfly (Instructional Masters 8B-1 and 8B-2)

15 minutes

- Show students Image Cards 17–20, and have them explain and sequence the butterfly’s life cycle. You may wish to show students Cycles Poster 6 (Life Cycle of a Butterfly) and have them once again identify the four stages of the butterfly’s life cycle. (egg, caterpillar, chrysalis/larva, butterfly)
- Give students Instructional Masters 8B-1 and 8B-2. Tell them that they will create Response Card 7; it will show the life cycle of a butterfly. [**Note:** This Response Card should be held and viewed using landscape orientation.]

- First, have students cut out the images of the stages of the life cycle of a butterfly on Instructional Master 8B-1.
- Next, have them put the images in the correct order of the life cycle of a butterfly.
- Then, students should glue or tape the images in the correct blanks on Instructional Master 8B-2.
- Finally, have students describe the life cycle of a butterfly to their partner or home-language peers.

Writing an Explanatory/Informational Paragraph: Life Cycle of a Butterfly (Instructional Master 7B-3) 20+ minutes

- Show students Cycles Poster 6 (Life Cycle of a Butterfly), and have them identify each stage of the life cycle of a butterfly.
- Tell students that they are going to write a paragraph to explain the stages of the life cycle of a butterfly. Emphasize that the life cycle of a butterfly goes from “egg to egg.”
- Tell students that they are going to write a paragraph explaining what they learned about the life cycle of a butterfly. Ask students what they call this type of paragraph. (informational paragraph)
- Refer to the paragraph planning chart you have created. Point out each part of the planning chart. Model this planning step of the writing process on the planning chart. [You may also wish to write sentence starters or complete sentences that students have suggested on the chart for students.]
 - **Introduction**—This sentence tells the reader what the paragraph is about.
 Suggestions: *There are four stages in the life cycle of a butterfly.*
The life cycle of a butterfly is from egg to egg.
Today I learned about the life cycle of a butterfly.
 - **First**—Tell about the first stage in the life cycle.
 Suggestions: *First, the butterfly is an egg.*
First, female butterflies lay their eggs on leaves.
 - **Next**—Tell about the second stage in the life cycle.
 Suggestions: *Next, a caterpillar hatches.*
Next, a caterpillar hatches and grows and molts.

- **Then**—Tell about the third stage in the life cycle.
Suggestions: *Then, the caterpillar forms a pupa.*
- **Finally**—Tell about the fourth stage in the life cycle.
Suggestions: *Finally, a butterfly comes out.*
- **Conclusion**—This sentence finishes and wraps up the paragraph.
Suggestions: *The adult butterfly lays eggs and the cycle starts over again.*
These are the four stages of the life cycle of a butterfly.
- After modeling the planning step, have students write their sentences on Instructional Master 7B-3. Remind students to use capital letters at the beginning of their sentences and the correct punctuation at the end.
- Allow students to share their paragraphs with their partner or with home-language peers.
- If time allows, you may wish to have students complete the editing step of the writing process.



The Water Cycle

9

☑ Lesson Objectives

Core Content Objectives

Students will:

- ✓ Explain that a cycle is a sequence of events that repeats itself again and again
- ✓ Define the term *water cycle*
- ✓ Explain that there is a limited amount of water on Earth
- ✓ Describe evaporation and condensation
- ✓ Identify forms and importance of precipitation
- ✓ Describe the formation of clouds
- ✓ Identify three types of clouds: cirrus, cumulus, and stratus

Language Arts Objectives

The following language arts objectives are addressed in this lesson. Objectives aligning with the Common Core State Standards are noted with the corresponding standard in parentheses. Refer to the Alignment Chart for additional standards addressed in all lessons in this domain.

Students will:

- ✓ Identify the main topic of the “The Water Cycle” (RI.2.2)
- ✓ Summarize in writing observations of the indoor water cycle (SL.2.2)
- ✓ Add drawings to a summary of observations of the indoor water cycle (SL.2.5)
- ✓ Prior to listening to “The Water Cycle,” orally identify information they know and have learned about the life cycles of plants, trees, chickens, frogs, and butterflies

Core Vocabulary

evaporation, n. The process by which a liquid changes into a gas

Example: We had to add water to our swimming pool because of the evaporation of some of the water.

Variation(s): none

condensation, n. The process by which a gas changes into a liquid

Example: It is difficult to see out of the car window when there is condensation.

Variation(s): none

humidity, n. The amount of moisture or water vapor in the air

Example: The humidity in the air caused Sam to sweat a lot during the summer.

Variation(s): none


precipitation, n. Water that falls from the sky as rain, snow, sleet, or hail

Example: We are planning to have a picnic because there is no chance of precipitation today.

Variation(s): none

Vocabulary Chart for The Water Cycle			
<p>Core Vocabulary words are in bold.</p> <p>Multiple Meaning Word Activity word is <u>underlined</u>.</p> <p>Vocabulary Instructional Activity words have an asterisk (*).</p> <p>Suggested words to pre-teach are in <i>italics</i>.</p>			
Type of Words	Tier 3 Domain-Specific Words	Tier 2 General Academic Words	Tier 1 Everyday-Speech Words
Understanding	condensation crystal evaporation humidity precipitation* sleet	temperature	air ice lake liquid/solid/gas ocean puddle rain river sky snow sun weather wind
Multiple Meaning	atmosphere cirrus/cumulus/ stratus clouds hail stream	change cycle form process state	cloud fall ground
Phrases	three states of matter water cycle water droplet water vapor	source of life	drinking water
Cognates	condensación cristal evaporación humedad precipitación atmósfera cirro/cúmulo	temperatura ciclo formar proceso estado	aire lago líquido/sólido/gas océano río

Note: Introducing the Read-Aloud and Extensions may have activity options which exceed the time allocated for that part of the lesson. To remain within the time periods allocated for each portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

Exercise	Materials	Details
Introducing the Read-Aloud (10 minutes)		
What Have We Already Learned?	Cycles Posters 1–6; Response Cards 2–7	Make up to six small groups. Have each small group review one cycle and explain the cycle to the rest of the class.
What Do We Know?		
Essential Background Information or Terms	water; two differently shaped, clear containers	Be sure that students understand the difference between solid, liquid, and gas.
Vocabulary Preview: Evaporation, Condensation	Image 9A-3	
Purpose for Listening		
Presenting the Read-Aloud (15 minutes)		
The Water Cycle	globe	Use the globe to point out the oceans on Earth.
		Note: You may wish to conclude the read-aloud with a short video clip that shows the water cycle.
Discussing the Read-Aloud (15 minutes)		
Comprehension Questions		
Word Work: Precipitation		
 Complete Remainder of the Lesson Later in the Day		
Extensions (20 minutes)		
Sequencing the Water Cycle	Cycles Poster 7 (Water Cycle); Instructional Master 9B-1 and 9B-2, scissors, glue	
A Water Cycle Song	Cycles Poster 7; instrumental recording of the song, “She’ll Be Comin’ ’Round the Mountain”	
Water Cycle Observations	clear plastic cup; clear plastic bag; marker; tape, water	Note: You may wish to do this during the Domain Review or Culminating Activities.

Exercise	Materials	Details
Domain-Related Trade Book	trade book about the water cycle	

Advance Preparation

Make copies of Instructional Masters 9B-1 and 9B-2 for each student. Students will create their own Response Card for the water cycle.

Find short, age-appropriate video clips of the water cycle to reinforce read-aloud content.

Find a trade book about the water cycle to read aloud to the class.



The Water Cycle

9_A

Note: Introducing the Read-Aloud may have activity options which exceed the time allocated for this part of the lesson. To remain within the time periods allocated for this portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

Introducing the Read-Aloud

10 minutes

What Have We Already Learned?

10 minutes

Ask students to explain what a cycle is. Next, ask them to describe the cycles they have learned about: seasonal, plant, tree, chicken, frog, and butterfly. You may wish to show students Cycles Posters 1–6 as a review of these cycles.

What Do We Know?

5 minutes

Ask students what comes to mind when they hear the word *water*. Have students share what they know about water. You may prompt discussion with the following questions:

- Where can you find water?
- Is there more water or land on the surface of the earth?
- How do you use water?
- What other living things need water besides people?
- Why did ancient civilizations develop around water?
- Why is it important to conserve water?
- When is water a liquid, a solid, or a gas?

Essential Background Information or Terms

10 minutes

Explain to students that all things on Earth can be described as being solid, liquid, or gas. Explain that if something is a solid, it keeps its shape. Tell students that if you pick up a book and hand

it to someone else, it will still keep its same shape. It keeps its shape because the book is a solid.

Explain that if something is a liquid, it can be poured. It doesn't keep its shape, but takes on the shape of its container. Show students two differently shaped, clear containers. Have students watch as you pour water from one container to another. Tell students that water is a liquid because it takes the shape of whatever container it is in.

Explain that if something is a gas, it is often hard to see. Explain that the air around us is a gas. It is not solid because it does not keep its shape, and it is not liquid because it cannot be poured.

Explain that heat can change things from solids to liquids to gases. Tell students that an ice cube is the solid form of water. When heated, an ice cube can melt and become water. When we boil water, it heats up and becomes water vapor, which is a gas.

Vocabulary Preview

5 minutes

Evaporation



◀ Show image 9A-3: Evaporation, condensation, precipitation

1. In today's read-aloud we will learn about three stages in the water cycle. One of the stages is called *evaporation*.
2. Say *evaporation* with me three times.
3. Evaporation happens when liquid, such as water, changes into a gas, such as water vapor, when the temperature becomes warmer.
4. A puddle on the ground disappears and becomes water vapor because of evaporation.
5. Which one of these three pictures shows us evaporation? Can you see evaporation happening in this picture? What does evaporation do? (Evaporation changes a liquid into a gas.) [You may wish to tell students that oftentimes evaporation cannot be seen, for example, the disappearance of a puddle after a rainy day.]



Condensation

◀ Show image 9A-3: Evaporation, condensation, precipitation

1. In today's read-aloud we will learn about another stage in the water cycle called *condensation*.
2. Say *condensation* with me three times.
3. Condensation happens when a gas, such as water vapor, changes into a liquid, such as water droplets or clouds in the sky, when the temperature becomes cooler.
4. It is difficult to see out the car window when there is condensation.
Condensation causes clouds to form in the sky.
5. Which one of these pictures shows us condensation? Have you ever seen condensation on a window before? What does condensation make in the sky? (clouds) What does condensation do? (Condensation changes a gas into a liquid.)

Purpose for Listening

Explain that the water on Earth goes through a cycle as well, and that this is called the water cycle. Tell students to listen carefully to learn about the main topic of the read-aloud—the water cycle—and to find out how important the water cycle is to our planet.



The Water Cycle

◀ Show image 9A-1: Water

Every day, all around you, an extraordinary natural cycle is happening. It is called the water cycle. Most of the water that has ever existed on our planet is still here and is being moved from one place to another. It moves from the oceans and land to the sky above us, and it moves from one part of the world to another. It has done this for millions and millions of years. The rain that falls on you has been recycled many, many times over many millions of years.



◀ Show image 9A-2: Water states

Water is the main source of life. More than two-thirds of Earth's surface is covered with water. That's a good thing, because all living things need water to survive. Approximately ninety-seven percent of the water on Earth is in the oceans.¹ The rest is in lakes, rivers, streams, ponds, beneath the ground, or in its frozen state in the form of glaciers and polar ice. There is also water that you cannot see in the air around you, called water vapor. Therefore, water not only moves from place to place, but it can exist in three states of matter. It can be a liquid, a solid, and a gas.² Oceans and rivers contain water in liquid form, glaciers and the ice you put in drinks contain water in frozen, solid form, and the air contains water as a gas called water vapor.

1 That means most of Earth's water is found in the oceans.

2 [Refer back to the review on solids, liquids, and gases in the "Introducing the Read-Aloud" section.]



◀ Show image 9A-3: Evaporation, condensation, precipitation

The water cycle has three main phases: evaporation, condensation, and precipitation. Water changes its form based on the temperature, and whether it is being heated or cooled. In the winter, when it is cold, many people experience days in which snow falls from the sky. The snow covers the land, and icicles hang down from the roofs of houses. But then, as spring arrives and the weather becomes warmer, the snow and ice melt into puddles. The puddles slowly disappear as the warm sunshine causes the water to evaporate. Through the process of

3 This also happens when you boil water.



evaporation, the warmth of the sun changes liquid water into a gas known as water vapor. Water vapor is carried up into the air. The hotter it is, the more quickly evaporation happens.³

Now let's follow that water vapor as it rises up, higher and higher into the sky. As it rises up, it is blown about by the wind, and it moves through the air, or atmosphere. In other words, water vapor may be carried by the wind far away from the place where it was once a puddle.

◀ **Show image 9A-4: Condensation**

Water vapor in the air far below the clouds is called **humidity**. When there is a lot of water in the air, we say it is humid. At different times of the year, there are different amounts of water in the air. Warm air can hold more water vapor than cold air. That is why on a hot summer's day, if there is a lot of moisture in the air, you will often hear people talk about the humidity.

Water vapor high in the atmosphere forms clouds as it becomes water droplets. The wind carries the water vapor higher and higher into the atmosphere where the temperatures are much cooler. As the vapor cools, it changes back from a gas into water droplets, which form clouds.

When water changes from a gas into a liquid, this process is called **condensation**. Because cold air cannot hold as much water vapor as hot air, condensation happens high up in the sky, or atmosphere. Condensation causes clouds to form. In other words, water vapor becomes water droplets.



◀ **Show image 9A-5: Dark clouds**

As the tiny water droplets are blown about by the wind, they crash into each other. They join together to form larger water droplets. As this bumping and crashing of water droplets continues, clouds are formed. Eventually, when water droplets in clouds become too large and too heavy, they fall back down to the ground.⁴ Depending on the temperature high up in the atmosphere, the water droplets either fall as rain, sleet, snow, or hail. When water droplets fall to the ground, regardless of what they look like, this is called **precipitation**.

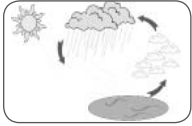
4 The darker the cloud, the more rain or snow will probably fall.



← **Show image 9A-6: Types of precipitation**

So down comes the rain, or snow, or hail, or sleet. It waters the earth and falls into the oceans, lakes, rivers, streams, and ponds. Some of the precipitation seeps into the ground, too. This groundwater nourishes plants. It also provides a source of fresh drinking water. Many people have wells that access the underground water supply.⁵

5 How do you think people get the water that is stored under the ground?



← **Show image 9A-7: Water Cycle**

Once precipitation occurs, the process starts all over again. Water on Earth evaporates and rises up into the atmosphere as water vapor. As it cools or condenses, clouds form once again.



← **Show image 9A-8: Types of clouds**

Clouds are much more than fun shapes in the sky. Without clouds, there would be no precipitation, such as snow, sleet, hail, or rain. Without precipitation, nothing could live or grow on Earth. Clouds also provide a kind of shelter or protection from the sun. Without clouds it would be very, very hot during the day and extremely cold at night. This would make it difficult for living things to survive. Clouds help control the temperature on our planet. Scientists group clouds according to their shape and height in the sky.



← **Show image 9A-9: Cirrus clouds**

Cirrus clouds form at very high altitudes in the atmosphere.⁶ They are wispy, almost feather-like in appearance, and are usually a sign of good weather. These clouds can be up to four miles above the ground. The temperature is very cold that high up in the atmosphere and so cirrus clouds are made largely of ice crystals.

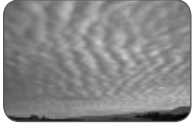
6 The word *cirrus* means “curl of hair” in Latin. Can you see why cirrus clouds have this name?



← **Show image 9A-10: Cumulus clouds**

Cumulus clouds gather in the sky on nice, sunny days.⁷ Cumulus clouds appear lower down in the sky, although they are still about two miles above the ground. Cumulus clouds are round and fluffy-looking. Some people think they look like cotton. They

7 The word *cumulus* means “heap” in Latin. Can you see why cumulus clouds have this name?



8 The word *stratus* means “layer” in Latin. Can you see why stratus clouds have this name?

are a sign that the weather is going to get colder. However, when cumulus clouds get larger and darker, this can mean that there will be a thunderstorm.

← **Show image 9A-11: Stratus clouds**

The appearance of stratus clouds means that you will probably need an umbrella because it is going to rain.⁸ They are usually gray, and they can cover the whole sky and block the sun. Stratus clouds form lower down in the atmosphere.

The temperature affects whether the clouds contain ice crystals or water droplets. The clouds that are high up, in the colder reaches of Earth’s atmosphere, are made up of sparkling ice crystals. The clouds that are lower down, where it is warmer, are made up of tiny water droplets.

The next time you look up at the clouds, think about the amazing water cycle!

Discussing the Read-Aloud

15 minutes

Comprehension Questions

10 minutes

Note: You may wish to show students Cycles Poster 7 (Water Cycle) as a guide for some questions. This poster will be referenced again in the extension.

1. *Literal* What is the main topic of the read-aloud? (The main topic of the read-aloud is the water cycle.)
2. *Literal* Is the earth covered mostly by land or by water? (The earth is covered mostly by water.)
3. *Inferential* What do we call the process when water from oceans, rivers, and puddles changes to a gas and moves into the air—evaporation or precipitation? (When water from oceans, rivers, and puddles changes to gas, we call this process evaporation.)
What causes evaporation? (The heat from the sun causes evaporation.)
Can we *usually* see evaporation or water vapor? (No, we cannot usually see evaporation.)

4. *Literal* What do we call the process when water vapor turns back into a liquid or water droplets because of cooling—precipitation or condensation? (When water vapor turns back into a liquid or water droplets, we call this process condensation.)
5. *Literal* Water can be a solid, a liquid, or a gas. What do we call water when it is a gas? (When water is a gas, it is called water vapor.)
6. *Inferential* Why are the processes of evaporation, condensation, and precipitation considered a cycle? (They are considered a cycle because they happen again and again in the same order.) What is the name of this cycle? (This cycle is called the water cycle.)
7. *Inferential* How do clouds fit into the water cycle? (Clouds are a key part of the water cycle. They form because of condensation; they release precipitation, which rises as a vapor to eventually form more clouds.)
8. *Inferential* When clouds get heavy with water as condensation, what do we call water that then falls from the sky as rain, snow, sleet, or hail? (We call this precipitation.) Which type of precipitation is a liquid? (Rain is a liquid.) Which types of precipitation are solids? (Snow, sleet, and hail are solid forms of precipitation.)
9. *Literal* Where does precipitation go after it falls from the clouds? (After it falls, precipitation goes into the ground or back into oceans, rivers, and streams.)
10. *Literal* Does the earth make new water, or does the same water go through the water cycle again and again? (The same water cycles again and again.)

[Please continue to model the *Think Pair Share* process for students, as necessary, and scaffold students in their use of the process.]

I am going to ask a question. I will give you a minute to think about the question, and then I will ask you to turn to your neighbor and discuss the question. Finally, I will call on several of you to share what you discussed with your partner.

11. *Evaluative Think Pair Share:* Why is precipitation important? (Answers may vary, but should include that precipitation replenishes the earth's water supply.)
12. After hearing today's read-aloud and questions and answers, do you have any remaining questions? [If time permits, you may wish to allow for individual, group, or class research of the text and/or other resources to answer these questions.]

Word Work: Precipitation

5 minutes

1. In the read-aloud you heard, "When water droplets fall to the ground, regardless of what they look like, this is called *precipitation*."
2. Say the word *precipitation* with me.
3. Precipitation is water that falls from the sky in the form of rain, snow, sleet, or hail.
4. The farmer had to water his garden because there had been no precipitation for a month.
5. What is your favorite and/or least favorite kind of precipitation? Be sure to explain why. Try to use the word *precipitation* when you tell about it. [Ask two or three students. If necessary, guide and/or rephrase the students' responses: "My favorite kind of precipitation is . . ."]
6. What's the word we've been talking about?

Use a *Making Choices* activity for follow-up. Directions: I will name two things. You will choose the one that is a type of precipitation. Be sure to begin your response with "_____ is a type of precipitation."

1. clouds or rain (Rain is a type of precipitation.)
2. sleet or water vapor (Sleet is a type of precipitation.)
3. snow or humidity (Snow is a type of precipitation.)
4. an ocean or hail (Hail is a type of precipitation.)



Complete Remainder of the Lesson Later in the Day



The Water Cycle

9_B

Note: Extensions may have activity options that exceed the time allocated for this part of the lesson. To remain within the time periods allocated for this portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

Extensions

20 minutes

10 Sequencing the Water Cycle (Instructional Masters 9B-1 and 9B-2)

15 minutes

- Show students Cycles Poster 7 (Water Cycle), and have them identify the three stages of the water life cycle. (evaporation, condensation, precipitation)
- Give students Instructional Masters 9B-1 and 9B-2. Tell them that they will create Response Card 8; it will show the water cycle.
[**Note:** This Response Card should be held and viewed using landscape orientation.]
- First, have students cut out the images of the stages of the water cycle on Instructional Master 9B-1.
- Next, have them put the images in the correct order of the water cycle.
- Then, students should glue or tape the images in the correct blanks on Instructional Master 9B-2.
- Finally, have students describe the water cycle to their partner or home-language peers.

A Water Cycle Song

10 minutes

Display Cycles Poster 7 to reference in this activity and throughout this domain. Teach students the following song and accompanying movements about the water cycle. The song is sung to the tune of “She’ll Be Comin’ ’Round the Mountain.”

Water travels in a cycle; yes, it does. [Move arm in a circular motion in front of the body.]

Water travels in a cycle; yes, it does. [Move arm in a circular motion in front of the body.]

It goes up as evaporation, [Move arms and hands, palms up, upward.]

Forms clouds as condensation, [With raised arms, form a cloud with the hands.]

Then falls down as precipitation; yes, it does. [Show rain falling with the hands and arms moving downward.]

Water Cycle Observations

(long-term project)

Set up a miniature, indoor water cycle for students to observe. Pour a small amount of water into a small, clear, plastic cup. Tell students that this represents water that is found on the earth in a lake or puddle. Mark the level of the water by using a marker to draw a line on the cup. Carefully place the cup of water in a clear, plastic bag. Seal the bag. If your classroom has a window, tape the bag to the window. If not, tape the bag to a warm wall. Ask the students to predict what will happen.

Observe the bag each day until students are able to see that some of the water has evaporated, condensed on the sides of the bag, and fallen to the bottom of the bag as precipitation. Have students describe what they see using the words *evaporated/evaporation*, *condensation*, and *precipitation*. Ask students to draw and write about their observations.

You may also make and discuss water cycle observations on days when clouds are visible in the sky or when precipitation is falling.

Domain-Related Trade Book

20 minutes

- Refer to the list of recommended trade books in the Introduction at the front of this *Supplemental Guide*, and choose one trade book about the water cycle to read aloud to the class.
- Explain to students that the person who wrote the book is called the author. Tell students the name of the author. Explain to students that the person who makes the pictures for the book is called an illustrator. Tell students the name of the illustrator. Show students where they can find this information on the cover of the book or on the title page.
- As you read, use the same strategies that you have been using when reading the read-aloud selections—pause and ask occasional questions; rapidly clarify critical vocabulary within the context of the read-aloud; etc.
- After you finish reading the trade book aloud, lead students in a discussion as to how the story or information in this book relates to the read-alouds in this domain.



Domain Review

DR

Note to Teacher

You should spend one day reviewing and reinforcing the material in this domain. You may have students do any combination of the activities provided, in either whole group or small group settings.

Core Content Objectives Addressed in This Domain

Students will:

- ✓ Explain that a cycle is a sequence of events that repeats itself again and again
- ✓ Recognize that the rotation of Earth causes daytime and nighttime
- ✓ Explain that it takes twenty-four hours for Earth to rotate once on its axis
- ✓ Recognize that living things have a life cycle
- ✓ Recognize that Earth orbits the sun
- ✓ Explain that it takes one year for Earth to orbit the sun
- ✓ Describe the seasonal cycle: spring, summer, autumn (fall), winter
- ✓ Identify that the tilt of Earth's axis in relation to the sun causes the seasons
- ✓ Explain effects of seasonal changes on plants and animals
- ✓ Describe animal processes in spring, summer, autumn (fall), winter
- ✓ Describe plant processes in spring, summer, autumn (fall), winter
- ✓ Define the term *life cycle*
- ✓ Identify the stages of the life cycle of a flowering plant (seed to seed)

- ✓ Identify the stages of the life cycle of a tree (seed to seed)
- ✓ Demonstrate familiarity with the poem “Bed in Summer”
- ✓ Demonstrate familiarity with the poem “Bee! I’m expecting you!”
- ✓ Identify the stages of the life cycle of a chicken (egg to egg)
- ✓ Identify the stages of the life cycle of a frog (egg to egg)
- ✓ Identify the stages of the life cycle of a butterfly (egg to egg)
- ✓ Explain metamorphosis
- ✓ Define the term *water cycle*
- ✓ Explain that there is a limited amount of water on Earth
- ✓ Describe evaporation and condensation
- ✓ Identify forms and importance of precipitation
- ✓ Describe the formation of clouds
- ✓ Identify three types of clouds: cirrus, cumulus, and stratus

Review Activities

Image Card Review

Materials: Image Cards 1–26

In your hand, hold Image Cards 1–26 fanned out like a deck of cards. Ask each student to pick one card. (If you have more than twenty-six students, you may need to pair up a few students.) Ask students to work together to sort themselves into groups according to the card they have and the cycle to which it belongs. Then have each group explain their particular cycle to the class.

Life Story

Materials: Drawing paper, drawing tools

Have students pretend they are one of the creatures they heard about from the previous read-alouds. Have each student write their creature’s life story, being sure to include the stages of its life cycle.

Life Cycles Review

Materials: Cycles Posters 4–6; Image Cards 10–20; Response Cards 5–7

Use Image Cards 10–20, Cycles Posters 4–6, and Response Cards 5–7 to review with students the life cycle of a chicken, frog, and butterfly. Have students explain and/or sequence the stages of the cycles.

Riddles for Core Content

Ask students riddles such as the following to review core content:

- I am the reason we have seasons. What am I? (Earth's tilt and orbit)
- I am the area on Earth that receives the greatest amount of direct, intense sunlight. What am I? (equator)
- I am the process in which a plant begins to grow and sprout. What am I? (germination)
- I am the process by which some young animals develop and *drastically* change as they become adults. What am I? (metamorphosis)
- I am the larva that hatches from the egg of an adult female frog. What am I? (tadpole)
- I am the process by which a liquid changes into a gas. What am I? (evaporation)
- I am the process by which a gas changes into a liquid. What am I? (condensation)
- I am the water that falls from the sky as rain, snow, sleet, or hail. What am I? (precipitation)
- We are the three main types of clouds. What are we? (cirrus, cumulus, and stratus)

Compare/Contrast Venn Diagram

Materials: Chart paper, chalkboard, or whiteboard

Tell students that there are many things to compare and contrast in the read-alouds they have heard. Remind students that *compare* means to tell how things are similar, and *contrast* means to tell how things are different. Have students choose a topic from the following list to compare/contrast on a Venn diagram. You may do this individually or as a class.

- the seasons (two out of the four seasons)
- the life cycle of a frog and a butterfly
- the three forms of water (two out of the three forms of water)
- evaporation, condensation, and precipitation (two out of the three)
- three types of clouds (two out of the three)

You may wish to extend this activity by using the chart as a prewriting tool and have students write two paragraphs, one describing similarities and the other describing differences.

Writing Prompts

Students may be given an additional writing prompt such as the following:

- Tadpoles and adult frogs breathe in different ways because . . .
- The changing seasons affect our lives because . . .
- The shape of a cloud is important because . . .
- I observe the water cycle when . . .
- The most interesting thing I learned about cycles is . . .



Domain Assessment

DA

This domain assessment evaluates each student's retention of domain and academic vocabulary words and core content targeted in *Cycles in Nature*. The results should guide review and remediation the following day.

There are three parts to this assessment. You may choose to do the parts in more than one sitting if you feel this is more appropriate for your students. Part I (vocabulary assessment) is divided into two sections: the first assesses domain-related vocabulary, and the second assesses academic vocabulary. Parts II and III of the assessment address the core content targeted in *Cycles in Nature*.

Part I (Instructional Master DA-1)

Directions: I am going to say a sentence using a word you have heard in the read-alouds and in this domain. If I use the word correctly in my sentence, circle the smiling face. If I do not use the word correctly in my sentence, circle the frowning face. I will say each sentence two times. Let's do number one together.

1. **Life Cycle:** A life cycle includes the stages of life from birth to adult. (smiling face)
2. **Equator:** The equator is an imaginary line that splits Earth in half. (smiling face)
3. **Hemisphere:** A hemisphere is half of the earth. (smiling face)
4. **Pollinators:** Pollinators help to eat the seeds from plants. (frowning face)
5. **Precipitation:** Clouds are a form of precipitation. (frowning face)
6. **Germination:** Seeds need warmth from the sun, nutrients from the soil, and water for germination to happen. (smiling face)
7. **Reproduce:** To reproduce is to make more of something. (smiling face)

8. **Amphibian:** An amphibian can only live in water, not on land. (frowning face)
9. **Metamorphosis:** Butterflies go through metamorphosis when they change from caterpillar to butterfly. (smiling face)
10. **Evaporation:** Evaporation is when rain falls from the sky. (frowning face)

Directions: Now I am going to read more sentences using other words you have heard and practiced. If I use the word correctly in my sentence, circle the smiling face. If I do not use the word correctly in my sentence, circle the frowning face. I will say each sentence two times.

11. **Protective:** When something is protective, it is meant to keep you safe. (smiling face)
12. **Transparent:** When something is see-through, it is transparent. (smiling face)
13. **Reveal:** To reveal something means to hide it and keep it secret. (frowning face)
14. **Adapt:** To adapt means to change in different situations. (smiling face)
15. **Transformation:** To have a transformation means to stay the same. (frowning face)

Part II (Instructional Master DA-2)

Directions: Let's identify the images in each row together (sunflower, apple tree, chicken, frog, butterfly). These images represent the life cycle of these living things. I will read a sentence about one or more of the life cycles you have learned about. Circle the image or images of the life cycle I am describing.

1. This life cycle is from seed to seed. (sunflower, apple tree)
2. This life cycle is from egg to egg. (chicken, frog, butterfly)
3. The shedding of leaves is part of this life cycle. (apple tree)
4. Germination is part of this life cycle. (sunflower, apple tree)
5. Metamorphosis is part of this life cycle. (frog, butterfly)

6. Growing legs and lungs is part of this life cycle. (frog)
7. Making a chrysalis or pupa is part of this life cycle. (butterfly)
8. Hatching from an egg that has a shell, yolk, and albumen is part of this life cycle. (chicken)
9. Pollination is part of this life cycle. (sunflower, also accept apple tree)
10. Adults laying eggs is part of this life cycle. (chicken, frog, also accept butterfly)

Part III (Instructional Master DA-3)

Directions: I am going to read several sentences about the cycles in nature you have recently learned about. If my sentence is correct, circle the letter 'T' for true. If my sentence is not correct, circle the 'F' for false. I will say each sentence two times.

1. All living things go through the same life cycle. (F)
2. Earth's rotation around its axis causes day and night. (T)
3. Earth's revolution around the moon causes the seasons. (F)
4. All animals migrate in the winter. (F)
5. Many frogs burrow into the ground and spend the winter there. (T)
6. Most of Earth's surface is covered by water. (T)
7. Water can be solid, liquid, or gas. (T)
8. When it gets very cold, water will evaporate. (F)
9. The three stages of the water cycle are evaporation, condensation, and precipitation. (T)
10. The seasonal cycle is as follows: winter, summer, winter, summer. (F)



Culminating Activities

CA

Note to Teacher

Please use this final day to address class results of the Domain Assessment. Based on the results of the Domain Assessment and students' Tens scores, you may wish to use this class time to provide remediation opportunities that target specific areas of weakness for individual students, small groups, or the whole class.

Alternatively, you may also choose to use this class time to extend or enrich students' experience with domain knowledge. A number of enrichment activities are provided below in order to provide students with opportunities to enliven their experiences with domain concepts.

Remediation

You may choose to regroup students according to particular areas of weakness, as indicated from Domain Assessment results and students' Tens scores.

Remediation opportunities include

- targeting Review Activities;
- revisiting lesson Extensions; and
- rereading and discussing select read-alouds.

Enrichment

Domain-Related Trade Book or Student Choice

Materials: Trade book

Read a trade book to review a particular cycle. Refer to the list in the Introduction. You may also choose to have the students select a read-aloud to be heard again.

Exploring Student Resources

Materials: Domain-related student websites

Pick appropriate websites from the Internet for further exploration of the life cycles of a chicken, frog, and butterfly, and the water cycle.

Videos of Life Cycles

Materials: Videos of Life Cycles

Carefully peruse the Internet for short (5-minute), age-appropriate videos related to the cycles your students have heard.

Prepare some questions related to the content presented in the videos.

Discuss how watching a video is the same as and different from listening to a storybook or read-aloud.

Have students ask and answer questions using question words *who*, *what*, *when*, *where*, and *why* regarding what they see in the videos.

Class Book: Animal Life Cycle Encyclopedia

Materials: Drawing paper, drawing tools

Tell students they are going to make a class book to help them remember what they have learned in this domain about the life cycles of different animals.

Have students brainstorm names of animals they would like to learn more about. Assign a particular animal to a partner pair or small group, and give them a set of resources (e.g., trade books, websites, realia, picture-based reference books) to research about its life cycle. Have students draw a picture of one idea from their research, and ask them to write a caption for their picture. Bind the pages to make a class book to put in the class library for students to read again and again.

Life Story

Materials: Drawing paper, drawing tools

Have students pretend they are one of the creatures they heard about from the previous read-alouds. Have each student write their creature's life story, being sure to include the stages of its life cycle.

Guest Speakers

Invite a local meteorologist from the community to visit and talk to students about his/her work and how s/he studies the weather. You may wish to share ahead of time the specific aspects of clouds and the water cycle that you are covering in this domain.

You are a Meteorologist

Materials: Drawing paper, drawing tools

Have students pretend they are meteorologists. If your classroom has a window, give each student an opportunity to observe what types of clouds and/or precipitation are in the sky. If possible, select a day when the students can go outside. You may wish to divide students into pairs or groups. Have students draw the types of clouds and/or precipitation they see and write a caption naming and/or describing them. You may also wish to have students view the sky on different days so they are able to observe different clouds and/or precipitation. As students share their weather reports with the class, remember to repeat and expand upon their vocabulary using richer and more complex language, including, if possible, any domain-related vocabulary.

Nature Poems

Collect various poems related to cycles that can be found in nature. [Some possibilities might be: "Bed in Summer" by Robert Louis Stevenson; "Bee! I'm expecting you!" by Emily Dickinson; "Caterpillars" by Aileen Fisher; "Something Told the Wild Geese" by Rachel Field; and "Who Has Seen the Wind?" by Christina Rossetti.]

Read the poem with your students a few times, and ask what kind of feelings or images the poem evokes. Ask whether the poem uses rhyming words.

You may wish to have students write their own poems about cycles in nature.

Writing Prompts

Students may be given an additional writing prompt such as the following:

- Tadpoles and adult frogs breathe in different ways because . . .
- The changing seasons affect our lives because
- The shape of a cloud is important because . . .
- I observe the water cycle when . . .
- The most interesting thing I learned about cycles is . . .

Observing Metamorphosis: Frog

Materials: Tadpoles; aquarium with a tight-fitting cover; rocks; branches; drawing paper, drawing tools

Note: Collect tadpoles from a local body of water, or order a native species of frog that can be released back into your area. If uncertain, check a field guide on amphibians for frogs native to your region. If using tadpoles collected locally, it is best to release the froglets back into the body of water or area they were collected from.

Prepare the aquarium tank with untreated water, placing in it the rocks and branches you have collected. Make sure that the branches protrude above the surface of the water for the frogs to climb on as they develop. Have students observe and examine the tadpoles' metamorphosis into adult frogs. Ask students to describe the stages they see as the tadpoles develop. Have them draw these stages on drawing paper and write a caption for each stage of metamorphosis.

Observing Metamorphosis: Butterfly

Materials: Caterpillars; fresh leaves; glass jar with a metal lid; hammer; nail; drawing paper, drawing tools

Note: Collect caterpillars from your local area, or order a native species of butterfly that can be released back into your area. If uncertain, check a field guide on insects for butterflies native to your region.

Option 1: Research instructions on how to raise a butterfly.

Option 2: Order a caterpillar kit for a species that is native to your region. Company sources can be found by searching the Internet or by checking with your local school district for information.

Refer to the set of instructions that came with your purchased butterfly kit. Have students observe and examine the caterpillars' metamorphosis into a butterfly. Ask students to describe the stages they see as the caterpillars develop. Have them draw these stages on drawing paper and write a caption for each stage of metamorphosis.

Water: The Essence of All Life

Materials: Clear plastic tubs or cartons; ruler

Have students measure and record rainfall.

Clouds: Sky Watching

Materials: Paper, pencils

Have students observe, draw, and label the clouds they see in the sky.

Cycles in Nature Research

Materials: Recommended trade books; online and library resources

Have students research questions they may have about the topics discussed in this domain. You may also wish to have students expand their knowledge about related topics; for example, students may wish to research the life cycle of other plants and/or animals.

Water Cycle Paper Chains

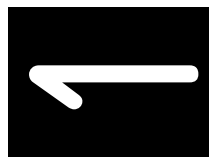
Materials: Cycles Poster 7 (Water Cycle); colored paper; scissors; tape

Have students create paper chains to represent the water cycle. They can use light blue paper to represent rain, dark blue paper to represent groundwater, green paper to represent plants, yellow paper to represent the sun, and white paper to represent clouds and water vapor. Have students use Poster 7 (Water Cycle) as a reference.

For Teacher Reference Only:

Instructional Masters for
Cycles in Nature





Directions: Draw a picture of the daytime on the left and a picture of the nighttime on the right.





Dear Family Member,

During the next several days, your child will learn about different types of cycles that occur in nature. Your child will be introduced to the reasons why the Earth has seasons and to the different seasonal changes that affect the life cycles of plants and trees. Below are some suggestions for activities that you may do at home to reinforce what your child is learning about cycles in nature.

1. Watch Seeds Sprout

Your child will learn that the life cycle of a plant is from seed to seed. When a plant begins to grow or sprout from a seed, it is called *germination*. Watch seeds germinate using the activity page included with this letter. [Note: Consider using sunflower seeds, pumpkin seeds, lima beans, or pinto beans.] In the boxes at the bottom of the activity sheet, have your child draw or write what is happening to the seeds.

2. Seasonal Activities

In a few days your child will learn why Earth has different seasons. Ask your child to explain why there are different seasons. (Earth has different seasons because of its tilt and orbit around the sun.) Talk to your child about the differences between the seasons (e.g., what the weather is like, what they wear, holidays your family celebrates). Talk about things your family likes to do during the different seasons.

3. “Bed in Summer” by Robert Louis Stevenson

Your child will hear this poem by a famous American poet, Robert Louis Stevenson. Read this poem with your child, and discuss how the poet feels about going to bed during the summer. You may also have your child point out the rhyming words in this poem.

*In winter I get up at night
And dress by yellow candle-light.
In summer, quite the other way,
I have to go to bed by day.*

*I have to go to bed and see
The birds still hopping on the tree,
Or hear the grown-up people's feet
Still going past me in the street.*



*And does it not seem hard to you,
When all the sky is clear and blue,
And I should like so much to play,
To have to go to bed by day?*

4. Read Aloud Each Day

Set aside time to read aloud to your child every day and listen to your child read to you. The local library or your child's teacher may have books on cycles in nature. A list of books relevant to this topic is attached to this letter.

Be sure to let your child know how much you enjoy hearing about what s/he has been learning at school.

Recommended Resources for Cycles in Nature

Trade Book List

Seasonal Cycles

1. *Earth Cycles*, by Michael Elsohn Ross (Millbrook Press, 2001) ISBN 978-0761319771
2. *Four Seasons Make a Year*, by Anne Rockwell (Walker & Company, 2004) ISBN 978-0802788832
3. *How Do Birds Find Their Way?*, by Roma Gans (Harper Collins, 1996) ISBN 978-0064451505
4. *The Reasons for Seasons*, by Gail Gibbons (Holiday House, 1995) ISBN 978-0823412389
5. *Red Leaf, Yellow Leaf*, by Lois Ehlert (Harcourt, Inc., 1991) ISBN 978-0152661977
6. *What Makes Day and Night*, by Franklyn Branley (Harper Collins, 1986) ISBN 978-0064450508

Plant and Animal Life Cycles

7. *Butterfly (How Does it Grow?)*, by Jinny Johnson (Smart Apple Media, 2010) ISBN 978-1599203522
8. *Frogs (How Does it Grow?)*, by Jinny Johnson (Smart Apple Media, 2010) ISBN 978-1599203553



9. *From Caterpillar to Butterfly (Let's-Read-and-Find-Out-Science)*, by Deborah Heiligman (Harper Collins Publishers, 1996) ISBN 978-0064451291
10. *From Seed to Plant*, by Gail Gibbons (Holiday House, 1991) ISBN 978-0823410255
11. *From Seed to Sunflower*, by Dr. Gerald Legg (Franklin Watts, 1998) ISBN 978-0531153345
12. *How a Seed Grows*, by Helene J. Jordan (Harper Collins, 2000) ISBN 978-0064451079
13. *The Life Cycle of an Oak Tree*, by Linda Tagliaferro (Capstone Press, 2007) ISBN 978-0736867115
14. *A Log's Life*, by Wendy Pfeffer (Aladdin Paperbacks, 1997) ISBN 978-1416934837
15. *Monarch Butterfly*, by Gail Gibbons (Holiday House, 1995) ISBN 978-0823409099
16. *A Nest Full of Eggs*, by Priscilla Belz Jenkins (Harper Collins, 1995) ISBN 978-0064451277
17. *One Bean*, by Anne Rockwell (Walker Publishing Company, 1998) ISBN 978-0802775726
18. *The Reason for a Flower*, by Ruth Heller (Penguin Putnam Books for Young Readers, 1999) ISBN 978-0698115590

Water Cycle

19. *Down Comes the Rain (Let's-Read-and-Find-Out-Science)*, by Franklyn M. Branley (Harper Collins Publishers, 1997) ISBN 978-0064451666
20. *The Snowflake: A Water Cycle Story*, by Neil Waldman (Milbrook Press, 2003) ISBN 978-0761323471
21. *Water (Nature's Cycles) [Spanish & English]*, by Dana Meachen Rau (Marshall Cavendish Corporation, 2010) ISBN 978-0761447924

22. *The Water Cycle*, by Helen Frost (Pebble Books, 2000) ISBN 978-0736804097
23. *The Water Cycle*, by Rebecca Olien (Capstone Press, 2005) ISBN 978-0736851824
24. *Water, Water Everywhere*, Mark J. Rauzon and Cynthia Overbeck Bix (Sierra Club Books for Children, 1994) ISBN 978-0871563835



Vocabulary List for Cycles in Nature (Part 1)

This list includes many important words your child will learn about in *Cycles in Nature*. Try to use these words with your child in English and in your native language. Next to this list are suggestions of fun ways your child can practice and use these words at home.

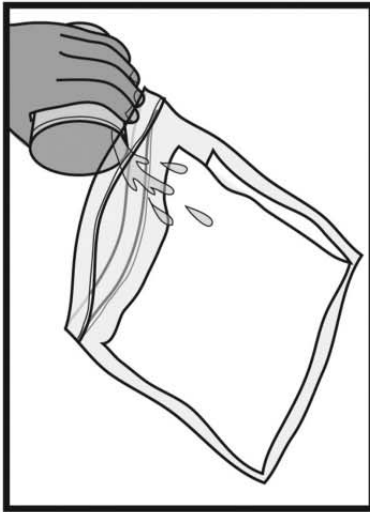
- ☐ axis
- ☐ cycle
- ☐ equator
- ☐ hemisphere
- ☐ adapt
- ☐ migrate
- ☐ photosynthesis
- ☐ emerge
- ☐ protective
- ☐ reproduce
- ☐ decomposers
- ☐ dependent
- ☐ flexible
- ☐ germination
- ☐ mature

Directions: Help your child pick a word from the vocabulary list. Then help your child choose an activity and do the activity with the word. Check off the box for the word. Try to practice a word a day in English and in your native language.

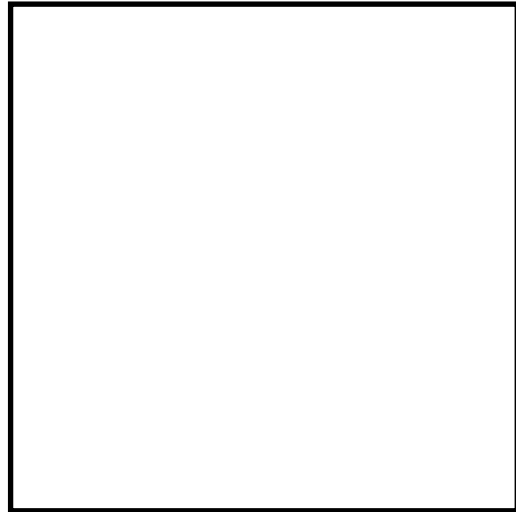
	Draw it
	Write a sentence using it
	Find one or two examples
	Tell someone about it
	Act it out
	Make up a song using it



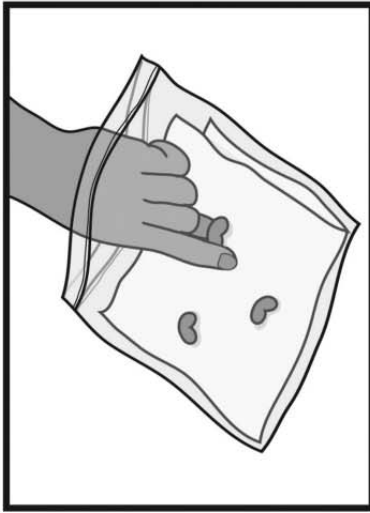
Watch Seeds Sprout



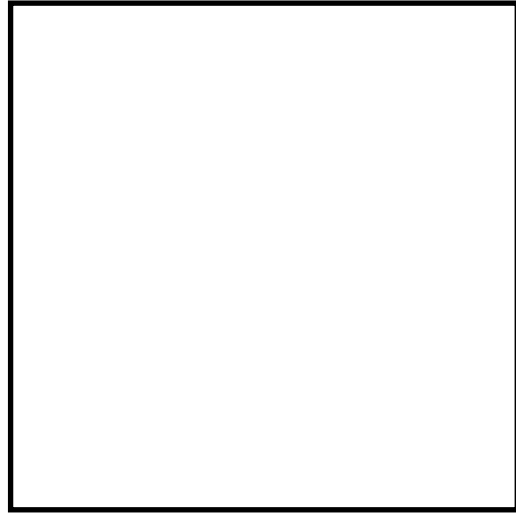
1. Lightly moisten three paper towel squares with water. Fold them flat, and slide them into a plastic zip-top bag, the kind you can close tightly.



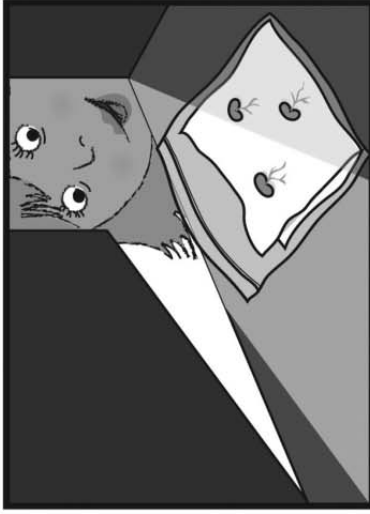
Day 1



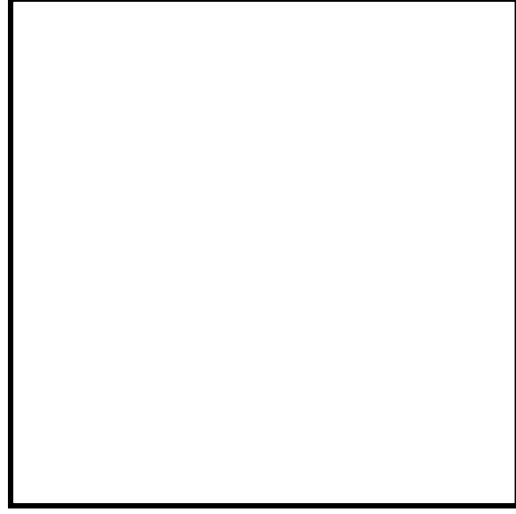
2. Place three seeds into the plastic bag so they are visible through the plastic. Seal the bag and keep it in a dark, warm (but not hot) place.



Day 3

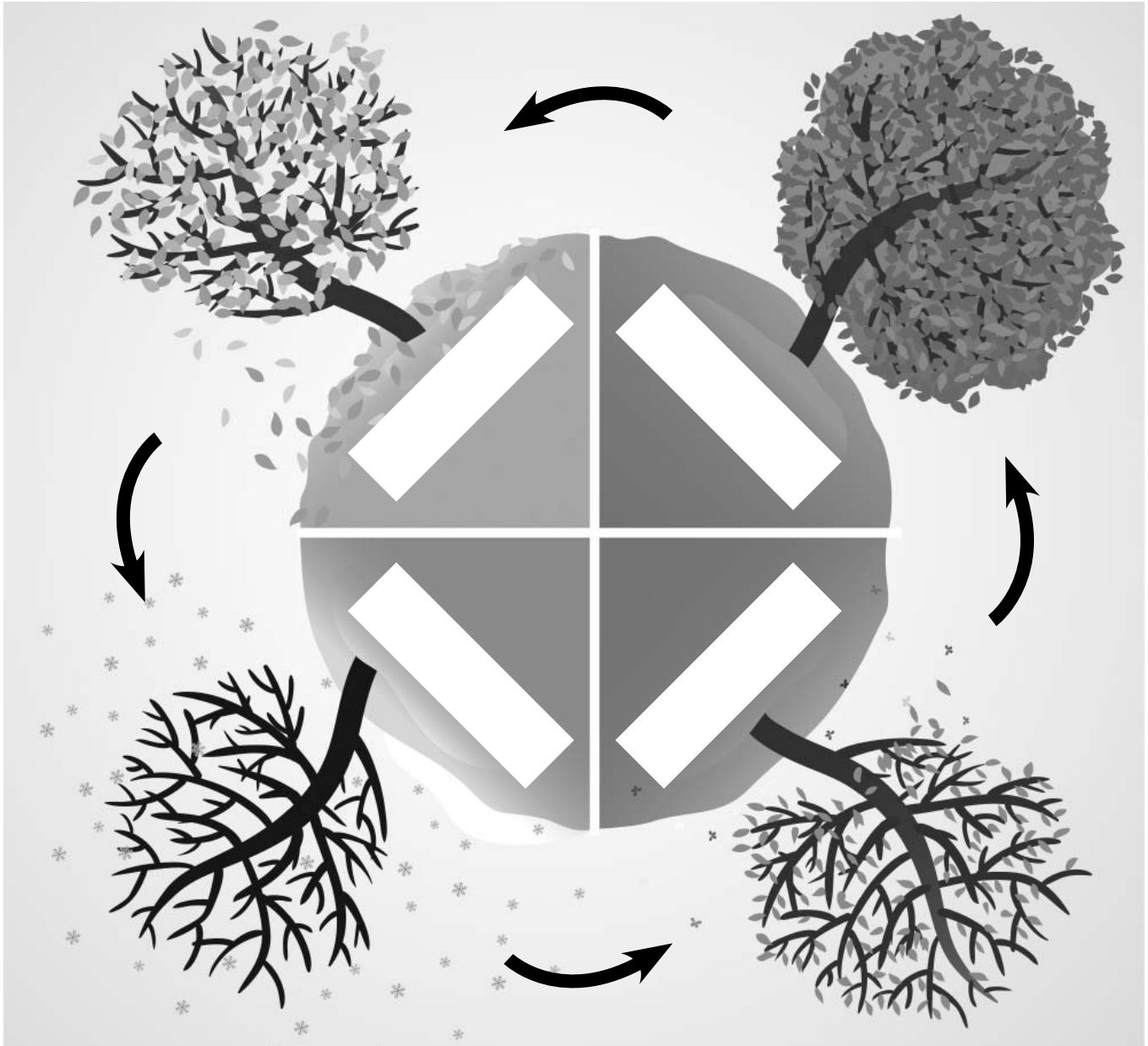


3. Check the bag daily. Make sure that the towels are wet enough. Help your child observe and write in the boxes below what is happening to the seeds.

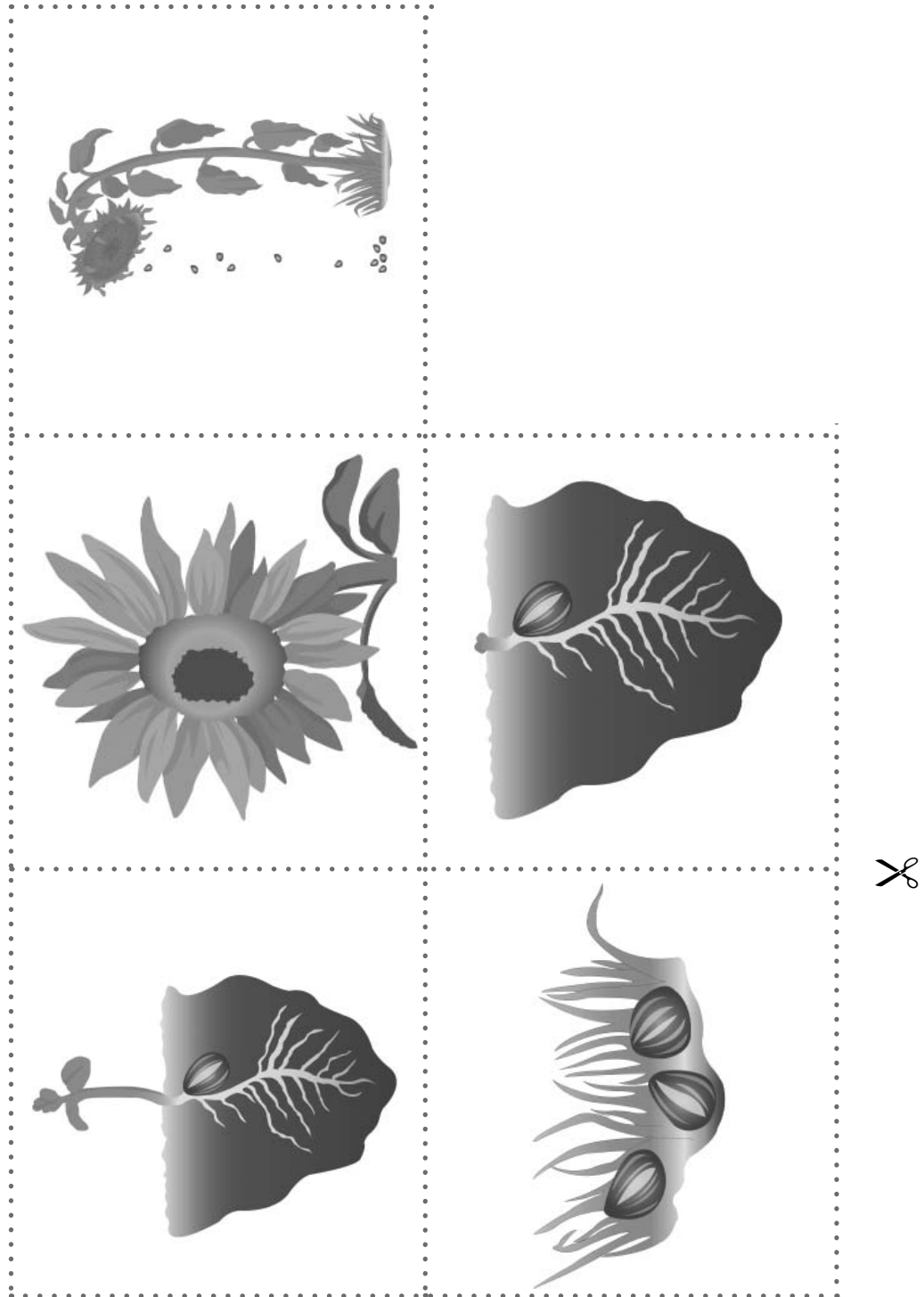


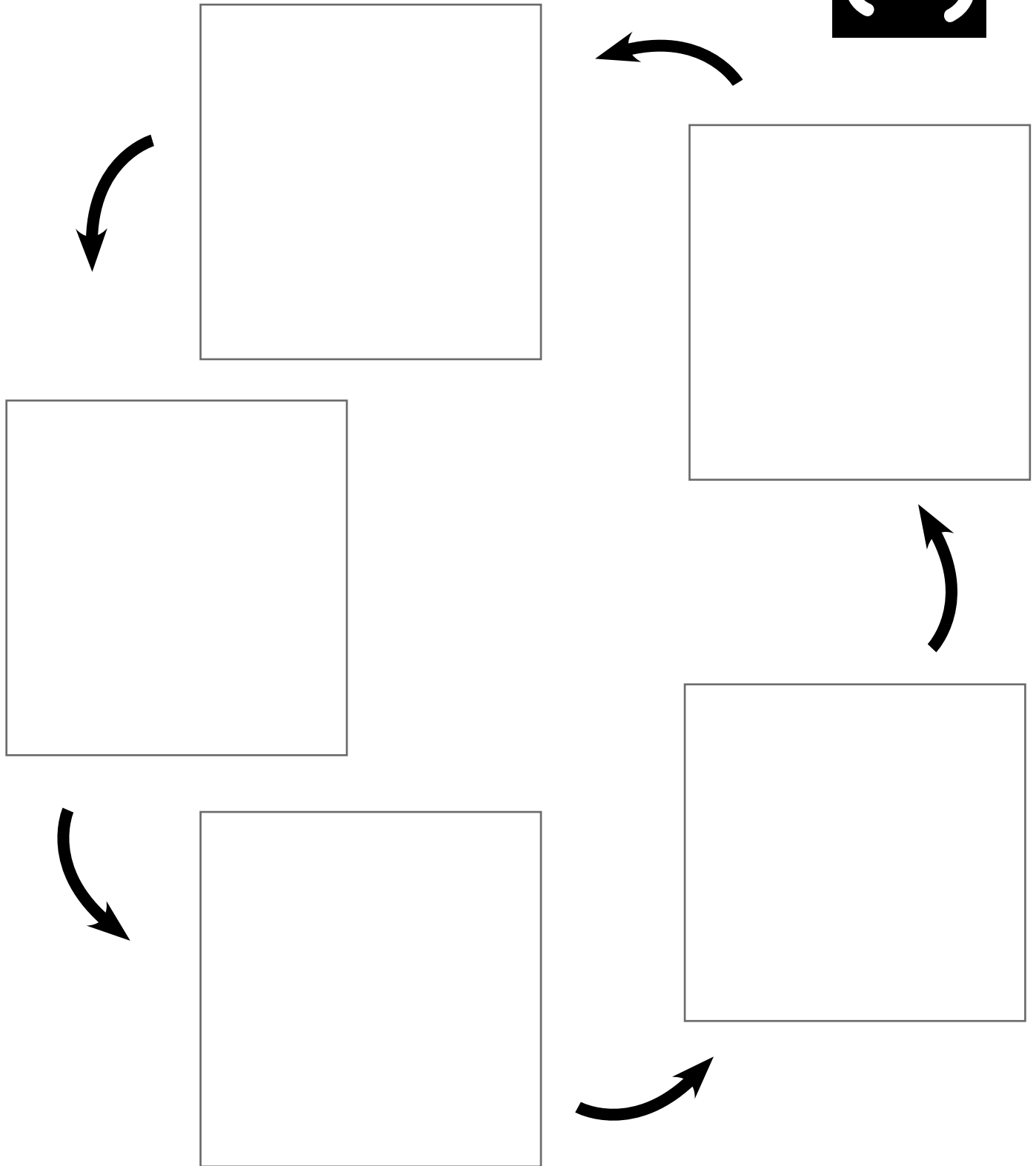
Day 5

<i>Winter</i>						
<i>Autumn (or Fall)</i>						
<i>Summer</i>						
<i>Spring</i>						
<i>Date Season Begins in the Northern Hemisphere</i>						
<i>Amount of Sunshine</i>						
<i>Temperature in the Northern Hemisphere</i>						
<i>Plants</i>						
<i>Animals</i>						
<i>People Activities/ Clothing</i>						

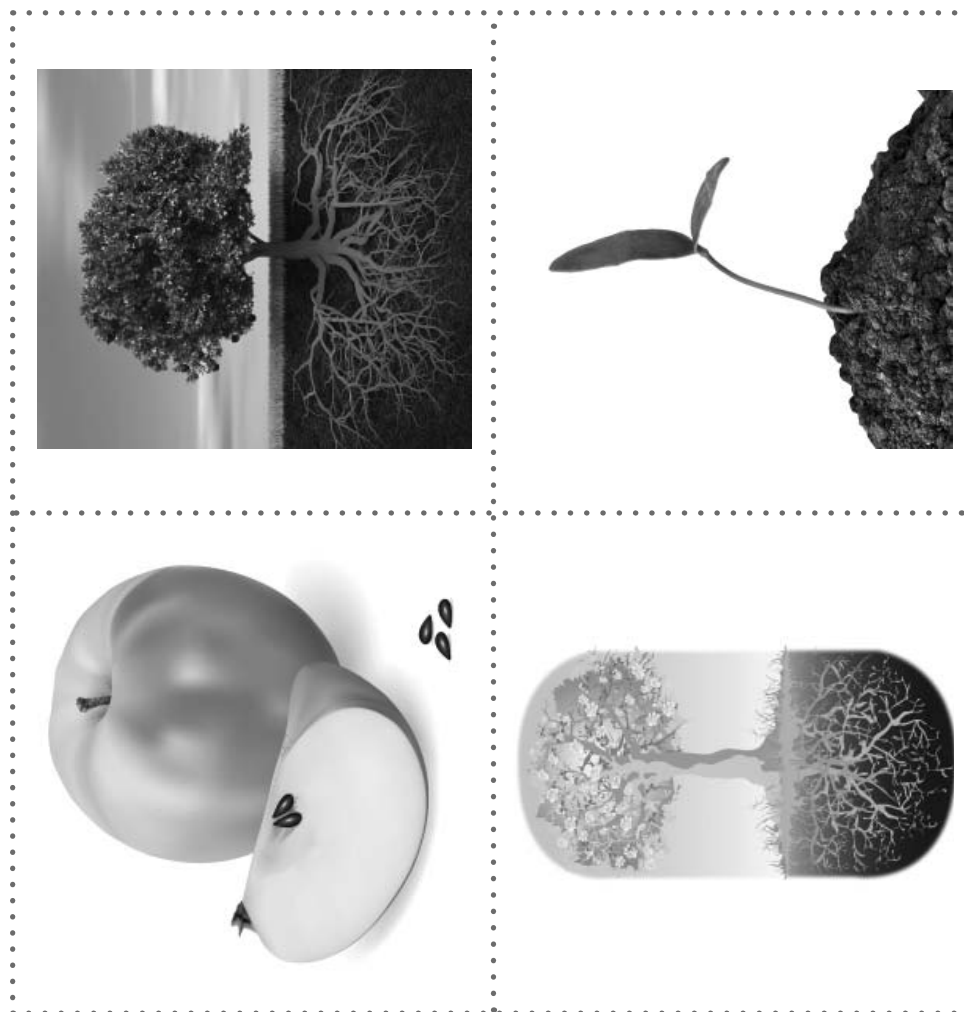


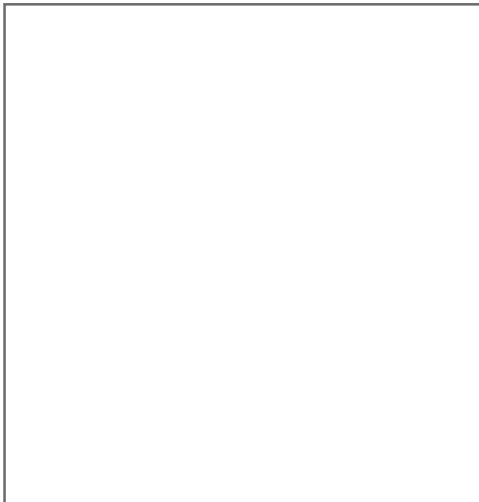
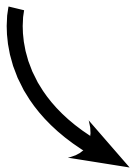
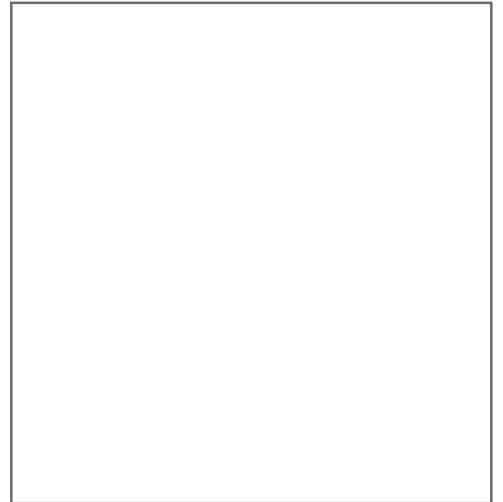
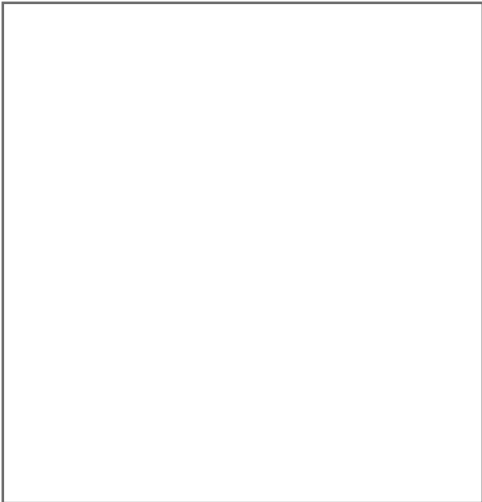
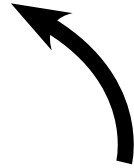
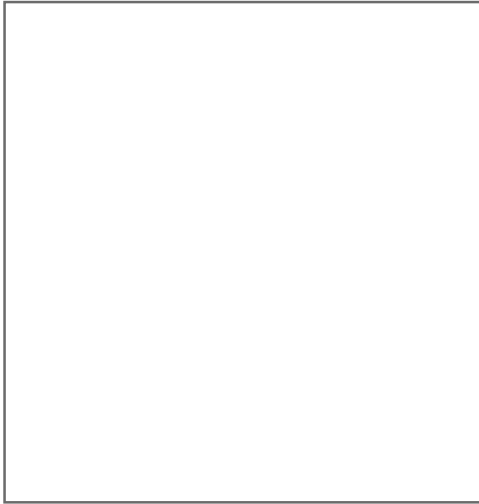
Directions: Cut out and sequence these pictures to show the life cycle of a sunflower on a separate piece of paper.

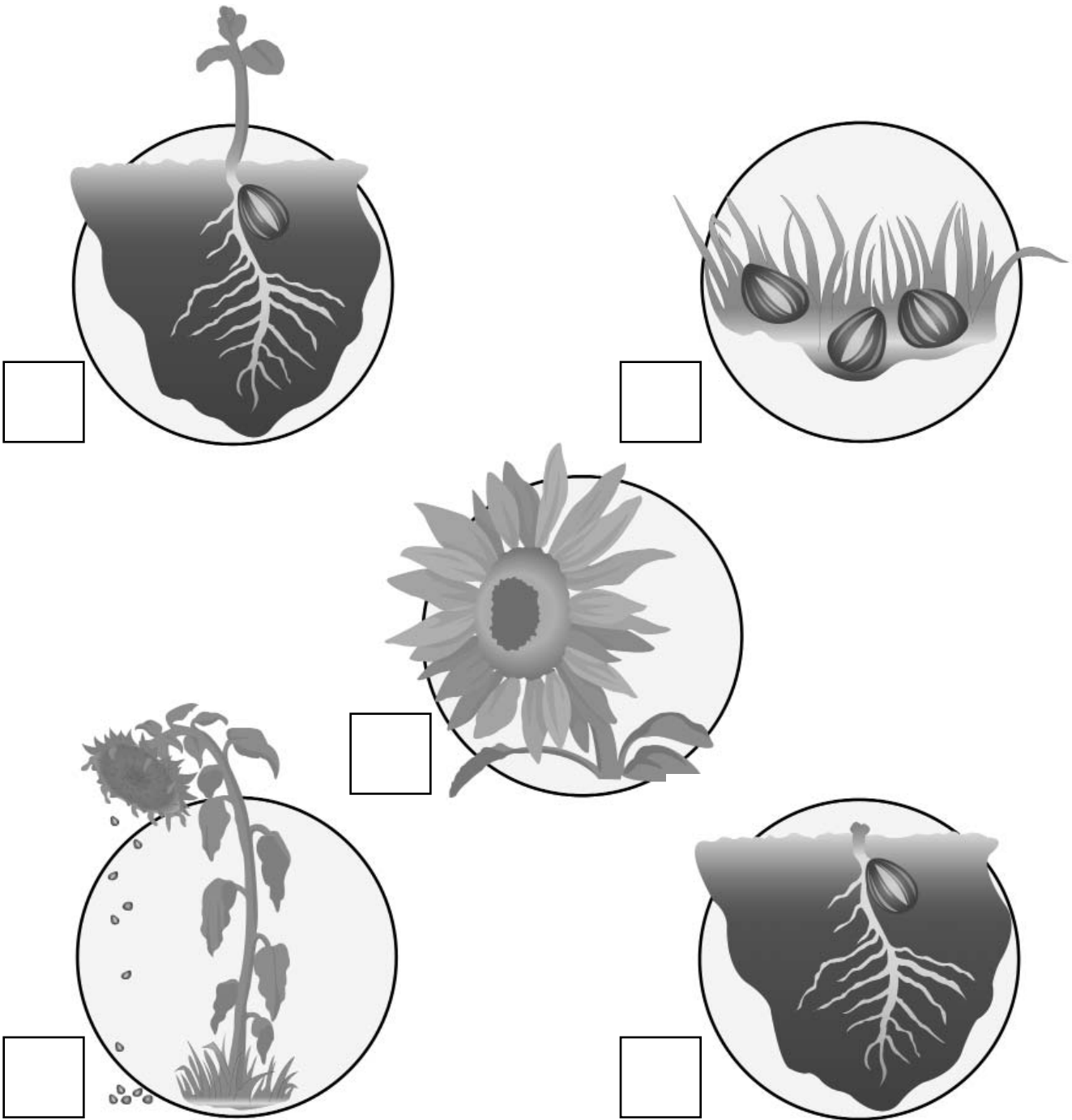




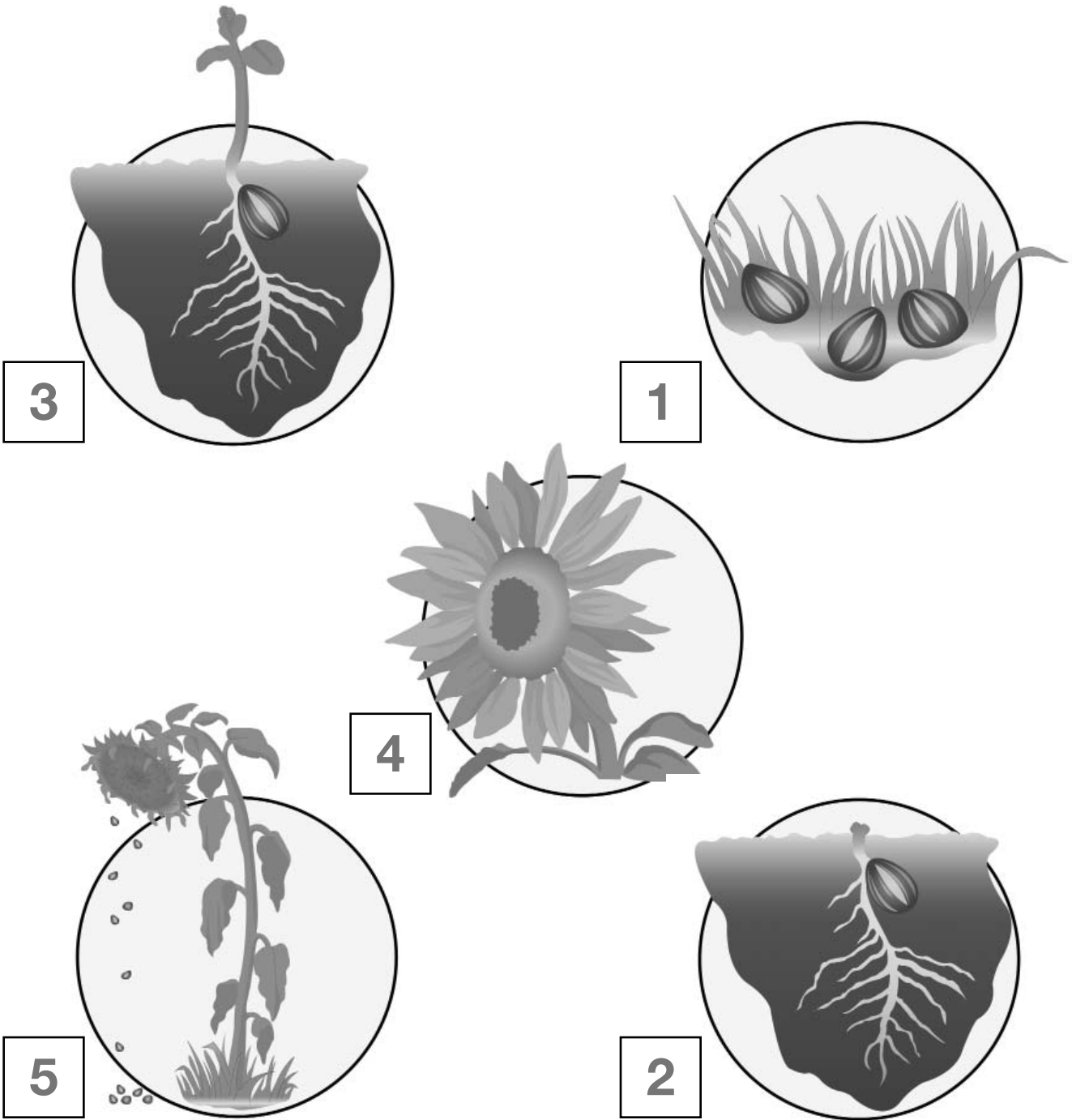
Directions: Cut out and sequence these pictures to show the life cycle of a tree on a separate piece of paper.



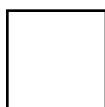
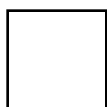
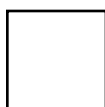
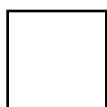




The life cycle of a sunflower begins with a _____ .



The life cycle of a sunflower begins with a seed .

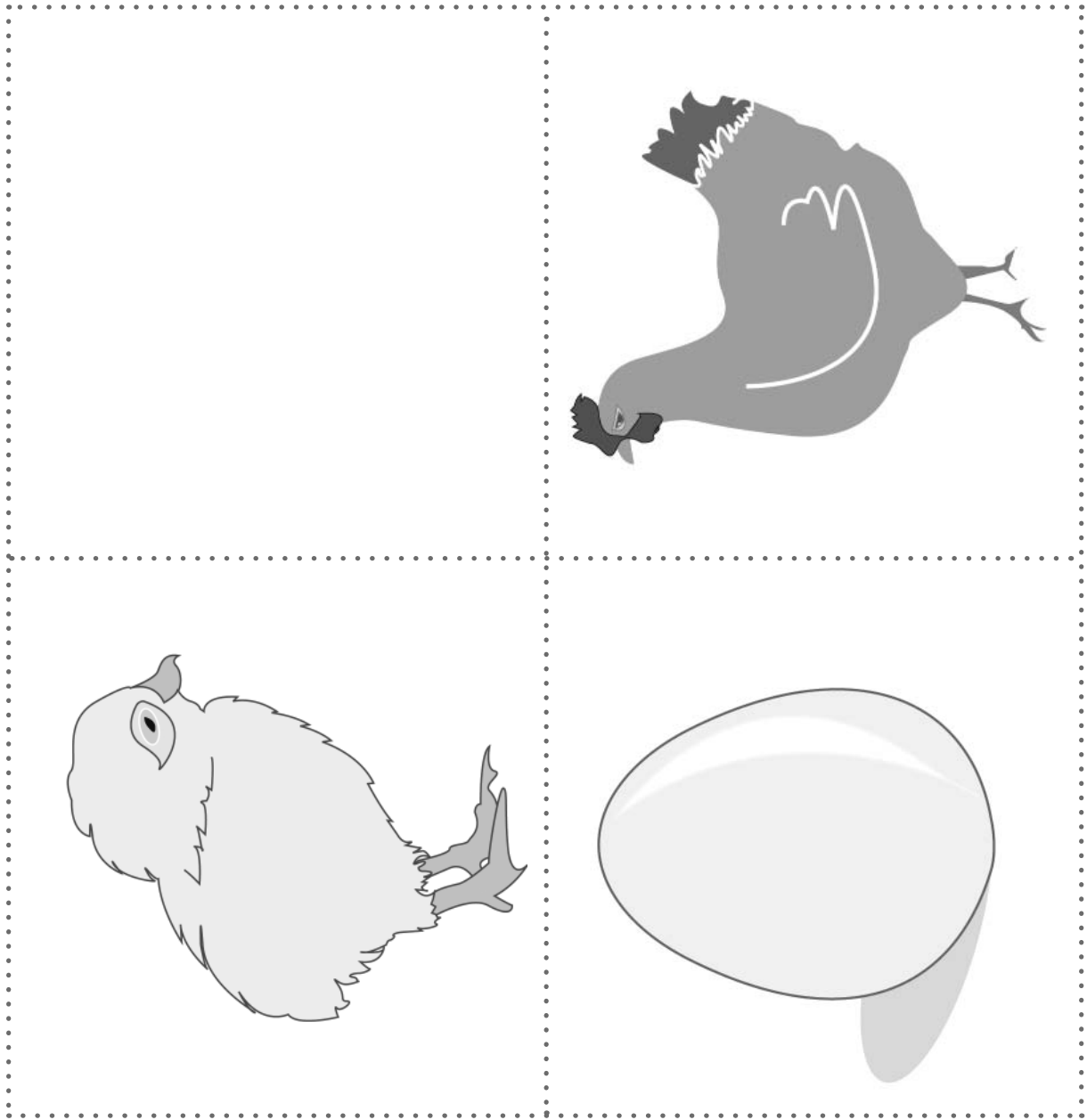


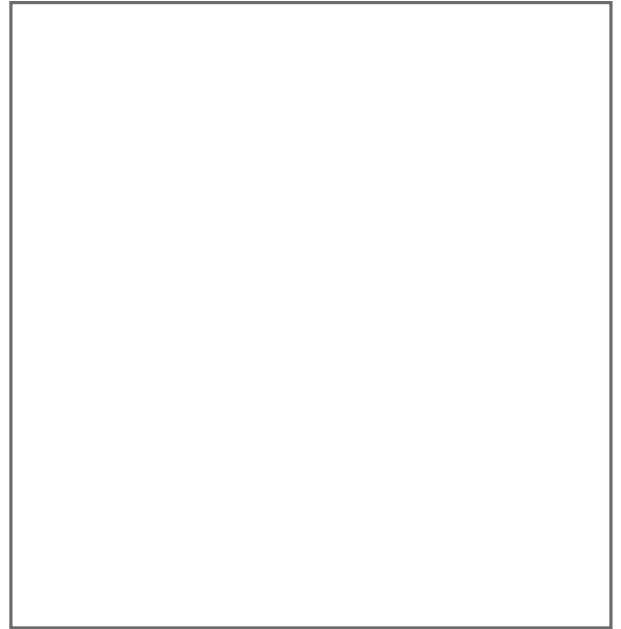
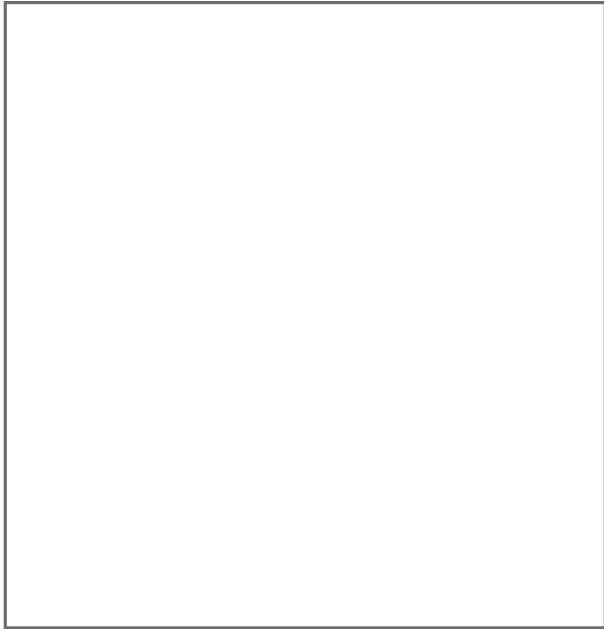
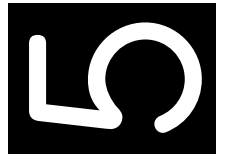
The life cycle of an apple tree begins with a _____ .

2**1****3****4**

The life cycle of an apple tree begins with a **seed** .

Directions: Cut out and sequence these pictures to show the life cycle of a chicken on a separate piece of paper.







Dear Family Member,

I hope your child has enjoyed learning about cycles in nature. Over the next several days, s/he will learn about the life cycle of a chicken, frog, and butterfly. In addition, s/he will be introduced to another cycle: the water cycle.

Below are some suggestions for activities that you may do at home to reinforce what your child is learning about cycles in nature.

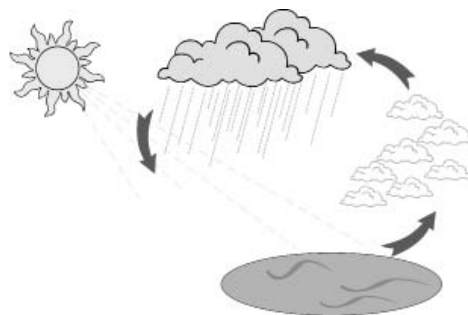
1. Drawing the Life Cycle of a Frog or a Butterfly

In the next few days your child will learn about the life cycle of a frog and butterfly. Use the activity page included in this letter, and have your child draw the stages of the life cycle of a frog or butterfly. Have your child explain the different stages to you. Ask your child about metamorphosis. (Metamorphosis is the change from one form to another form, such as from a tadpole to a frog and from a caterpillar to a butterfly.)

2. The Water Cycle

Your child will learn about the stages of the water cycle: evaporation, condensation, and precipitation. S/he may also wish to share the water cycle song learned at school. [This song is sung to the tune of “She’ll be Comin’ ’Round the Mountain.”]

*Water travels in a cycle; yes, it does.
Water travels in a cycle; yes, it does.
It goes up as evaporation,
Forms clouds as condensation,
Then falls down as precipitation; yes, it does.*



3. Cloud Gazing

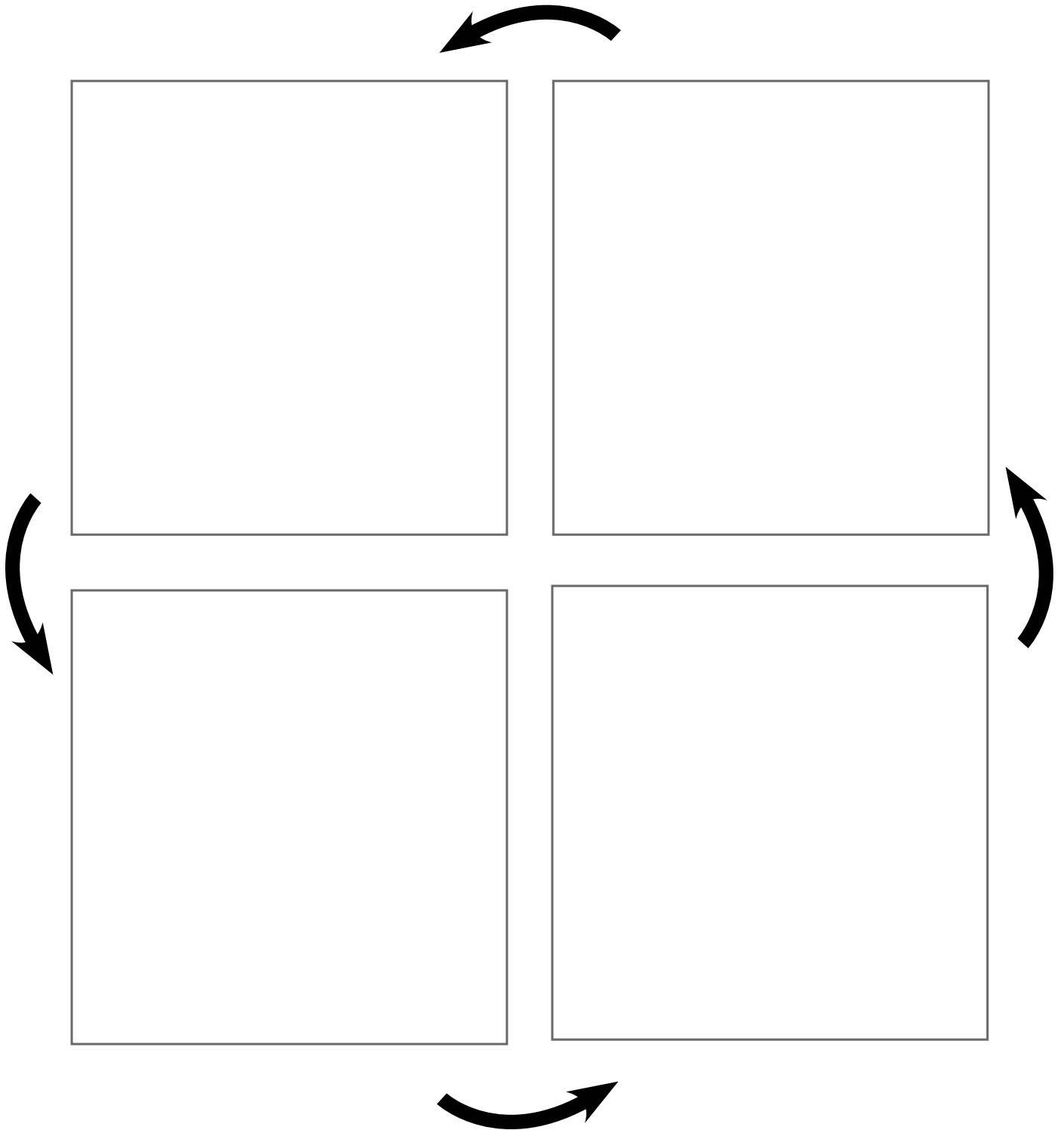
Go outdoors with your child on a partly cloudy day. Ask your child to name the different cloud formations and to explain how s/he is able to determine these by their shape: cirrus (wispy, feathery clouds high in the sky); cumulus (round, puffy clouds); and stratus (layered grey clouds that can cover the whole sky and usually bring rain).

4. Read Aloud Each Day

Continue to read with your child every day.

Be sure to let your child know how much you enjoy hearing about the cycles in nature s/he has been learning at school.

Life Cycle of a _____





Vocabulary List for Cycles in Nature (Part 2)

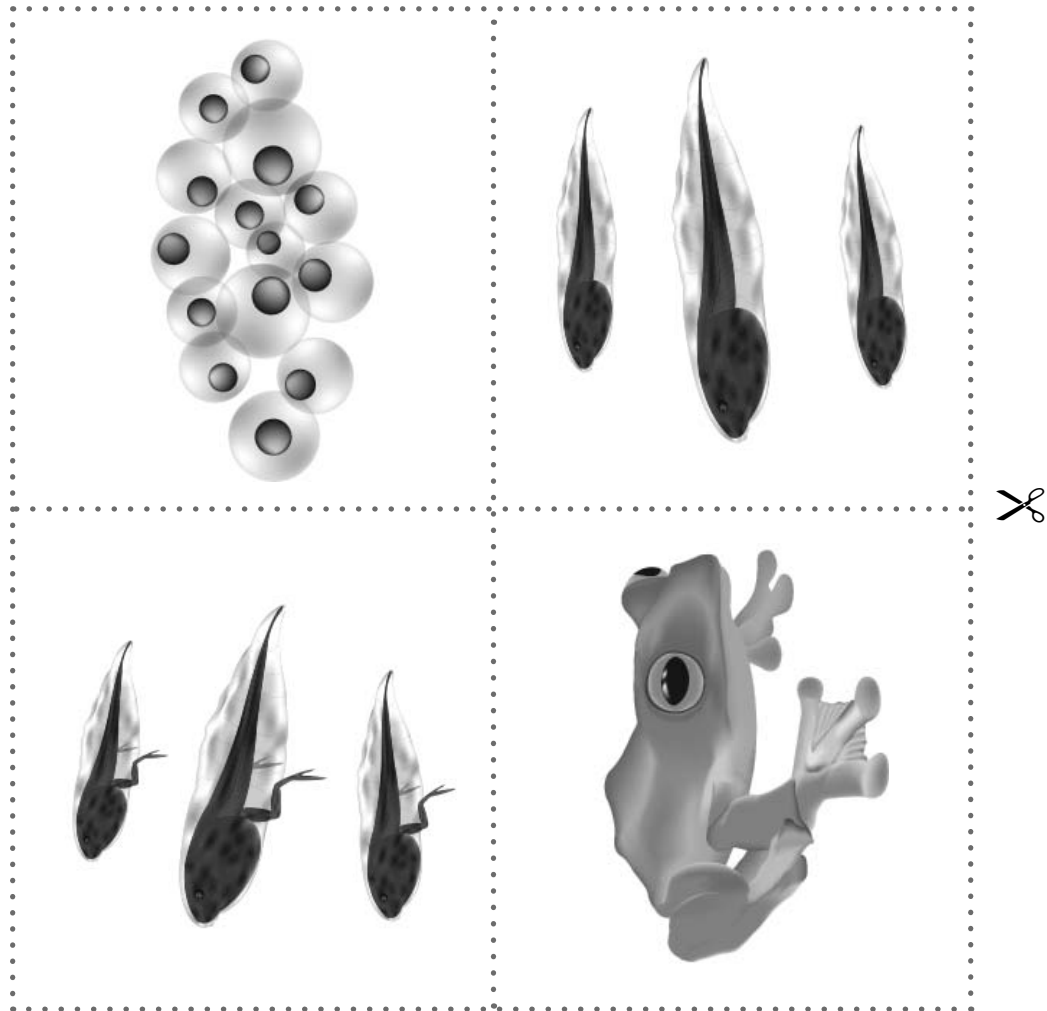
This list includes many important words your child will learn about in *Cycles in Nature*. Try to use these words with your child in English and in your native language. Next to this list are suggestions of fun ways your child can practice and use these words at home.

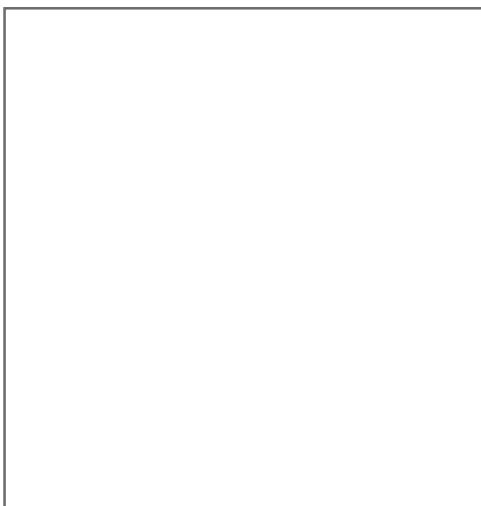
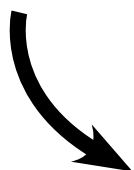
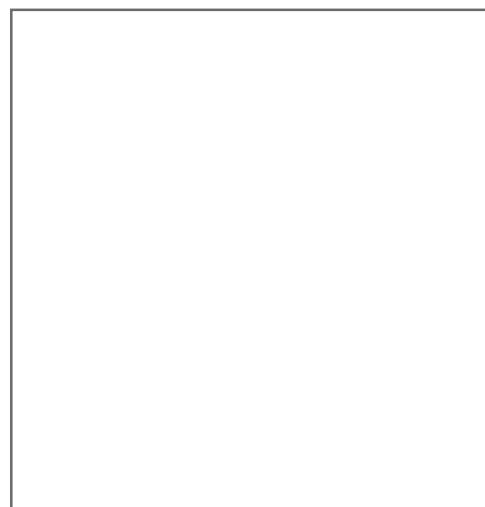
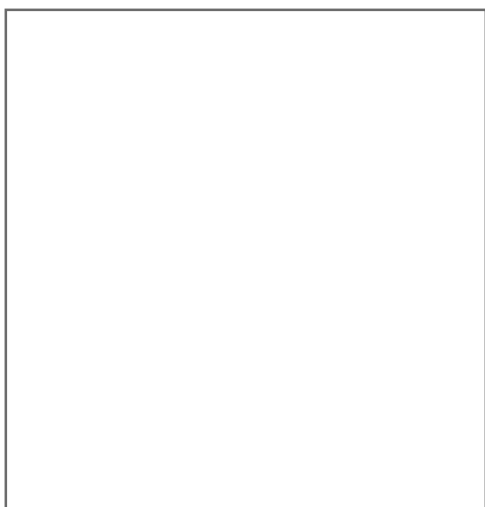
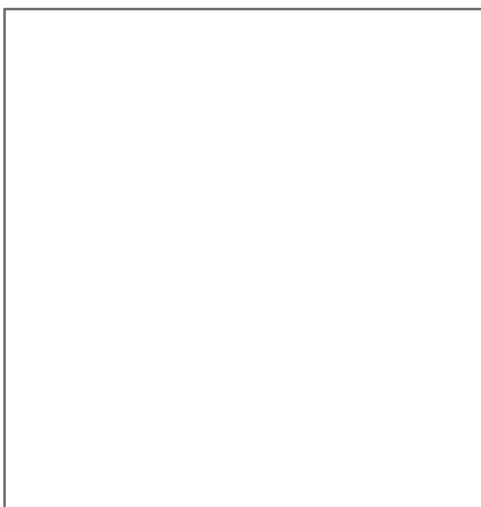
- ☐ embryo
- ☐ fertilize
- ☐ replenished
- ☐ amphibian
- ☐ burrow
- ☐ gills
- ☐ metamorphosis
- ☐ larva
- ☐ transparent
- ☐ evaporation
- ☐ condensation
- ☐ precipitation

Directions: Help your child pick a word from the vocabulary list. Then help your child choose an activity and do the activity with the word. Check off the box for the word. Try to practice a word a day in English and in your native language.

	Draw it
	Write a sentence using it
	Find one or two examples
	Tell someone about it
	Act it out
	Make up a song using it

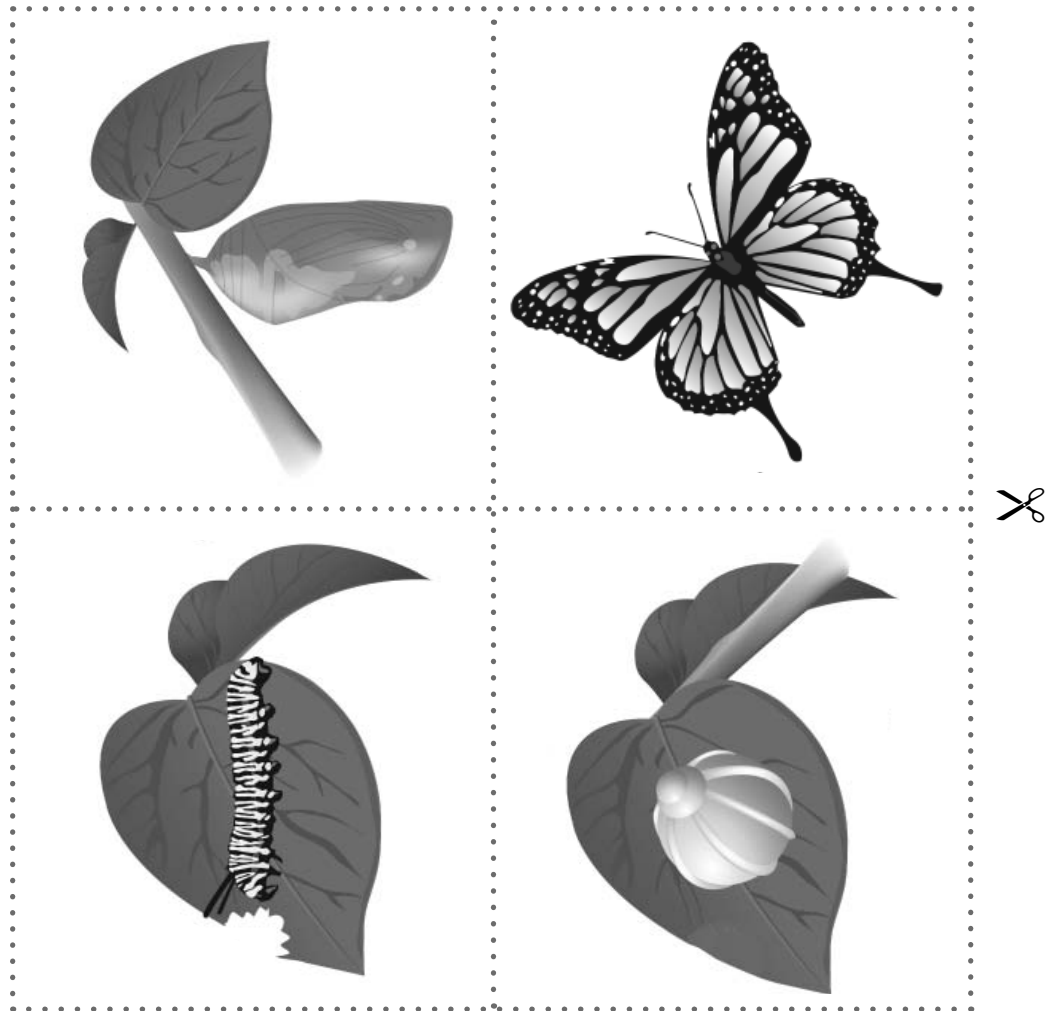
Directions: Cut out and sequence these pictures to show the life cycle of a frog on a separate piece of paper.

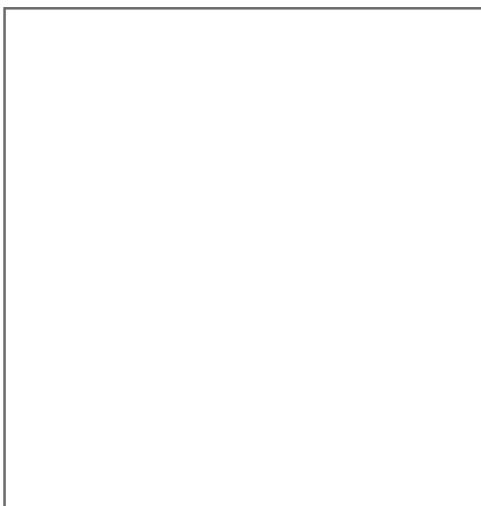
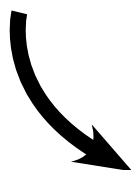
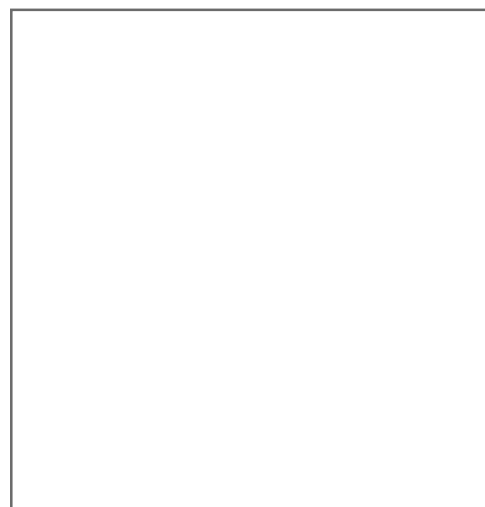
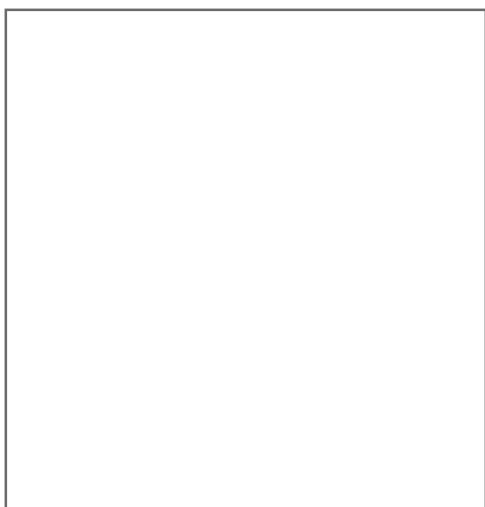
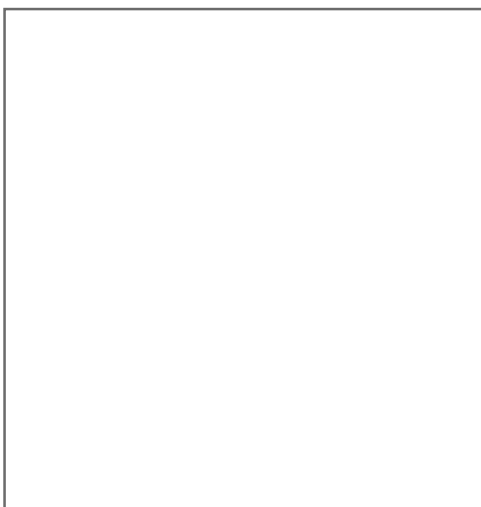
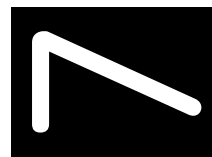




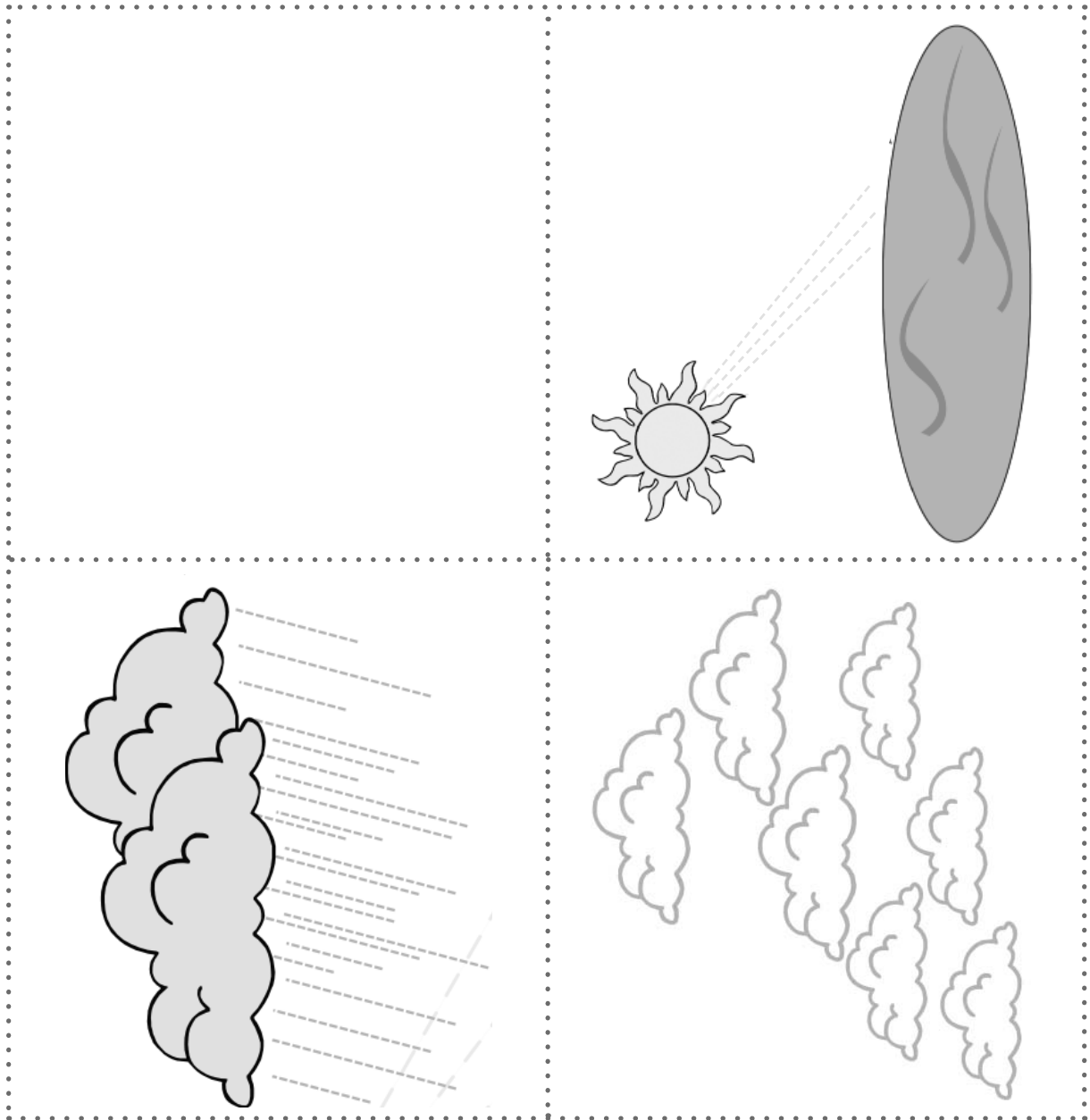
Introduction***First******Next******Then******Last******Conclusion***

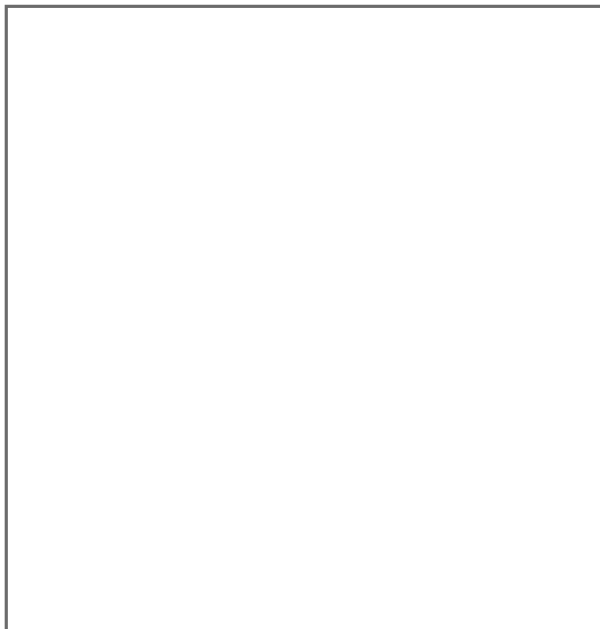
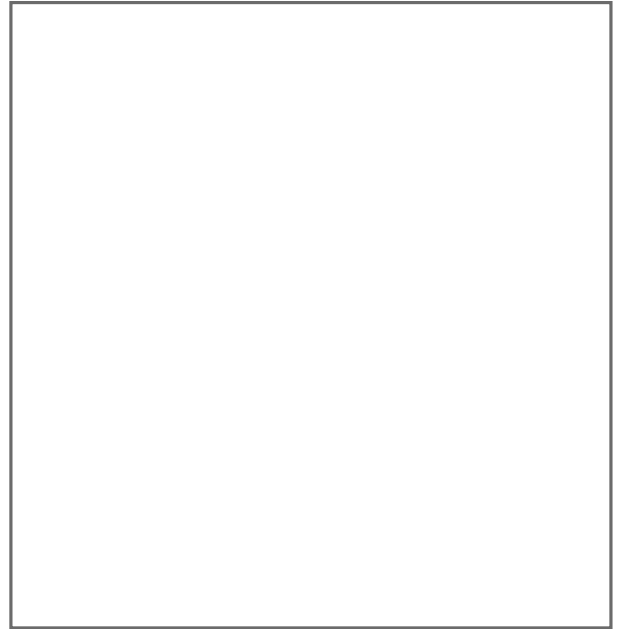
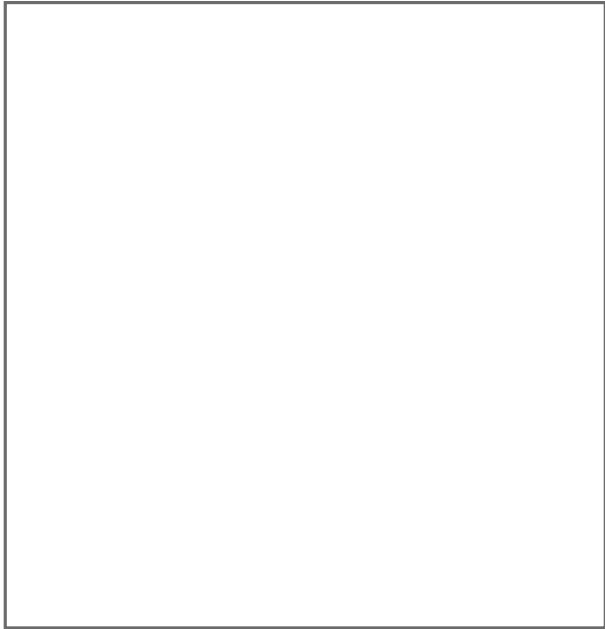
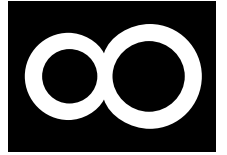
Directions: Cut out and sequence these pictures to show the life cycle of a butterfly on a separate piece of paper.














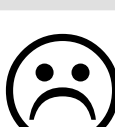

















Directions: Cut out and sequence these pictures to show the water cycle on a separate piece of paper.

























Directions: Listen carefully to the words and sentences read by your teacher. If the sentence uses the word correctly, circle the smiling face. If the sentence does not use the word correctly, circle the frowning face.

1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

11.		
12.		
13.		
14.		
15.		

Directions: Listen carefully to the words and sentences read by your teacher. If the sentence uses the word correctly, circle the smiling face. If the sentence does not use the word correctly, circle the frowning face.

1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

11.	<input checked="" type="radio"/>	<input type="radio"/>
12.	<input checked="" type="radio"/>	<input type="radio"/>
13.	<input type="radio"/>	<input checked="" type="radio"/>
14.	<input checked="" type="radio"/>	<input type="radio"/>
15.	<input type="radio"/>	<input checked="" type="radio"/>

Directions: Listen to the sentence read by the teacher. Circle the picture or pictures of the life cycle being described.



1.



2.



3.

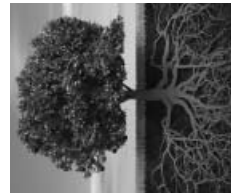


4.



5.





6.


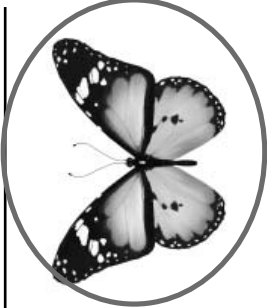


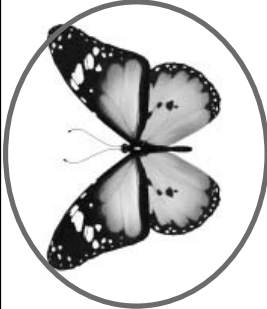

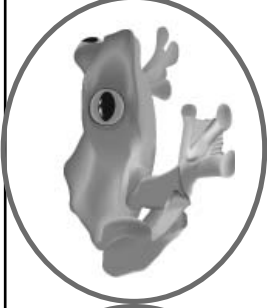




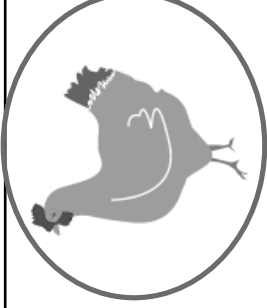



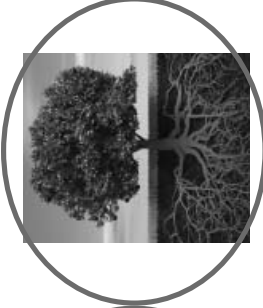

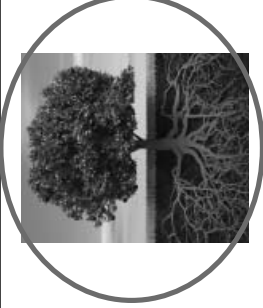
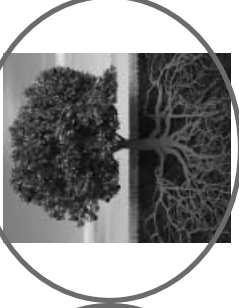
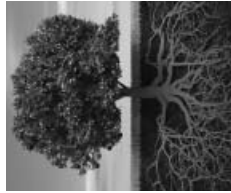





7.

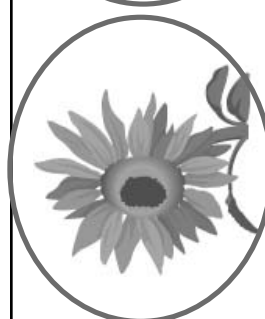
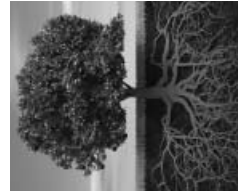
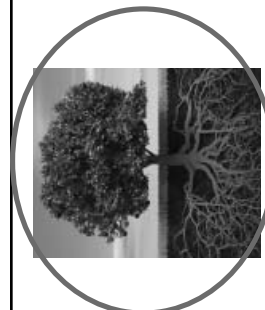
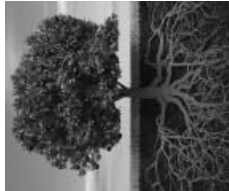
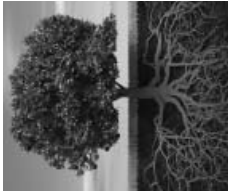
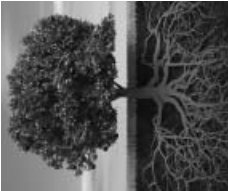
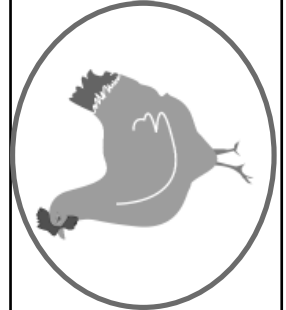
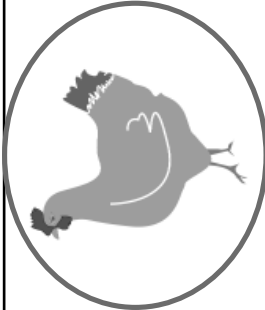
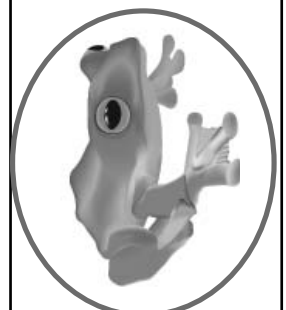
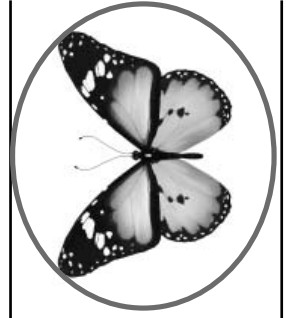
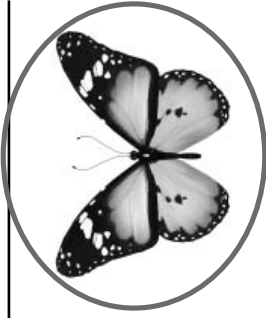
8.

9.

10.

Directions: Listen to the sentence read by the teacher. Circle the picture or pictures of the life cycle being described.

				
				
				
				
				
1.	2.	3.	4.	5.



6.

7.

8.

9.

10.

Directions: Listen to the sentence read by the teacher. Circle "T" if the sentence is correct. Circle "F" if the sentence is not correct.

1.

T

F

2.

T

F

3.

T

F

4.

T

F

5.

T

F

6.

T

F

7.

T

F

8.

T

F

9.

T

F

10.

T

F

Directions: Listen to the sentence read by the teacher. Circle "T" if the sentence is correct. Circle "F" if the sentence is not correct.

1.

T

F

2.

T

F

3.

T

F

4.

T

F

5.

T

F

6.

T

F

7.

T

F

8.

T

F

9.

T

F

10.

T

F

Tens Recording Chart

Use this grid to record Tens scores. Refer to the Tens Conversion Chart that follows.

[illegible]

Tens Conversion Chart

		Number Correct																					
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Number of Questions	1	0	10																				
	2	0	5	10																			
	3	0	3	7	10																		
	4	0	3	5	8	10																	
	5	0	2	4	6	8	10																
	6	0	2	3	5	7	8	10															
	7	0	1	3	4	6	7	9	10														
	8	0	1	3	4	5	6	8	9	10													
	9	0	1	2	3	4	6	7	8	9	10												
	10	0	1	2	3	4	5	6	7	8	9	10											
	11	0	1	2	3	4	5	5	6	7	8	9	10										
	12	0	1	2	3	3	4	5	6	7	8	8	9	10									
	13	0	1	2	2	3	4	5	5	6	7	8	8	9	10								
	14	0	1	1	2	3	4	4	5	6	6	7	8	9	9	10							
	15	0	1	1	2	3	3	4	5	5	6	7	7	8	9	9	10						
	16	0	1	1	2	3	3	4	4	5	6	6	7	8	8	9	9	10					
	17	0	1	1	2	2	3	4	4	5	6	6	7	7	8	8	9	9	10				
	18	0	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10			
	19	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10		
	20	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	

Simply find the number of correct answers the student produced along the top of the chart and the number of total questions on the worksheet or activity along the left side. Then find the cell where the column and the row converge. This indicates the Tens score. By using the Tens Conversion Chart, you can easily convert any raw score, from 0 to 20, into a Tens score.

Please note that the Tens Conversion Chart was created to be used with assessments that have a defined number of items (such as written assessments). However, teachers are encouraged to use the Tens system to record informal observations as well. Observational Tens scores are based on your observations during class. It is suggested that you use the following basic rubric for recording observational Tens scores.

9–10	Student appears to have excellent understanding
7–8	Student appears to have good understanding
5–6	Student appears to have basic understanding
3–4	Student appears to be having difficulty understanding
1–2	Student appears to be having great difficulty understanding
0	Student appears to have no understanding/does not participate

CORE KNOWLEDGE LANGUAGE ARTS

SERIES EDITOR-IN-CHIEF

E. D. Hirsch, Jr.

PRESIDENT

Linda Bevilacqua

EDITORIAL STAFF

Carolyn Gosse, Senior Editor - Preschool
Khara Turnbull, Materials Development Manager
Michelle L. Warner, Senior Editor - Listening & Learning

Mick Anderson
Robin Blackshire
Maggie Buchanan
Paula Coyner
Sue Fulton
Sara Hunt
Erin Kist
Robin Luecke
Rosie McCormick
Cynthia Peng
Liz Pettit
Ellen Sadler
Deborah Samley
Diane Auger Smith
Sarah Zelinke

DESIGN AND GRAPHICS STAFF

Scott Ritchie, Creative Director

Kim Berrall
Michael Donegan
Liza Greene
Matt Leech
Bridget Moriarty
Lauren Pack

CONSULTING PROJECT MANAGEMENT SERVICES

ScribeConcepts.com

ADDITIONAL CONSULTING SERVICES

Ang Blanchette
Dorrit Green
Carolyn Pinkerton

ACKNOWLEDGMENTS

These materials are the result of the work, advice, and encouragement of numerous individuals over many years. Some of those singled out here already know the depth of our gratitude; others may be surprised to find themselves thanked publicly for help they gave quietly and generously for the sake of the enterprise alone. To helpers named and unnamed we are deeply grateful.

CONTRIBUTORS TO EARLIER VERSIONS OF THESE MATERIALS

Susan B. Albaugh, Kazuko Ashizawa, Nancy Braier, Kathryn M. Cummings, Michelle De Groot, Diana Espinal, Mary E. Forbes, Michael L. Ford, Ted Hirsch, Danielle Knecht, James K. Lee, Diane Henry Leipzig, Martha G. Mack, Liana Mahoney, Isabel McLean, Steve Morrison, Juliane K. Munson, Elizabeth B. Rasmussen, Laura Tortorelli, Rachael L. Shaw, Sivan B. Sherman, Miriam E. Vidaver, Catherine S. Whittington, Jeannette A. Williams

We would like to extend special recognition to Program Directors Matthew Davis and Souzanne Wright who were instrumental to the early development of this program.

SCHOOLS

We are truly grateful to the teachers, students, and administrators of the following schools for their willingness to field test these materials and for their invaluable advice: Capitol View Elementary, Challenge Foundation Academy (IN), Community Academy Public Charter School, Lake Lure Classical Academy, Lepanto Elementary School, New Holland Core Knowledge Academy, Paramount School of Excellence, Pioneer Challenge Foundation Academy, New York City PS 26R (The Carteret School), PS 30X (Wilton School), PS 50X (Clara Barton School), PS 96Q, PS 102X (Joseph O. Loretan), PS 104Q (The Bays Water), PS 214K (Michael Friedsam), PS 223Q (Lyndon B. Johnson School), PS 308K (Clara Cardwell), PS 333Q (Goldie Maple Academy), Sequoyah Elementary School, South Shore Charter Public School, Spartanburg Charter School, Steed Elementary School, Thomas Jefferson Classical Academy, Three Oaks Elementary, West Manor Elementary.

And a special thanks to the CKLA Pilot Coordinators Anita Henderson, Yasmin Lugo-Hernandez, and Susan Smith, whose suggestions and day-to-day support to teachers using these materials in their classrooms was critical.



CREDITS

Every effort has been taken to trace and acknowledge copyrights. The editors tender their apologies for any accidental infringement where copyright has proved untraceable. They would be pleased to insert the appropriate acknowledgment in any subsequent edition of this publication. Trademarks and trade names are shown in this publication for illustrative purposes only and are the property of their respective owners. The references to trademarks and trade names given herein do not affect their validity.

The Word Work exercises are based on the work of Beck, McKeown, and Kucan in *Bringing Words to Life* (The Guilford Press, 2002).

All photographs are used under license from Shutterstock, Inc. unless otherwise noted.

EXPERT REVIEWER

Margaret S. Saha

WRITERS

Rosie McCormick

ILLUSTRATORS AND IMAGE SOURCES

Cover: Steve Morrison; Title Page: Steve Morrison; Domain Icon: Core Knowledge Staff; 1A-1 (top left): Shutterstock; 1A-1 (top right): Shutterstock; 1A-1 (bottom left): Core Knowledge Staff; 1A-1 (bottom right): Shutterstock; 1A-2: Shutterstock; 1A-3: Shutterstock; 1A-4: Shutterstock; 1A-5: Shutterstock; 1A-6: Shutterstock; 1A-7: Shutterstock; 2A-1: Shutterstock; 2A-2: Shutterstock; 2A-3: Shutterstock; 2A-4: Shutterstock; 2A-5 : Shutterstock; 2A-6: Shutterstock; 2A-7: Shutterstock; 2A-8: Shutterstock; 2B-1: Shutterstock; 3A-1: Shutterstock; 3A-2: Shutterstock; 3A-3: Shutterstock; 3A-4: Shutterstock; 3A-5: Shutterstock; 3A-6 : Shutterstock; 3A-7: Shutterstock; 3A-8: Shutterstock; 3B-1: Shutterstock; 4A-1: Shutterstock; 4A-2: Shutterstock; 4A-3 (left): Shutterstock; 4A-3 (right): Core Knowledge Staff; 4A-4: Shutterstock; 4A-5: Shutterstock; 4A-6: Shutterstock; 4A-7: Shutterstock; 4A-8: Core Knowledge Staff; 5A-1: Shutterstock; 5A-2: Shutterstock; 5A-3: Shutterstock; 5A-4: Shutterstock; 5A-5: Shutterstock; 5A-6: Shutterstock; 5A-7: Shutterstock; 5A-8: Shutterstock; 5A-9: Shutterstock; 6A-1: Shutterstock; 6A-2 (top left): Shutterstock; 6A-2 (bottom left): Core Knowledge Staff; 6A-2 (right): Shutterstock; 6A-3: Shutterstock; 6A-4: Core Knowledge Staff; 6A-5: Shutterstock; 6A-6: Core Knowledge Staff; 7A-1: Shutterstock; 7A-2: Shutterstock; 7A-3: Shutterstock; 7A-4: Shutterstock; 7A-5: Shutterstock; 7A-6: Shutterstock; 7A-7: Shutterstock; 8A-1: Shutterstock; 8A-2: Core Knowledge Staff; 8A-3: Shutterstock; 8A-4: Core Knowledge Staff; 8A-5: Shutterstock; 8A-6: Shutterstock; 8A-7: Shutterstock; 8A-8: Shutterstock; 8A-9 (left): Shutterstock; 8A-9 (right): Core Knowledge Staff; 8A-10: Shutterstock; 8A-11: Shutterstock; 8A-12: Shutterstock; 8A-13: Shutterstock; 9A-1: Shutterstock; 9A-2: Shutterstock; 9A-3: Shutterstock; 9A-4: Shutterstock; 9A-5: Shutterstock; 9A-6: Shutterstock; 9A-7: Core Knowledge Staff; 9A-8: Shutterstock; 9A-9: Shutterstock; 9A-10: Shutterstock; 9A-11: Shutterstock; 4B: Shutterstock; Take Home Icon: Core Knowledge Staff; 1B-2: Shutterstock; 1B-3: Core Knowledge Staff; 3B-1: Shutterstock; 4B-1: Core Knowledge Staff; 5B-1: Shutterstock; PP-1: Core Knowledge Staff; PP-1 Answer Key: Core Knowledge Staff; PP-2: Shutterstock; PP-2 Answer Key: Shutterstock; 6B-1: Core Knowledge Staff; 6B-3: Core Knowledge Staff; 6B-4: Core Knowledge Staff; 7B-1: Shutterstock; 8B-1: Shutterstock; 9B-1: Core Knowledge Staff; DA-2 (sunflower): Core Knowledge Staff; DA-2 (tree): Shutterstock; DA-2 (chicken): Core Knowledge Staff; DA-2 (frog): Shutterstock; DA-2 (butterfly): Shutterstock; DA-2 Answer Key (sunflower): Core Knowledge Staff; DA-2 Answer Key (tree): Shutterstock; DA-2 Answer Key (chicken): Core Knowledge Staff; DA-2 Answer Key (frog): Shutterstock; DA-2 Answer Key (butterfly): Shutterstock

Regarding the Shutterstock items listed above, please note: "No person or entity shall falsely represent, expressly or by way of reasonable implication, that the content herein was created by that person or entity, or any person other than the copyright holder(s) of that content."



Cycles in Nature

Tell It Again!™ Read-Aloud Supplemental Guide

Listening & Learning™ Strand
GRADE 2

The Core Knowledge Foundation
www.coreknowledge.org