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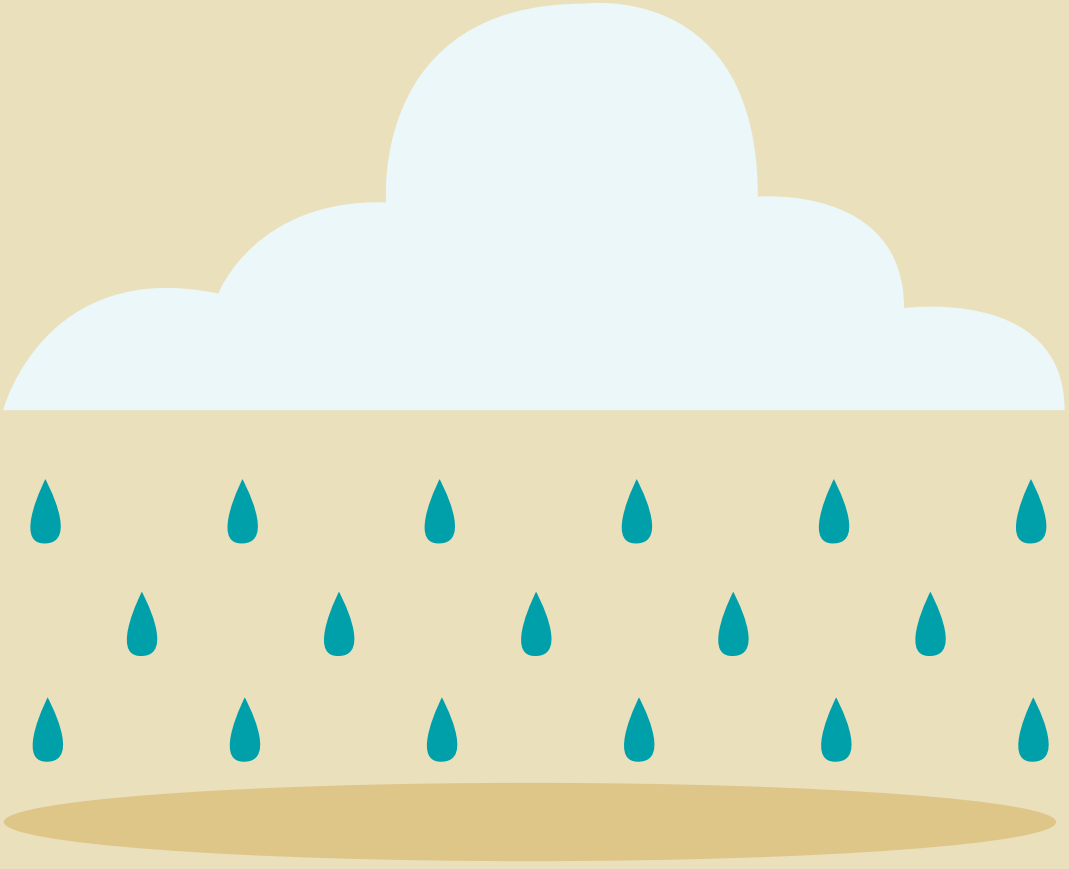
ELEMENTARY LITERACY PROGRAM

ENGLISH



Grade 2

Knowledge 5 | Teacher Guide

Cycles of Nature: Clouds to Raindrops

Grade 2 | Knowledge 5

Cycles of Nature:
Clouds to Raindrops

Teacher Guide

Notice and Disclaimer: The agency has developed these learning resources as a contingency option for school districts. These are optional resources intended to assist in the delivery of instructional materials in this time of public health crisis. Feedback will be gathered from educators and organizations across the state and will inform the continuous improvement of subsequent units and editions. School districts and charter schools retain the responsibility to educate their students and should consult with their legal counsel regarding compliance with applicable legal and constitutional requirements and prohibitions.

Given the timeline for development, errors are to be expected. If you find an error, please email us at **texashomelearning@tea.texas.gov.**

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Grade 2 | Knowledge 5

Contents

CYCLES OF NATURE: CLOUDS TO RAINDROPS

Grade 2 | Knowledge 5

Introduction

This introduction includes the necessary background information to be used in teaching the *Cycles of Nature: Clouds to Raindrops* domain. The Teacher Guide for *Cycles of Nature: Clouds to Raindrops* 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. Each entire lesson will require a total of sixty minutes.

This domain includes a two-day Pausing Point following 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 fourteen days total on this domain.

DOMAIN COMPONENTS

Along with this Teacher Guide, you will need:

- Flip Book for *Cycles of Nature: Clouds to Raindrops*
- Image Cards for *Cycles of Nature: Clouds to Raindrops*
- Activity Book for *Cycles of Nature: Clouds to Raindrops*
- Digital Components for *Cycles of Nature: Clouds to Raindrops*

Additional resources that you may wish to integrate into your classroom instruction are:

- Trade Book Guide for *The Snowflake: A Water Cycle Story* by Neil Waldman
- Read-Aloud Videos for *Cycles of Nature: Clouds to Raindrops*

All domain components materials can also be found on the program's digital components site.

WHY CYCLES OF 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 of nature by learning more about seasonal cycles, and by beginning their study of flowering plants and trees, animal life cycles, and the importance of the water cycle. Students will also learn about the effect seasonal changes have on plants and animals. As students learn that all organisms experience the developmental stages of the life cycle, they will also learn how their growth and development relates to Earth's seasonal cycles and begin to understand how all organisms depend on Earth's limited water supply.

This domain also provides opportunities for students to build content knowledge and draw connections to the science subject area but it does not explicitly teach the Texas Essential Knowledge and Skills standards for Science. At times throughout the unit, you may wish to build on class discussions to support students in making cross-curricular connections to the strands of Earth and Space, Organisms and Environments, and Scientific Investigation and Reasoning from the science discipline.

WHAT STUDENTS HAVE ALREADY LEARNED

The following domains are particularly relevant to the Read-Alouds students will hear in *Cycles of Nature: Clouds to Raindrops*. This background knowledge will greatly enhance students' understanding of the Read-Alouds they are about to enjoy:

Plants: How Do They Grow? (Kindergarten)

Seasons and Weather: As the Earth Turns (Kindergarten)

Taking Care of the Earth (Kindergarten)

Astronomy: Space Exploration (Grade 1)

Animals and Habitats: The World We Share (Grade 1)

CORE VOCABULARY FOR CYCLES OF NATURE: CLOUDS TO RAINDROPS

The following list contains all of the core vocabulary words in *Cycles of Nature: Clouds to Raindrops* in the forms in which they appear in the Read-Alouds. Boldfaced words in the list have an associated Word Work activity. 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 **stage** thrive	**Lesson 4** attracted emerge pollinators **protective** reproduce	**Lesson 7** amphibian **burrow** gills lungs metamorphosis
Lesson 2 equator hemisphere revolves **tilt**	**Lesson 5** decomposers dependent flexible **germination** mature	**Lesson 8** larva molt **transparent**
Lesson 3 absorbed **adapt** migrate minimum photosynthesis	**Lesson 6** albumen embryo fertilize **replenished** yolk	**Lesson 9** condensation evaporation humidity **precipitation** recycled

CORE CONTENT OBJECTIVES

- Explain that a cycle is a sequence of events that repeats itself again and again
- Explain how the rotation of Earth causes daytime and nighttime
- Explain how tilt and the revolution of Earth around the sun causes the seasons
- Describe the seasonal cycle: spring, summer, autumn, winter
- Explain effects of seasonal changes on plants and animals
- 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)
- Explain why trees are important to living things on earth
- Explain that a life cycle is the stages of growth of a living thing that repeat over and over
- Identify the stages of the life cycle of a chicken
- Identify the stages of the life cycle of a frog
- Identify the stages of the life cycle of a butterfly
- Describe the water cycle on earth, including evaporation, condensation, and precipitation
- Explain that there is a limited amount of water on Earth
- Identify three types of clouds: cirrus, cumulus, and stratus

WRITING

In this domain students will practice collecting and synthesizing information by using note-taking tools such as charts and graphic organizers. As a class students will participate in a shared research project by recording observations of scientific phenomena. Throughout the domain, students will practice summarizing knowledge about cycles. Toward the end of the domain, students will also work independently to write an informational paragraph summarizing the life cycle of a frog.

Writing Portfolio

The following activities may be added to students' writing portfolios:

- Sequencing and Summarizing the Life Cycle of a Flowering Plant (Activity Page 4.1)
- I Am A Tree response strips (Activity Page 5.1)
- Interactive Illustrations (Lesson 6 Exit Pass)
- Informational Paragraph (Activity Page 7.1)
- Sequencing and Summarizing the Life Cycle of a Butterfly (Activity Page 8.1)
- Summarize the Water Cycle (Lesson 9 Exit Pass)

LESSON

1

CYCLES OF NATURE: CLOUDS TO RAINDROPS

The Cycle of Daytime and Nighttime

PRIMARY FOCUS OF LESSON

Speaking and Listening

Students will provide examples of cycles.

TEKS 2.1.D

Reading

Students will explain how the rotation of the earth causes daytime and nighttime, evaluating details read to determine key ideas.

TEKS 2.6.E; TEKS 2.6.G

Language

Students will demonstrate an understanding of the Tier 2 word *stage*.

TEKS 2.3.D; TEKS 2.6.D

Reading

Students will observe and describe how the rotation of the earth causes daytime and nighttime.

TEKS 2.1.D; TEKS 2.6.E

FORMATIVE ASSESSMENT

Activity Page 1.1

Earth's Rotation Students will determine how the rotation of the earth causes daytime and nighttime.

TEKS 2.6.G

TEKS 2.1.D Work collaboratively with others to follow agreed-upon rules for discussion, including listening to others, speaking when recognized, making appropriate contributions, and building on the ideas of others; **TEKS 2.6.E** Make connections to personal experiences, ideas in other texts, and society; **TEKS 2.6.G** Evaluate details read to determine key ideas; **TEKS 2.3.D** Identify, use, and explain the meaning of antonyms, synonyms, idioms, and homographs in context; **TEKS 2.6.D** Create mental images to deepen understanding.

LESSON AT A GLANCE

	Grouping	Time	Materials
Introducing the Read-Aloud (10 min.)			
Core Connections	Whole Group	10 min.	
Read-Aloud (30 min.)			
Purpose for Listening	Whole Group	30 min.	❑ globe ❑ Poster 1M: Stage (Flip Book) ❑ Flip Book: 1A-1–1A-7
"The Cycle of Daytime and Nighttime"			
Comprehension Questions			
Word Work: *Stage*			
This is a good opportunity to take a break.			
Application (20 min.)			
Observing Earth's Movement	Whole Group	20 min.	❑ globe ❑ flashlight ❑ chart paper, whiteboard, or chalkboard ❑ Activity Page 1.1
Take-Home Material			
Family Letter			❑ Activity Page 1.2

ADVANCE PREPARATION

Application

- Locate a globe, preferably a globe mounted on a stand at an angle that allows it to rotate, for the Observing Earth's Movement activity. This activity requires light and shadow created by a flashlight, which may require a fairly dark room. Practice the Observing Earth's Movement activity in your classroom to ensure that you can adequately demonstrate light and shadow with the flashlight. You may need to plan to conduct this activity in a darker classroom or even with small groups in a closet to get the full effect of the light and shadow.
- Prepare an Observations Board where you can record the dictated scientific observations of students. You may wish to use a piece of chart paper with the title "Observations: Cycles of Nature," or you may wish to create a bulletin board on which you can post class observations throughout the domain. You will use this Observations Board in Lessons 1, 2, and 9, but you should also encourage students to add their own written, drawn, or oral observations at any time.
- The demonstration planned for the Lesson 9 Application activity will take time because evaporation and condensation must occur. You may wish to prepare for this activity in this lesson and have students make observations during the domain. (See Lesson 9 for details)

Universal Access

- If possible, locate and borrow several globes so that small groups of students have access to a globe for the first three Read-Alouds.
- Plan to use a camera (without a flash) to document the demonstration during the Application activity.

CORE VOCABULARY

axis, n. a real or imaginary central line around which an object spins
Example: The axis of Earth is an imaginary line that goes through the North and South Poles.
Variation(s): axes

cycle, n. the period of time it takes to complete a sequence of events
Example: The life cycle of a frog includes the egg, the tadpole, and the adult frog.
Variation(s): cycles

rotating, v. turning around a central point
Example: As I pedal my bike, the tires are rotating to keep me moving.
Variation(s): rotate, rotates, rotated

stage, n. a particular time in the growth of something
Example: One stage in the life cycle of a butterfly is the chrysalis.
Variation(s): stages

thrive, v. grow and develop well
Example: With such an abundance of green grass and clover to eat, the sheep will thrive.
Variation(s): thrives, thrived, thriving

Vocabulary Chart for "The Cycle of Daytime and Nighttime"

Type	Tier 3 Domain-Specific Words	Tier 2 General Academic Words	Tier 1 Everyday Speech Words
Vocabulary	axis cycle *(ciclo)*	rotating thrive	
Multiple Meaning		stage	
Sayings and Phrases	life cycle gives life to		

Start Lesson

Lesson 1: The Cycle of Daytime and Nighttime

Introducing the Read-Aloud

10M

Speaking and Listening: Students will provide examples of cycles.

TEKS 2.1.D

CORE CONNECTIONS

Note: Students who have participated in the program in Kindergarten and Grade 1 will already be familiar with certain cycles of nature from the Kindergarten *Plants: How Do They Grow?* domain, the Kindergarten *Seasons and Weather: As the Earth Turns* domain, and the Grade 1 *Astronomy: Space Exploration* domain.

Cycles

- 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.
- Have students share some examples of events they have learned about that repeat, or occur over and over again in the same order. You may wish to use the following examples to elicit discussion:
  - days of the week
  - months in the year
  - day and night (Grade 1 *Astronomy: Space Exploration)*
  - seasons (Kindergarten *Seasons and Weather: As the Earth Turns)*
  - life cycles of plants and animals (Kindergarten *Plants: How Do They Grow?*)

Check for Understanding

Turn and Talk: Tell your partner one example of a cycle.

ENGLISH LANGUAGE LEARNERS

Speaking and Listening

Exchanging Information and Ideas

Beginning
Elicit short answers from students (e.g., "Name a cycle.").

Intermediate
Elicit more details in students' answers (e.g., "What happens during the cycle?").

Advanced/Advanced High
Elicit higher-level insights and comparisons (e.g., "Why is this an example of a cycle?").

ELPS 2.G; ELPS 3.F

TEKS 2.1.D Work collaboratively with others to follow agreed-upon rules for discussion, including listening to others, speaking when recognized, making appropriate contributions, and building on the ideas of others.

Earth's Rotation and Revolution

- 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, on its axis.
  - Earth also revolves, or moves in a path around, the sun.
- Tell students they are going to learn over the next few lessons 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.
- 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. Tell students today they will learn why they experience daytime and nighttime on Earth.

Lesson 1: The Cycle of Daytime and Nighttime

Read-Aloud

30M

Reading: Students will explain how the rotation of the earth causes daytime and nighttime, evaluating details read to determine key ideas.

TEKS 2.6.E; TEKS 2.6.G

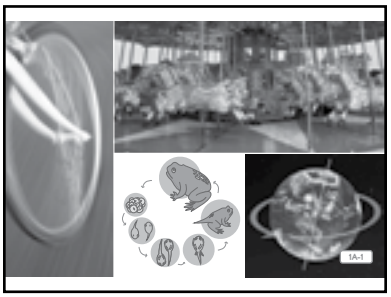
Language: Students will demonstrate an understanding of the Tier 2 word *stage.*

TEKS 2.3.D; TEKS 2.6.D

PURPOSE FOR LISTENING

- Tell students to listen carefully to learn why they experience daytime and nighttime.

"THE CYCLE OF DAYTIME AND NIGHTTIME" (15 MIN.)



Show Image 1A-1: Things that go round and round

A **cycle** is like a circle that goes around and around. 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. A cycle is a sequence of events that repeats itself again and again. Just like you can pick any part of the circle to be the starting point, we choose one part of each natural cycle to be our starting point. This makes it easier to talk about all of the parts of the cycle. The most important thing to remember is that cycles always come back to the chosen starting point before starting over again. *Stand up and face the blackboard. Spin around in a circle until you come back to facing the blackboard. You've just come back to your starting point!*

Show Image 1A-2: Living things and their young

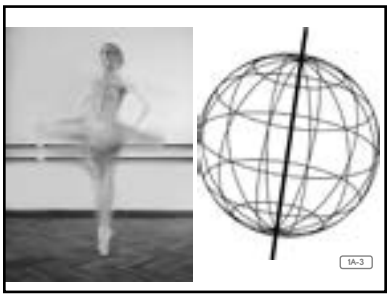
All living things are part of a cycle of life that keeps going around and around. What does this mean? It means that almost all living things are born, grow, reproduce (or make babies), and eventually die. The reproduction of living things is one way that life continues

TEKS 2.6.E Make connections to personal experiences, ideas in other texts, and society; **TEKS 2.6.G** Evaluate details read to determine key ideas; **TEKS 2.3.D** Identify, use, and explain the meaning of antonyms, synonyms, idioms, and homographs in context; **TEKS 2.6.D** Create mental images to deepen understanding.

Support

The word *stage* can also have other meanings, such as a platform on which people dance, sing, and act for an audience.

on Earth. A life cycle includes each **stage** that a living thing goes through from birth to adult. *Here the word* stage *means a particular time in the growth of something.* You will hear a lot more about life cycles later in this domain. First, there are other cycles of nature that make life on Earth possible, too.



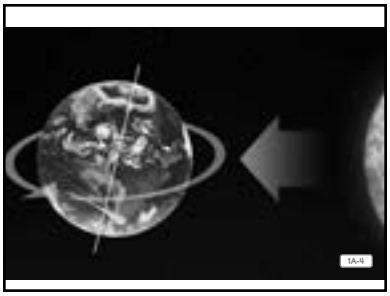
Show Image 1A-3: Spinning

Earth spins around and around, a never-ending cycle that shapes everything we do here on Earth. *The earth is constantly moving. Can we feel the earth moving?* As Earth turns around, part of it faces the sun and part of it faces away from the sun. *Remember, the sun is a star that provides light, heat, and energy for the earth.* 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**. *[Point to the axis in the image.]* 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. *Try to imagine an invisible line running through our body from head to foot—a central line, or axis, around which we can spin.* 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.

Support

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



Show Image 1A-4: Earth rotating on its axis

Rotation is the movement of Earth on its axis. This controls the cycle of daytime and nighttime. Earth takes twenty-four hours to turn, or rotate, back to the position from which it started. Rotation takes us from daytime to nighttime, and back to the very beginning of daytime again, before the cycle starts over.

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.

Show Image 1A-5: Sunrise

The cycle of daytime and nighttime begins with sunrise in the early morning. Sunlight hits our planet and moves across Earth from east to west. 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!" *Is the sun really moving or "coming up?"* (No) *What is actually happening?* (The earth is moving, but to us it looks like the sun is moving.) This first appearance of the sun above the eastern horizon is called sunrise.

Show Image 1A-6: Sunset

Over the course of the day, the sun appears 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 appears lower in the sky and disappears below the horizon. That's when people say, "The sun is going down." *Is the sun really going down? Why can't we see it anymore?* 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 appear to rise and set each day. *Have you seen a sunset recently? How would you describe it?*

Show Image 1A-7: Children sleeping and children waking up

This daily rotation explains why there is always daytime and nighttime 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.

Support

Have you ever seen the sun rise? How does it look?

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. *[Show students where they live on a globe.] Is it day or night right now where we live?* (daytime) *[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?* (nighttime)

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

ENGLISH LANGUAGE LEARNERS

Reading

Selecting Language Resources

Beginning
Reframe questions as simple yes/no questions (e.g., "Is the main topic of this Read-Aloud the cycle of daytime and nighttime?").

Intermediate
Provide students with a specific sentence frame (e.g., "The main topic of this Read-Aloud is ...").

Advanced/Advanced High
Encourage students to use key details in complete sentences (e.g., "The main topic of the Read-Aloud is the cycle of daytime and nighttime.").

ELPS 4.G; ELPS 4.I

COMPREHENSION QUESTIONS (10 MIN.) TEKS 2.6.G

1. **Literal.** What is the main topic of the Read-Aloud, or what does this Read-Aloud explain? (*This Read-Aloud explains 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.*)

Check for Understanding

Turn and Talk: How does the rotation of Earth cause daytime and nighttime? (During rotation, the earth spins on its axis. The part of Earth that faces the sun changes during rotation, giving some parts of Earth daytime and some parts of Earth nighttime.)

4. **Evaluative.** *Think-Pair-Share:* How would life on Earth be different if Earth did not rotate? (*Answers may vary.*)

TEKS 2.6.G Evaluate details read to determine key ideas.

WORD WORK: STAGE (5 MIN.)

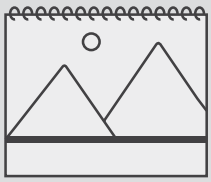
1. In the Read-Aloud you heard, "A life cycle includes each stage that a living thing goes through from birth to adult."
2. Say the word *stage* with me.
3. Here *stage* means a particular time in the growth of something.
4. One stage in the life cycle of a butterfly is the chrysalis.
5. Can you think of the stages of growth of humans? Try to use the word *stage* when you talk about them. At what stage do humans start out? *(baby)* [Ask two or three students. If necessary, guide and/or rephrase the students' responses: "_____ is a stage in the life cycle of humans."]
6. What's the word we've been talking about?

Show Poster 1M (Stage)

Use a Making Choices activity for follow-up.

- Use the Poster 1M to help students understand two different meanings of the word *stage*.
  - The word stage can also have other meanings, such as a raised platform on which people dance, sing, and act. Look at the two pictures. In the Read-Aloud you heard, "A life cycle includes each stage that a living thing goes through from birth to adult."
- Have students hold up one or two fingers to indicate which image on the poster shows this meaning.
  - Stage also means a raised platform on which people sing, dance, and act.
- Have students hold up one or two fingers to indicate which image on the poster shows this meaning.

Poster 1M



Check for Understanding

Think-Pair-Share: Have students discuss the different meanings of *stage* with a partner:

- Talk about what you think of when you see this kind of stage. [Point to the image of stage that shows a theater stage.] (*Answers may vary but may include going to see a play, acting in the school play, etc.)*
- Now talk about what you think of when you see this kind of stage [Point to the image of stage that shows times in the growth or development of something.] *(Answers may vary but may include babies growing into adults, times in someone's life, etc.)*

Lesson 1: The Cycle of Daytime and Nighttime

Application

20M

Reading: Students will observe and describe how the rotation of the earth causes daytime and nighttime.

TEKS 2.1.D; TEKS 2.6.E

OBSERVING EARTH'S MOVEMENT

Rotation: Day and Night

- Tell students you are going to do a demonstration that allows them to make observations of the earth rotating and the cycle of daytime and nighttime.
- Show students the Observations Board you created in advance and read the title, "Observations: Cycles of Nature." Tell students you will record your observations as a class on this board after the demonstration. Tell students you will be using the Observations board to record observations throughout the domain. Encourage students to make relevant observations about cycles of nature at any time.
- Show students a globe, pointing out the United States and the state in which you live. Have a student place a sticker where you live on the globe.
- Show students the tilt of the globe and remind them that the earth's axis is tilted and always points in the same direction (to the right).
- Point to the tips of the globe's axis and ask:
  - What is the name of the imaginary central line around which the earth spins, or rotates? *(axis)*
- Darken the room. Ask a volunteer to point the flashlight at the globe from a single horizontal point. Tell students that the flashlight represents the sun.
- Rotate the globe counterclockwise if you are looking down at the North Pole to demonstrate rotation. Rotate the globe until the sticker marking your town is directly in the path of the light.
- ***Observation 1:*** Help students observe that when it is daytime in your town, your town is in the path of light from the sun and that when it is daytime in your town, it is nighttime on the opposite side of the Earth.
- Then slowly spin the globe counterclockwise until your town is in complete shadow.

TEKS 2.1.D Work collaboratively with others to follow agreed-upon rules for discussion, including listening to others, speaking when recognized, making appropriate contributions, and building on the ideas of others; **TEKS 2.6.E** Make connections to personal experiences, ideas in other texts, and society.

ENGLISH LANGUAGE LEARNERS

Speaking and Listening

Selecting Language Resources

Beginning
Elicit short one-word answers from students (e.g., "Is our town in daytime or nighttime now?").

Intermediate
Elicit more detail in students' answers (e.g., "Describe what is happening in our town now.").

Advanced/Advanced High
Elicit higher-level insights and comparisons (e.g., "How can you tell when it is daytime and when it is nighttime in our town?").

ELPS 2.G; ELPS 3.F

Support

As you record observations on the Observations Board, you may wish to make drawings beside each recorded observation to help students visually remember what they observed. Refer to Activity Page 1.1 for ideas of how to depict daytime and nighttime on earth as it relates to rotation in a simple drawing. You might also take photographs (without a flash) to document your demonstration and support student observations.

- ***Observation 2:*** Help students observe that it is nighttime in your town when the sun is shining on the opposite side of the globe and your town is in shadow.
- Now continue slowly spinning the globe counterclockwise until the sticker is once again directly in the beam of light.
- ***Observation 3:*** Help students observe that when the earth spins all the way around one time, one whole day—or twenty-four hours—has passed on the earth.

Challenge

Slowly rotate the globe so your town is half in the path of the light and half out of the path of light and ask students what is happening in your town at that moment. *(sunrise)* Continue rotating the globe counterclockwise and ask what happens as your town goes back into shadow. *(sunset)*

Check for Understanding

What does the rotation of the earth on its axis cause? *(the cycle of daytime and nighttime)*

Activity Page 1.1

- Give students Activity Page 1.1. Read the prompts for each question and tell students to circle the appropriate answer.
- Collect Activity Page 1.1 to ensure that students understand how the rotation of the earth causes daytime and nighttime.

End of Lesson

Lesson 1: The Cycle of Daytime and Nighttime

Take-Home Material

FAMILY LETTER

Activity Page 1.2

Send home Activity Page 1.2.

LESSON

2

CYCLES OF NATURE: CLOUDS TO RAINDROPS

The Reasons for Seasons

PRIMARY FOCUS OF LESSON

Language

Students will demonstrate an understanding of the words *rotation* and *revolution* as they apply to the movement of Earth.

TEKS 2.3.B; TEKS 2.6.E

Reading

Students will explain how the tilt of the earth affects the northern seasons using newly acquired vocabulary as appropriate.

TEKS 2.6.G; TEKS 2.7.F

Students will recognize characteristics and structures of informational text, including graphics, to locate and gain information.

TEKS 2.9.D.ii

Language

Students will demonstrate an understanding of the Tier 2 word *tilt*.

TEKS 2.3.B

Speaking and Listening

Students will observe and describe how the revolution and tilt of the earth cause seasons. TEKS 2.1.C

Reading

Students will describe how a poet's use of rhyme and repetition adds to the meaning of a poem. TEKS 2.10.F

FORMATIVE ASSESSMENT

Activity Page 2.1 **Seasons** Students will demonstrate an understanding of how the tilt of the earth affects the northern seasons.

TEKS 2.6.G

TEKS 2.3.B Use context within and beyond a sentence to determine the meaning of unfamiliar words; **TEKS 2.6.E** Make connections to personal experiences, ideas in other texts, and society; **TEKS 2.6.G** Evaluate details read to determine key ideas; **TEKS 2.7.F** Respond using newly acquired vocabulary as appropriate; **TEKS 2.9.D.ii** Recognize characteristics and structures of informational text, including features and graphics to locate and gain information; **TEKS 2.1.C** Share information and ideas that focus on the topic under discussion, speaking clearly at an appropriate pace and using the conventions of language; **TEKS 2.10.F** Identify and explain the use of repetition.

LESSON AT A GLANCE

	Grouping	Time	Materials
Introducing the Read-Aloud (10 min.)			
What Have We Already Learned?	Whole Group	10 min.	❑ Observations Board (created in Lesson 1) ❑ globe
Essential Background Information or Terms			
Read-Aloud (30 min.)			
Purpose for Listening	Whole Group	30 min.	❑ globe ❑ flashlight ❑ Flip Book: 2A-1–2A-8
"The Reasons for Seasons"			
Comprehension Questions			
Word Work: *Tilt*			
This is a good opportunity to take a break.			
Application (20 min.)			
Observing Earth's Movement	Whole Group	20 min.	❑ globe ❑ flashlight ❑ Observations Board (created in Lesson 1) ❑ Activity Page 2.1 ❑ Position of the Earth at the Start of Northern Seasons (Digital Components)
"Bed in Summer" by Robert Louis Stevenson			

ADVANCE PREPARATION

Note to Teacher

Note that the four seasons discussed in Lessons 2 and 3 might not have the same characteristics as the seasons you and your students experience where you live. Be sure to read Lessons 2 and 3 ahead of time and plan your discussion of seasons to include information relevant to students' daily experiences. If you live in a climate with milder seasonal changes, think about how you might teach about both milder seasons and about the more distinct seasonal changes depicted in the Read-Alouds in Lessons 2 and 3.

Universal Access

- You may wish to ask students the comprehension questions *after* you have completed the Application activity "Observing Earth's Movement." This activity kinesthetically reinforces the information presented in the Read-Aloud and may help students more deeply understand how the tilt of the earth affects the seasons in the Northern Hemisphere.

CORE VOCABULARY

equator, n. an imaginary line that divides Earth into the Northern and Southern Hemispheres
Example: People who live near the equator experience mild seasons and live in warm climates.
Variation(s): none

hemisphere, n. half of Earth as divided north and south by the equator or east and west by the Prime Meridian.
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 once every year.
Variation(s): revolve, revolved, revolving

tilt, v. to slant or place at an angle
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"

Type	Tier 3 Domain-Specific Words	Tier 2 General Academic Words	Tier 1 Everyday Speech Words
Vocabulary	equator *(ecuador)* hemisphere *(hemisferio)*	revolves tilt	
Multiple Meaning			
Sayings and Phrases	circular path leap year summer solstice winter solstice spring equinox autumn equinox		

Start Lesson

Lesson 2: The Reasons for Seasons

Introducing the Read-Aloud

10M

Language: Students will demonstrate an understanding of the words *rotation* and *revolution* as they apply to the movement of Earth.

TEKS 2.3.B; TEKS 2.6.E

Support

You may wish to conduct the demonstration from Lesson 1 again to reinforce student understanding of the cycle of nighttime and daytime.

Challenge

Why is the cycle of daytime and nighttime important to living things on earth? *(it gives living things just the right amount of time to be active and time to rest)*

WHAT HAVE WE ALREADY LEARNED? (5 MIN.)

- Review what students have learned by asking the following questions. Students may refer to the Observations board you created during Lesson 1.
  - What is a cycle? *(a sequence of events or stages that repeats again and again)*
  - What cycle have we learned about? *(the cycle of daytime and nighttime)*
  - Why do we have the cycle of daytime and nighttime? *(because the Earth rotates; when it is facing the sun we have daylight and when it is facing away from the sun we have nighttime or darkness)*
- Remind students that it takes twenty-four hours, or one whole day and one whole night, for Earth to rotate once on its axis.

Check for Understanding

Make a Choice: Does daytime happen when the part of Earth you live on faces the sun or faces away from the sun? *(when the part of Earth you live on faces the sun)*

TEKS 2.3.B Use context within and beyond a sentence to determine the meaning of unfamiliar words; **TEKS 2.6.E** Make connections to personal experiences, ideas in other texts, and society.

ESSENTIAL BACKGROUND INFORMATION OR TERMS (5 MIN.)

Seasons

- Discuss the seasons you experience where you live.
- Tell students that different people all over the world experience the seasons in different ways, but that today you will be discussing the seasons people in the Northern Hemisphere, where you live, experience.
- Ask a student to point to your approximate location on the globe.

Rotation and Revolution

- Have students sit in a circle around you.
- Prompt students to remember that Earth's rotation causes the cycle of daytime and nighttime.
  - What is the word that describes how the earth moves on its axis? *(rotation)*
- Stand in the center of students and tell students you are the sun. You may wish to create a "sun hat" or hold a picture of the sun.
- Tell students they are going to be little Earths. Have students stand up and show you how Earth rotates on its axis.
- Then, tell students when they are facing the sun (you), they should say, "Daytime!" When their backs are to the sun, they should say, "Nighttime!" After you have completed the activity, have students sit down.
- Tell students Earth moves in another way, 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.
- Ask one student to stand and be the earth. Have the student walk in a circle around you. Tell students the earth is revolving around the sun. Though the student who is playing Earth cannot both rotate and revolve around the sun, remind students that when the earth revolves around the sun, it is also rotating.

ENGLISH LANGUAGE LEARNERS

Speaking and Listening

Selecting Language Resources

Beginning
Reframe open ended questions as simple yes/no questions (e.g., "Do we experience summer?").

Intermediate
Provide students with a specific sentence frame (e.g., "Summer is . . . ").

Advanced/Advanced High
Encourage students to answer questions in complete sentences (e.g., "In the season, summer, it is hot and lots of flowers bloom.").

ELPS 2.G; ELPS 3.F

Support

Show students photographs showing the seasonal changes where you live.

Challenge

Compare and contrast *rotation* and *revolution*.

Check for Understanding

Show Me: Have students stand and show you the rotation of the earth. Have a few students take turns showing you the revolution of the earth.

Lesson 2: The Reasons for Seasons

Read-Aloud

30M

Reading: Students will explain how the tilt of the earth affects the northern seasons using newly acquired vocabulary as appropriate.

TEKS 2.6.G; TEKS 2.7.F

Reading: Students will recognize characteristics and structures of informational text, including graphics, to locate and gain information.

TEKS 2.9.D.ii

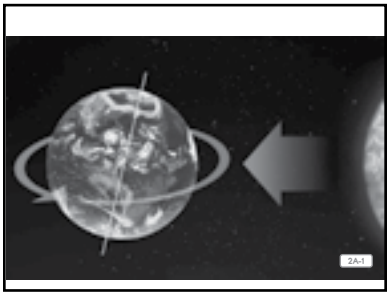
Language: Students will demonstrate an understanding of the Tier 2 word *tilt*.

TEKS 2.3.B

PURPOSE FOR LISTENING

- Tell students to listen carefully to hear about how Earth's revolution relates to the seasons in the Northern Hemisphere.

"THE REASONS FOR SEASONS" (15 MIN.)



Show Image 2A-1: Earth rotating on its axis

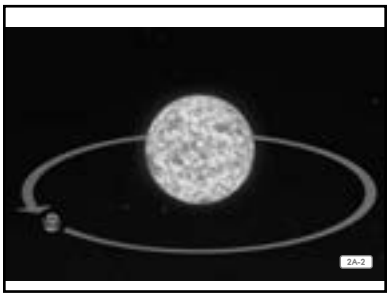
Right now, Earth is moving! Even though you cannot feel it, Earth is always moving in space in two ways. The first way the earth moves is called rotation. Rotation is the movement of Earth around its axis. This controls the cycle of daytime and nighttime. The Earth takes twenty-four hours to turn, or rotate, once on its axis. The earth rotates in a counterclockwise direction from daytime to nighttime and back to daytime again. Counterclockwise *means to move in the opposite direction from the hands on a clock. [Demonstrate counterclockwise for students.]* 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. 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. *Stand up and turn or rotate one time moving*

TEKS 2.6.G Evaluate details read to determine key ideas; **TEKS 2.7.F** Respond using newly acquired vocabulary as appropriate; **TEKS 2.9.D.ii** Recognize characteristics and structures of informational text, including features and graphics to locate and gain information; **TEKS 2.3.B** Use context within and beyond a sentence to determine the meaning of unfamiliar words.

in a counterclockwise direction. Your full rotation models the earth's rotation as it completes one full twenty-four hour cycle.

Support

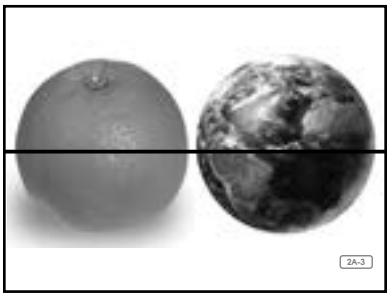
Using the globe, model the earth revolving around the sun while rotating.



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

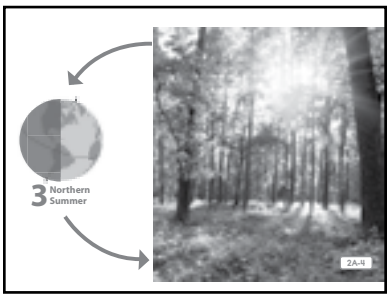
The second way the earth moves is called revolution. Earth **revolves**, or orbits, around the sun in an almost circular path. Therefore, as you live on Earth, you are traveling around the sun, too. It takes Earth 365¼ days—or one year—to complete one revolution, or orbit. You might be wondering about the ¼ of a day. This ¼ explains why we have a leap year every four years. *Four quarters equal one whole, or one whole number, just like four quarters equal one dollar.* During a leap year, we add on one additional day to the calendar to catch it up to Earth's orbit around the sun. *We add one day in February, February 29th, every four years.*

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

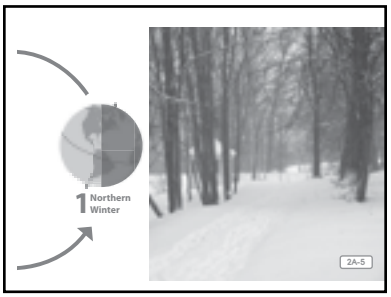
Earth is divided into **hemispheres**, or halves. Just like an orange can be cut in half either through the center from side to side or from the top to the bottom, Earth can also be divided two different ways. Our planet is divided in half into the Northern and Southern Hemispheres by an imaginary line 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. Earth can also be divided into two halves called the Eastern and Western Hemispheres. These hemispheres are divided by the Prime Meridian [/mə*rid*ee*en/], an imaginary line used to split Earth into eastern and western halves. *[Locate the equator, the North Pole, the South Pole, and the Prime Meridian on the globe for students.]*



Show Image 2A-4: Northern summer

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. *[Shine a light on the tilted globe to demonstrate the more direct angle of intense sunlight.]* 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 [/sol*stis/] 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. *[Direct students' attention to the graphic. What are the features in this graphic? What is the purpose of the arrows? Why is there both a diagram and a photograph?]* **TEKS 2.9.D.ii**

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. *North and south are opposites. They are opposite directions.*



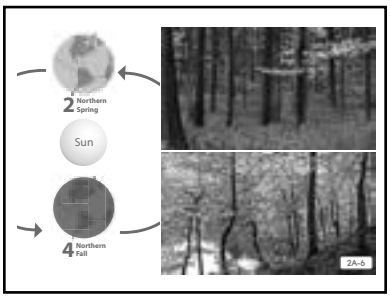
Show Image 2A-5: Northern winter

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!

Challenge

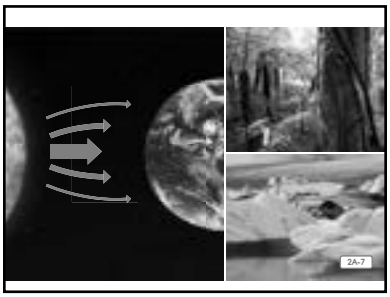
Before revealing that summer is the season when the Northern Hemisphere is tilted toward the sun, ask students to try to infer which season it might be.

TEKS 2.9.D.ii Recognize characteristics and structures of informational text, including features and graphics to locate and gain information.



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 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. *Think of two words that describe each season.*



Show Image 2A-7: Light hitting Earth
Not every part of Earth experiences four different seasons. 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 in that part of the planet. 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?

COMPREHENSION QUESTIONS (10 MIN.) TEKS 2.7.F

Note: You may wish to ask students the comprehension questions *after* you have completed the Application activity "Observing Earth's Movement." This activity kinesthetically reinforces the information presented in the Read-Aloud and may help students more deeply understand how the tilt of the earth affects the seasons in the Northern Hemisphere.

1. **Literal.** How long does it take Earth to orbit or revolve around the sun? (*one year*)
2. **Literal.** In what hemisphere do you live? (*Northern Hemisphere*)
3. **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.*)
4. **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; day and night are the same length of time.*)
5. **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.*)

Challenge

How does the part of the earth near the equator experience seasons? How do the North and South Poles experience seasons? (*the equator receives the most amount of intense sunshine, so it is always warm, and the difference in the seasons is very slight; the North and South Poles are on the opposite ends of our planet, are almost always cold, and often covered with ice)*

TEKS 2.7.F Respond using newly acquired vocabulary as appropriate.

Check for Understanding

Think-Pair-Share: How does the tilt of the earth affect the seasons you experience living in the Northern Hemisphere? *(Answers will vary based on location but should at least include that in the summer, days are longer which results in more sunlight and in winter, days are shorter which results in less sunlight.)*

WORD WORK: TILT (5 MIN.)

1. In the Read-Aloud you heard, "Tilt . . . your head to one side. "
2. Say the word *tilt* with me.
3. *Tilt* means to slant or place at an angle.
4. Andrea will have to tilt her water bucket so that every drop can spill out onto her plants.
5. When do you tilt your head? First, tilt your head to the left and then to the right. Try to use the word *tilt* when you talk about it. Why might you tilt your head? [Ask two or three students. If necessary, guide and/or rephrase the students' responses: "I tilt my head when . . . "]
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. Describe other objects that you tilt when you use them. Be sure to begin your responses with "An object we tilt is . . . "

Lesson 2: The Reasons for Seasons

Application

20M

Speaking and Listening: Students will observe and describe how the revolution and tilt of the earth cause seasons. **TEKS 2.1.C**

Reading: Students will describe how a poet's use of rhyme and repetition adds to the meaning of a poem. **TEKS 2.10.F**

OBSERVING EARTH'S MOVEMENT (15 MIN.)

- Tell students today you are going to do another demonstration that allows them to make observations of the earth revolving and the cycle of the seasons, but first you are going to review the observations you made about daytime and nighttime. Remind students to speak clearly and in complete sentences when sharing their observations.
- If it is not already marked, have a student place a sticker on the globe approximately where you live.
- Show students the tilt of the globe and remind them that the earth's axis is tilted and always points in the same direction.

Review Rotation: Daytime and Nighttime

- Remind students of the Observations Board you created in Lesson 1. Have students reference your observations as you review earth's rotation.
- Darken the room. Ask a volunteer to act as the sun and point the flashlight at the globe horizontally.
- Rotate the globe counterclockwise if you are looking down at the North Pole to demonstrate rotation. Ask students if you are showing Earth's rotation or revolution. *(Earth's rotation)*
- Ask students what the rotation of the earth causes. *(The rotation of the earth causes the cycle of daytime and nighttime.)*

Revolution: Four Seasons

- Tell students you will record your observations as a class on the Observations Board after the demonstration.
- Using the following diagram, demonstrate each of the four positions of the Earth representing the four seasons. Tell students 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. You can also find this diagram in the digital components for this unit should you wish to display it for students.

TEKS 2.1.C Share information and ideas that focus on the topic under discussion, speaking clearly at an appropriate pace and using the conventions of language; **TEKS 2.10.F** Identify and explain the use of repetition.

Support

Mark each seasonal position on the floor by taping an image with a label representing each season. You may wish to use Image Cards 1–4.

ENGLISH LANGUAGE LEARNERS

Speaking and Listening

Selecting Language Resources

Beginning
Elicit short one-word answers from students (e.g., "Is the Northern Hemisphere in winter, spring, summer, or autumn now?").

Intermediate
Elicit more detail in students' answers (e.g., "Describe what is happening now.").

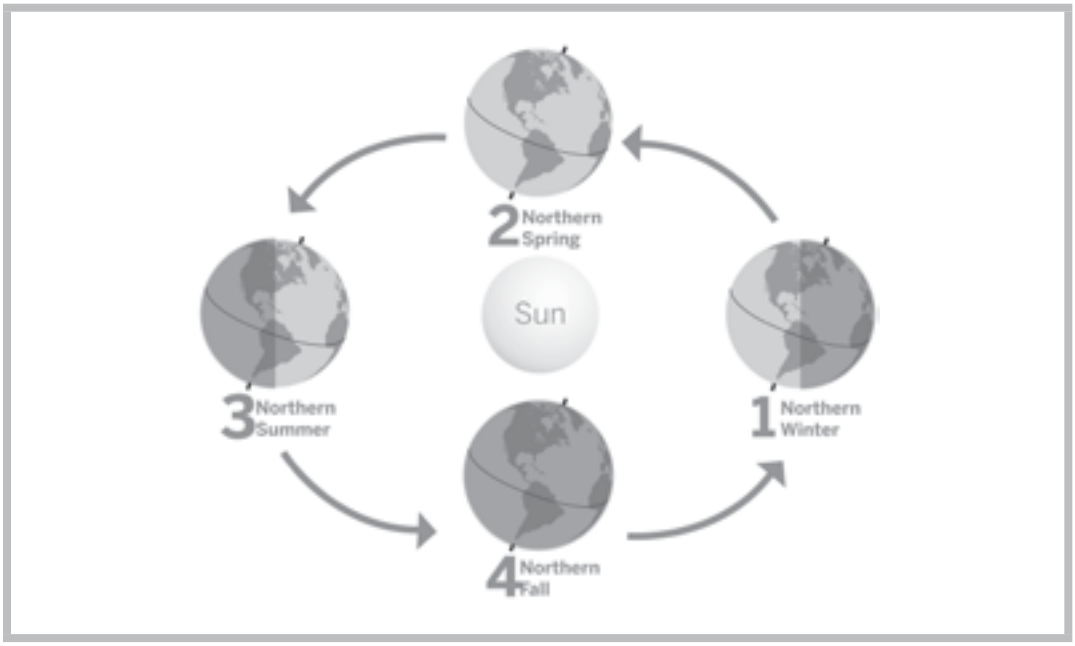
Advanced/Advanced High
Elicit higher-level insights and comparisons (e.g., "How can you tell what season it is now?").

ELPS 2.G; ELPS 3.F

Support

As you record observations on the Observations Board, you may wish to make drawings beside each recorded observation to help students visually remember what they observed. Refer to Activity Page 2.1 for ideas of how to depict the seasons as they relate to revolution in a simple drawing. You might also take photographs (without a flash) to document your demonstration and support student observations.

- Throughout this demonstration, walk counterclockwise around the student holding the flashlight while, if possible, rotating the globe counterclockwise.



Position 1: Northern Winter

- Ask a volunteer to stand in the middle 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.
- ***Observation 1:*** Which season is it when the Northern Hemisphere is tilted away from the sun and we have fewer daylight hours and colder temperatures?" *(winter)*

Position 2: Northern Spring

- Ask another volunteer to stand in the middle 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. Notice how the Northern Hemisphere is not really tilted toward or away from the sun.
- ***Observation 2:*** Which season follows winter when we begin to have more daylight hours and warmer temperatures?" *(spring)*

Position 3: Northern Summer

- Ask another volunteer to stand in the middle 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.
- ***Observation 3:*** When the Northern Hemisphere is tilted toward the sun, daylight hours increase and the temperatures become hotter. Which season follows spring when we have more daylight hours and hotter temperatures?" *(summer)*

Position 4: Northern Fall

- Ask another volunteer to stand in the middle 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. Notice how the Northern Hemisphere is not really tilted toward or away from the sun.
- ***Observation 4:*** Which season follows summer when we begin to have fewer daylight hours and cooler temperatures?" *(autumn or fall)*

Check for Understanding

Recall: The revolution or orbit of the earth around the sun causes what cycle of nature? (*The revolution of Earth causes the cycle of the seasons.*)

- Give students Activity Page 2.1. Read all of the labels on the page while tracing the path of the earth revolving around the sun (spring, longer days/toward; fall, shorter days/away). Remind students the person on earth is in the Northern Hemisphere.
- Have students point to number 1. Ask students in what northern season the days are longer and the Northern Hemisphere is tilted toward the sun. Tell students to write the season's name on the line.
- Have students point to number 2. Ask students in what northern season the days are shorter and the Northern Hemisphere is tilted away from the sun.

Challenge

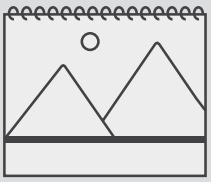
Ask students to show you the position Earth would be in for a specific season by holding the globe in relation to the flashlight (sun).

Activity Page 2.1

- Collect Activity Page 2.1 to ensure that students understand how the rotation of the earth causes daytime and nighttime.

"BED IN SUMMER" BY ROBERT LOUIS STEVENSON (5 MIN.)

Flip Book 2B-1



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 the poet's use of rhyming words and the rhythm of the poem. Remind students that poets sometimes use rhyme to help make the poem more interesting. Tell them to also listen to find out how the poem relates to the tilt of the earth.

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?

Support

Create a copy of the poem on chart paper and ask students to identify rhyming words.

- Discuss with students how the tilt of the earth changes the amount of sunlight we get in each season by asking the following questions:
  - How does the poet use rhyming words in the poem?
  - What words does the poet repeat, or say more than once? Why?
  - How does this poem relate to the tilt of the earth?
  - Do we get more sunlight in the summer or in the winter?
  - 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?
- 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, and so they often went to bed earlier.

End of Lesson

LESSON

3

CYCLES OF NATURE: CLOUDS TO RAINDROPS

Four Seasons in One Year

PRIMARY FOCUS OF LESSON

Reading

With assistance, students will use a graphic organizer to analyze the four seasons.

TEKS 2.6.G; TEKS 2.9.D.i

Students will describe how the seasons in the Northern Hemisphere affect plants and animals.

TEKS 2.6.G; TEKS 2.7.C

Language

Students will demonstrate an understanding of the Tier 2 word *adapt* and will use it to describe a personal connection.

TEKS 2.3.D; TEKS 2.7.A

Students will identify and generate compound words.

TEKS 2.2.B.iv

Reading

With assistance, students will use a graphic organizer to analyze the four seasons.

TEKS 2.6.G

Students will recognize characteristics and structures of informational text, including the central idea, and of multimodal texts. TEKS 2.9.D.i; TEKS 2.9.F

FORMATIVE ASSESSMENT

Exit Pass

Compound Words Students will draw a picture of a compound word and its root words and then write a sentence using the compound word.

TEKS 2.2.B.iv

TEKS 2.6.G Evaluate details read to determine key ideas; **TEKS 2.9.D.i** Recognize characteristics and structures of informational text, including the central idea and supporting evidence with adult assistance; **TEKS 2.7.C** Use text evidence to support an appropriate response; **TEKS 2.3.D** Identify, use, and explain the meaning of antonyms, synonyms, idioms, and homographs in context; **TEKS 2.7.A** Describe personal connections to a variety of sources; **TEKS 2.2.B.iv** Demonstrate and apply phonetic knowledge by decoding compound words, contractions, and common abbreviations; **TEKS 2.9.F** Recognize characteristics of multimodal and digital texts.

LESSON AT A GLANCE

	Grouping	Time	Materials
Introducing the Read-Aloud (10 min.)			
What Have We Already Learned?	Whole Group	10 min.	❑ globe ❑ flashlight ❑ Northern Seasons Chart (see Advance Preparation) ❑ Image Cards 1–4 ❑ Posters 1, 3 ❑ Northern Seasons Chart (Digital Components) ❑ Flip Book: 2A-4–2A-6
Northern Seasons Chart			
Read-Aloud (30 min.)			
Purpose for Listening	Whole Group	30 min.	❑ globe ❑ Flip Book: 3A-1–3A-8
"Four Seasons in One Year"			
Comprehension Questions			
Word Work: *Adapt*			
This is a good opportunity to take a break.			
Application (20 min.)			
Syntactic Awareness Activity: Compound Words	Whole Group/ Independent	20 min.	❑ paper ❑ writing and drawing tools ❑ Northern Seasons Chart (Digital Components) ❑ Posters 1, 3 ❑ Image Cards 1-4
Northern Seasons Chart			

ADVANCE PREPARATION

Introducing the Read-Aloud

- Create an enlarged version of the following chart on chart paper, a blackboard, or a whiteboard in a place where you can leave it on display for students. You will use this chart throughout Lessons 3 and 4. Alternatively, you may access an electronic version of this chart in the digital components.

Northern Seasons Chart				
	Spring	**Summer**	**Autumn/ Fall**	**Winter**
Date Season Begins				
Amount of Sunshine				
Temperature				
Plants				
Animals				
Activities/ Clothing				

Note to Teacher

Note that the four seasons discussed in Lessons 2 and 3 might not have the same characteristics as the seasons you and your students experience where you live. Be sure to read Lessons 2 and 3 ahead of time and plan your discussion of seasons to include information relevant to students' daily experiences. If you live in a climate with milder seasonal changes, think about how you might teach about both milder seasons and about the more distinct seasonal changes depicted in the Read-Alouds in Lessons 2 and 3.

The purpose of the Syntactic Awareness Activity 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.

Universal Access

- Bring in pictures of people doing outside activities in the autumn, winter, spring, and summer to show students.
- Be prepared to conduct the demonstration from Lessons 1 and 2 again to reinforce student understanding of the cause of the cycle of nighttime and daytime and the cycle of the seasons.

CORE VOCABULARY

absorbed, v. took in or soaked up
Example: Sunlight and water are absorbed by plants.
Variation(s): absorb, absorbs, absorbing

adapt, v. to adjust or change to better suit one's environment
Example: Many foxes that normally live in the wild have learned to adapt to a city environment.
Variation(s): adapts, adapting, adapted

migrate, v. to move from one place to another
Example: The flocks of wild geese prepare to migrate south before the first snow of each winter.
Variation(s): migrates, migrated, migrating

minimum, n. the least amount possible
Example: Bake the cookies for a minimum of ten minutes; otherwise, they might be too soft inside.
Variation(s): none

photosynthesis, n. when plants use sunlight to turn water and air into food
Example: Plants use photosynthesis to make their own food.
Variation(s): none

Vocabulary Chart for "Four Seasons in One Year"

Type	Tier 3 Domain-Specific Words	Tier 2 General Academic Words	Tier 1 Everyday Speech Words
Vocabulary	migrate *(migrar)* photosynthesis *(fotosíntesis)*	absorbed *(absorbido/a)* adapt *(adaptarse)* minimum *(mínimo)*	
Multiple Meaning			
Sayings and Phrases	great burst of life live young a sight to behold as best they can		

Start Lesson

Lesson 3: Four Seasons in One Year

Introducing the Read-Aloud

10M

Reading: With assistance, students will use a graphic organizer to analyze the four seasons.

TEKS 2.6.G; TEKS 2.9.D.i

WHAT HAVE WE ALREADY LEARNED? (5 MIN.)

- Review with students how Earth's rotation and revolution cause the cycles of daytime and nighttime and the cycle of the seasons. Use the following questions to guide discussion:
  - What causes daytime and nighttime? (*rotation of Earth*)
  - How does the rotation of Earth cause daytime and nighttime? (*During rotation, the earth spins on its axis. The part of Earth that faces the sun changes during rotation, giving some parts of Earth daytime and some parts of Earth nighttime.*)
  - How long does it take Earth to orbit or revolve around the sun? (*one year*)
  - What causes the seasons? (*the tilt of Earth as it revolves around the sun*)

NORTHERN SEASONS CHART (5 MIN.)

Check for Understanding

Ask students to identify the following characteristics of the four seasons. Record students' answers on the Northern Seasons chart.

- date the season begins in the Northern Hemisphere
- amount of sunshine
- temperature (relative)

- Use Image Cards 1–4 and Posters 1 and 3 to guide student responses.

TEKS 2.6.G Evaluate details read to determine key ideas; **TEKS 2.9.D.i** Recognize characteristics and structures of informational text, including the central idea and supporting evidence with adult assistance.

Support

You may wish to conduct the demonstration from Lessons 1 and 2 again to reinforce student understanding of the cause of the cycle of nighttime and daytime and the cycle of the seasons.

Challenge

Encourage select students to conduct the demonstrations from Lessons 1 and 2 for the class.

Posters 1, 3

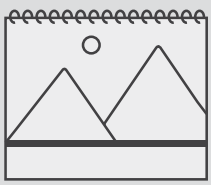
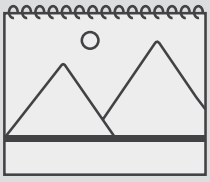


Image Cards 1–4

Northern Seasons				
	Spring	**Summer**	**Autumn/ Fall**	**Winter**
Date Season Begins	*Spring equinox; around March 21*	*Summer solstice; around June 21*	*Autumn equinox; around September 21*	*Winter solstice; around December 21*
Amount of Sunshine	*Roughly the same number of daylight and dark hours*	*More daylight hours than dark hours; it stays light out later.*	*Roughly the same number of daylight and dark hours*	*Fewer daylight hours than dark hours; it gets dark earlier.*
Temperature	*Warmer*	*Hotter*	*Cooler*	*Colder*
Plants				
Animals				
Activities/ Clothing				

- You may wish to reread the following parts of the Read-Aloud "The Reasons for the Seasons" from Lesson 2 to help students populate the first three rows of the Northern Seasons chart.

Flip Book
2A-4, 2A-5, 2A-6



Show Image 2A-4: Northern summer

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. 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.

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.

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.

Lesson 3: Four Seasons in One Year

Read-Aloud

30M

Reading: Students will describe how the seasons in the Northern Hemisphere affect plants and animals.

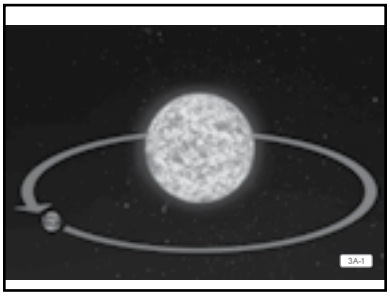
TEKS 2.6.G; TEKS 2.7.C

Language: Students will demonstrate an understanding of the Tier 2 word *adapt* and will use it to describe a personal connection. TEKS 2.3.D; TEKS 2.7.A

PURPOSE FOR LISTENING

- Tell students to listen carefully to find out more about seasons in the Northern Hemisphere so they can complete the Northern Seasons chart.

"FOUR SEASONS IN ONE YEAR" (15 MIN.)

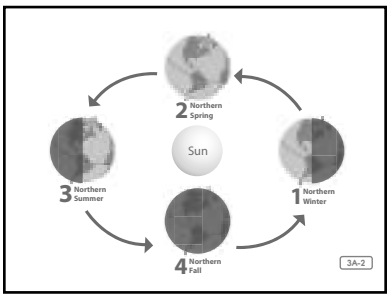


Show Image 3A-1: Earth revolving around the sun

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? *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.*

Only certain parts of our planet have 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. *[Locate the equator and surrounding tropical regions on the globe for students.]* 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. *[Locate the North Pole, South Pole, and polar regions on the globe for students.]* 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. *[Locate the temperate regions and the United States on the globe for students.]*

TEKS 2.6.G Evaluate details read to determine key ideas; **TEKS 2.7.C** Use text evidence to support an appropriate response; **TEKS 2.3.D** Identify, use, and explain the meaning of antonyms, synonyms, idioms, and homographs in context; **TEKS 2.7.A** Describe personal connections to a variety of sources.



Show Image 3A-2: Four seasons in 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. *[Have students locate the Northern Hemisphere and Southern Hemisphere on the globe. Remind them that we live in the Northern Hemisphere.]* 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." New plants emerge, and plants that have been inactive for the winter become active and start growing again. As buds and leaves form, the water the plant has **absorbed** *or taken in* travels up the stem to the leaves. 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. *Why is there a "great burst of life" in spring?*

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

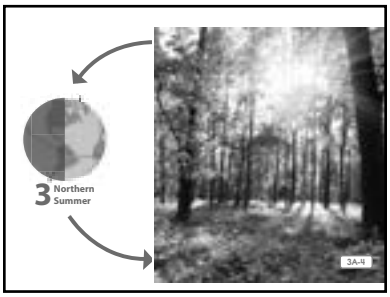
Support

Students who had instruction in the program in Kindergarten have learned the saying "April showers bring May Flowers" in the *Seasons and Weather* domain. Encourage students to share the meaning with their peers or explain this saying to students who may be unfamiliar with it.

Support

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

inside their bodies. Animals that hatch from eggs have been nourished by a yolk within the egg.



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

Show Image 3A-5: Autumn

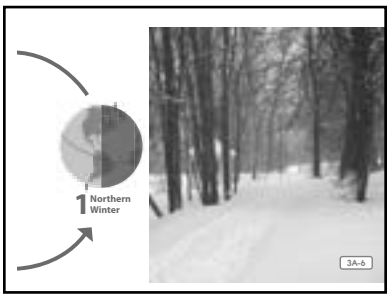
As the earth revolves, and summer turns to autumn, both the temperature and the environment begin to change again. In autumn, often called "fall," while it is still warm, light from the sun is not as intense, and the growth and development of plants and animals begins to slow down. *Remind students that living things thrive with sunlight, so when there is less sunlight, some plants and animals don't grow as quickly, or cannot grow at all.*

In many places in the Northern Hemisphere, autumn is a time to harvest the crops that have grown and ripened beneath the summer sun. 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 [/də*sid*yoo*wəs/] trees receive less sunshine than they need to produce food, and photosynthesis stops. When photosynthesis stops, these leaves begin to die and fall off. Therefore, deciduous trees are trees that have leaves that change color and fall off. Why do deciduous trees lose their leaves?

Challenge

The word *deciduous* comes from the Latin word *decidere*, meaning to fall down, or fall off. Why are these trees called deciduous trees?



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**. *Minimum is the smallest amount possible.* 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.

Challenge

What do you think the word *dormant* means?

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.

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. *Can you name some animals that hibernate and some animals that migrate?*

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?

Show Image 3A-8: Spring again
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.

COMPREHENSION QUESTIONS (10 MIN.)

Note: If you live in a temperate climate and students are not as familiar with the differences between summer and winter, you may wish to show them various photographs of people from around the world of winter and summer conditions to discuss how people adapt.

1. **Inferential.** What causes the yearly seasons on earth? *(the tilt of the earth as it revolves around the sun)*
2. **Literal.** If it is summer in the Northern Hemisphere, what season is it in the Southern Hemisphere? (*winter*)

Check for Understanding

Think-Pair-Share How do the seasons affect plants? *(Answers may vary. Elicit examples from the Read-Aloud.)*

- 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.*)
- 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.*)

- How do the seasons affect animals? *(Answers may vary. Elicit examples from the Read-Aloud.)*
  - 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.*)

- In which season do most animals give birth to their young? (*Most animals give birth to their young in the spring.*)
- In which season are many crops harvested? (*Many crops are harvested in autumn.*)

3. **Evaluative.** *Think-Pair-Share:* How do people adapt to winter and summer? (*Answers may vary.*)

WORD WORK: ADAPT (5 MIN.)

1. In the Read-Aloud you heard, "[Animals] have learned to adapt . . . to their ever-changing environment."
2. Say the word *adapt* with me. (Write the word *adapt* on the the right side of the board or chart paper.)
3. The word *adapt* means to change or adjust to make it easier to live in one's environment. What word might describe the opposite of adapt? (Answers may vary.) (Write a word students suggested or the word "same" on the left side of board or chart paper to create a horizontal word wall.)
4. What other words could describe the idea of change or staying the same? (Allow the students to make several suggestions so there are 4-5 words. Place the words horizontally in the proper relationship to the end words, *same* and *adapt*.)

Use a Discussion activity for follow-up. Talk to your partner about how you have adapted to second grade. What are the differences between first grade and second grade? How might you adapt next year in third grade? **TEKS 2.7.A**

ENGLISH LANGUAGE LEARNERS

Language

Using Verbs and Verb Phrases

Beginning
Give students a sentence frame to use the verb *adapt* in a sentence (e.g., "I have adapted to second grade by . . .").

Intermediate
Encourage students to create their own sentence using the verb *adapt.* Reframe students' sentences to be grammatically correct.

Advanced/Advanced High
Encourage students to create their own grammatically correct sentences using the verb *adapt.*

ELPS 1.E; ELPS 2.D

TEKS 2.7.A Describe personal connections to a variety of sources.

Lesson 3: Four Seasons in One Year

Application

20M

Language: Students will identify and generate compound words. TEKS 2.2.B.iv

Reading: With assistance, students will use a graphic organizer to analyze the four seasons. TEKS 2.6.G; TEKS 2.9.D.i

Students will recognize characteristics and structures of informational text, including the central idea, and of multimodal texts. TEKS 2.9.D.i; TEKS 2.9.F

SYNTACTIC AWARENESS ACTIVITY: COMPOUND WORDS (10 MIN.)

Note: There may be variations in the sentences created by your class. Allow for these variations, and restate students' sentences so that they are grammatical.

- Tell students two words can be added together to form a new word, called a compound word.
- Tell students if they know the meaning of the two words, they will most likely be able to tell the meaning of the new compound word.
- Ask students to identify the two words that make up each compound word you read:
  - Bedtime = bed + time (*time to go to bed*)
  - Notebook = note + book (*a book in which you write notes*)
  - Bathroom = bath + room (*a room where you take a bath*)
- Demonstrate for students how to predict the meaning of a compound word:
  - In the Read-Aloud you heard, "Springtime also sees the return of animals that had migrated . . . to warmer places during the wintertime."
  - Springtime is one compound word in this sentence. Which two words do you hear? (*spring and time*)
  - What is spring? (*the season with flowers*)
  - What is time? (*when you do something*)
  - Use what you know about these two words to predict the meaning of springtime: The time when it is spring!
- Ask students to predict the meaning of a compound word:

TEKS 2.2.B.iv Demonstrate and apply phonetic knowledge by decoding compound words, contractions, and common abbreviations; **TEKS 2.6.G** Evaluate details read to determine key ideas; **TEKS 2.9.D.i** Recognize characteristics and structures of informational text, including the central idea and supporting evidence with adult assistance; **TEKS 2.9.F** Recognize characteristics of multimodal and digital texts.

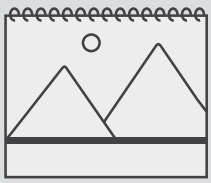
- Wintertime is one compound word in this sentence. Which two words do you hear? (*winter and time*)
- What is winter? (*the coldest season*)
- What is time? (*when you do something*)
- Talk to your partner about what wintertime might mean.

Exit Pass

- Have students draw a picture of a compound word, as well as pictures of the individual words that make up the compound word. (Suggestions: daytime, nighttime, sunlight, firefly, flashlight, moonlight, grasshopper, etc.)
- Then have students write a sentence about the compound word on the back of their paper. If there is time, have students share their drawing with a partner, small group, or the class.
- Collect students' drawing and writing to check that they understand how to deduce the meaning of a compound word.

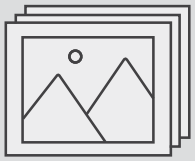
NORTHERN SEASONS CHART (10 MIN.) TEKS 2.9.D.i; TEKS 2.9.F

Posters 1, 3



- Use Image Cards 1–4 and Posters 1 and 3 to guide student responses. Ask students to include information about how they found the information in the images useful.
- Continue the class Northern Seasons chart you started in the lesson introduction.

Image Cards 1–4



Check for Understanding

Ask students to identify the following characteristics of the four seasons. Record students' answers on the Northern Seasons chart.

- How do plants grow?
- What do animals do?
- What do people do?

TEKS 2.9.D.i Recognize characteristics and structures of informational text, including the central idea and supporting evidence with adult assistance; **TEKS 2.9.F** Recognize characteristics of multimodal and digital texts.

- You may wish to use Image Cards 1–4 and Posters 1 and 3 to guide student responses. Use the following chart as a guide:

Northern Seasons				
	Spring	**Summer**	**Autumn/ Fall**	**Winter**
Date Season Begins	Spring equinox; around March 21	Summer solstice; around June 21	Autumn equinox; around September 21	Winter solstice; around December 21
Amount of Sunshine	Roughly the same number of daylight and dark hours	More daylight hours than dark hours; it stays light out later.	Roughly the same number of daylight and dark hours	Fewer daylight hours than dark hours; it gets dark earlier.
Temperature	Warmer	Hotter	Cooler	Colder
Plants	*Trees grow new leaves; flowers start to bloom; crops are planted.*	*Plants and crops grow as they absorb more sunlight.*	*Leaves change color and begin to fall; farmers harvest crops.*	*Leaves have fallen from deciduous trees; many plants die.*
Animals	*Birds return and animals wake up; many animals have babies.*	*Animals raise their babies.*	*Many birds migrate; many animals prepare for winter by collecting food.*	*Many animals hibernate or migrate; there are not as many birds.*
Activities/ Clothing	*Starting a garden; flying kites; etc.*	*More time outdoors; lighter clothing; swimming; picnics; etc.*	*Back to school; harvesting crops; etc.*	*More time indoors; heavier clothing; ice skating; skiing; etc.*

End of Lesson

LESSON

4

CYCLES OF NATURE: CLOUDS TO RAINDROPS

The Life Cycle of a Plant

PRIMARY FOCUS OF LESSON

Speaking and Listening

Students will review how the earth's revolution and tilt cause the four seasons.

TEKS 2.7.D

Reading

Students will describe the life cycle of a flowering plant.

TEKS 2.6.G; TEKS 2.7.D

Language

Students will demonstrate an understanding of the Tier 2 word *protective.*

TEKS 2.3.B

Writing

Students will sequence and write a summary of the life cycle of a flowering plant.

TEKS 2.7.D; TEKS 2.12.B

FORMATIVE ASSESSMENT

Activity Page 4.1

Flowering Plant Life Cycle Students will sequence and write a summary of the life cycle of a flowering plant.

TEKS 2.12.B

TEKS 2.7.D Retell and paraphrase texts in ways that maintain meaning and logical order; **TEKS 2.6.G** Evaluate details read to determine key ideas; **TEKS 2.3.B** Use context within and beyond a sentence to determine the meaning of unfamiliar words; **TEKS 2.12.B** Compose informational texts, including procedural texts and reports.

LESSON AT A GLANCE

	Grouping	Time	Materials
Introducing the Read-Aloud (10 min.)			
What Have We Already Learned?	Whole Group	10 min.	❑ Image Cards 1–4 ❑ Northern Seasons Chart (Digital Components)
Read-Aloud (30 min.)			
Purpose for Listening	Whole Group	30 min.	❑ Flip Book: 4A-1–4A-8 ❑ various seeds (such as pinecones, acorns, fruit seeds, etc.) ❑ Poster 2 ❑ Image Cards 5–9
"The Life Cycle of a Plant"			
Comprehension Questions			
Word Work: *Protective*			
This is a good opportunity to take a break.			
Application (20 min.)			
Sequencing the Life of a Plant	Partner/ Independent	20 min.	❑ Activity Page 4.1 ❑ paper ❑ writing tools

ADVANCE PREPARATION

Universal Access

- Grow a flowering plant in your classroom so students can observe each stage in the plant's life cycle.

CORE VOCABULARY

attracted, v. made someone or something interested in someone or something else
Example: The bright, colorful signs attracted customers to the bake sale.
Variation(s): attract, attracts, attracting

emerge, v. to come out into view
Example: At the beginning of spring, bears emerge from their long winter hibernation.
Variation(s): emerges, emerged, emerging

pollinators, n. animals that carry pollen to and from plants
Example: Insects are perhaps our planet's most important pollinators; we need them so that we can have beautiful flowers and plants to eat.
Variation(s): pollinate, pollinating, pollination

protective, adj. helpful at keeping someone or something safe
Example: Many nuts have a protective outer layer called a shell.
Variation(s): none

reproduce, v. to make new animals or 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"

Type	Tier 3 Domain-Specific Words	Tier 2 General Academic Words	Tier 1 Everyday Speech Words
Vocabulary	pollinators *(polinizadores)* reproduce *(reproducirse)*	attracted *(atraído)* emerge protective *(protector/a)*	
Multiple Meaning			
Sayings and Phrases	life cycle/cycle of life in other words play a part seed dispersal		

Start Lesson

Lesson 4: The Life Cycle of a Plant

Introducing the Read-Aloud

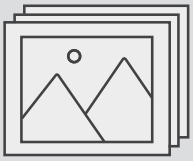
10M

Speaking and Listening: Students will review how the earth's revolution and tilt cause the four seasons.

TEKS 2.7.D

WHAT HAVE WE ALREADY LEARNED?

Image Cards 1–4



Show Image Cards 1–4

- Have students sequence the images.
- Ask students the following questions to review what they have learned about the seasonal cycle, especially as it pertains to plants. Encourage students to reference the Northern Seasons chart from Lesson 3.
  - How long does it take Earth to orbit or revolve around the sun? (*one year*)
  - What causes the seasons? (*the tilt of Earth as it revolves around the sun*)

Check for Understanding

Think-Pair-Share: What are the characteristics of the four seasons? How are plants affected by the variation in sunlight and the four seasons? *(Answers may vary, but should be supported by the text.)*

- Tell students that in today's lesson they are going to learn about another cycle of nature, the life cycle of a plant.

TEKS 2.7.D Retell and paraphrase texts in ways that maintain meaning and logical order.

Lesson 4: The Life Cycle of a Plant

Read-Aloud

30M

Reading: Students will describe the life cycle of a flowering plant.

TEKS 2.6.G; TEKS 2.7.D

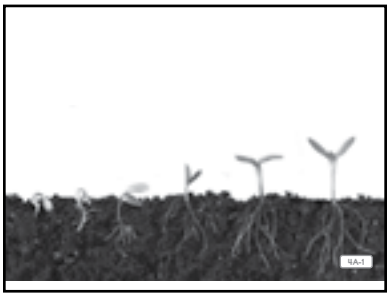
Language: Students will demonstrate an understanding of the Tier 2 word *protective.*

TEKS 2.3.B

PURPOSE FOR LISTENING

- Tell students to listen carefully to today's Read-Aloud to find out about the life cycle of a flowering plant.

"THE LIFE CYCLE OF A PLANT" (15 MIN.)



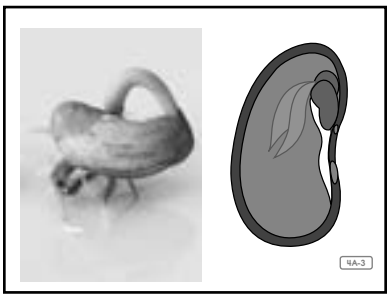
Show Image 4A-1: New plant life

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. *Name the four seasons in the order they occur.* 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. *Some living things have longer life spans than others. Some flies only live for a few days, but humans, like you, can live to be over one hundred years old.*

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.

TEKS 2.6.G Evaluate details read to determine key ideas; **TEKS 2.7.D** Retell and paraphrase texts in ways that maintain meaning and logical order; **TEKS 2.3.B** Use context within and beyond a sentence to determine the meaning of unfamiliar words.



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.

Show Image 4A-1: New plant life
In spring, there is more sunlight and temperatures are warmer. 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. *Roots, stem, and leaves are the three main parts of a young plant.* 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.

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** *or come out*.

Show Image 4A-4: Interior of flower
Once the plant matures, or becomes an adult plant, flowers appear. In order for a flowering plant to reproduce by making 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. *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 dusty substance called pollen clings to their bodies and is transferred from flower to flower. *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

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. *[Point out the shape of each bird's beak in the image.]* 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 dusty pollen is accidently carried from flower to flower.

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

Support

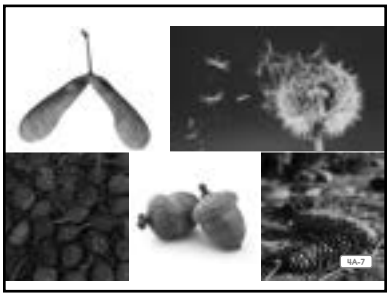
Show students a tube in your classroom to help them understand how hummingbirds use their beaks to reach inside "tubular-shaped flowers."

Support

Here, the word *bats* means a small, furry animals with wings. The word *bats* also means hits a baseball. Use Poster 3M in the Flip Book as additional support for the multiple meanings of *bats*.

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.

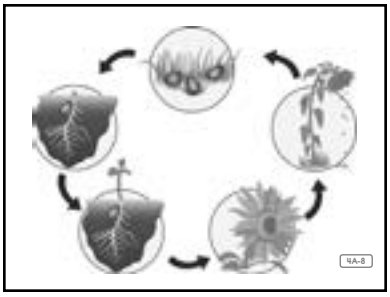
Once pollen has been transferred and reaches the new plant, the flower produces seeds. The next part of the process is called seed dispersal. This is the process of carrying the seeds away from the parent plant so that the flowering plant life cycle can begin all over again. *Most seeds are dispersed, or spread, in late summer and fall.*



Show Image 4A-7: Seed dispersal
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 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 homes. *[Pass around various seeds for students to examine.]*

Sometimes animals carry seeds from place to place without knowing it. Some seeds contained within a **protective** casing, or covering, can attach themselves to the fur of passing animals. *This protective layer keeps the seed safe.* 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.

COMPREHENSION QUESTIONS (10 MIN.)

Check for Understanding

Show Poster 2 (life cycle of a flowering plant)

Think-Pair-Share: Using Poster 2 and/or Image Cards 5–9 to guide you, describe the stages in the life cycle of a flowering plant. *(The first stage of the life cycle of a flowering plant is as a seed. Once the seed has germinated, it sprouts. Then it grows and develops into a young plant with roots, a stem, and leaves. Next the plant flowers and then the flower withers and it creates seeds to be dispersed and make new plants.*)

1. **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. Then, throughout the summer, the plant can thrive in the sunlight and warmth.*)
2. **Literal.** What is pollination? *(when pollen from one flower mixes with the pollen of another flower so that the plant can make seeds)*
3. **Inferential.** Why is pollination important to the life cycle of a plant? *(because it allows plants to make new seeds and continue the life cycle)*
4. **Inferential.** How does pollination happen? (*Pollen is carried by animals, the wind, or water from one flower to another.)*
    - **Inferential.** How do flowering plants attract pollinators? (*Flowering plants use their fragrance, shape, and color to attract pollinators.*)
5. **Literal.** What is seed dispersal and why is it important to the life cycle of a plant? *(Seed dispersal is when seeds from a plant are spread to other places where they fall into the ground and germinate. It is important because it allows the plant life cycle to continue and for new plants to grow.)*
    - What are the three ways seeds are dispersed? (*by animals, the wind, and water*)
6. **Evaluative.** What might happen if there were no more honeybees to pollinate flowers? *(Answers may vary but should cite the importance of honeybees to pollination and therefore their importance in the continuation of the plant life cycle.)*

Poster 2

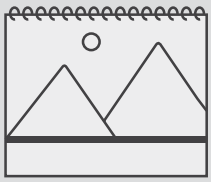
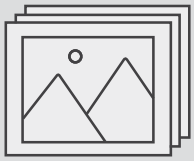


Image Cards 5–9



ENGLISH LANGUAGE LEARNERS

Reading

Reading/Viewing Closely

Beginning
Prompt and support students to recall words and phrases that relate to the life cycle of a flowering plant.

Intermediate
Provide moderate support in eliciting phrases and ideas with greater detail that relate to the life cycle of a flowering plant.

Advanced/Advanced High
Provide minimal support in eliciting key details relating to the life cycle of a plant.

ELPS 4.C; ELPS 4.I

WORD WORK: PROTECTIVE (5 MIN.)

1. In the Read-Aloud you heard, "Some seeds contained within a protective casing, or covering, 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? Try to use the word *protective* when you tell about it. [Ask two or three students. If necessary, guide and/or rephrase the students' responses: "A _____ is protective because it . . . "]
6. What's the word we've been talking about?

Use a Making Choices activity for follow-up. 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.

- using bug spray to keep mosquitoes away (*That is protective.*)
- wearing a helmet when you ride your bike (*That is protective.*)
- eating pizza (*That is not protective.*)
- using an umbrella when it rains (*That is protective.*)
- climbing a tree (*That is not protective.*)
- wearing shin pads when you play soccer (*That is protective.*)

Challenge

How can a person be protective of someone or something?

Lesson 4: The Life Cycle of a Plant

Application

20M

Writing: Students will sequence and write a summary of the life cycle of a flowering plant.

TEKS 2.7.D; TEKS 2.12.B

SEQUENCING THE LIFE CYCLE OF A PLANT

- Have students cut out each of the images on Activity Page 4.1.
- Next, have them put the images in the correct order of the life cycle of the sunflower plant.

Check for Understanding

Check In: Have students raise their hands when they have put the images in order but before they glue them down. Check students' work before they begin gluing, providing oral feedback and prompting as necessary.

- Have students glue the ordered images to a blank piece of paper.
- Have students describe the life cycle of a sunflower plant to their partners, using their pictures as a guide.

Exit Pass

- Finally, on a separate sheet of paper, tell students to write a summary of the life cycle of a flowering plant. Encourage students to use temporal words such as *first, next, then,* and *last.*
- Collect students' ordered images from Activity Page 4.1, along with students' summaries, to check that students understand the life cycle of a plant.

End of Lesson

TEKS 2.7.D Retell and paraphrase texts in ways that maintain meaning and logical order; **TEKS 2.12.B** Compose informational texts, including procedural texts and reports.

Activity Page 4.1

Challenge

Have students organize the images in a circle to represent the repetitive nature of the plant life cycle.

ENGLISH LANGUAGE LEARNERS

Writing

Writing

Beginning
Have students dictate facts using familiar vocabulary to a teacher to be recorded.

Intermediate
Have students dictate phrases using familiar vocabulary to a peer to be recorded.

Advanced/Advanced High
Have students write facts using familiar vocabulary independently.

ELPS 5.G

LESSON

5

CYCLES OF NATURE: CLOUDS TO RAINDROPS

The Life Cycle of Trees

PRIMARY FOCUS OF LESSON

Speaking and Listening:

Students will describe the life cycle of plants, including trees.

TEKS 2.7.D

Reading

Students will describe the life cycle of a tree and explain why trees are important to life on earth.

TEKS 2.6.G

Language

Students will demonstrate an understanding of the Tier 3 word *germination.*

TEKS 2.3.B

Writing

Students will record information about the tree life cycle and explain why trees are important to humans.

TEKS 2.7.E; TEKS 2.12.B

FORMATIVE ASSESSMENT

Activity Page 5.1

I Am a Tree Students will record information about the tree life cycle and explain why trees are important to humans.

TEKS 2.12.B

TEKS 2.7.D Retell and paraphrase texts in ways that maintain meaning and logical order; **TEKS 2.6.G** Evaluate details read to determine key ideas; **TEKS 2.3.B** Use context within and beyond a sentence to determine the meaning of unfamiliar words; **TEKS 2.7.E** Interact with sources in meaningful ways such as illustrating or writing; **TEKS 2.12.B** Compose informational texts, including procedural texts and reports.

LESSON AT A GLANCE

	Grouping	Time	Materials
Introducing the Read-Aloud (10 min.)			
What Have We Already Learned?	Whole Group	10 min.	❑ Image Cards 5–9 ❑ Northern Seasons Chart (created in Lesson 3) (Digital Components)
Read-Aloud (30 min.)			
Purpose for Listening	Whole Group	30 min.	❑ Poster 3 ❑ Flip Book: 5A-1–5A-9
"The Life Cycle of Trees"			
Comprehension Questions			
Word Work: *Germination*			
This is a good opportunity to take a break.			
Application (20 min.)			
I Am a Tree	Independent	20 min.	❑ large chart paper or a bulletin board ❑ "I Am A Tree" display (see Advance Preparation) ❑ Activity Page 5.1 ❑ writing tools

ADVANCE PREPARATION

Application

- Create an "I Am a Tree" display with the following labels. Leave room beneath the labels for student responses to be posted. You might draw or construct a large tree, and place the various labels on different branches. To save space, you might create a simple chart beside a picture of a tree.
  - I have many parts like . . .
  - When I am young . . .
  - When I get a little bit older . . .
  - When I am mature . . .
  - I am important to humans because . . .

Note to Teacher

Like in the previous Read-Aloud "The Life Cycle of a Flowering Plant," this Read-Aloud explores not only the life cycle of a tree, but also how that life cycle feeds into the larger ecosystem on earth. While it is important for students to understand the stages of a tree in its life cycle, it is also important to stress to students that trees are an integral part of the existence of all organisms on earth.

Universal Access

- Bring in a branch with rough bark and a branch with younger, smooth bark to pass around to students.
- You may wish to show students a time-lapse video of the growth of a tree from seed.
- Take students on a walk around school grounds, in your neighborhood, or in a nearby park to identify the different trees. Help students determine the tree's stage in the seasonal cycle and/or its stage in the life cycle. If you have a variety of trees to observe, have students determine whether they are deciduous or evergreen trees.

CORE VOCABULARY

decomposers, n. living things that help break down dead matter
Example: Worms are decomposers because they break things down into soil that is rich in nutrients.
Variation(s): decomposer

dependent, adj. requiring support or help
Example: Flowers are dependent on pollinators to help them reproduce.
Variation(s): none

flexible, adj. able to bend or move easily
Example: We can touch our toes to see how flexible we are.
Variation(s): none

germination, n. the process in which a seed begins to grow into a plant
Example: The seeds we planted in clear, plastic cups began the germination process after we watered them.
Variation(s): none

mature, adj. fully grown
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"

Type	Tier 3 Domain-Specific Words	Tier 2 General Academic Words	Tier 1 Everyday Speech Words
Vocabulary	decomposers *(descomponedores)* germination *(germinación)*	dependent *(dependiente)* flexible *(flexible)* mature *(maduro/a)*	
Multiple Meaning			
Sayings and Phrases	soil erosion all over the world		

Lesson 5: The Life Cycle of Trees

Introducing the Read-Aloud

10M

Speaking and Listening: Students will describe the life cycle of plants, including trees.

TEKS 2.7.D

WHAT HAVE WE ALREADY LEARNED?

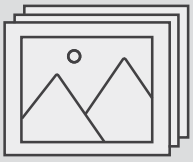
Life Cycle of a Flowering Plant

- 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.
- Ask students to sequence Image Cards 5–9 while describing each stage in the life cycle of a flowering plant. *(seed, sprout/germination, seedling, adult flower, seed dispersal)*
- You may also wish to have students refer back to their sequenced plant life cycles from the Application in Lesson 4.
- Have students act out the life cycle of a flowering plant, using the sequenced Image Cards as cues. Students should interpret each stage with a physical action (e.g., curl up in a ball to represent a seed; put arms straight overhead to represent germination; etc.)

Trees and Seasons

- Refer students to the Northern Seasons chart you created in Lesson 3. Remind students that they recorded information about how plants are affected by the cycle of the seasons.
- Ask students what they remember about how trees are affected by the cycle of the seasons. *(spring: trees grow new leaves; summer: trees grow as they absorb more sunlight; fall: leaves change color and begin to fall; winter: no leaves, live off energy in roots)*
- If possible, take students outside to observe any trees near your school and discuss how the current season is affecting the trees.

Image Cards 5–9



Support

Show students Poster 2 to help them sequence Image Cards 5–9.

Challenge

Help students begin a Tree Observation Journal. Students should choose a tree (preferably deciduous), and draw pictures and take notes on the tree at least once a month throughout the school year to observe its changes over time. You might also keep a class Tree Observation Journal on a tree you can see from the window of your classroom.

TEKS 2.7.D Retell and paraphrase texts in ways that maintain meaning and logical order.

Lesson 5: The Life Cycle of Trees

Read-Aloud

30M

Reading: Students will describe the life cycle of a tree and explain why trees are important to life on earth.

TEKS 2.6.G

Language: Students will demonstrate an understanding of the Tier 3 word *germination.*

TEKS 2.3.B

PURPOSE FOR LISTENING

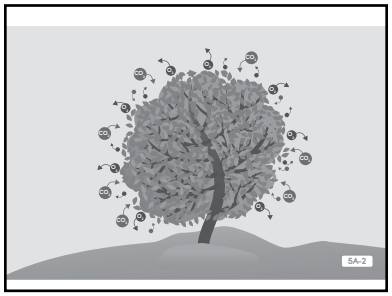
- Have students listen carefully to learn more about a tree's life cycle.

"THE LIFE CYCLE OF TREES" (15 MIN.)

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 **dependent** on, or supported by, the existence of trees. Without trees, it would be almost impossible for humans to survive on earth.

There are thousands of different kinds of trees in the world. There are towering sequoia [sə*koi*ə] trees and tiny dwarf willows. There are noble oak trees and scented pines. They all help to make life possible on this planet.

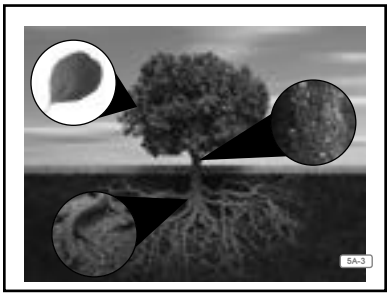


Show Image 5A-2: Tree taking in carbon dioxide and emitting oxygen

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

TEKS 2.6.G Evaluate details read to determine key ideas; **TEKS 2.3.B** Use context within and beyond a sentence to determine the meaning of unfamiliar words.

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. *That means tree roots help hold the soil and ground in place.* 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? *[Pause for student responses.]*

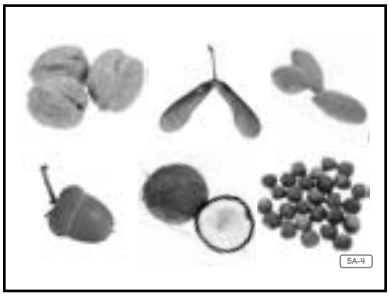


Show Image 5A-3: Tree parts

Let's review the different parts of a tree. *[Point to the various parts of a tree as you read about them.]* 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 ground. Absorb *means to take in, just like a sponge absorbs water.* 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. *Tree leaves produce food through photosynthesis, just like the leaves of flowering plants.* 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. *Bacteria are very small living things that often cause disease.*

Support

Pass around a branch with rough bark so students can feel the protection bark provides a tree.



Show Image 5A-4: Tree seeds

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.

Show Image 5A-5: Close-up of germinated tree seed

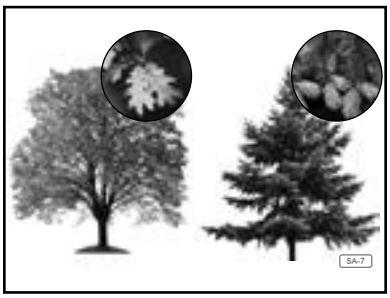
Once germination begins, the seed produces roots that search for groundwater. *The word* groundwater *is a compound word made of the word* ground *and the word* water. *What do you think it means?* (water that is in the ground) As they find water, the roots hold fast in the ground and a stem grows up 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

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. *When something is flexible, it means it can bend or move quite easily.* Once a tree is considered mature, it may flower and produce fruits, nuts, or cones. Some trees simply produce seeds.

Support

Pass around a branch with smooth bark so students can feel it in comparison to a mature tree's rough bark.



Show Image 5A-7: Deciduous and evergreen trees

There are two types of trees: deciduous and evergreen. Deciduous trees shed their leaves. 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.

Evergreen trees, on the other hand, shed and reproduce their leaves throughout the year, so there are green leaves on evergreen trees all year long. 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.

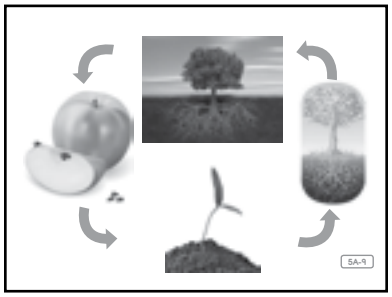
Challenge

What are some names of deciduous trees? *(maple, oak, birch, etc.)* What are some names of evergreen trees? *(spruce, pine, fir, etc.)*

Show Image 5A-8: Tree destruction

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

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



Show Image 5A-9: Life cycle of an apple tree
And there you have it, the life cycle of a tree.

Support

You may wish to show students a time-lapse video of a tree growing from a seed.

COMPREHENSION QUESTIONS (10 MIN.)

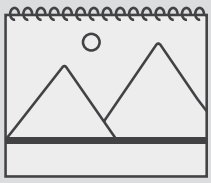
1. **Inferential.** Why are trees important to life on earth? *(they absorb carbon dioxide and emit oxygen; they help keep the climate livable; their roots prevent soil erosion)*

Check for Understanding

Show Poster 3 (life cycle of a tree)

Think-Pair-Share: Using Poster 3 to guide you, describe the stages in the life cycle of an apple tree. *(seed/germination/sapling, flowering/fruiting adult; produce seeds to be dispersed to grow into new trees*)

Poster 3



2. **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.*)
3. **Evaluative.** 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.*)

WORD WORK: GERMINATION (5 MIN.)

1. In the Read-Aloud you heard, "Germination is when a seed begins to grow, or sprout."
2. Say the word *germination* with me.
3. Germination is the process that causes a seed to begin to grow and develop into a plant.
4. We knew the germination of the seeds had occurred when we saw our garden covered with tiny green leaves.
5. Have you ever watched the germination of a seed? What happened to the seed? Did it change or grow new parts? Try to use the word *germination* when you tell about it. [Ask two or three students. If necessary, guide and/or rephrase the students' responses: "You can tell when germination is happening because . . . "]
6. What's the word we've been talking about?

Use a Making Choices activity for follow-up. I will read two choices about what happens to seeds during the germination process. You will choose the correct answer. Be sure to use the word *germination* in your answer.

- Does germination happen to the seed or to the adult plant in the life cycle of a flowering plant? (*Seed germination happens to the seed of a flowering plant.*)
- Does seed germination happen in the spring or in the winter? (*The germination process usually takes place in the spring, when the ground has thawed and the air is warm.)*
- Are water and sunlight, or rocks and grass, necessary to the germination process? (*Water and sunlight are necessary for germination to occur.*)

Challenge

Have students draw a picture illustrating what is required for germination to occur. *(warm air, water, sunlight, soil)* Encourage students to label their drawing and write a summary sentence at the bottom explaining the conditions necessary for germination.

Lesson 5: The Life Cycle of Trees

Application

20M

Writing: Students will record information about the tree life cycle and explain why trees are important to humans.

TEKS 2.7.E; TEKS 2.12.B

I AM A TREE

- Show students the "I Am a Tree" display you created in advance.
- Tell students they will pretend to be a tree and will write about what it is like to be a tree. Tell students that during the next lesson they will have a chance to post their writing on the display.
- Have students turn to Activity Page 5.1.
- Read each prompt to students and have them complete the statement. Point to the prompts on the "I Am A Tree" display and on Activity Page 5.1 so students know where to write.
- Give students three to five minutes to answer each prompt. Students who finish writing may draw an illustration in the box beside the prompt to illustrate their writing.

Check for Understanding

Circulate and Ask: Circulate and guide students as they respond using the answers provided in the completed sample chart to elicit student writing

Activity Page 5.1

ENGLISH LANGUAGE LEARNERS

Writing

Writing

Beginning
Have students dictate facts using familiar vocabulary to a teacher to be recorded.

Intermediate
Have students write or dictate phrases using familiar vocabulary to a peer to be recorded.

Advanced/Advanced High
Have students write facts using familiar vocabulary independently.

ELPS 5.G

TEKS 2.7.E Interact with sources in meaningful ways such as illustrating or writing; **TEKS 2.12.B** Compose informational texts, including procedural texts and reports.

Challenge

Have students conduct outside research and write additional facts about trees from the perspective of a tree on a separate sheet of paper. You may add these additional facts to the "I Am A Tree" display on a separate branch or row during the Introducing the Read-Aloud activity in Lesson 6.

Label on Display	Show Students	Possible Answers to Record
I have many parts like . . .	Image 5A-3	bark, leaves, roots, trunk, etc.
When I am Young . . .	Image 5A-5	I am a seed. I need water, sunlight, and warmth to germinate.
When I get a little bit older . . .	Image 5A-6	I am a sapling. My bark is smooth and I am flexible. I am still growing.
When I am mature . . .	Images 5A-1, 5A-9	I am a large tree. I can produce fruits and seeds.
I am important to humans because . . .	Image 5A-2	I absorb carbon dioxide and produce oxygen for humans and other animals to breathe. Humans can use my wood to build things and can eat my fruit.

- Collect Activity Page 5.1 to check that students understand the life cycle of a tree and why trees are important to humans.

End of Lesson

Grade 2 | Knowledge 5

Pausing Point

NOTE TO TEACHER

You should pause here and spend two days 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 that you use the Mid-Domain Assessment to assess students' knowledge of cycles of 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
- Explain how the rotation of Earth causes daytime and nighttime
- Explain how tilt and the revolution of Earth around the sun causes the seasons
- Describe the seasonal cycle: spring, summer, autumn, winter
- Explain effects of seasonal changes on plants and animals
- 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)
- Explain why trees are important to living things on earth
- Explain that a life cycle is the stages of growth of a living thing that repeat over and over

Activity Page PP.1

MID-DOMAIN ASSESSMENT

Sequencing the Life Cycle of a Plant

Materials: Activity Page PP.1

- Have students cut out each of the images of the sunflower life cycle and put them in the correct order of the life cycle of the sunflower plant. Students should then glue the pictures in the correct sequence onto a separate sheet of paper.
- Have students write sentences describing the life cycle of a sunflower on the back of their paper.

ACTIVITIES

Observing Nature

- Encourage students to make observations about plants and trees outside your classroom, specifically how the current season is affecting their growth. Record observations on the Observations board and tie student observations back to the content of this domain.

"Bee! I'm Expecting You!" by Emily Dickinson

- 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.

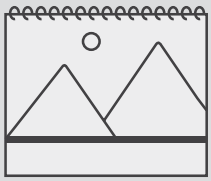
- Ask students who is speaking in the poem. Ask: "Why is the fly expecting the bee? What season is coming?" *(spring)* Help students make the connection between the word *expecting* and the repetition inherent in the seasonal cycle.

Multiple Meaning Word Activity: *Buds*

Materials: Poster 2M

Show Poster 2M (Buds)

Poster 2M



- In the Read-Aloud you heard, "As buds and leaves form, water absorbed . . . by the plant travels up the stem to the leaves."

- Have students hold up one, two, or three fingers to indicate which image on the poster shows this meaning.
  - *Buds* can also mean something else. *Buds* also means the small spots on your tongue that you use to taste.

- Have students hold up one, two, or three fingers to indicate which image on the poster shows this meaning.
  - *Buds* can also mean something else. *Buds* also means your friends or pals.

- Have students hold up one, two, or three fingers to indicate which image on the poster shows this meaning.

- Point to the buds that shows taste buds.
  - With your partner, talk about what you think of when you see this kind of buds. I will call on a few partners to share what they came up with. Try to answer in complete sentences. *(When I see this kind of buds, I think of licking an ice cream cone, tasting something spicy, etc.)*

- Point to the buds that shows friends or pals.
  - With your partner, talk about what you think of when you see this kind of buds. I will call on a few partners to share what they came up with. Try to answer in complete sentences. *(When I see this kind of buds, I think of playing with friends after school, etc.)*

- Point to the buds that shows tiny flowers on tree branches.
  - With your partner, talk about what you think of when you see this kind of buds. I will call on a few partners to share what they came up with. Try to answer in complete sentences. *(When I see this kind of buds, I think of springtime, etc.)*

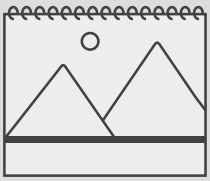
Word Work: Process

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.
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, using the words first, next, and then.
5. Can you think of the steps of other processes? Try to use the word *process* when you tell about it. [Ask two or three students. If necessary, guide and/or rephrase the students' responses: "The steps of the _____ process are . . . "]
6. What's the word we've been talking about?

Use a Discussion activity for follow-up. 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.

Sequence Review

Posters 1–3



Materials: Posters 1–3

- Use Posters 1–3 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. You may also choose to have the students select a Read-Aloud to be heard again.

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 important information about how seasonal cycles affect these plants. Have each student choose one idea to draw a picture of, and ask them to write a caption for the 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
- 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.

Key Vocabulary Brainstorming

Materials: Chart paper, chalkboard, or whiteboard

- Give students a key domain concept or vocabulary word such as *cycle*. Have them brainstorm everything that comes to mind when they hear the word, such as *repeats*, *four seasons*, etc. Record their responses on chart paper, a chalkboard, or whiteboard for reference.

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 a 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.

LESSON

6

CYCLES OF NATURE: CLOUDS TO RAINDROPS

Which Came First, the Chicken or the Egg?

PRIMARY FOCUS OF LESSON

Speaking and Listening

Students will present information about the tree life cycle and explain why trees are important to humans following agreed-upon rules for discussion.

TEKS 2.1.C; TEKS 2.1.D; TEKS 2.11.E

Reading

Students will describe the life cycle of a chicken.

TEKS 2.6.G

Language

Students will demonstrate an understanding of the Tier 2 word *replenished.*

TEKS 2.3.B

Writing

In collaboration with peers, students will write and illustrate key information about the life cycle of a chicken.

TEKS 2.7.D; TEKS 2.7.E; TEKS 2.7.F; TEKS 2.11.C

FORMATIVE ASSESSMENT

Exit Pass

Interactive Illustrations Students will write and illustrate key information about the life cycle of a chicken.

TEKS 2.7.D; TEKS 2.7.E

TEKS 2.1.C Share information and ideas that focus on the topic under discussion, speaking clearly at an appropriate pace and using the conventions of language; **TEKS 2.1.D** Work collaboratively with others to follow agreed-upon rules for discussion, including listening to others, speaking when recognized, making appropriate contributions, and building on the ideas of others; **TEKS 2.11.E** Publish and share writing; **TEKS 2.6.G** Evaluate details read to determine key ideas; **TEKS 2.3.B** Use context within and beyond a sentence to determine the meaning of unfamiliar words; **TEKS 2.7.D** Retell and paraphrase texts in ways that maintain meaning and logical order; **TEKS 2.7.E** Interact with sources in meaningful ways such as illustrating or writing; **TEKS 2.7.F** Respond using newly acquired vocabulary as appropriate; **TEKS 2.11.C** Revise drafts by adding, deleting, or rearranging words, phrases, or sentences.

LESSON AT A GLANCE

	Grouping	Time	Materials
Introducing the Read-Aloud (10 min.)			
What Have We Already Learned?	Whole Group	10 min.	❑ Activity Page 5.1 (completed in Lesson 5) ❑ "I Am a Tree" display ❑ scissors ❑ Posters 2, 3
Read-Aloud (30 min.)			
Purpose for Listening	Whole Group	30 min.	❑ Flip Book: 6A-1–6A-6 ❑ Poster 4
"Which Came First, the Chicken or the Egg?"			
Comprehension Questions			
Word Work: *Replenished*			
This is a good opportunity to take a break.			
Application (20 min.)			
A Chicken's Life Cycle: Egg to Egg	Whole Group/ Partner	20 min.	❑ raw egg ❑ clear jar or bowl ❑ Image Cards 10–12 ❑ Poster 4 ❑ paper ❑ writing and drawing tools
Interactive Illustrations			
Take-Home Material			
Family Letter			❑ Activity Page 6.1

ADVANCE PREPARATION

Application

- Acquire a fresh raw egg and be prepared to crack it into a jar or bowl during the Application activity. Be sure to check with your school's policy regarding food distribution and allergies.

Note to Teacher

This Read-Aloud explores the life cycle of a chicken. The title of the Read-Aloud poses an age-old question that touches on an innate characteristic of nature's cycles, that they have no beginning or end. Students are not expected to be able to eloquently explain why there is no answer to the question "Which came first, the chicken or the egg?" but they should begin to show that they understand that the life cycle repeats itself in all living things on earth.

Universal Access

- You may wish to discuss with students what foods they get from chickens. Note that this may be a sensitive subject for students, but may also allow some students to better access the content. Use your judgment and knowledge of your students in facilitating this discussion.
- Show students a video of a chick hatching from an egg. and a video or images depicting fully grown roosters and hens.

CORE VOCABULARY

albumen, n. the clear or white part inside an egg that surrounds the yolk
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 early in its development
Example: A developing chicken embryo must receive nutrients and oxygen from its egg.
Variation(s): embryos

fertilize, v. to make an egg able to grow and develop into a chick
Example: A rooster can fertilize an egg before a hen lays it, which allows a baby chick to grow.
Variation(s): fertilizes, fertilized, fertilizing

replenished, v. replaced or refilled
Example: The cookie jar was empty, so we replenished it with more cookies.
Variation(s): replenish, replenishes, replenishing

yolk, n. the yellow, internal part of 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?"

Type	Tier 3 Domain-Specific Words	Tier 2 General Academic Words	Tier 1 Everyday Speech Words
Vocabulary	albumen *(albumen)* embryo *(embrión)* fertilize yolk	replenished	
Multiple Meaning			
Sayings and Phrases	life cycle fully formed outside world		

Start Lesson

Lesson 6: Which Came First, the Chicken or the Egg?

Introducing the Read-Aloud

10M

Speaking and Listening: Students will present information about the tree life cycle and explain why trees are important to humans following agreed-upon rules for discussion.

TEKS 2.1.C; TEKS 2.1.D; TEKS 2.11.E

WHAT HAVE WE ALREADY LEARNED? TEKS 2.1.D

- 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 life cycles of flowering plants and trees both go from seed to seed. The life cycles begin with seeds and end with the plants and trees producing new seeds.
- Have students cut out their responses on Activity Page 5.1.

Check for Understanding

Share Your Answer: Review each of the prompts on the "I Am A Tree" display and have students share their answers with the class and then tape or glue their answers to the display.

Note: To save time, you might want to call on just a few students for each prompt and then allow students to post their answers to the display at a later time.

Show Posters 2 and 3

- Ask students what trees and flowering plants 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.
- Tell students they are going to continue learning about the life cycle as experienced by a very familiar bird.

TEKS 2.1.C Share information and ideas that focus on the topic under discussion, speaking clearly at an appropriate pace and using the conventions of language; **TEKS 2.1.D** Work collaboratively with others to follow agreed-upon rules for discussion, including listening to others, speaking when recognized, making appropriate contributions, and building on the ideas of others; **TEKS 2.11.E** Publish and share writing.

Activity Page 5.1

Challenge

Have students conduct outside research and write additional facts to share with the class.

ENGLISH LANGUAGE LEARNERS

Speaking and Listening

Presenting

Beginning
Read the student's fact aloud to the class and allow the student to describe their illustration.

Intermediate
Help the student prepare by reading the fact aloud to them just before oral presentation.

Advanced/Advanced High
Have the student read their fact aloud and/or describe their illustration independently in an oral presentation.

ELPS 1.G; ELPS 3.F; ELPS 3.I

Lesson 6: Which Came First, the Chicken or the Egg?

Read-Aloud

30M

Reading: Students will describe the life cycle of a chicken.

TEKS 2.6.G

Language: Students will demonstrate an understanding of the Tier 2 word *replenished.*

TEKS 2.3.B

PURPOSE FOR LISTENING

- Tell students to listen carefully to find out about the life cycle of a chicken.

"WHICH CAME FIRST, THE CHICKEN OR THE EGG?" (15 MIN.)

Show Image 6A-1: Chicken

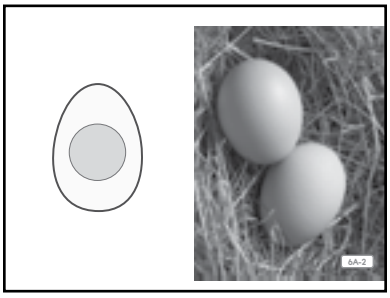
A chicken is a type of bird. Did you know that there are more chickens in our world than any other type of bird? In fact there are more chickens on Earth than people.

Like almost 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!

Challenge

Which do you think came first, the chick or the egg? Why?



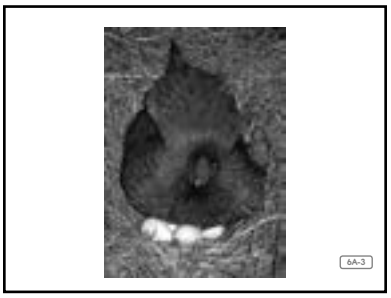
Show Image 6A-2: Egg

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

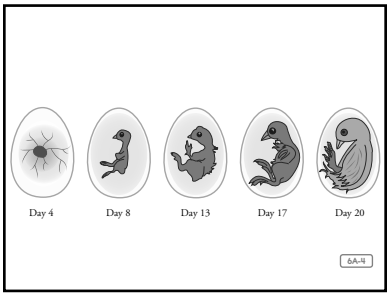
TEKS 2.6.G Evaluate details read to determine key ideas; **TEKS 2.3.B** Use context within and beyond a sentence to determine the meaning of unfamiliar words.

mostly of fat, and a clear part, called the **albumen** [/al*byoo*mən/].

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. *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.* Eggs that are not fertilized do not become baby chickens. They are sent to stores so that people can buy them and eat them.



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. *Twenty-one days is three weeks.* Let's find out what happens inside the egg during this time!



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. *An embryo is an animal in the early stages of life before it is born or has hatched.* 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. *Humans also have pores. Pores are the openings on our skin out of which hair grows.*

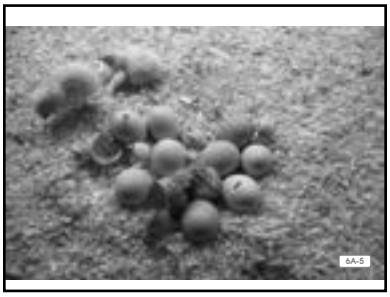
The parts of the egg inside the shell contain all the food the growing embryo needs to develop into a fully formed chick. The yellow yolk provides the food necessary for the embryo to grow big and strong. The clear part of the egg, or albumen, surrounds the yolk and provides the growing embryo with more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

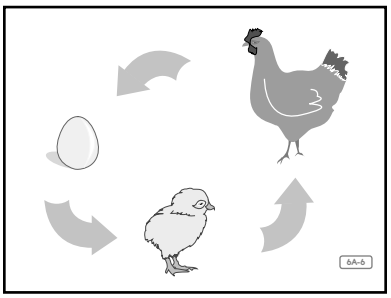
Support

Have students act out the hatching of chicks according to the steps in the text.



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. *Have you ever seen newborn chicks? Where did you see them?*

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. *That means chicks know how to scratch around for food without being taught to do so.* For the first two weeks, the chicks stay close to their mother.



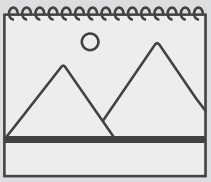
Show Image 6A-6: Chicken life cycle diagram
Chicks grow quickly in the first months of their lives. When a female is about six months old, she will start to lay eggs. These first eggs will be quite small, though. Interestingly, females are called pullets, not hens, until they are one year old. Roosters 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? *[Pause for students to give their opinions.]*

Note: While the egg is the logical "starting point" of the life cycle of a chicken, it is important students understand that this cycle happens over and over again, with chickens laying new eggs that hatch into chicks, become chickens, and lay more eggs.

Poster 4



ENGLISH LANGUAGE LEARNERS

Reading

Selecting Language Resources

Beginning
Elicit short answers from students (e.g., "What is the first stage in the life cycle of a chicken?").

Intermediate
Elicit more details in students' answers (e.g., "What happens during the egg stage in the life cycle of a chicken?").

Advanced/Advanced High
Elicit higher-level insights and comparisons (e.g., "Why is the hen important in the egg stage of a chicken's life cycle?").

ELPS 2.G; ELPS 4.G; ELPS 4.I

COMPREHENSION QUESTIONS (10 MIN.)

Check for Understanding

Show Poster 4 (life cycle of a chicken)

Turn and Talk: Describe the life cycle of a chicken. (*egg, chick, adult chicken, lay new eggs)*

1. **Inferential.** Do all chicken eggs develop into baby chicks? Why or why not? (*No, an egg must be fertilized by a rooster to produce baby chicks.*)
2. **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.*)
3. **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.*)
4. **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.)*

WORD WORK: REPLENISHED (5 MIN.)

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."]
6. What's the word we've been talking about?

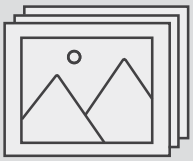
Use a Making Choices activity for follow-up. I am going to read a list of several things to you. If what I read describes something that can be replenished, say, "That can be replenished." If what I read describes something that cannot be replenished, say, "That cannot be replenished." Remember to answer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

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

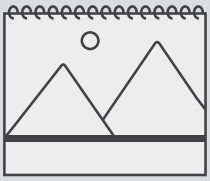
Support

Show students a video of a chick hatching from an egg. Then show students a video or images depicting fully grown roosters and hens. You might also discuss food humans get from chickens.

Image Cards 10–12



Poster 4



Lesson 6: Which Came First, the Chicken or the Egg?

Application

20M

Writing: In collaboration with peers, students will write and illustrate key information about the life cycle of a chicken.

TEKS 2.7.D; TEKS 2.7.E; TEKS 2.7.F; TEKS 2.11.C

A CHICKEN'S LIFE CYCLE: EGG TO EGG (5 MIN.)

- Crack open a fresh egg into a clear glass jar or bowl. Have students identify the parts of the egg and describe their function. *(eggshell protects, albumen provides food and water, yolk provides food)*
- Discuss with students why this egg did not become a chick. *(If the egg is not fertilized by a rooster, it can never grow into a baby chick.)*

Show Image Cards 10–12

- Have students sequence and describe the chicken's life cycle.

Show Poster 4 (chicken's life cycle)

- Remind students that the life cycle repeats itself over and over again and that, even though there is a starting point, the cycle never really begins or ends.
- Arrange the sequenced Image Cards in a circle rather than a horizontal line.

TEKS 2.7.D Retell and paraphrase texts in ways that maintain meaning and logical order; **TEKS 2.7.E** Interact with sources in meaningful ways such as illustrating or writing; **TEKS 2.7.F** Respond using newly acquired vocabulary as appropriate; **TEKS 2.11.C** Revise drafts by adding, deleting, or rearranging words, phrases, or sentences.

INTERACTIVE ILLUSTRATIONS (15 MIN.)

- 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 their partner's sentence.
- Then have students hand the paper back to the original author. Encourage the author to add descriptive words to their 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, repeat and expand upon each response using richer and more complex language, including, if possible, any domain-related vocabulary.

Exit Pass

Collect students' writing and illustrations to check that they understand the life cycle of a chicken from egg to egg.

End of Lesson

Lesson 6: Which Came First, the Chicken or the Egg?

Take-Home Material

FAMILY LETTER

Send home Activity Page 6.1.

ENGLISH LANGUAGE LEARNERS

Writing

Writing

Beginning
Have students dictate facts using familiar vocabulary to a teacher to be recorded.

Intermediate
Have students write or dictate phrases using familiar vocabulary to a peer to be recorded.

Advanced/Advanced High
Have students write facts using familiar vocabulary independently.

ELPS 5.G

Challenge

Have students include the following words and phrases in their writing: *yolk, albumen, egg tooth, hen.*

Activity Page 6.1

LESSON

7

CYCLES OF NATURE: CLOUDS TO RAINDROPS

The Life Cycle of a Frog

PRIMARY FOCUS OF LESSON

Speaking and Listening

Students will review various cycles of nature.

TEKS 2.7.D

Reading

Students will explain the process of metamorphosis in the life cycle of a frog, following agreed-upon rules for discussion and asking relevant questions about the text after reading to deepen understanding and gain information.

TEKS 2.1.A; TEKS 2.1.D; TEKS 2.6.B

Language

Students will demonstrate an understanding of the Tier 2 word *burrow*.

TEKS 2.3.B

Writing

Students will compose an informational text describing the life cycle of a frog and will develop their drafts into a focused piece of writing by developing an idea with specific and relevant details.

TEKS 2.11.B.ii; TEKS 2.12.B

FORMATIVE ASSESSMENT

Activity Page 7.1

Write an Informational Paragraph Students will write a short paragraph describing the life cycle of a frog.

TEKS 2.12.B

TEKS 2.7.D Retell and paraphrase texts in ways that maintain meaning and logical order; **TEKS 2.1.A** Listen actively, ask relevant questions to clarify information, and answer questions using multi-word responses; **TEKS 2.1.D** Work collaboratively with others to follow agreed-upon rules for discussion, including listening to others, speaking when recognized, making appropriate contributions, and building on the ideas of others; **TEKS 2.6.B** Generate questions about text before, during, and after reading to deepen understanding and gain information; **TEKS 2.3.B** Use context within and beyond a sentence to determine the meaning of unfamiliar words; **TEKS 2.11.B.ii** Develop drafts into a focused piece of writing by developing an idea with specific and relevant details; **TEKS 2.12.B** Compose informational texts, including procedural texts and reports.

LESSON AT A GLANCE

	Grouping	Time	Materials
Introducing the Read-Aloud (10 min.)			
What Have We Already Learned?	Whole Group	10 min.	❑ Posters 1–4
Read-Aloud (30 min.)			
Purpose for Listening	Whole Group	30 min.	❑ Flip Book: 7A-1–7A-7 ❑ Poster 5 ❑ Image Cards 13–16
"The Life Cycle of a Frog"			
Comprehension Questions			
Word Work: *Burrow*			
This is a good opportunity to take a break.			
Application (20 min.)			
Write an Informational Paragraph	Independent	20 min.	❑ Activity Page 7.1 ❑ Poster 5 ❑ Image Cards 13–16 ❑ Informational Paragraph: Life Cycle of a Frog (Digital Components)

ADVANCE PREPARATION

Application

- Prepare an enlarged version of the following chart on the board/chart paper. Alternatively, you may access a digital version in the digital components for this unit.

Sentence	What to Write	Example Sentence
(Introduction)	This sentence tells the reader what the paragraph is about.	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. (Image Card 13)	First, adult frogs lay eggs in the pond in spring.
Next . . .	Tell about the second stage in the life cycle. (Image Card 14)	Next, tadpoles with long tails hatch in the spring.
Then . . .	Tell about the third stage in the life cycle. (Image Card 15)	Then, tadpoles grow legs and lungs and become a young frog.
Finally . . .	Tell about the fourth stage in the life cycle. (Image Card 16)	Finally, young frogs become adult frogs.
(Conclusion)	This sentence finishes and wraps up the paragraph.	Adult frogs then lay frogspawn, continuing the life cycle of frogs.

Universal Access

- Show students a time-lapse video of a frog growing from egg to tadpole to froglet to frog.

CORE VOCABULARY

amphibian, n. an animal that can live on both land and 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 passage into or under something
Example: My dog loves to burrow under the blankets on my bed.
Variation(s): burrows, burrowed, burrowing

gills, n. the body parts some aquatic animals use to breathe underwater
Example: The fish's gills open to take in water.
Variation(s): gill

lungs, n. a pair of organs used to breathe
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 change form as they become adults
Example: After the young larva goes through metamorphosis to become a butterfly, it looks nothing like it once did.
Variation(s): metamorphoses

Vocabulary Chart for "The Life Cycle of a Frog"

Type	**Tier 3 Domain-Specific Words**	**Tier 2 General Academic Words**	**Tier 1 Everyday Speech Words**
Vocabulary	amphibian *(anfibio)* gills lungs metamorphosis *(metamorfosis)*	burrow	
Multiple Meaning			
Sayings and Phrases	survival technique		

Start Lesson

Lesson 7: The Life Cycle of a Frog

Introducing the Read-Aloud

10M

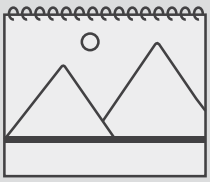
Speaking and Listening: Students will review various cycles of nature.

TEKS 2.7.D

WHAT HAVE WE ALREADY LEARNED?

- Review with students that a life cycle includes the stages a living thing goes through from birth to adult.

Posters 1–4



Show Posters 1–4

- Ask students about the cycles they have learned about so far using the list below to elicit responses. Remind students that some of these are life cycles and some are not. Each time a student names a cycle, encourage students to describe the stages in the cycle and state any relevant facts.
  - daytime and nighttime
  - seasons
  - flowering plants (life cycle)
  - trees (life cycle)
  - chickens (life cycle)

Check for Understanding

Share It: Encourage students to retell the life cycle of a chicken. Have students share the Interactive Illustrations activity with their peers to review the life cycle of a chicken.

TEKS 2.7.D Retell and paraphrase texts in ways that maintain meaning and logical order.

Lesson 7: The Life Cycle of a Frog

Read-Aloud

30M

Reading: Students will explain the process of metamorphosis in the life cycle of a frog, following agreed-upon rules for discussion and asking relevant questions about the text after reading to deepen understanding and gain information.

TEKS 2.1.A; TEKS 2.1.D; TEKS 2.6.B

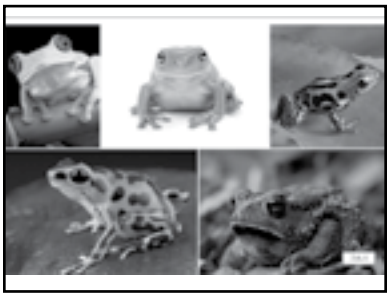
Language: Students will demonstrate an understanding of the Tier 2 word *burrow.*

TEKS 2.3.B

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" (15 MIN.)



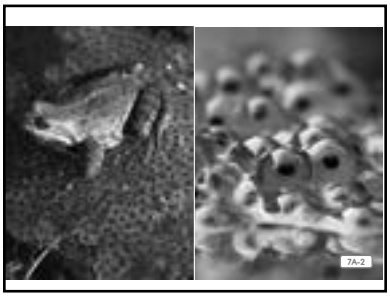
Show Image 7A-1: Frogs

What sound do frogs make? (Frogs make croaking sounds, like "ribbit".) 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! *[Show students a dime for reference.]* The largest frog in the world is the Goliath frog from Africa. It can grow up to three feet long and weigh seven pounds.

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. OK, now that you know some cool facts about frogs, let's find out about their life cycles.

TEKS 2.1.A Listen actively, ask relevant questions to clarify information, and answer questions using multi-word responses; **TEKS 2.1.D** Work collaboratively with others to follow agreed-upon rules for discussion, including listening to others, speaking when recognized, making appropriate contributions, and building on the ideas of others; **TEKS 2.6.B** Generate questions about text before, during, and after reading to deepen understanding and gain information; **TEKS 2.3.B** Use context within and beyond a sentence to determine the meaning of unfamiliar words.

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. *How are the chicken and frog's life cycles similar?*



Show Image 7A-2: Frogspawn

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. A developing young frog is called an embryo at the early stages and a tadpole at the later stages. *When else have we heard about embryos?* (The inside of a tree seed is called an embryo. A growing baby chick is called an embryo as it grows inside the egg.)

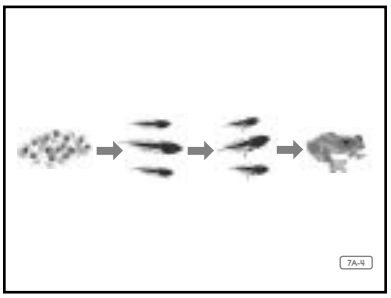
The mother frog lays her eggs in water in spring, when the cold winter months are over and the water is warm enough for her eggs to survive. *What other living things reproduce in the spring when it is warm?* (trees, plants) The mother frog lays hundreds of eggs at one time. Female frogs lay hundreds 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. *People cannot breathe underwater because people do not have gills. Instead, we hold our breath when we go underwater.*

Once it hatches, a tadpole lives in water. A tadpole has a long, flat tail that 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.

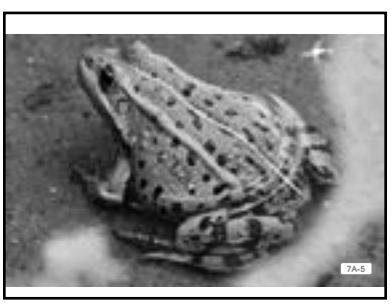


Show Image 7A-4: Tadpole metamorphosis
After some time, the tadpole begins its transformation into a frog. When a living thing undergoes a huge change in shape, this process is called **metamorphosis**. Tadpoles change quite dramatically from fish-like creatures with gills, into four-legged land creatures with **lungs**. *Frogs can breathe air because they have lungs, just like people. Lungs are the body parts that we use to breathe air.* Let's find out more about this remarkable transformation.

After the appearance of the head and the tail, the tadpole grows 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.

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. *That's roughly the size of your thumb.* 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.



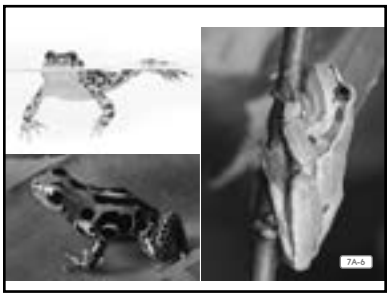
Show Image 7A-5: Frog skin
Do you know what you call an animal that can live in water and on land? An animal that can live in water and on land is called an **amphibian**. Frogs are amphibians.

Although frogs spend a lot of time on land, they stay fairly close to water. Frogs need

Challenge

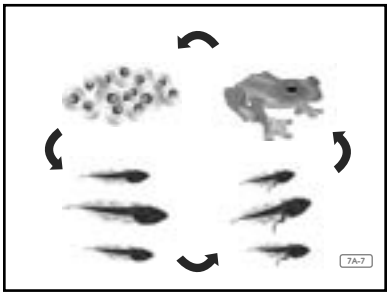
What other animals do you know that go through metamorphosis, turning from one thing into another? *(Answers may vary but may include caterpillars, butterflies, moths, etc.)*

to keep their skin damp. *or somewhat wet* 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. 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.



Show Image 7A-6: Frog camouflage
The young frog has to survive until it is two or three years old to become a parent. To live that long, frogs have various survival techniques. *A survival technique is a way staying alive.* 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 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. Frogspawn *is a compound word. If* spawn *means eggs, what does* frogspawn *mean?* 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!

COMPREHENSION QUESTIONS (10 MIN.)

Check for Understanding

Show Poster 5 (life cycle of a frog) and/or Image Cards 13–16

Turn and Talk: Describe the life cycle of a frog. (*egg, tadpole, froglet, and adult frog)*

1. **Inferential.** How do tadpoles breathe underwater? (*Tadpoles, like fish, have gills so that they can breathe underwater.*)
2. **Inferential.** Are tadpoles effected by the cycle of the seasons? *(yes)* How? do tadpoles prepare for the cold of winter? (*In winter tadpoles burrow under the mud at the bottom of the pond and hibernate. In spring, female frogs lay their eggs*)
3. **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? *(metamorphosis*)
4. **Evaluative.** *Question-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 *who*, *what*, *where*, *when*, or *why*. For example, you could ask, "What is the name for a frog after it emerges from an egg and lives in water?" 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.

TEKS 2.1.A; TEKS 2.1.D; TEKS 2.6.B

Poster 5

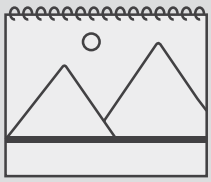
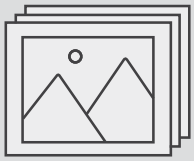


Image Cards 13–16



ENGLISH LANGUAGE LEARNERS

Reading

Selecting Language Resources

Beginning
Elicit short answers from students (e.g., "What is the first stage in the life cycle of a frog?").

Intermediate
Elicit more details in students' answers (e.g., "What happens after the egg stage in the life cycle of a frog?").

Advanced/Advanced High
Elicit higher-level insights and comparisons (e.g., "How is the life of a frog affected by other cycles of nature?").

ELPS 2.G; ELPS 4.G; ELPS 4.I

TEKS 2.1.A Listen actively, ask relevant questions to clarify information, and answer questions using multi-word responses; **TEKS 2.1.D** Work collaboratively with others to follow agreed-upon rules for discussion, including listening to others, speaking when recognized, making appropriate contributions, and building on the ideas of others; **TEKS 2.6.B** Generate questions about text before, during, and after reading to deepen understanding and gain information.

WORD WORK: BURROW (5 MIN.)

1. In the Read-Aloud you heard, "In the winter, many frogs hibernate. Often they burrow, or dig a hole in mud at the bottom of ponds."
2. Say the word *burrow* with me.
3. *Burrow* means to make a hole into or under something.
4. Some animals use their front legs to push dirt aside so they can burrow deeper into the ground.
5. Has there ever been a time when you tried to burrow into something or when you saw an animal burrow into something? Try to use the word *burrow* when you tell about it. [Ask two or three students. If necessary, guide and/or rephrase the students' responses: "Once, I saw my dog burrow into . . . "]
6. What's the word we've been talking about? What part of speech is the word *burrow*? How do you know that it is an action word?

Use a Discussion activity for follow-up. Share with your partner why you think it is important for creatures to burrow when they hibernate. Be sure to begin your responses with "It is important for creatures to burrow because . . . "

Lesson 7: The Life Cycle of a Frog

Application

20M

Writing: Students will compose an informational text describing the life cycle of a frog and will develop their drafts into a focused piece of writing by developing an idea with specific and relevant details.

TEKS 2.11.B.ii; TEKS 2.12.B

WRITE AN INFORMATIONAL PARAGRAPH

TEKS 2.11.B.ii; TEKS 2.12.B

Show Poster 5 (life cycle of a frog) and/or Image Cards 13–16

- Have students identify each stage of the life cycle of the frog. You may wish to display this poster on the classroom wall to reference throughout the domain.
- Tell students that they are going to write a paragraph to explain the stages of the life cycle of a frog. Tell students that a paragraph that tells about something that is true is called an informational paragraph.
- Have students use the information heard in the Read-Aloud and the images on Poster 5 and/or on Image Cards 13–16 to orally review the stages of a frog's life cycle. Encourage them to describe each stage, and to include any domain-related vocabulary. Emphasize that the life cycle of a frog goes from "egg to egg" it is a cycle so it repeats itself over and over again.
- Have students turn to Activity Page 7.1 and refer to the enlarged version you prepared in advance.
- Review the structure of the paragraph you are going to write. Tell students their paragraph will have six sentences.

Note: Please read aloud the labels on each box on Activity Page 7.1 to students. Students are not expected to decode these labels.

- After reviewing the parts of the informational paragraph, have students write their paragraph on Activity Page 7.1. Remind students to use capital letters at the beginning of their sentences and the correct punctuation at the end.

Poster 5

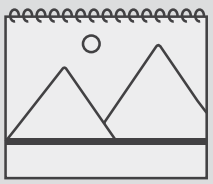
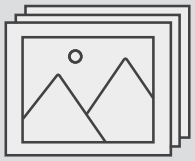


Image Cards 13–16



Activity Page 7.1

ENGLISH LANGUAGE LEARNERS

Writing

Writing

Beginning
Have students dictate facts using familiar vocabulary to a teacher to be recorded.

Intermediate
Have students write phrases using familiar vocabulary to a peer to be recorded.

Advanced/Advanced High
Have students write facts using familiar vocabulary independently.

ELPS 5.G

TEKS 2.11.B.ii Develop drafts into a focused piece of writing by developing an idea with specific and relevant details; **TEKS 2.12.B** Compose informational texts, including procedural texts and reports.

Challenge

Encourage students to write an informational paragraph without using Activity Page 7.1 to structure their writing. Tell students to use transition words such as first, next, then, and last, to describe the life cycle of a frog in complete sentences.

- 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.
- Collect Activity Page 7.1 to check that students understand the life cycle of a frog and to informally assess students' writing. You may wish to add this informational paragraph to students' writing portfolio.

End of Lesson

LESSON

8

CYCLES OF NATURE: CLOUDS TO RAINDROPS

The Life Cycle of a Butterfly

PRIMARY FOCUS OF LESSON

Speaking and Listening

Students will review what a cycle in nature is.

TEKS 2.7.D

Reading

Students will explain the role of metamorphosis in the life cycle of a butterfly.

TEKS 2.6.E; TEKS 2.6.G; TEKS 2.7.D

Language

Students will demonstrate an understanding of the Tier 2 word *transparent.*

TEKS 2.3.B

Reading

Students will sequence and write a summary of the stages in the life cycle of a butterfly.

TEKS 2.6.G; TEKS 2.7.D; TEKS 2.12.B

FORMATIVE ASSESSMENT

Activity Page 8.1

Sequencing and Summarizing the Life Cycle of a Butterfly Students will sequence and write a summary of the stages in the life cycle of a butterfly.

TEKS 2.7.D; TEKS 2.12.B

TEKS 2.7.D Retell and paraphrase texts in ways that maintain meaning and logical order; **TEKS 2.6.E** Make connections to personal experiences, ideas in other texts, and society; **TEKS 2.6.G** Evaluate details read to determine key ideas; **TEKS 2.3.B** Use context within and beyond a sentence to determine the meaning of unfamiliar words' **TEKS 2.12.B** Compose informational texts, including procedural texts and reports.

LESSON AT A GLANCE

	Grouping	Time	Materials
Introducing the Read-Aloud (10 min.)			
What Have We Already Learned?	Whole Group	10 min.	❑ Posters 1–4 ❑ Image Cards 10–16
Read-Aloud (30 min.)			
Purpose for Listening	Whole Group	30 min.	❑ Flip Book: 8A-1–8A-9 ❑ Poster 6 ❑ Image Cards 17–20
"The Life Cycle of a Butterfly"			
Comprehension Questions			
Word Work: *Transparent*			
This is a good opportunity to take a break.			
Application (20 min.)			
Sequencing the Life Cycle of a Butterfly	Independent	20 min.	❑ Activity Page 8.1 ❑ paper, glue, writing tools

ADVANCE PREPARATION

Universal Access

- Show students a time-lapse video of a butterfly going through metamorphosis.

CORE VOCABULARY

larva, n. the early form of an insect that is not completely developed
Example: A larva must go through many stages of growth before becoming an adult insect.
Variation(s): larvae

molt, v. to shed an outer layer
Example: When it comes time for my pet snake to molt, he sheds all of his scales at once.
Variation(s): molts, molted, molting

transparent, adj. clear; see through
Example: Kayla planted her seeds in a 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"

Type	Tier 3 Domain-Specific Words	Tier 2 General Academic Words	Tier 1 Everyday Speech Words
Vocabulary	larva *(larva)* molt	transparent *(transparente)*	
Multiple Meaning			
Sayings and Phrases	life cycle a matter of days a beautiful sight to see		

Start Lesson

Lesson 8: The Life Cycle of a Butterfly

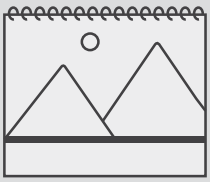
Introducing the Read-Aloud

10M

Speaking and Listening: Students will review what a cycle in nature is.

TEKS 2.7.D

Flip Book Posters 1–4



ENGLISH LANGUAGE LEARNERS

Reading

Selecting Language Resources

Beginning
Elicit short answers from students (e.g., "In which season do animals and plants tend to reproduce?").

Intermediate
Elicit more details in students' answers (e.g., "Why do animals and plants tend to reproduce in the spring?").

Advanced/Advanced High
Elicit higher-level insights and comparisons (e.g., "How does the seasonal cycle affect the life cycles of living things?").

ELPS 2.G; ELPS 4.G; ELPS 4.I

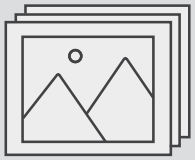
WHAT HAVE WE ALREADY LEARNED?

Show Posters 1–4

- Use the following questions to review what students have learned about cycles of nature.
  - What is a cycle? *(a sequence of events that repeats itself again and again)*
  - What is a life cycle? *(all the stages a living thing goes through from birth to adult and back to birth again)*
  - How does the seasonal cycle affect the life cycles of living things? *(most new life occurs in the spring, when there is more sunlight and temperatures are warmer)*
  - After something becomes an adult, how does the cycle begin again? *(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 to egg, called a life cycle.

TEKS 2.7.D Retell and paraphrase texts in ways that maintain meaning and logical order.

Image Cards 10–16



Check for Understanding

Show Image Cards 10–16

Sequence It: Have students take turns using Image Cards 10–16 to sequence the life cycles of chickens and frogs.

- Help students compare and contrast the life cycle of a chicken and a frog (e.g., "How do the life cycles of chickens and frogs begin?").

Lesson 8: The Life Cycle of a Butterfly

Read-Aloud

30M

Reading: Students will explain the role of metamorphosis in the life cycle of a butterfly.

TEKS 2.6.E; TEKS 2.6.G; TEKS 2.7.D

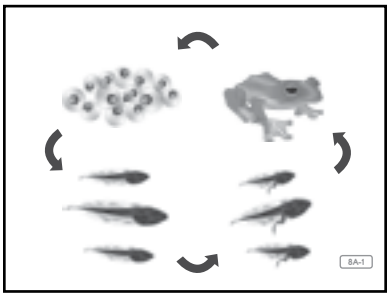
Language: Students will demonstrate an understanding of the Tier 2 word *transparent.*

TEKS 2.3.B

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 carefully to find out if butterflies go through metamorphosis like frogs do.

"THE LIFE CYCLE OF A BUTTERFLY" (15 MIN.)

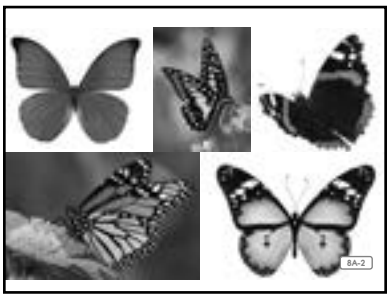


Show Image 8A-1: Frog life cycle

You have already learned about five cycles! 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. A butterfly's life cycle is somewhat different from most animals because it goes through a stage called metamorphosis. Metamorphosis is a process in which a living thing changes or transforms from one shape into another. *What animal did we already learn about that goes through metamorphosis?* (frog) This means that it literally changes its entire appearance. *How does the frog change its entire appearance?* (It starts as a tadpole, and then grows legs and arms and loses its tail and becomes a fully grown frog.) Let's hear more about the extraordinary life cycle of those beautiful creatures called butterflies. *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.)

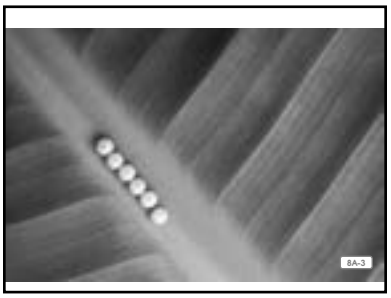
TEKS 2.6.E Make connections to personal experiences, ideas in other texts, and society; **TEKS 2.6.G** Evaluate details read to determine key ideas; **TEKS 2.7.D** Retell and paraphrase texts in ways that maintain meaning and logical order; **TEKS 2.3.B** Use context within and beyond a sentence to determine the meaning of unfamiliar words.



Show Image 8A-2: Butterflies

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

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. *85˚F is the temperature on a warm, summer day.* When they do, the fastest butterflies can fly is 12 miles per hour. They cannot move at all if their body temperature drops below 55°F. *55˚F is the temperature on a chilly day.* Well, now that you know some interesting facts about butterflies, it's time to find out about a butterfly's life cycle.



Show Image 8A-3: Butterfly eggs

A butterfly begins its life as an egg that has been produced by its mother. Butterfly eggs can be round or oval. There are even some that are cylindrical in shape. *[Show students something that is cylinder-shaped in your classroom for reference.]* 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.

Support

Here, the word *round* refers to the shape of the eggs. The word *round* also can mean to go or pass around something. Use Poster 4M in the Flip Book as additional support for the multiple meanings of *round*.

Show Image 8A-4: Butterfly larva

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. *Let's try to move like caterpillars.*

Challenge

Why do you think it is important for caterpillars to eat as much as they can after they first hatch?

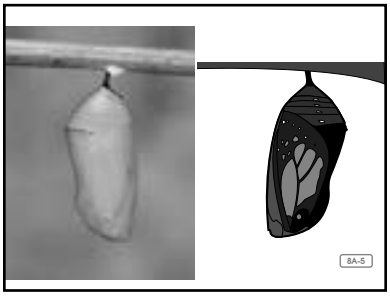
A caterpillar also uses its muscles to eat. The caterpillar's job is to eat as much as it can. A caterpillar eats the egg that sheltered it. Then it begins to eat the leaf on which it was born. The tiny caterpillar keeps on eating, devouring all the leaves around it. Caterpillars don't sleep, so they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

Support

What happens when you outgrow your clothes?

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!

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.



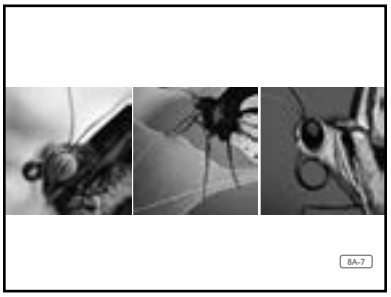
Show Image 8A-5: Chrysalis

[Point to the image on the left.] In the next stage, the caterpillar forms a protective outer casing called a pupa, or chrysalis [kris*ə*lis]. 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.

[Point to the image on the right.] Inside the chrysalis something incredible happens. The caterpillar transforms from one thing into another in the process called metamorphosis.

Show Image 8A-6: 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. *Is it still the same animal after metamorphosis?* 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-7: 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. *What other animals have we learned about whose eggs are fertilized by males?* (chickens, frogs) The life cycle begins all over again as female butterflies search for the right places to lay their eggs.

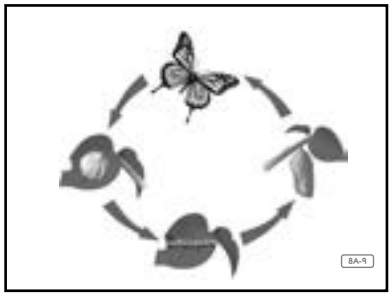
Amazingly, female butterflies use their feet to find the best place to lay their eggs. The butterfly "tastes" various leaves using her feet to find just the right home for her young. She knows that when her eggs hatch, they will need an instant food supply.

Support

Show students a time-lapse video showing a butterfly going through metamorphosis.

Show Image 8A-8: 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. *What does the word* migrate *mean?*



Show Image 8A-9: 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 it even more.

COMPREHENSION QUESTIONS (10 MIN.)

Check for Understanding

Show Poster 6 (life cycle of a butterfly) and/or Image Cards 17–20

Turn and Talk: Describe the life cycle of a butterfly. (*egg, caterpillar, chrysalis or pupa, butterfly, lay eggs)*

1. **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. It also might eat the skin. The last time it molts, the skin becomes the outside of the chrysalis.*)
2. **Inferential.** After metamorphosis, does the adult animal look like it did when it was younger? Is it still the same animal? (*It doesn't look like it did when it was younger, but it is still the same animal.*)
3. **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.*)

Poster 6

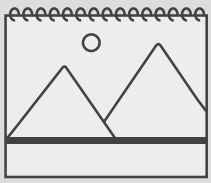
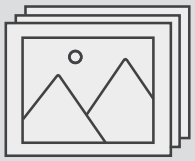


Image Cards 17–20



ENGLISH LANGUAGE LEARNERS

Reading

Selecting Language Resources

Beginning
Elicit short answers from students (e.g., "What is the first stage in the life cycle of a butterfly?").

Intermediate
Elicit more details in students' answers (e.g., "What happens during the egg stage in the life cycle of a butterfly?").

Advanced/Advanced High
Elicit higher-level insights and comparisons (e.g., "Why is it important for caterpillars to hatch on edible leaves?").

ELPS 2.G; ELPS 4.G; ELPS 4.I

WORD WORK: TRANSPARENT (5 MIN.)

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?

Check for Understanding

Making Choices: I am going to name several things. If what I name is transparent, say, "That is transparent." If what I name is not transparent, say, "That is not transparent." Remember to answer in complete sentences.

- a window (*That is transparent.*)
- a brown paper bag (*That is not transparent.*)
- a classroom pet tank (*That is transparent.*)
- a book (*That is not transparent.*)
- the lenses in a pair of glasses (*Those are transparent.*)
- clear plastic wrap (*That is transparent.*)

Lesson 8: The Life Cycle of a Butterfly

Application

20M

Reading: Students will sequence and write a summary of the stages in the life cycle of a butterfly.

TEKS 2.6.G; TEKS 2.7.D; TEKS 2.12.B

SEQUENCING THE LIFE CYCLE OF A BUTTERFLY

- Have students cut out each of the images of the life cycle of a butterfly on Activity Page 8.1.
- Next, have them put the images in the correct order of the life cycle of the butterfly.

Check for Understanding

Check In: Have students raise their hands when they have put the images in order but before they glue them down. Check students' work before they begin gluing, providing oral feedback and prompting as necessary.

- Have students glue the ordered images on a blank piece of paper.
- Have students describe the life cycle of a butterfly to their partners, using their pictures as a guide.

Exit Pass

- Finally, on a separate sheet of paper, tell students to write a summary of the life cycle of a butterfly. Encourage students to use temporal words such as *first, next, then,* and *last.*
- Collect the sequenced images from Activity Page 8.1, along with students' summaries, to check that students understand the life cycle of a butterfly.

End of Lesson

TEKS 2.6.G Evaluate details read to determine key ideas; **TEKS 2.7.D** Retell and paraphrase texts in ways that maintain meaning and logical order; **TEKS 2.12.B** Compose informational texts, including procedural texts and reports.

Activity Page 8.1

Support

Show students Poster 5 to help them remember the life cycle of a butterfly.

Challenge

Have students organize the images in a circle to represent the repetitive nature of the butterfly life cycle.

ENGLISH LANGUAGE LEARNERS

Writing

Writing

Beginning
Have students dictate facts using familiar vocabulary to a teacher to be recorded.

Intermediate
Have students dictate phrases using familiar vocabulary to a peer to be recorded.

Advanced/Advanced High
Have students write facts using familiar vocabulary independently.

ELPS 5.G

LESSON

9

CYCLES OF NATURE: CLOUDS TO RAINDROPS

The Water Cycle

PRIMARY FOCUS OF LESSON

Speaking and Listening

Students will identify the three states of water.

TEKS 2.1.A; TEKS 2.6.E

Reading

Students will describe the water cycle.

TEKS 2.6.G; TEKS 2.7.D

Language

Students will identify the meaning of and use a word with affix *-tion*, demonstrating an understanding of the Tier 3 word *precipitation.*

TEKS 2.3.B; TEKS 2.3.C

Writing

Students will act out, observe, and write about the water cycle.

TEKS 2.7.D; TEKS 2.12.B

FORMATIVE ASSESSMENT

Exit Pass

Summarize the Water Cycle Students will summarize the water cycle.

TEKS 2.7.D; TEKS 2.12.B

TEKS 2.1.A Listen actively, ask relevant questions to clarify information, and answer questions using multi-word responses; **TEKS 2.6.E** Make connections to personal experiences, ideas in other texts, and society; **TEKS 2.6.G** Evaluate details read to determine key ideas; **TEKS 2.7.D** Retell and paraphrase texts in ways that maintain meaning and logical order; **TEKS 2.3.B** Use context within and beyond a sentence to determine the meaning of unfamiliar words; **TEKS 2.3.C** Identify the meaning of and use words with affixes un-, re-, -ly, -er, and -est (comparative and superlative), and -ion/tion/sion; **TEKS 2.12.B** Compose informational texts, including procedural texts and reports.

LESSON AT A GLANCE

	Grouping	Time	Materials
Introducing the Read-Aloud (10 min.)			
What Do We Already Know?	Whole Group	10 min.	❑ a book ❑ two clear containers, different shapes ❑ water
Essential Background Information or Terms			
Read-Aloud (30 min.)			
Purpose for Listening	Whole Group	30 min.	❑ Poster 7 ❑ Flip Book: 9A-1–9A-11
"The Water Cycle"			
Comprehension Questions			
Word Work: *Precipitation*			
This is a good opportunity to take a break.			
Application (20 min.)			
Water Cycle Song	Whole Group/ Independent	20 min.	❑ Poster 7 ❑ clear cup ❑ plastic sealable bag ❑ tape ❑ Observations Board (created in Lesson 1) ❑ paper or index cards ❑ writing tools
Water Cycle Observations			

ADVANCE PREPARATION

Note to Teacher

The demonstration planned for the Application activity will take time because evaporation and condensation must occur. A recommendation to begin the activity in advance was made in the Advance Preparation section of Lesson 1. Please plan to allow time to elapse between when you fill the cup and place it in the bag and when your students make observations. You may wish to fill the cup during the Introducing the Read-Aloud activity and then make observations during the Application activity. Alternatively, you could conduct the observations during the Domain Review or Culminating Activities.

Application

- Prepare to set up a miniature, indoor water cycle for students to observe. Bring in a small, clear, plastic cup and 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.

Universal Access

- Keep a cup of ice and a cup of water on hand throughout this lesson to show students water in its solid and liquid states.

CORE VOCABULARY

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 on it.
Variation(s): none

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

humidity, n. the amount of moisture or water vapor in the air
Example: There is high humidity in the world's tropical rainforests.
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

recycled, v. used again; went through the same process again
Example: In the water cycle, water is recycled through the process of evaporation, condensation, and precipitation.
Variation(s): recycle, recycles, recycling

Vocabulary Chart for "The Water Cycle"

Type	Tier 3 Domain-Specific Words	Tier 2 General Academic Words	Tier 1 Everyday Speech Words
Vocabulary	condensation *(condensación)* evaporation *(evaporación)* humidity *(humedad)* precipitation *(precipitación)* recycled *(reciclado)*		
Multiple Meaning			
Sayings and Phrases	water cycle water vapor water droplets		

Lesson 9: The Water Cycle

Introducing the Read-Aloud

10M

Speaking and Listening: Students will identify the three states of water.

TEKS 2.1.A; TEKS 2.6.E

WHAT DO WE ALREADY KNOW? (5 MIN.)

- 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?
  - How do you use water?
  - What other living things need water besides people?
  - Why did ancient civilizations develop around water?

ESSENTIAL BACKGROUND INFORMATION OR TERMS (5 MIN.)

- Tell students that all things on Earth can be described as being solid, liquid, or gas.

Solid

- 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.

Liquid

- 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.

Gas

- 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.

TEKS 2.1.A Listen actively, ask relevant questions to clarify information, and answer questions using multi-word responses; **TEKS 2.6.E** Make connections to personal experiences, ideas in other texts, and society.

Solid to Liquid to Gas

- 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.
- Tell students the water on Earth goes through a cycle called the water cycle. During the water cycle, water can go through all three states, solid, liquid, and gas.

Check for Understanding

Making Choices: I am going to name something. Tell me if it is a solid, a liquid, or a gas.

- a chair *(solid)*
- juice *(liquid)*
- air you breathe *(gas)*
- ice *(solid)*
- snow *(solid)*
- water *(liquid)*

Challenge

Ask students to think of examples of solids, liquids, and gases.

Lesson 9: The Water Cycle

Read-Aloud

30M

Reading: Students will describe the water cycle.

TEKS 2.6.G; TEKS 2.7.D

Language: Students will identify the meaning of and use a word with affix *-tion*, demonstrating an understanding of the Tier 3 word *precipitation.*

TEKS 2.3.B; TEKS 2.3.C

PURPOSE FOR LISTENING

- Tell students to listen carefully to learn the stages of the water cycle and to find out how important the water cycle is to life on Earth.

"THE WATER CYCLE" (15 MIN.)

Support

Keep ice cubes and a cup of water beside you during the Read-Aloud. Hold up the water and the ice when you discuss water in the solid and liquid states. Point to the air when you talk about water in the gas state, reminding students that there is always some water vapor in the air.

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

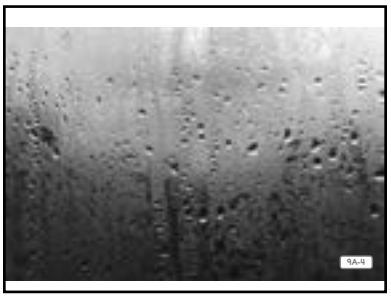
TEKS 2.6.G Evaluate details read to determine key ideas; **TEKS 2.7.D** Retell and paraphrase texts in ways that maintain meaning and logical order; **TEKS 2.3.B** Use context within and beyond a sentence to determine the meaning of unfamiliar words; **TEKS 2.3.C** Identify the meaning of and use words with affixes un-, re-, -ly, -er, and -est (comparative and superlative), and -ion/tion/sion.

place to place, but it can exist in three states of matter. It can be a liquid, a solid, and a gas. 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.

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 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. *Boiling water also creates water vapor. Have you ever seen steam rising up from boiling water?*

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 *or even in a lake, river, or ocean*.



Show Image 9A-4: Condensation

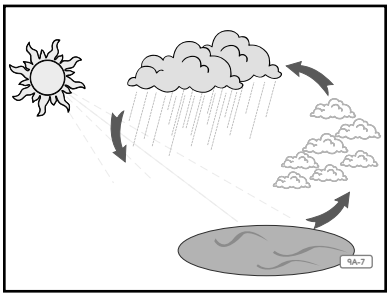
Water vapor in the air far below the clouds is called **humidity**. When there is a lot of water in the air, we say it is humid. At different times of the year, there are different amounts of water in the air. Warm air can hold more water vapor than cold air. That is why on a hot summer's day, if there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

Water vapor high in the atmosphere *or way up in the sky* 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, where it is very cold. 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. *The darker the cloud, the more rain or snow will probably fall.* 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. *So is snow precipitation? Is rain?*

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. *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

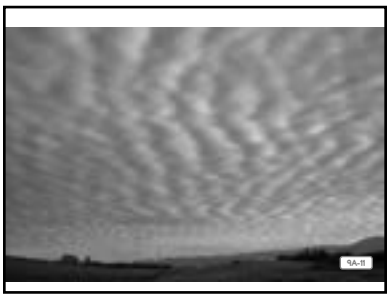
Clouds are much more than fun shapes in the sky. Without clouds, there would be no precipitation, such as snow, sleet, hail, or rain. Without precipitation, nothing could live or grow on Earth. Clouds also provide a kind of shelter or protection from the sun. Without clouds it would be very, very hot 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 [/seer*əs/] clouds form at very high altitudes in the atmosphere. *The word* cirrus *means "curl of hair" in Latin. Can you see why cirrus clouds have this name?* 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.

Show Image 9A-10: Cumulus clouds

Cumulus [/kyoo*myə*ləs/] clouds gather in the sky on nice, sunny days. *The word* cumulus *means "heap," or "a bunch of," in Latin. Can you see why cumulus clouds have this name?* 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 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. *The word* stratus *means "layer" in Latin. Can you see why stratus clouds have this name?* They are usually gray, and they can cover the whole sky and block the sun. Stratus clouds form lower down in the atmosphere than cirrus or cumulus clouds.

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, see if you can figure out what kind of clouds they are, and then think about the amazing water cycle!

COMPREHENSION QUESTIONS (10 MIN.)

1. **Literal.** Is the earth covered mostly by land or by water? *(The earth is covered mostly by water.)*

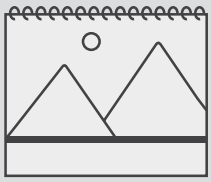
Check for Understanding

Show Poster 7 (water cycle)

Turn and Talk: Describe the water cycle. (*evaporation: when water from oceans, rivers, and puddles changes to gas; condensation: when water vapor turns back into a liquid or water droplets, turning into clouds; precipitation: when water falls from the sky in the form of rain, snow, hail, etc.; this starts the water cycle all over again)*

2. **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.*)
3. **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.*)
4. **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.*)
5. **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.*)
6. **Evaluative.** *Think-Pair-Share:* Why is precipitation important? (*Answers may vary, but should include that precipitation replenishes the earth's water supply.*)

Poster 7



ENGLISH LANGUAGE LEARNERS

Reading

Reading/Viewing Closely

Beginning
Prompt and support students to recall words and phrases that relate to the water cycle.

Intermediate
Provide moderate support in eliciting phrases and ideas with greater detail that relate to the water cycle.

Advanced/Advanced High
Provide minimal support in eliciting key details relating to the water cycle.

ELPS 4.F; ELPS 4.I

WORD WORK: PRECIPITATION (5 MIN.) TEKS 2.3.C

1. In the Read-Aloud you heard, "When water droplets fall to the ground, regardless of what they look like, it 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 Brainstorming activity for follow-up. Turn to a partner and name as many types of precipitation as you can. Be sure to give your response in a complete sentence: " _____ is a type of precipitation." *(Answers may vary but may include rain, sleet, snow, hail, etc.)*

TEKS 2.3.C Identify the meaning of and use words with affixes un-, re-, -ly, -er, and -est (comparative and superlative), and -ion/tion/sion.

Lesson 9: The Water Cycle

Application

20M

Writing: Students will act out, observe, and write about the water cycle.

TEKS 2.7.D; TEKS 2.12.B

A WATER CYCLE SONG (5 MIN.)

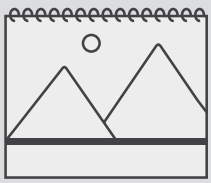
- Display Poster 7 to reference in this activity and throughout this domain. Teach students the following song and accompanying movements about the water cycle. The song is sung to the tune of "She'll Be Comin' 'Round the Mountain."
  - Water travels in a cycle; yes, it does. [Move arm in a circular 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 (15 MIN.)

- 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. Record students' predictions on the Observations Board. Tell students they will make observations over the next hours or days to see if their predictions are correct.

TEKS 2.7.D Retell and paraphrase texts in ways that maintain meaning and logical order; **TEKS 2.12.B** Compose informational texts, including procedural texts and reports.

Poster 7



ENGLISH LANGUAGE LEARNERS

Reading

Selecting Language Resources

Beginning
Elicit short answers from students (e.g., "What is the name for when water from oceans changes into a gas?").

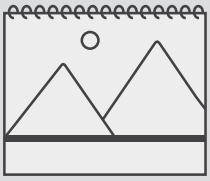
Intermediate
Elicit more details in students' answers (e.g., "What is evaporation?").

Advanced/Advanced High
Elicit higher-level insights and comparisons (e.g., "Why is evaporation an important part of the water cycle?").

ELPS 2.G; ELPS 4.G; ELPS 4.I

- 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 *evaporation, condensation, precipitation.*
- Record students' observations on the Observation board, confirming or correcting their predictions.

Poster 7



Exit Pass

Show Poster 7 (water cycle)

Summarize the Water Cycle: Have students write a summary of the water cycle on an index card or piece of paper. Encourage students to illustrate their summary. Collect students' summaries to check that they understand the water cycle.

End of Lesson

Support

Encourage students to sing the water cycle song to help them remember the stages of the water cycle while they are writing.

Grade 2 | Knowledge 5

Domain Review

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
- Explain how the rotation of Earth causes daytime and nighttime
- Explain how tilt and the revolution of Earth around the sun causes the seasons
- Describe the seasonal cycle: spring, summer, autumn, winter
- Explain effects of seasonal changes on plants and animals
- 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)
- Explain why trees are important to living things on earth
- Explain that a life cycle is the stages of growth of a living thing that repeat over and over
- Identify the stages of the life cycle of a chicken
- Identify the stages of the life cycle of a frog
- Identify the stages of the life cycle of a butterfly
- Describe the water cycle on earth, including evaporation, condensation, and precipitation
- Explain that there is a limited amount of water on Earth
- Identify three types of clouds: cirrus, cumulus, and stratus

REVIEW ACTIVITIES

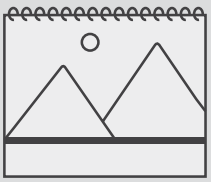
Life Story

Materials: Drawing paper, drawing tools

- Have students pretend they are one of the creatures they heard about in the Read-Alouds.
- Have each student write their creature's life story, making sure to include the stages of its life cycle.

Life Cycles Review

Posters 4–6

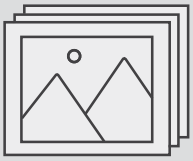


Materials: Posters 4–6; Image Cards 10–20

- Use Image Cards 10–20 and Posters 4–6 to review with students the life cycle of a chicken, frog, and butterfly. Have students explain and/or sequence the stages of the cycles.

Domain-Related Trade Book or Student Choice

Image Cards 10–20



Materials: Trade book

- Read a trade book to review a particular cycle.
- You may also choose to have students select a Read-Aloud to be heard again.

Class Book: Animal Life Cycle Encyclopedia

Materials: Drawing paper, drawing tools

- Tell the class or a group of students that they are going to make a class book to help them remember what they have learned in this domain.
- Have students brainstorm important information about how seasonal cycles affect the life cycles of animals they have heard about, and describe the animals' life cycles.
- Have each student choose one idea to draw a picture of, and ask them to write a caption for the 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:
  - We are the reasons we have seasons. What are we? *(Earth's tilt and Earth's revolution around the sun)*
  - 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 completely change form 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

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 chart. You may do this individually or as a class.
  - the seasons
  - the life cycle of a frog and a butterfly
  - the three forms of water
  - evaporation, condensation, and precipitation
  - three types of clouds
- 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.

Key Vocabulary Brainstorming

Materials: Chart paper, chalkboard, or whiteboard

- Give the students a key domain concept or vocabulary word such as *water cycle*. Have them brainstorm everything that comes to mind when they hear the word, such as *repeats*, *evaporation*, *condensation*, *precipitation*, etc. Record their responses on chart paper, a chalkboard, or a whiteboard for reference.

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 . . .

Cycles of 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.

Grade 2 | Knowledge 5

Domain Assessment

This domain assessment evaluates each student's retention of domain and academic vocabulary words and core content targeted in *Cycles of Nature: Clouds to Raindrops.* 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 of Nature: Clouds to Raindrops.*

PART I TEKS 2.7.F

Directions: I am going to read a question that uses a word you have heard in this domain. If the answer is yes, circle the thumbs-up. If the answer is no, circle the thumbs-down. I will ask each question two times.

Note: For students who will be using the Editable PDF Activity Book, please have them answer by typing "yes" if the sentence is correct, and "no" if the sentence is incorrect.

1. **Life Cycle:** Is a life cycle the stages a living thing goes through from birth to adult? *(thumbs-up)*
2. **Rotation:** Does Earth's rotation cause daytime and nighttime? *(thumbs-up)*
3. **Hemisphere:** Do we live in the Southern Hemisphere of Earth? *(thumbs-down)*
4. **Revolution:** Does it take Earth one year to make one revolution around the sun? *(thumbs-up)*
5. **Precipitation:** Is wind is a form of precipitation? *(thumbs-down)*
6. **Germination:** Is germination the stage when a plant flowers and makes new seeds? *(thumbs-down)*
7. **Seasons:** Do seasons happen in a cycle, meaning they happen over and over in the same order? *(thumbs-up)*
8. **Humidity:** Is humidity the dryness in the air? *(thumbs-down)*
9. **Metamorphosis:** Do humans go through metamorphosis? *(thumbs-down)*
10. **Condensation:** When water droplets are formed from water vapor, is condensation occurring? *(thumbs-up)*

Activity Page DA.1

Directions: Now I am going to read more questions using other words you have heard and practiced. If the answer is yes, circle the thumbs-up. If the answer is no, circle the thumbs-down. I will ask each question two times.

11. **Protective:** Are hens protective of their baby chicks? *(thumbs-up)*
12. **Transparent:** If you *can't* see through a door, does that mean it is transparent? *(thumbs-down)*
13. **Burrow:** Do birds burrow by flying south for the winter? *(thumbs-down)*
14. **Replenished:** If you pour more water into your empty water cup, does that mean it is replenished? *(thumbs-up)*
15. **Thrive:** Does a plant tend to thrive when it has sunlight, water, and warmth? *(thumbs-up)*

PART II TEKS 2.6.G

Activity Page DA.2

Directions: I will read a sentence about one of the animal life cycles you have learned about. You will circle the picture of the animal whose life cycle I am describing.

1. This animal changes from a fish-like larva with gills, called a tadpole, to a four-legged adult with lungs. *(frog)*
2. This animal hatches from an egg as a larva in the form of a caterpillar. *(butterfly)*
3. This animal uses its egg tooth to hatch from an egg that has a shell, a yolk, and albumen. *(chicken)*
4. This animal goes through stages of metamorphosis from tadpole to adult. *(frog)*
5. This animal changes from a larva to a pupa to an adult insect with a head, body, and wings. *(butterfly)*

PART III TEKS 2.7.D; TEKS 2.12.B

Activity Page DA.3

Directions: Choose one cycle in nature we have learned about. Write the name of the cycle on the line where it says "Title." Write your summary of this cycle on the lines that follow. Remember to use vocabulary from Part I. At the bottom of the page, draw the cycle and label each stage.

Grade 2 | Knowledge 5

Culminating Activities

NOTE TO TEACHER

Please use this final day to address class results of the Domain Assessment. Based on the results, 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 in this section 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 by the Assessment results.

Remediation opportunities include:

- targeting Review Activities
- revisiting lesson Applications
- rereading and discussing select Read-Alouds
- using the corresponding activities in the Language Studio

ENRICHMENT

Student Choice

- Have students select a Read-Aloud to be heard again, or a trade book for the first time.

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, making sure to include the stages of its life cycle.

Class Book: Animal Life Cycle Encyclopedia

Materials: Drawing paper, drawing tools

- Tell the class or a group of students that they are going to make a class book to help them remember what they have learned in this domain. Have students brainstorm important information about how seasonal cycles affect the life cycles of animals they have heard about, and describe the animals' life cycles. Have each student choose one idea to draw a picture of, and ask them to write a caption for the picture. Bind the pages to make a class book to put in the class library for students to read again and again.

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. 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.
  - the seasons
  - the life cycle of a frog and a butterfly
  - the three forms of water
  - evaporation, condensation, and precipitation
  - three types of clouds
- 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.

Guest Speakers

- Invite a local meteorologist from the community to visit and talk to students about their work and how they study 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.

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 to 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.

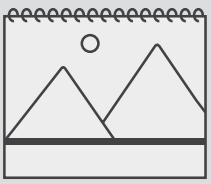
Cycles of Nature Research

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

Poster 7



Materials: 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 as a reference.

Teacher Resources

Grade 2	Knowledge 5

Teacher Guide

Grade 2 | Knowledge 5

Teacher Resources

In this section you will find:

- Activity Book Answer Key
- Texas Essential Knowledge and Skills Correlation Chart
- English Language Proficiency Standards Correlation Chart

ACTIVITY BOOK ANSWER KEY

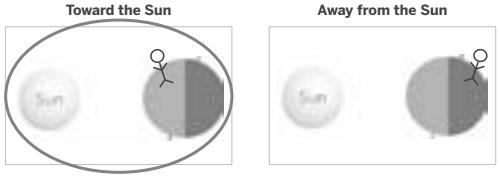
NAME: _____

DATE: _____

1.1 **Activity Page**

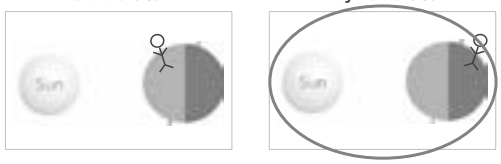
1. When it is daytime for me, my town is facing

Toward the Sun **Away from the Sun**



2. When it is nighttime for me, my town is facing

Toward the Sun **Away from the Sun**



Directions: Listen to your teacher's instructions and circle the correct answer.

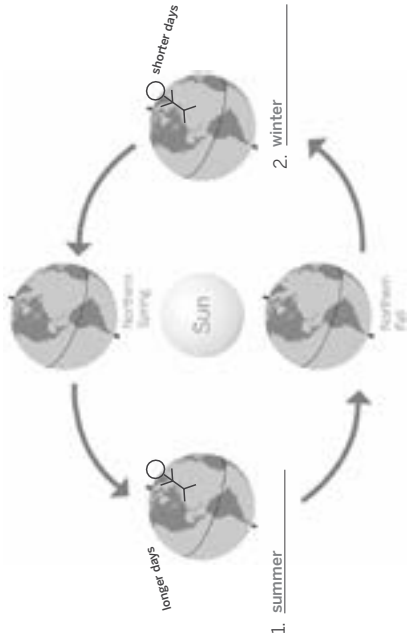
Knowledge 5

Knowledge 5 Cycles of Nature: Clouds to Raindrops 201

NAME: _____

DATE: _____

2.1 **Activity Page**



Directions: Listen to your teacher's instructions and identify winter and summer in the diagram.

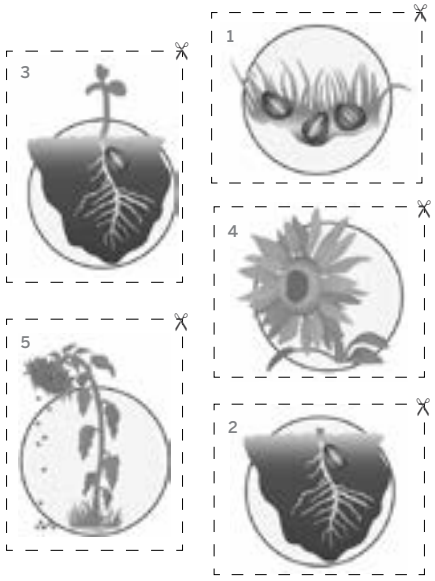
Knowledge 5

Knowledge 5 Cycles of Nature: Clouds to Raindrops 205

NAME: _____

DATE: _____

4.1 **Activity Page**



Directions: Cut out the pictures of the plant at various stages. Sequence the pictures, starting with the beginning of the plant life cycle. Then, glue or tape the pictures in the correct order onto a separate sheet of paper.

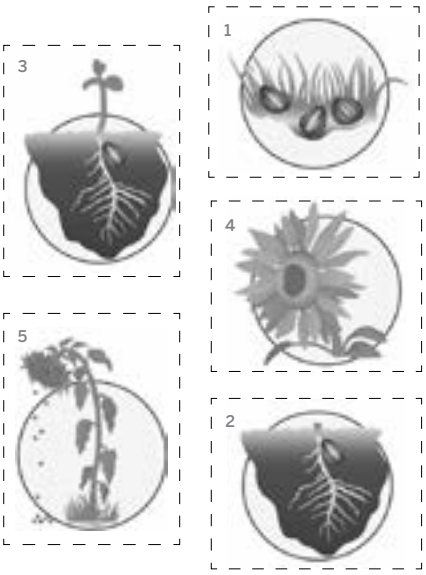
Knowledge 5

Knowledge 5 Cycles of Nature: Clouds to Raindrops 207

NAME: _____

DATE: _____

PP.1 **Activity Page**



Directions: Cut out the pictures of the plant at various stages. Sequence the pictures, starting with the seed. Then, glue or tape the pictures in the correct order onto a separate sheet of paper. Write sentences describing the life cycle of a sunflower on the back of the paper.

Knowledge 5

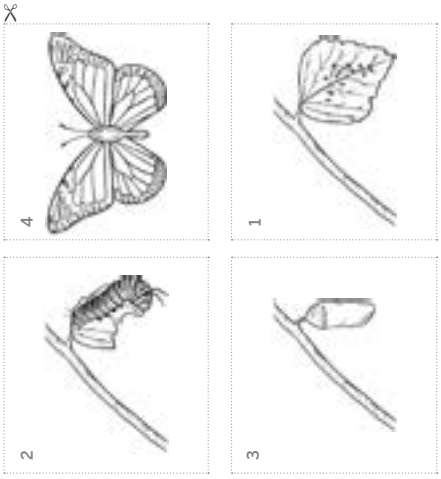
Knowledge 5 Cycles of Nature: Clouds to Raindrops 211

NAME: _____

DATE: _____

8.1 **Activity Page**

Directions: Color and cut out the pictures showing the different stages of metamorphosis for a monarch butterfly, and then sequence them in the correct order. Glue or tape the pictures onto drawing paper. Work with a partner to retell the stages of metamorphosis.



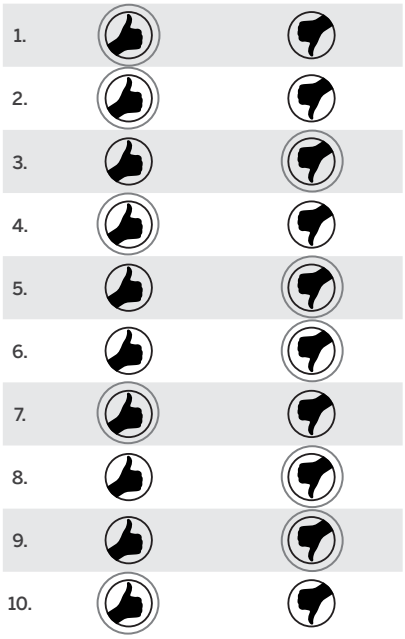
Knowledge 5

NAME: _____

DATE: _____

DA.1 **Assessment**

Directions: Listen to your teacher's instructions.



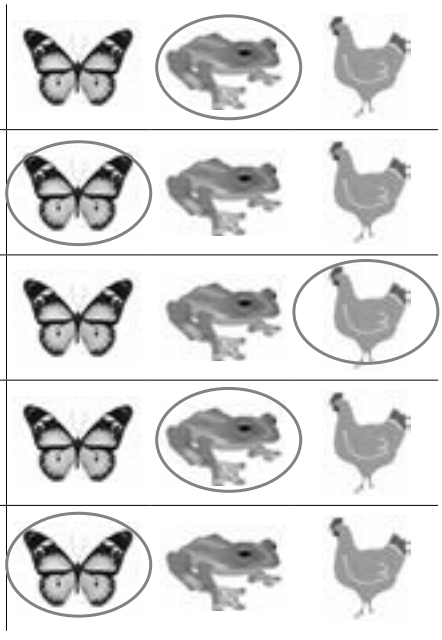
Knowledge 5

NAME: _____

DATE: _____

DA.2 **Assessment**

Directions: Listen to the sentence read by the teacher. Circle the animal whose life cycle is being described.



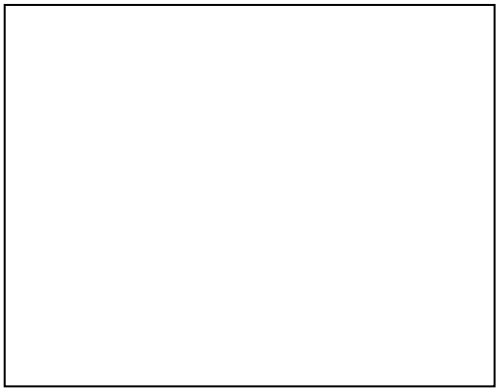
Knowledge 5

NAME: _____

DATE: _____

DA.3 **Assessment**

Title: Answers will vary.



Knowledge 5

TEXAS ESSENTIAL KNOWLEDGE AND SKILLS - GRADE 2

Knowledge 5		Correlation—Teacher's Guide
(1) Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking—oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:		
TEKS 2.1.A	listen actively, ask relevant questions to clarify information, and answer questions using multi-word responses	D5: p. 96, D5: p. 101, D5: p. 105, D5: p. 122, D5: p. 126
TEKS 2.1.B	follow, restate, and give oral instructions that involve a short, related sequence of actions	
TEKS 2.1.C	share information and ideas that focus on the topic under discussion, speaking clearly at an appropriate pace and using the conventions of language.	D5: p. 21, D5: p. 33, D5: p. 83, D5: p. 87
TEKS 2.1.D	work collaboratively with others to follow agreed-upon rules for discussion, including listening to others, speaking when recognized, making appropriate contributions, and building on the ideas of others;	D5: p. 7, D5: p. 11, D5: p. 19, D5: p. 83, D5: p. 87, D5: p. 96, D5: p. 101, D5: p. 105
TEKS 2.1.E	develop social communication such as distinguishing between asking and telling	
(2) Developing and sustaining foundational language skills: listening, speaking, reading, writing, and thinking–beginning reading and writing. The student develops word structure knowledge through phonological awareness, print concepts, phonics, and morphology to communicate, decode, and spell. The student is expected to:		
(A) demonstrate phonological awareness by:		
TEKS 2.2.A.i	producing a series of rhyming words;	
TEKS 2.2.A.ii	distinguishing between long and short vowel sounds in one-syllable and multi-syllable words	
TEKS 2.2.A.iii	recognizing the change in spoken word when a specified phoneme is added, changed, or removed; and	
TEKS 2.2.A.iv	manipulating phonemes within base words	
(B) demonstrate and apply phonetic knowledge by:		
TEKS 2.2.B.i	decoding words with short, long, or variant vowels, trigraphs and blends	
TEKS 2.2.B.ii	decoding words with silent letters such as knife and gnat;	
TEKS 2.2.B.iii	decoding multisyllabic words with closed syllables; open syllables; VCe syllables; vowel teams, including digraphs and diphthongs; r-controlled syllables; and final stable syllables;	
TEKS 2.2.B.iv	decoding compound words, contractions, and common abbreviations	D5: p. 37, D5: p. 50
TEKS 2.2.B.v	decoding words using knowledge of syllable division patterns such as VCCV, VCV, and VCCCV;	
TEKS 2.2.B.vi	decoding words with prefixes including *un-, re-*, and *dis-*, and inflectional endings, including *-s, -es, -ed, -ing, -er*, and *-est*	
TEKS 2.2.B.vii	identifying and reading high-frequency words from a research-based list	
(C) demonstrate and apply spelling knowledge by:		

TEXAS ESSENTIAL KNOWLEDGE AND SKILLS - GRADE 2

Knowledge 5		Correlation—Teacher's Guide
TEKS 2.2.C.i	spelling one-syllable and multisyllabic words with closed syllables; open syllables; VCe syllables; vowel teams, including digraphs and diphthongs; r-controlled syllables; and final stable syllables;	
TEKS 2.2.C.ii	spelling words with silent letters such as *knife* and *gnat*;	
TEKS 2.2.C.iii	spelling compound words, contractions, and common abbreviations;	
TEKS 2.2.C.iv	spelling multisyllabic words with multiple sound-spelling patterns;	
TEKS 2.2.C.v	spelling words using knowledge of syllable division patterns, including words with double consonants in the middle of the word; and	
TEKS 2.2.C.vi	spelling words with prefixes, including *un-, re-*, and *dis-*, and inflectional endings, including *-s, -es, -ed, -ing, -er,* and *-est*	
TEKS 2.2.D	alphabetize a series of words and use a dictionary or glossary to find words;	
TEKS 2.2.E	develop handwriting by accurately forming all cursive letters using appropriate strokes when connecting letters	
(3) Developing and sustaining foundational language skills: listening, speaking, reading, writing, and thinking—vocabulary. The student uses newly acquired vocabulary expressively. The student is expected to:		
TEKS 2.3.A	use print or digital resources to determine meaning and pronunciation of unknown words;	
TEKS 2.3.B	use context within and beyond a sentence to determine the meaning of unfamiliar words	D5: p. 21, D5: p. 24, D5: p. 27, D5: p. 53, D5: p. 57, D5: p. 64, D5: p. 69, D5: p. 83, D5: p. 88, D5: p. 96, D5: p. 101, D5: p. 109, D5: p. 114, D5: p. 122, D5: p. 128
TEKS 2.3.C	identify the meaning of and use words with affixes *un-, re-, -ly, -er,* and *-est* (comparative and superlative), and -ion/tion/sion	D5: p. 122, D5: p. 128, D5: p. 134
TEKS 2.3.D	identify, use, and explain the meaning of antonyms, synonyms, idioms, and homographs in context.	D5: p. 7, D5: p. 13, D5: p. 37, D5: p. 44
(4) Developing and sustaining foundational language skills: listening, speaking, reading, writing, and thinking–fluency. The student reads grade-level text with fluency and comprehension. The student is expected to use appropriate fluency (rate, accuracy, and prosody) when reading grade-level text.		
TEKS 2.4	use appropriate fluency (rate, accuracy, and prosody) when reading grade-level text	
(5) Developing and sustaining foundational language skills: listening, speaking, reading, writing, and thinking—self-sustained reading. The student reads grade-appropriate texts independently. The student is expected to self-select text and read independently for a sustained period of time.		
TEKS 2.5	self-select text and read independently for a sustained period of time.	
(6) Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:		

TEXAS ESSENTIAL KNOWLEDGE AND SKILLS - GRADE 2

Knowledge 5		Correlation—Teacher's Guide
TEKS 2.6.A	establish purpose for reading assigned and self-selected texts;	
TEKS 2.6.B	generate questions about text before, during, and after reading to deepen understanding and gain information	D5: p. 96, D5: p. 101, D5: p. 105
TEKS 2.6.C	make and correct or confirm predictions using text features, characteristics of genre, and structures	
TEKS 2.6.D	create mental images to deepen understanding	D5: p. 7, D5: p. 13
TEKS 2.6.E	make connections to personal experiences, ideas in other texts, and society	D5: p. 7, D5: p. 13, D5: p. 19, D5: p. 21, D5: p. 24, D5: p. 109, D5: p. 114, D5: p. 122, D5: p. 126
TEKS 2.6.F	make inferences and use evidence to support understanding	
TEKS 2.6.G	evaluate details read to determine key ideas	D5: p. 7, D5: p. 13, D5: p. 16, D5: p. 21, D5: p. 27, D5: p. 37, D5: p. 41, D5: p. 44, D5: p. 50, D5: p. 53, D5: p. 57, D5: p. 64, D5: p. 69, D5: p. 83, D5: p. 88, D5: p. 109, D5: p. 114, D5: p. 121, D5: p. 122, D5: p. 128
TEKS 2.6.H	synthesize information to create new understanding	
TEKS 2.6.I	monitor comprehension and make adjustments such as re-reading, using background knowledge, checking for visual cues, asking questions, and annotating when understanding breaks down	
(7) Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:		
TEKS 2.7.A	describe personal connections to a variety of sources	D5: p. 37, D5: p. 44, D5: p. 49
TEKS 2.7.B	write brief comments on literary or informational texts that demonstrate an understanding of the text	
TEKS 2.7.C	use text evidence to support an appropriate response	D5: p. 37, D5: p. 44
TEKS 2.7.D	retell and paraphrase texts in ways that maintain meaning and logical order	D5: p. 53, D5: p. 56, D5: p. 57, D5: p. 63, D5: p. 64, D5: p. 68, D5: p. 83, D5: p. 94, D5: p. 96, D5: p. 100, D5: p. 109, D5: p. 112, D5: p. 114, D5: p. 121, D5: p. 122, D5: p. 128, D5: p. 135
TEKS 2.7.E	interact with sources in meaningful ways such as illustrating or writing	D5: p. 64, D5: p. 75, D5: p. 83, D5: p. 94
TEKS 2.7.F	respond using newly acquired vocabulary as appropriate	D5: p. 21, D5: p. 27, D5: p. 31, D5: p. 83, D5: p. 94
(8) Multiple genres: listening, speaking, reading, writing, and thinking using multiple texts–literary elements. The student recognizes and analyzes literary elements within and across increasingly complex traditional, contemporary, classical, and diverse literary texts. The student is expected to:		
TEKS 2.8.A	discuss topics and determine theme using text evidence with adult assistance	
TEKS 2.8.B	describe the main character's (characters') internal and external traits	
TEKS 2.8.C	describe and understand plot elements, including the main events, the conflict, and the resolution, for texts read aloud and independently	
TEKS 2.8.D	describe the importance of the setting	
(9) Multiple genres: listening, speaking, reading, writing, and thinking using multiple texts–genres. The student recognizes and analyzes genre-specific characteristics, structures, and purposes within and across increasingly complex traditional, contemporary, classical, and diverse texts. The student is expected to:		
TEKS 2.9.A	demonstrate knowledge of distinguishing characteristics of well-known children's literature such as folktales, fables, and fairy tales	

TEXAS ESSENTIAL KNOWLEDGE AND SKILLS - GRADE 2

Knowledge 5		Correlation—Teacher's Guide
TEKS 2.9.B	explain visual patterns and structures in a variety of poems	
TEKS 2.9.C	discuss elements of drama such as characters, dialogue, and setting	
(D) recognize characteristics and structures of informational text, including:		
TEKS 2.9.D.i	the central idea and supporting evidence with adult assistance	D5: p. 37, D5: p. 41, D5: p. 50, D5: p. 51
TEKS 2.9.D.ii	features and graphics to locate and gain information	D5: p. 21, D5: p. 27, D5: p. 29
TEKS 2.9.D.iii	organizational patterns such as chronological order and cause and effect stated explicitly	
(E) recognize characteristics of persuasive text, including:		
TEKS 2.9.E.i	stating what the author is trying to persuade the reader to think or do	
TEKS 2.9.E.ii	distinguishing facts from opinion	
TEKS 2.9.F	recognize characteristics of multimodal and digital texts	D5: p. 37, D5: p. 50, D5: p. 51
(10) Author's purpose and craft: listening, speaking, reading, writing, and thinking using multiple texts. The student uses critical inquiry to analyze the authors' choices and how they influence and communicate meaning within a variety of texts. The student analyzes and applies author's craft purposefully in order to develop his or her own products and performances. The student is expected to:		
TEKS 2.10.A	discuss the author's purpose for writing text	
TEKS 2.10.B	discuss how the use of text structure contributes to the author's purpose	
TEKS 2.10.C	discuss the author's use of print and graphic features to achieve specific purposes	
TEKS 2.10.D	discuss the use of descriptive, literal, and figurative language	
TEKS 2.10.E	identify the use of first or third person in a text	
TEKS 2.10.F	identify and explain the use of repetition	D5: p. 21, D5: p. 33
(11) Composition: listening, speaking, reading, writing, and thinking using multiple texts—writing process. The student uses the writing process recursively to compose multiple texts that are legible and uses appropriate conventions. The student is expected to:		
TEKS 2.11.A	plan a first draft by generating ideas for writing such as drawing and brainstorming	
(B) develop drafts into a focused, structured, and coherent piece of writing by:		
TEKS 2.11.B.i	organizing with structure; and	
TEKS 2.11.B.ii	developing an idea with specific and relevant details	D5: p. 96, D5: p. 107
TEKS 2.11.C	revise drafts by adding, deleting, or rearranging words, phrases or sentences	D5: p. 83, D5: p. 94
(D) edit drafts using standard English conventions, including:		
TEKS 2.11.D	edit drafts using standard English conventions	
TEKS 2.11.D.i	complete sentences with subject-verb agreement.	
TEKS 2.11.D.ii	past, present, and future verb tense	
TEKS 2.11.D.iii	singular, plural, common, and proper nouns	
TEKS 2.11.D.iv	adjectives, including articles	
TEKS 2.11.D.v	adverbs that convey time and adverbs that convey place;	

TEXAS ESSENTIAL KNOWLEDGE AND SKILLS - GRADE 2

Knowledge 5		Correlation—Teacher's Guide
TEKS 2.11.D.vi	prepositions and prepositional phrases	
TEKS 2.11.D.vii	pronouns, including subjective, objective, and possessive cases	
TEKS 2.11.D.viii	coordinating conjunctions to form compound subjects and predicates	
TEKS 2.11.D.ix	capitalization of months, days of the week, and the salutation and conclusion of a letter;	
TEKS 2.11.D.x	end punctuation, apostrophes in contractions, and commas with items in a series and in dates;	
TEKS 2.11.D.xi	correct spelling of words with gradeappropriate orthographic patterns and rules and high-frequency words;	
TEKS 2.11.E	publish and share writing	D5: p. 83, D5: p. 87
(12) Composition: listening, speaking, reading, writing, and thinking using multiple texts–genres. The student uses genre characteristics and craft to compose multiple texts that are meaningful. The student is expected to:		
TEKS 2.12.A	compose literary texts, including personal narratives and poetry	
TEKS 2.12.B	compose informational texts, including procedural texts and reports; and	D5: p. 53, D5: p. 63, D5: p. 64, D5: p. 75, D5: p. 96, D5: p. 107, D5: p. 109, D5: p. 121, D5: p. 122, D5: p. 135
TEKS 2.12.C	compose correspondence such as thank you notes or letters	
(13) Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:		
TEKS 2.13.A	generate questions for formal and informal inquiry with adult assistance	
TEKS 2.13.B	develop and follow a research plan with adult assistance	
TEKS 2.13.C	identify and gather relevant sources and information to answer the questions	
TEKS 2.13.D	identify primary and secondary sources	
TEKS 2.13.E	demonstrate understanding of information gathered	
TEKS 2.13.F	cite sources appropriately	
TEKS 2.13.G	use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.	

ENGLISH LANGUAGE PROFICIENCY STANDARDS - GRADE 2

Knowledge 5		Correlation—Teacher's Guide
(1) Cross-curricular second language acquisition/learning strategies. The ELL uses language learning strategies to develop an awareness of his or her own learning processes in all content areas. In order for the ELL to meet grade-level learning expectations across the foundation and enrichment curriculum, all instruction delivered in English must be linguistically accommodated (communicated, sequenced, and scaffolded) commensurate with the student's level of English language proficiency. The student is expected to:		
ELPS 1.A	use prior knowledge and experiences to understand meanings in English	
ELPS 1.B	monitor oral and written language production and employ self-corrective techniques or other resources	
ELPS 1.C	use strategic learning techniques such as concept mapping, drawing, memorizing, comparing, contrasting, and reviewing to acquire basic and grade-level vocabulary	
ELPS 1.D	speak using learning strategies such as requesting assistance, employing nonverbal cues, and using synonyms and circumlocution (conveying ideas by defining or describing when exact English words are not known)	
ELPS 1.E	internalize new basic and academic language by using and reusing it in meaningful ways in speaking and writing activities that build concept and language attainment	D5: p. 49
ELPS 1.F	use accessible language and learn new and essential language in the process	
ELPS 1.G	demonstrate an increasing ability to distinguish between formal and informal English and an increasing knowledge of when to use each one commensurate with grade-level learning expectations	D5: p. 87
ELPS 1.H	develop and expand repertoire of learning strategies such as reasoning inductively or deductively, looking for patterns in language, and analyzing sayings and expressions commensurate with grade-level learning expectations	
(2) Cross-curricular second language acquisition/listening. The ELL listens to a variety of speakers including teachers, peers, and electronic media to gain an increasing level of comprehension of newly acquired language in all content areas. ELLs may be at the beginning, intermediate, advanced, or advanced high stage of English language acquisition in listening. In order for the ELL to meet grade-level learning expectations across the foundation and enrichment curriculum, all instruction delivered in English must be linguistically accommodated (communicated, sequenced, and scaffolded) commensurate with the student's level of English language proficiency. The student is expected to:		
ELPS 2.A	distinguish sounds and intonation patterns of English with increasing ease	
ELPS 2.B	recognize elements of the English sound system in newly acquired vocabulary such as long and short vowels, silent letters, and consonant clusters	
ELPS 2.C	learn new language structures, expressions, and basic and academic vocabulary heard during classroom instruction and interactions	
ELPS 2.D	monitor understanding of spoken language during classroom instruction and interactions and seek clarification as needed	D5: p. 49
ELPS 2.E	use visual, contextual, and linguistic support to enhance and confirm understanding of increasingly complex and elaborated spoken language	

ENGLISH LANGUAGE PROFICIENCY STANDARDS - GRADE 2

Knowledge 5		Correlation—Teacher's Guide
ELPS 2.F	listen to and derive meaning from a variety of media such as audio tape, video, DVD, and CD-ROM to build and reinforce concept and language attainment	
ELPS 2.G	understand the general meaning, main points, and important details of spoken language ranging from situations in which topics, language, and contexts are familiar to unfamiliar	D5: p. 11, D5: p. 19, D5: p. 25, D5: p. 34, D5: p. 92, D5: p. 105, D5: p. 112, D5: p. 119, D5: p. 135
ELPS 2.H	understand implicit ideas and information in increasingly complex spoken language commensurate with grade-level learning expectations	
ELPS 2.I	demonstrate listening comprehension of increasingly complex spoken English by following directions, retelling or summarizing spoken messages, responding to questions and requests, collaborating with peers, and taking note	
(3) Cross-curricular second language acquisition/speaking. The ELL speaks in a variety of modes for a variety of purposes with an awareness of different language registers (formal/informal) using vocabulary with increasing fluency and accuracy in language arts and all content areas. ELLs may be at the beginning, intermediate, advanced, or advanced high stage of English language acquisition in speaking. In order for the ELL to meet grade-level learning expectations across the foundation and enrichment curriculum, all instruction delivered in English must be linguistically accommodated (communicated, sequenced, and scaffolded) commensurate with the student's level of English language proficiency. The student is expected to:		
ELPS 3.A	practice producing sounds of newly acquired vocabulary such as long and short vowels, silent letters, and consonant clusters to pronounce English words in a manner that is increasingly comprehensible	
ELPS 3.B	expand and internalize initial English vocabulary by learning and using highfrequency English words necessary for identifying and describing people, places, and objects, by retelling simple stories and basic information represented or supported by pictures, and by learning and using routine language needed for classroom communication	
ELPS 3.C	speak using a variety of grammatical structures, sentence lengths, sentence types, and connecting words with increasing accuracy and ease as more English is acquired	
ELPS 3.D	speak using grade-level content area vocabulary in context to internalize new English words and build academic language proficiency	
ELPS 3.E	share information in cooperative learning interactions	
ELPS 3.F	ask and give information ranging from using a very limited bank of high-frequency, high-need, concrete vocabulary, including key words and expressions needed for basic communication in academic and social contexts, to using abstract and contentbased vocabulary during extended speaking assignments	D5: p. 11, D5: p. 19, D5: p. 25, D5: p. 34, D5: p. 87
ELPS 3.G	express opinions, ideas, and feelings ranging from communicating single words and short phrases to participating in extended discussions on a variety of social and gradeappropriate academic topics	
ELPS 3.H	narrate, describe, and explain with increasing specificity and detail as more English is acquired	

ENGLISH LANGUAGE PROFICIENCY STANDARDS - GRADE 2

Knowledge 5		Correlation—Teacher's Guide
ELPS 3.I	adapt spoken language appropriately for formal and informal purposes	D5: p. 87
ELPS 3.J	respond orally to information presented in a wide variety of print, electronic, audio, and visual media to build and reinforce concept and language attainment	
(4) Cross-curricular second language acquisition/reading. The ELL reads a variety of texts for a variety of purposes with an increasing level of comprehension in all content areas. ELLs may be at the beginning, intermediate, advanced, or advanced high stage of English language acquisition in reading. In order for the ELL to meet grade-level learning expectations across the foundation and enrichment curriculum, all instruction delivered in English must be linguistically accommodated (communicated, sequenced, and scaffolded) commensurate with the student's level of English language proficiency. For kindergarten and grade 1, certain of these student expectations apply to text read aloud for students not yet at the stage of decoding written text. The student is expected to:		
ELPS 4.A	learn relationships between sounds and letters of the English language and decode (sound out) words using a combination of skills such as recognizing sound-letter relationships and identifying cognates, affixes, roots, and base words	
ELPS 4.B	recognize directionality of English reading such as left to right and top to bottom	
ELPS 4.C	develop basic sight vocabulary, derive meaning of environmental print, and comprehend English vocabulary and language structures used routinely in written classroom materials	D5: p. 61
ELPS 4.D	use prereading supports such as graphic organizers, illustrations, and pretaught topicrelated vocabulary and other prereading activities to enhance comprehension of written text	
ELPS 4.E	read linguistically accommodated content area material with a decreasing need for linguistic accommodations as more English is learned	
ELPS 4.F	use visual and contextual support and support from peers and teachers to read grade-appropriate content area text, enhance and confirm understanding, and develop vocabulary, grasp of language structures, and background knowledge needed to comprehend increasingly challenging language	D5: p. 133
ELPS 4.G	demonstrate comprehension of increasingly complex English by participating in shared reading, retelling or summarizing material, responding to questions, and taking notes commensurate with content area and grade level needs	D5: p.16, D5: p. 92, D5: p. 105, D5: p. 112, D5: p. 119, D5: p. 135
ELPS 4.H	read silently with increasing ease and comprehension for longer periods	
ELPS 4.I	demonstrate English comprehension and expand reading skills by employing basic reading skills such as demonstrating understanding of supporting ideas and details in text and graphic sources, summarizing text, and distinguishing main ideas from details commensurate with content area needs	D5: p. 16, D5: p. 61, D5: p. 92, D5: p. 105, D5: p. 112, D5: p. 119, D5: p. 133, D5: p. 135

ENGLISH LANGUAGE PROFICIENCY STANDARDS - GRADE 2

Knowledge 5		Correlation—Teacher's Guide
ELPS 4.J	demonstrate English comprehension and expand reading skills by employing inferential skills such as predicting, making connections between ideas, drawing inferences and conclusions from text and graphic sources, and finding supporting text evidence commensurate with content area needs	
ELPS 4.K	demonstrate English comprehension and expand reading skills by employing analytical skills such as evaluating written information and performing critical analyses commensurate with content area and grade-level needs	
(5) Cross-curricular second language acquisition/writing. The ELL writes in a variety of forms with increasing accuracy to effectively address a specific purpose and audience in all content areas. ELLs may be at the beginning, intermediate, advanced, or advanced high stage of English language acquisition in writing. In order for the ELL to meet grade-level learning expectations across foundation and enrichment curriculum, all instruction delivered in English must be linguistically accommodated (communicated, sequenced, and scaffolded) commensurate with the student's level of English language proficiency. For kindergarten and grade 1, certain of these student expectations do not apply until the student has reached the stage of generating original written text using a standard writing system. The student is expected to:		
ELPS 5.A	learn relationships between sounds and letters of the English language to represent sounds when writing in English	
ELPS 5.B	write using newly acquired basic vocabulary and content-based grade-level vocabulary	
ELPS 5.C	spell familiar English words with increasing accuracy, and employ English spelling patterns and rules with increasing accuracy as more English is acquired	
ELPS 5.D	edit writing for standard grammar and usage, including subject-verb agreement, pronoun agreement, and appropriate verb tenses commensurate with grade-level expectations as more English is acquired	
ELPS 5.E	employ increasingly complex grammatical structures in content area writing commensurate with grade level expectations such as (i) using correct verbs, tenses, and pronouns/antecedents; (ii) using possessive case (apostrophe -s) correctly; and, (iii) using negatives and contractions correctly	
ELPS 5.F	write using a variety of grade-appropriate sentence lengths, patterns, and connecting words to combine phrases, clauses, and sentences in increasingly accurate ways as more English is acquired	
ELPS 5.G	narrate, describe, and explain with increasing specificity and detail to fulfill content area writing needs as more English is acquired	D5: p. 63, D5: p. 75, D5: p. 95, D5: p. 107, D5: p. 121

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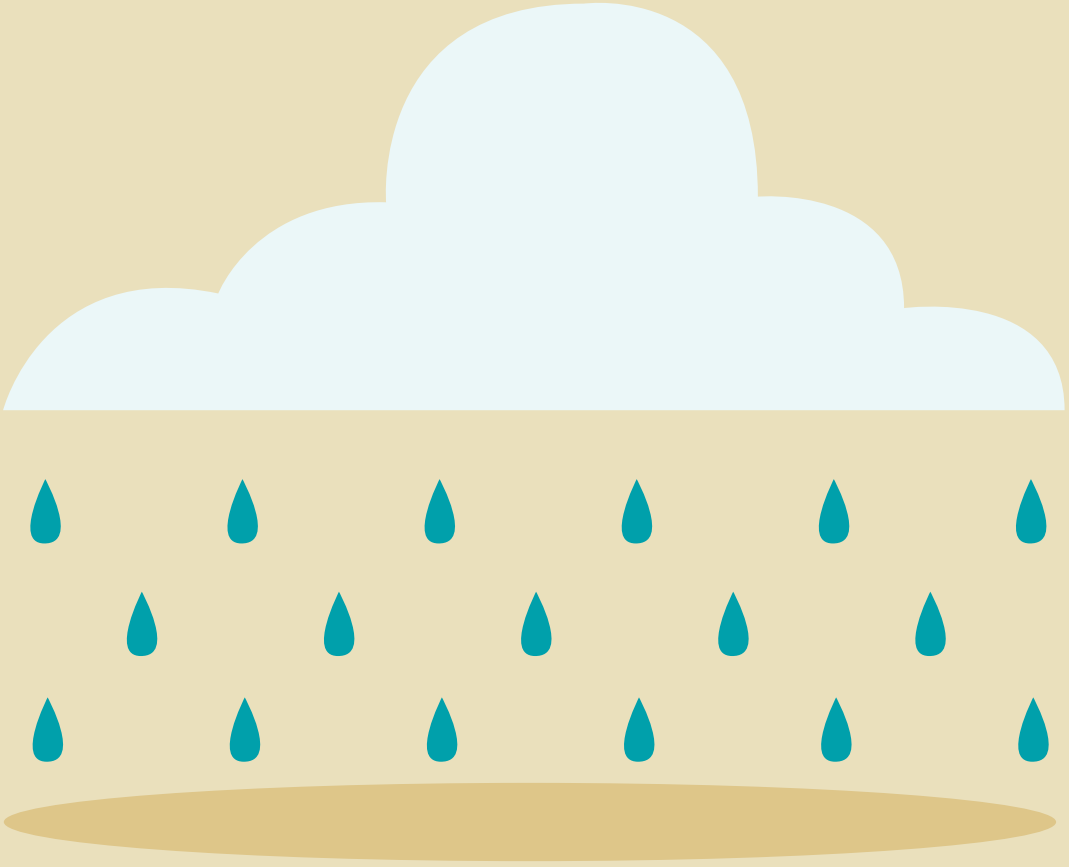

Grade 2

Knowledge 5 | Activity Book

Cycles of Nature: Clouds to Raindrops

Grade 2 | Knowledge 5

Cycles of Nature:
Clouds to Raindrops

Activity Book

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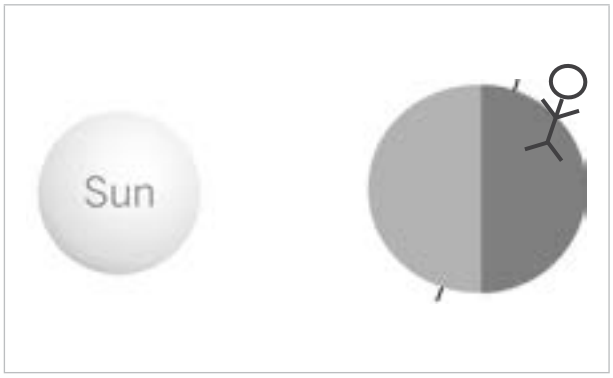
NAME: _____

DATE: _____

1. When it is daytime for me, my town is facing

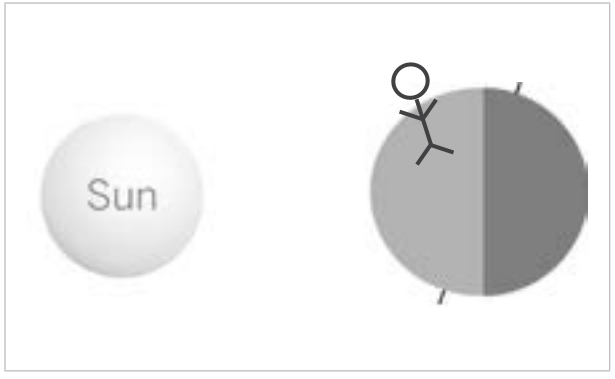
Toward the Sun

Away from the Sun



2. When it is nighttime for me, my town is facing

Toward the Sun



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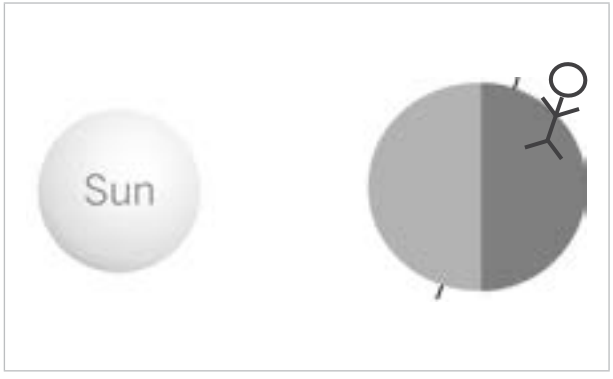


Directions: Listen to your teacher's instructions and circle the correct answer.

NAME: _____

DATE: _____

Dear Family Member,

During the next several days, your student will learn about cycles and explore some of the different types of cycles that occur in nature. Your student will be introduced to the reasons why we have daytime and nighttime and the four seasons on planet Earth, 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 student is learning about cycles of nature.

1. Personal Connections

Share with your student your favorite season and the different experiences from your own childhood connected with seasonal changes. Emphasize the changes observed in plants and animals. Ask your student what favorite memories they have of a particular season shared with you and your family.

2. Draw and Write

Have your student draw and/or write what they have learned about seasonal cycles and the life cycles of plants. Ask questions to help your student use the vocabulary learned at school.

3. Words to Use

Below is a list of some of the words that your student will be learning about and using. Try to use these words as they come up in everyday speech with your student.

- *revolve*—It takes one year for Earth to revolve around the sun.
- *hibernation*—Some animals have longer periods of winter hibernation than others.
- *cycles*—Planet Earth has many cycles, such as day and night, the seasons, and life cycles of plants and animals.

4. Read Aloud Each Day

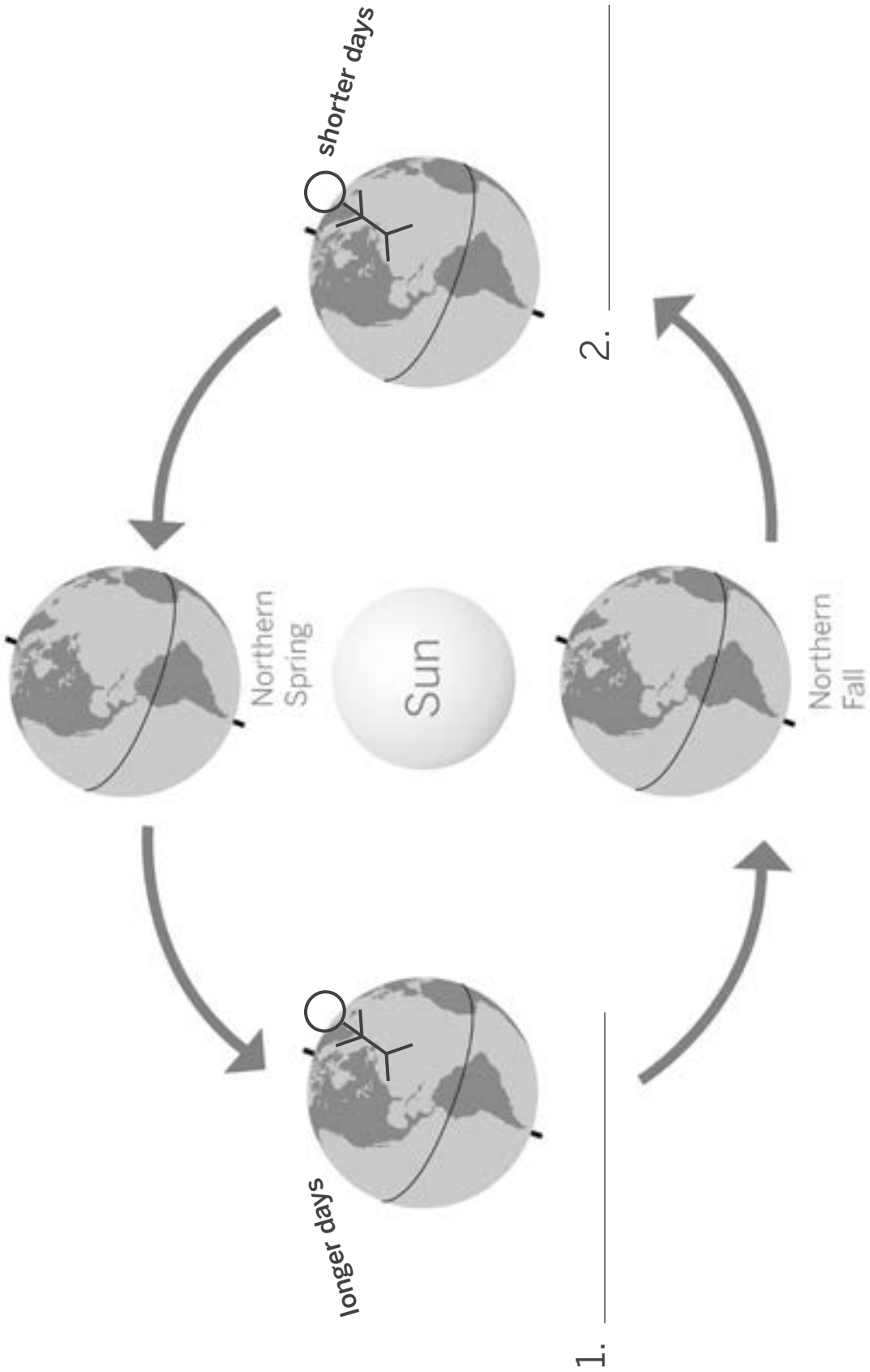
Set aside time to read aloud to your student every day. The local library has many books on cycles of nature.

Be sure to let your student know how much you enjoy hearing about what they have been learning at school.

NAME: _____

DATE: _____

Directions: Listen to your teacher's instructions and identify winter and summer in the diagram.

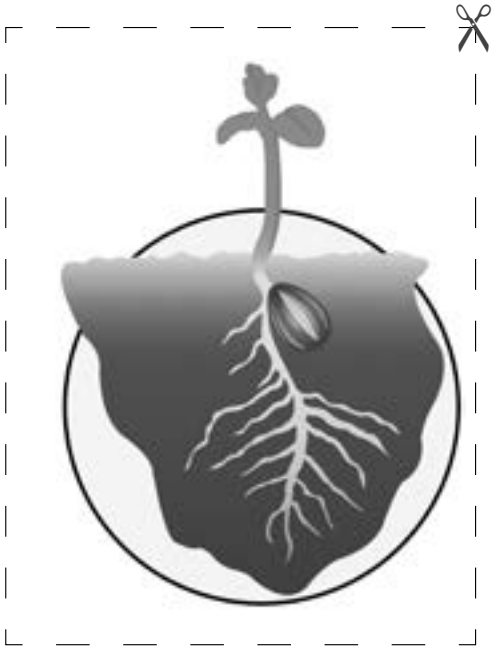


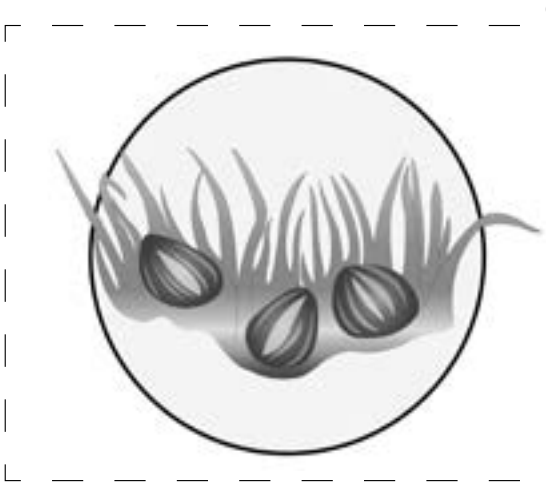
NAME: _____

DATE: _____

4.1 **Activity Page**

Directions: Cut out the pictures of the plant at various stages. Sequence the pictures, starting with the beginning of the plant life cycle. Then, glue or tape the pictures in the correct order onto a separate sheet of paper.





NAME: _____

DATE: _____

Directions: Pretend you are a tree. Complete the following statements from a tree's point of view.

I have many parts like _____

_____

_____

_____

When I am young _____

_____

_____

_____

_____

When I get a little bit older _____

_____

_____

_____

_____

When I am mature _____

_____

_____

_____

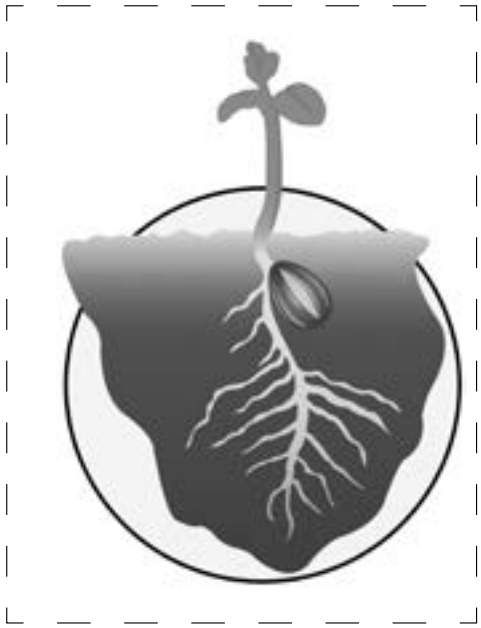
_____

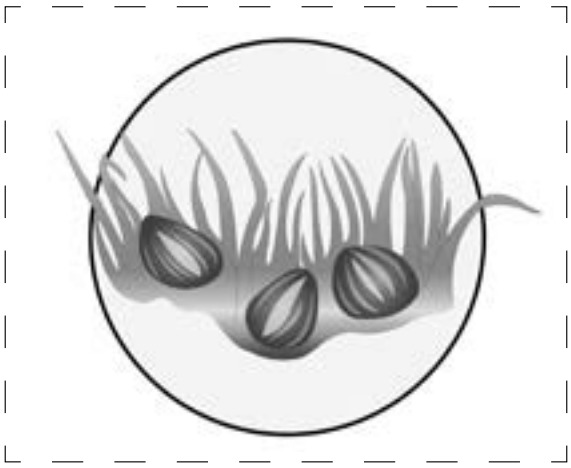
NAME: _____

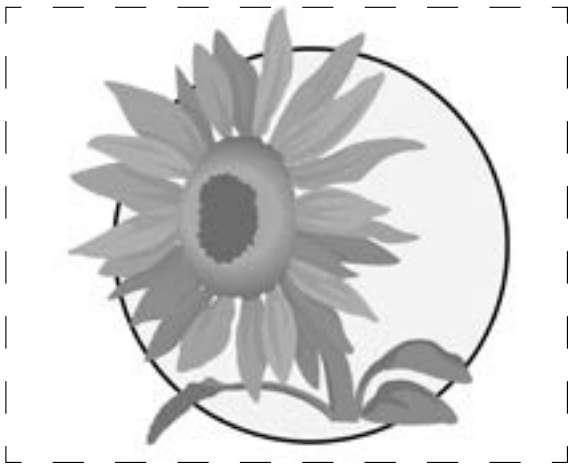
DATE: _____

PP.1 **Activity Page**

Directions: Cut out the pictures of the plant at various stages. Sequence the pictures, starting with the seed. Then, glue or tape the pictures in the correct order onto a separate sheet of paper. Write sentences describing the life cycle of a sunflower on the back of the paper.







Knowledge 5

NAME: _____

DATE: _____

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- *cycles*—Planet Earth has many cycles, such as day and night, the seasons, and life cycles of plants.

4. Read Aloud Each Day

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Be sure to let your student know how much you enjoy hearing about what they have been learning at school.

NAME: _____

DATE: _____

7.1 **Activity Page**

Directions: Write one complete sentence in the first rectangle to introduce your paragraph. Write one complete sentence in the next four rectangles to explain the stages of the life cycle of a frog. Write one complete sentence in the last rectangle to conclude, or finish, your paragraph.

Introductory Sentence:

First . . .

Next . . .

Then . . .

Finally . . .

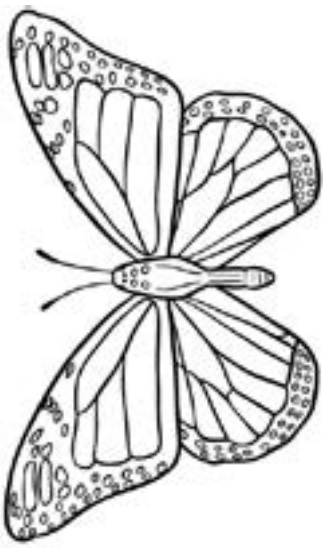
Concluding Sentence:

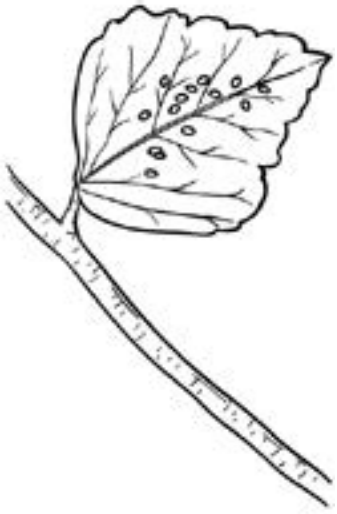
NAME: _____

DATE: _____

8.1 **Activity Page**

Directions: Color and cut out the pictures showing the different stages of metamorphosis for a monarch butterfly, and then sequence them in the correct order. Glue or tape the pictures onto drawing paper. Work with a partner to retell the stages of metamorphosis.





NAME: _____

DATE: _____

DA.1 **Assessment**

1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Directions: Listen to your teacher's instructions.

Knowledge 5

11.		
12.		
13.		
14.		
15.		

NAME: _____

DATE: _____

DA.2 **Assessment**

Directions: Listen to the sentence read by the teacher. Circle the animal whose life cycle is being described.

1.			
2.			
3.			
4.			
5.			

NAME: _____

DATE: _____

DA.3 **Assessment**

Title: _____

_____

_____

_____

_____

_____

_____

_____

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Grade 2 | **Knowledge 5** | Activity Book

Cycles of Nature: Clouds to Raindrops

ISBN 9781643837079

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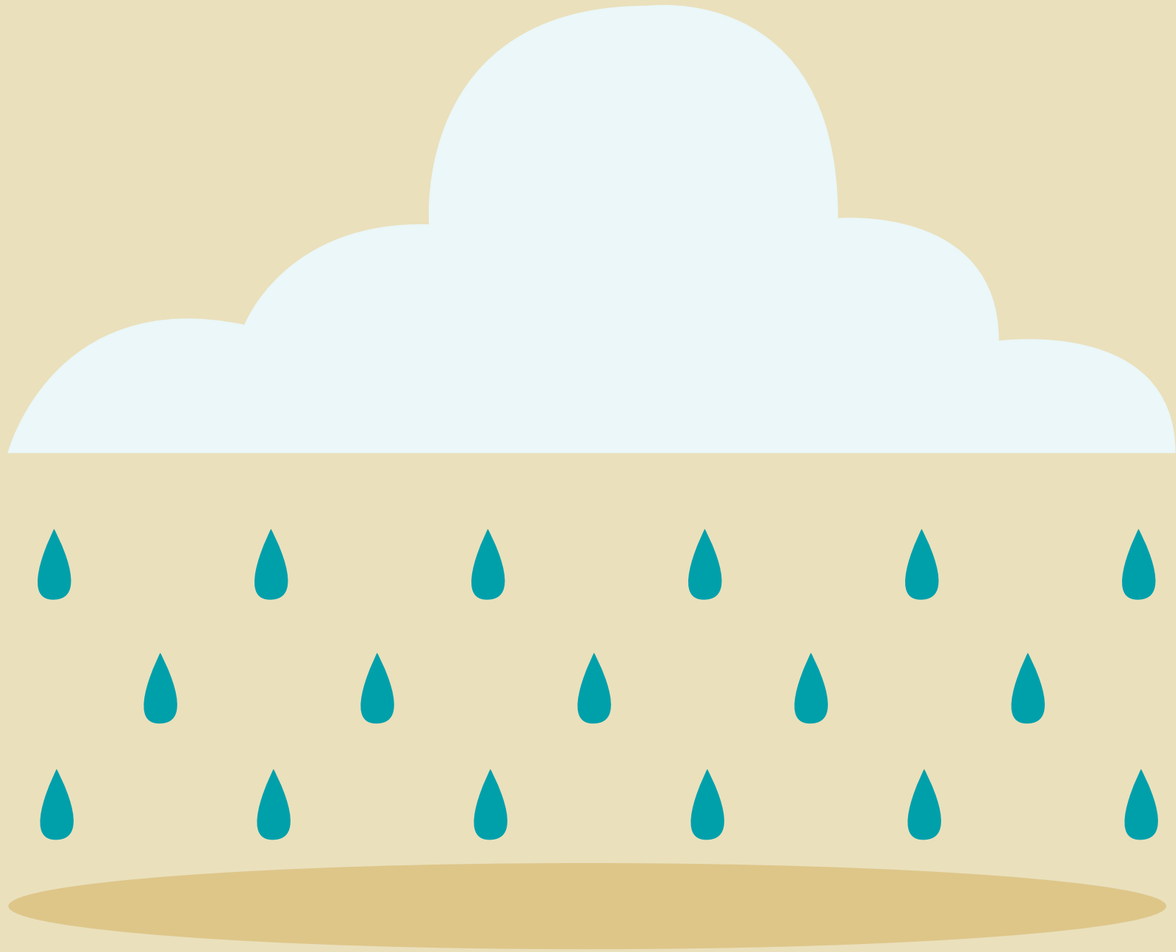

Grade 2

Knowledge 5 | Flip Book

Cycles of Nature: Clouds to Raindrops

Grade 2 | Knowledge 5

Cycles of Nature:
Clouds to Raindrops

Flip Book

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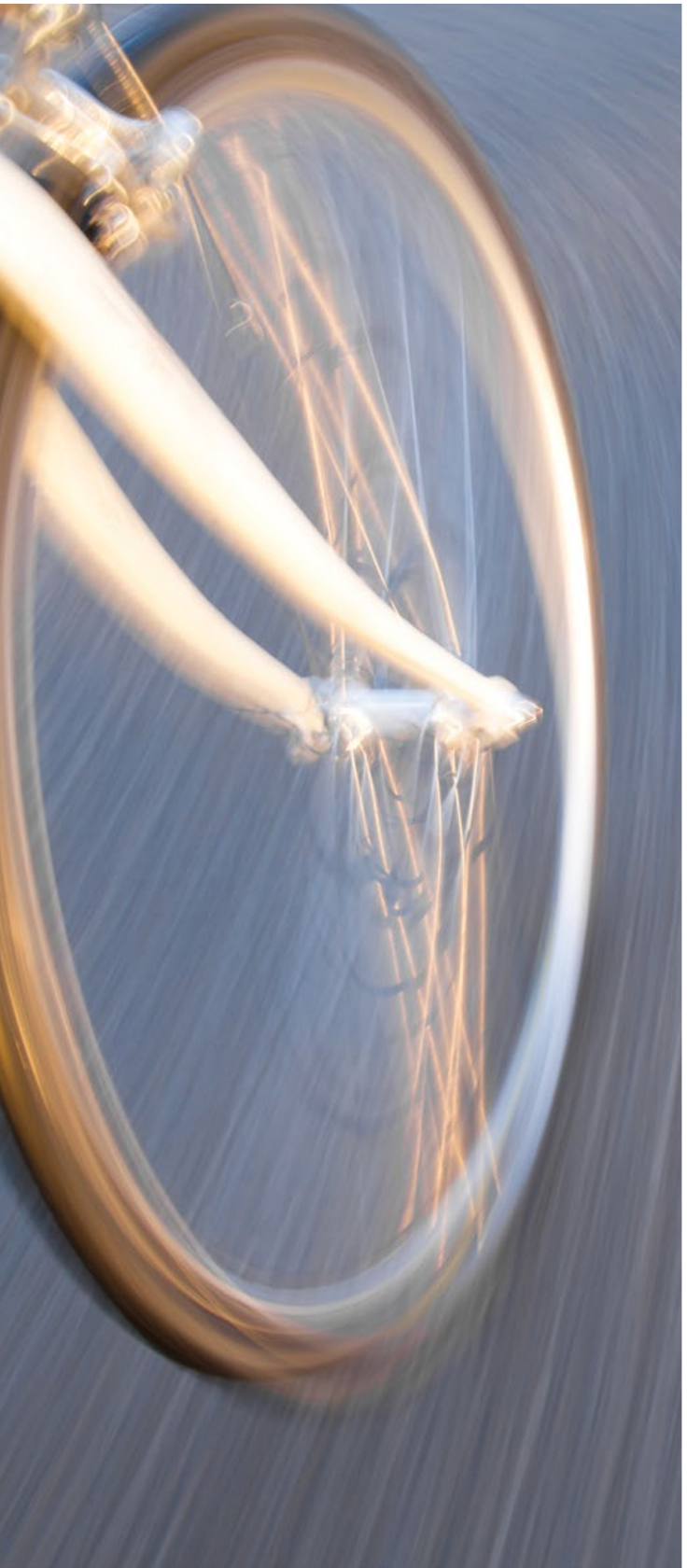
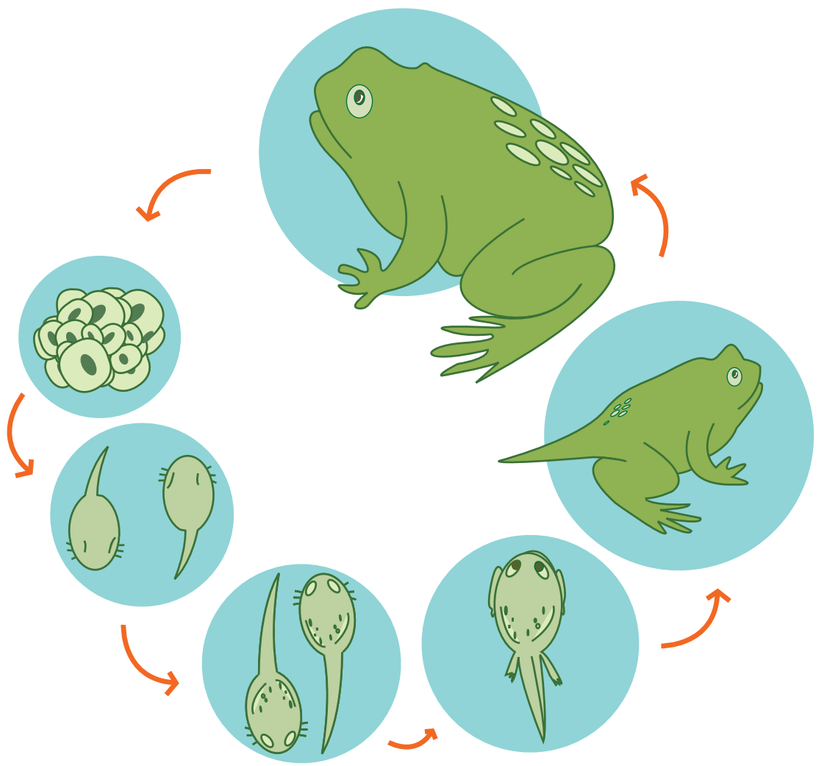
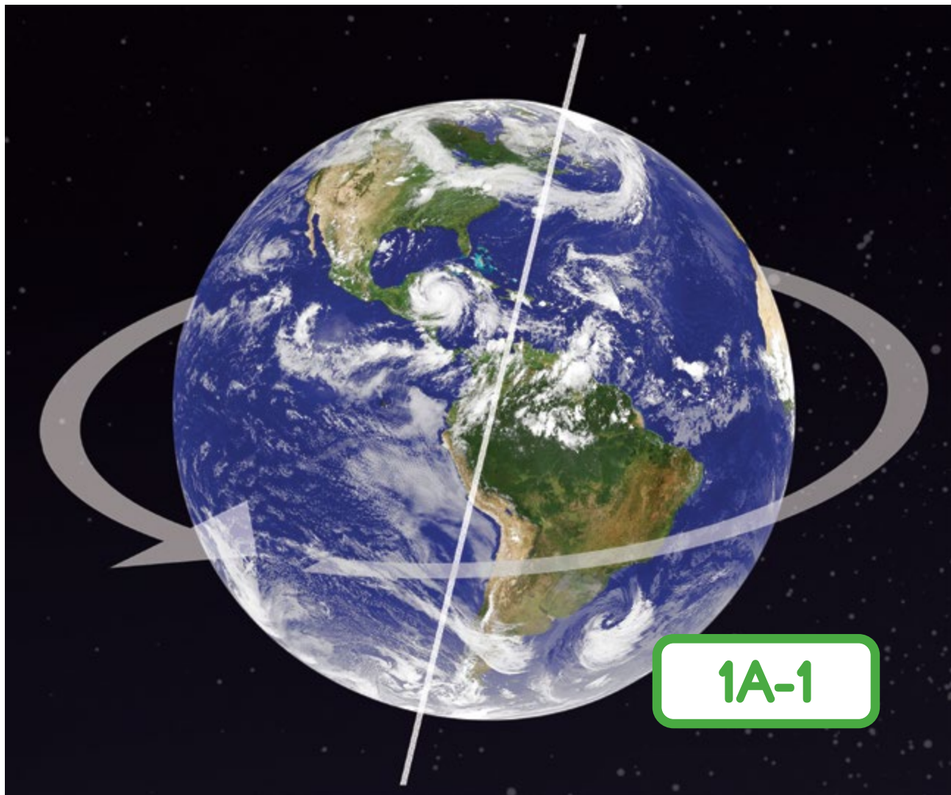
Flip Book Introduction

This Flip Book contains images that accompany the Teacher Guide for *Cycles of Nature: Clouds to Raindrops*. The images are in sequential order. Each image is identified by its lesson number, read-aloud letter (A or B), and the number of the image within the particular read-aloud. For example, the first image in Read-Aloud 1A is numbered 1A-1. Once you have worked your way through the book to the last page, you will flip the entire book over to view the second half of the images.

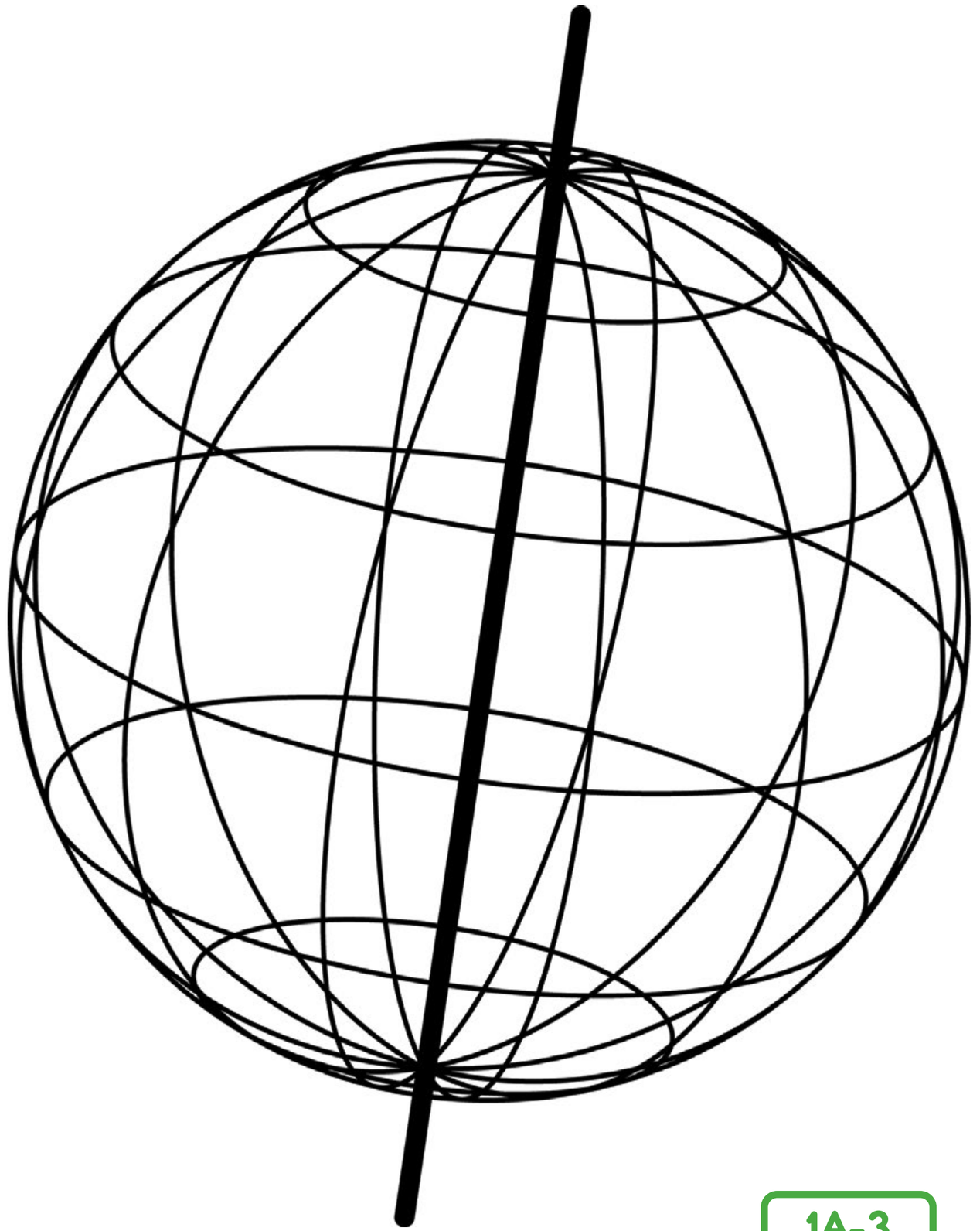
Depending on your classroom configuration, you may need to have students sit closer to the flip book in order to see the images clearly.






1A-1


1A-2



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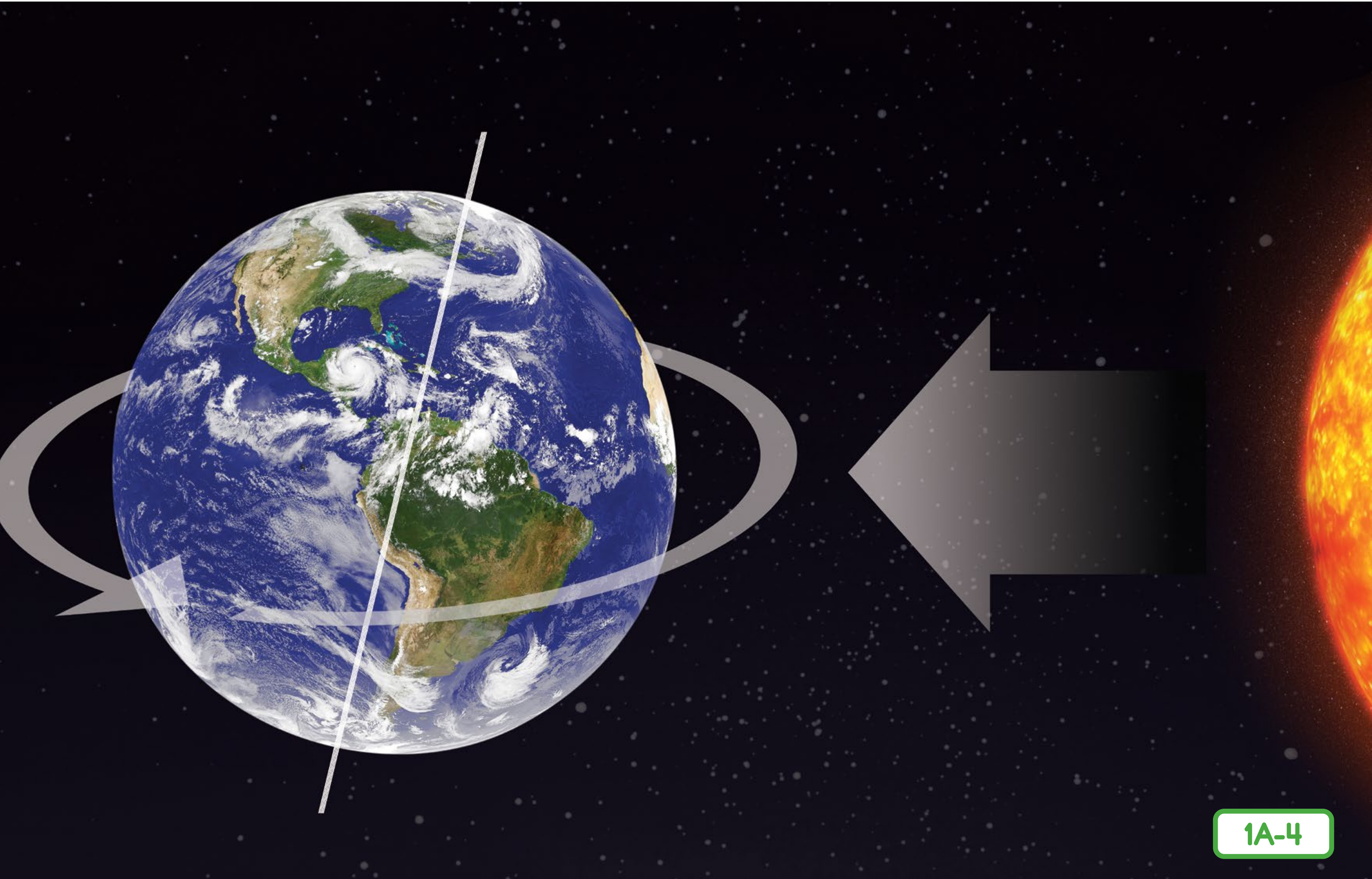
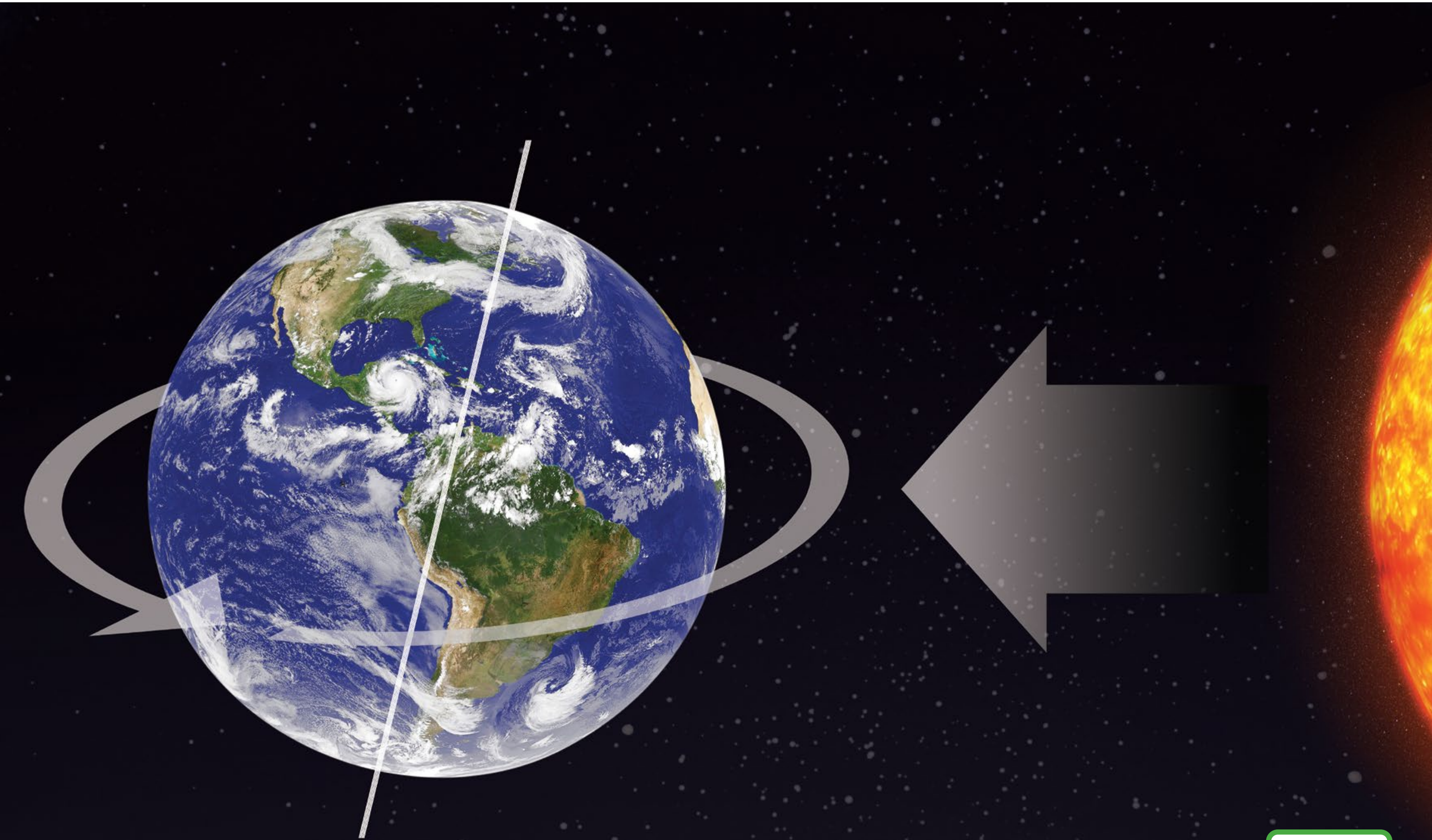


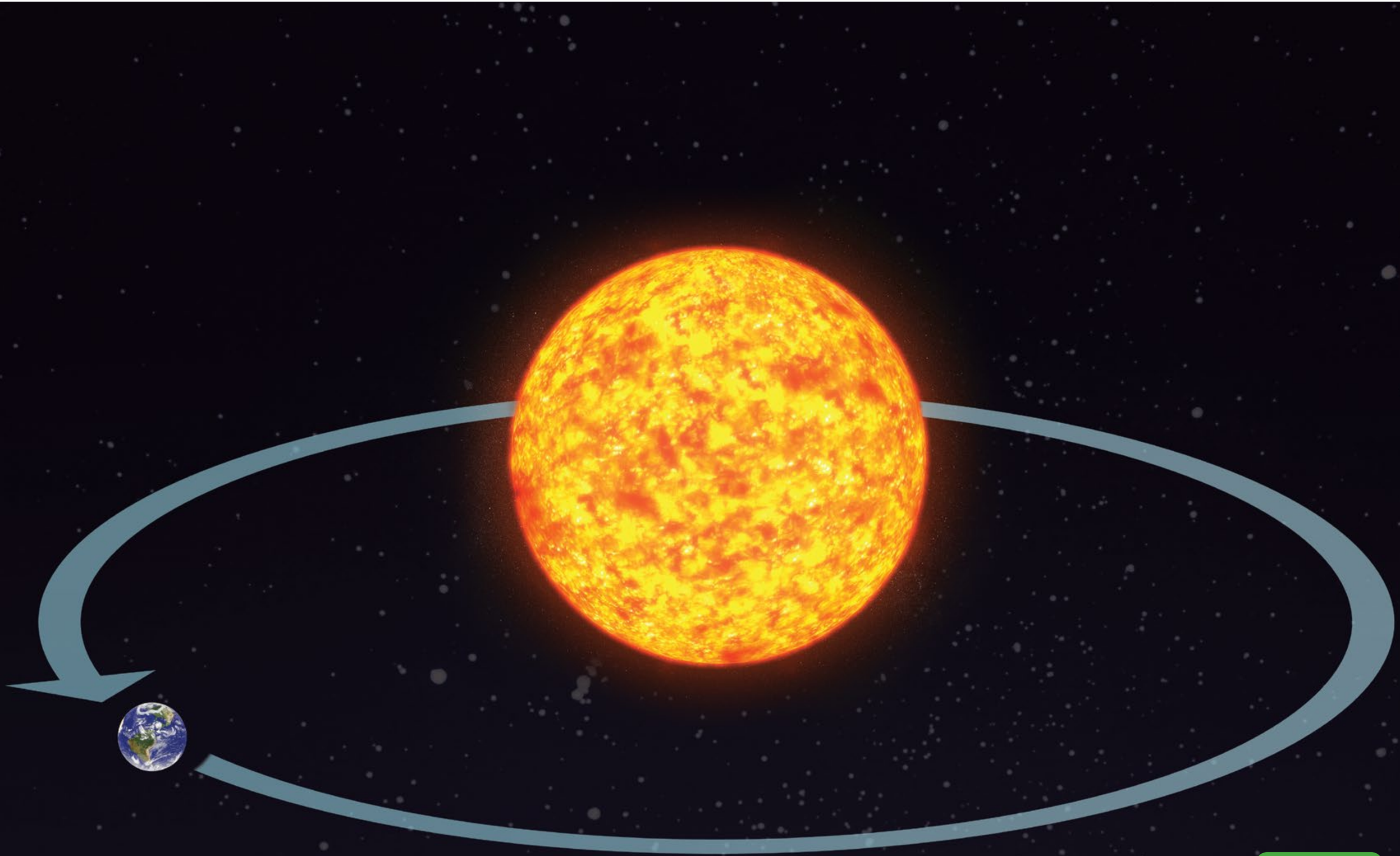
1A-4

1A-5

1A-6



2A-1



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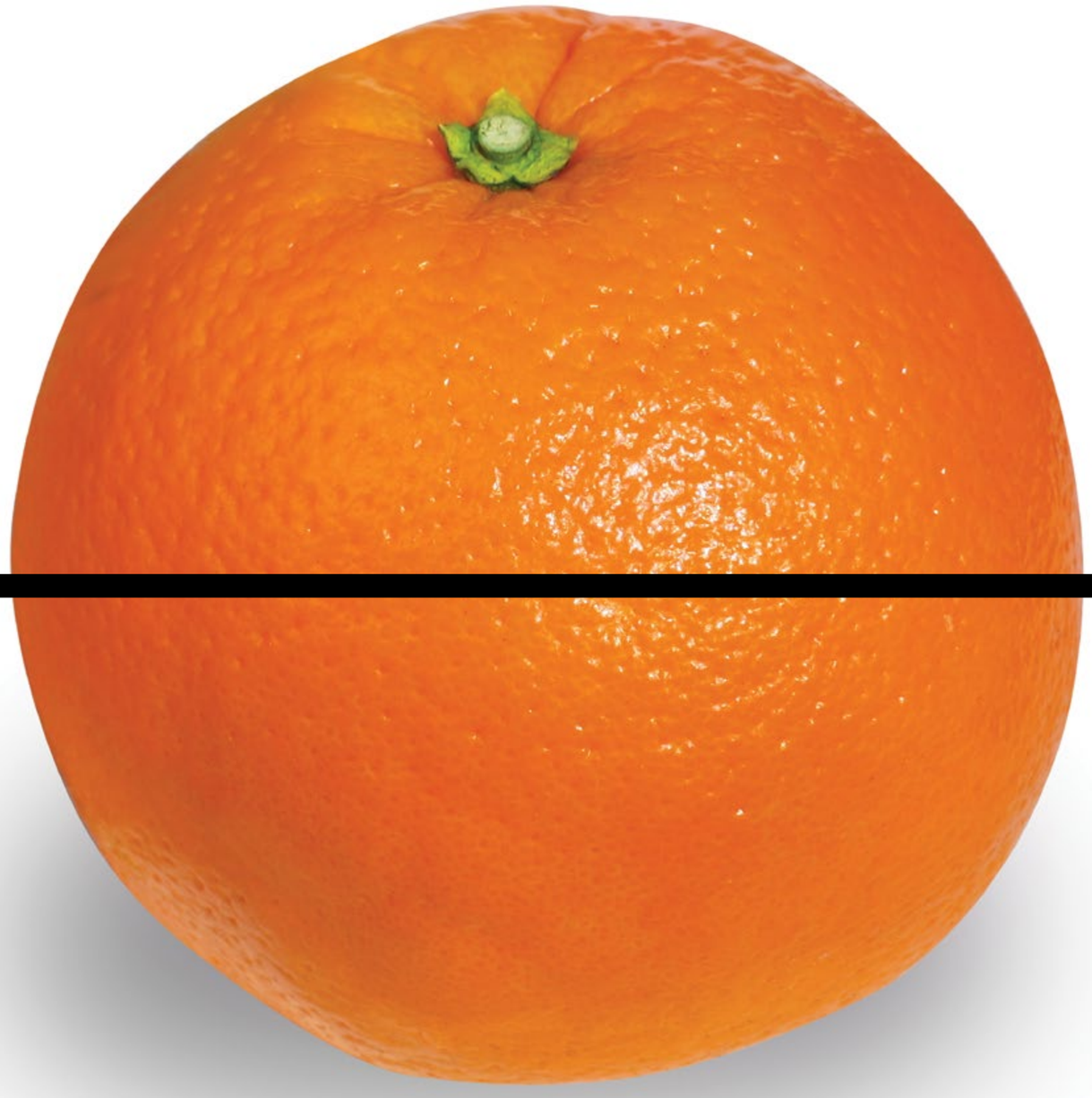

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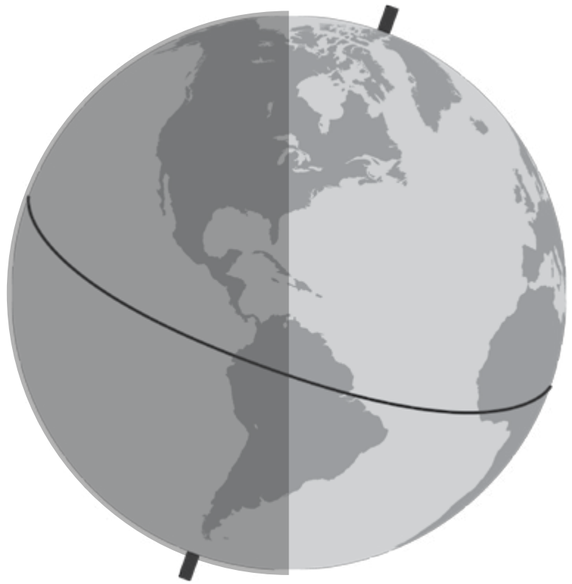
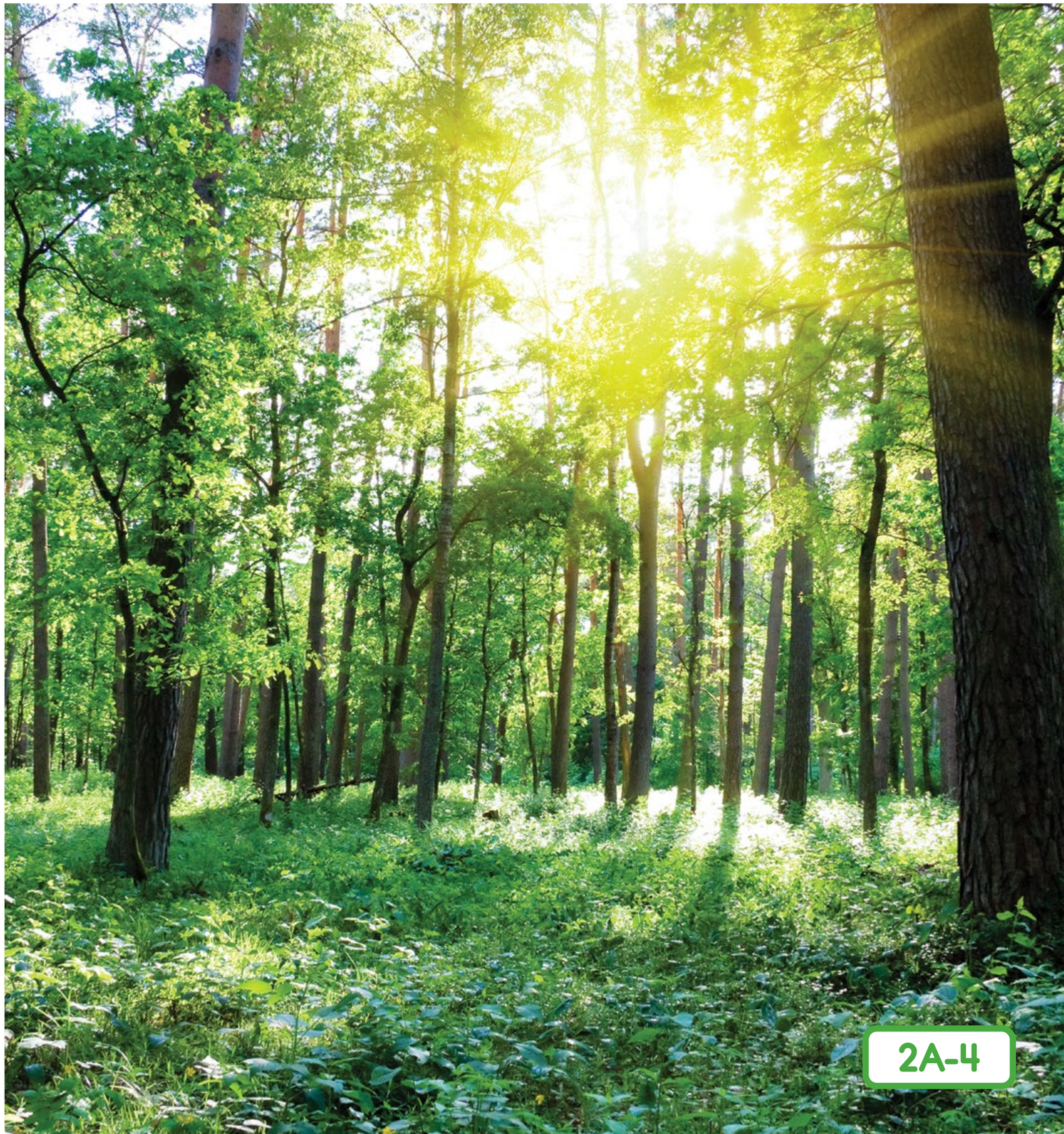
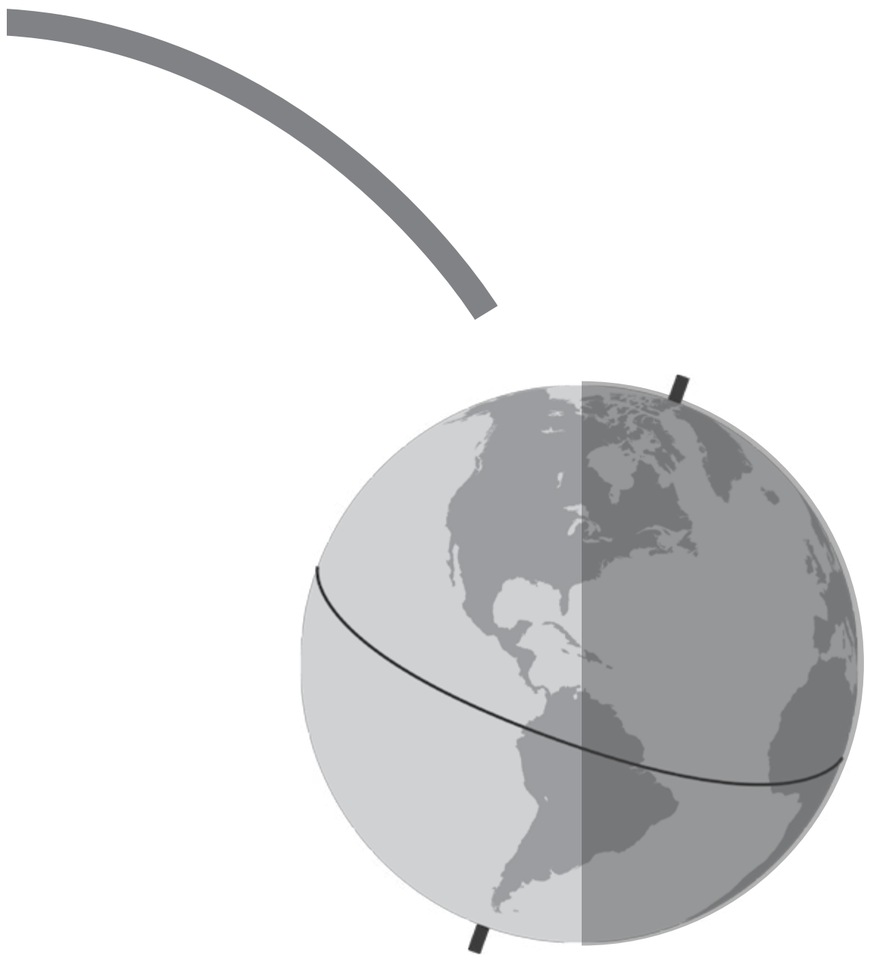


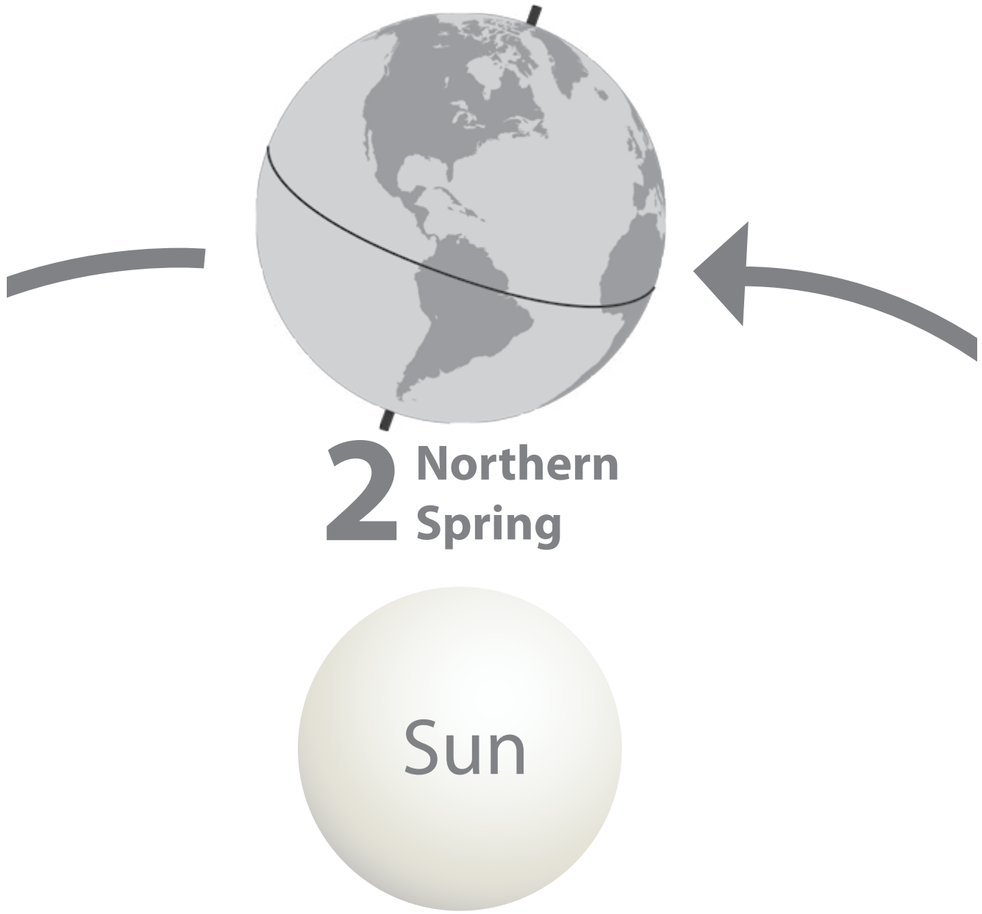
3 Northern Summer





1 Northern Winter

2A-5



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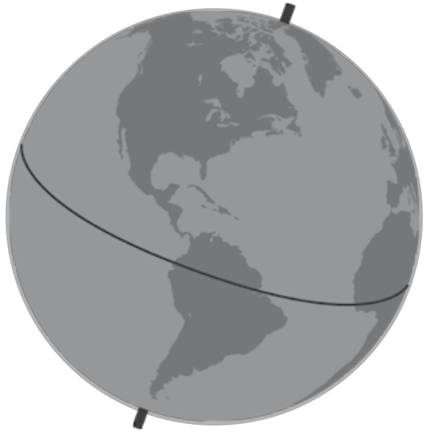

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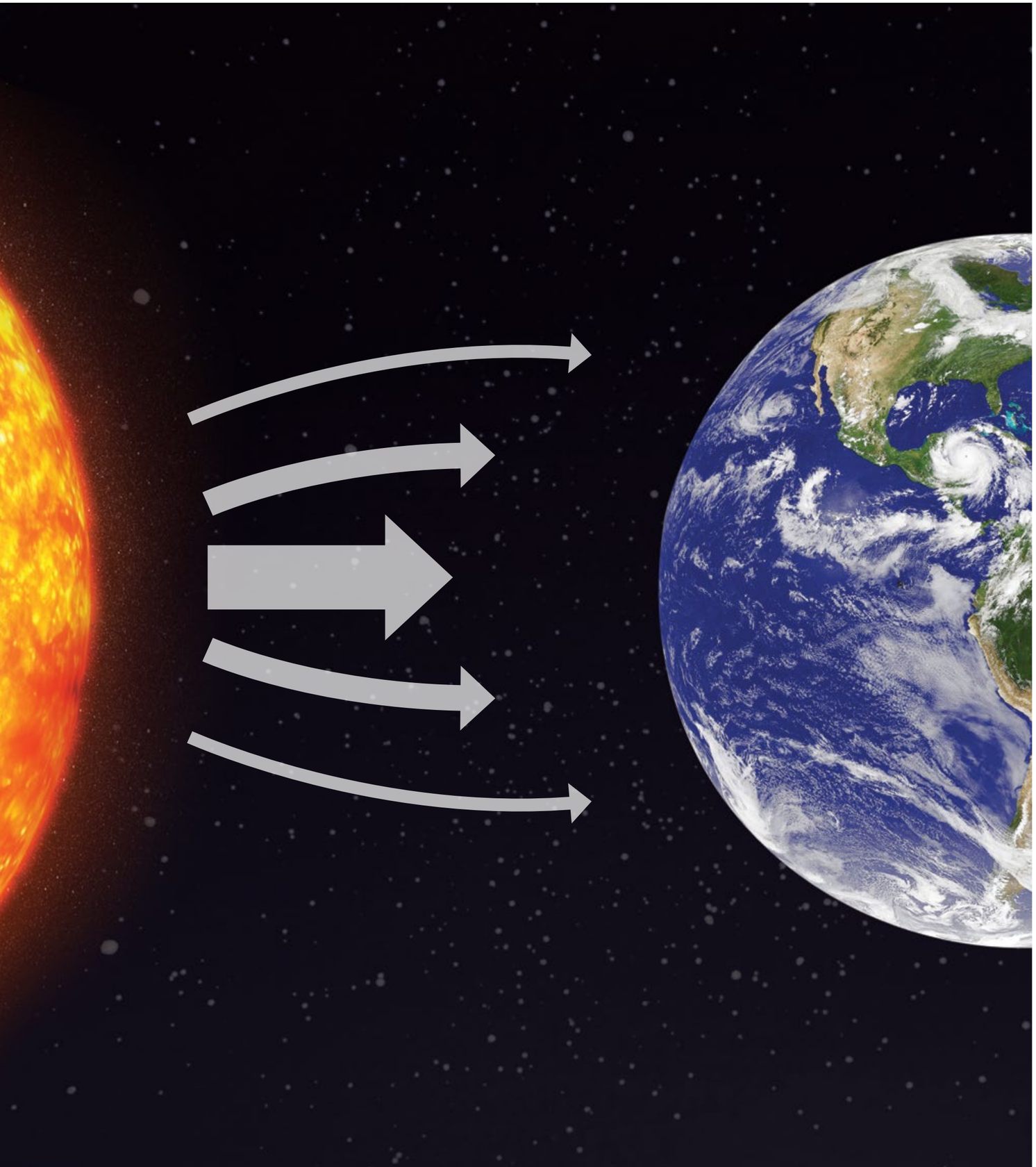
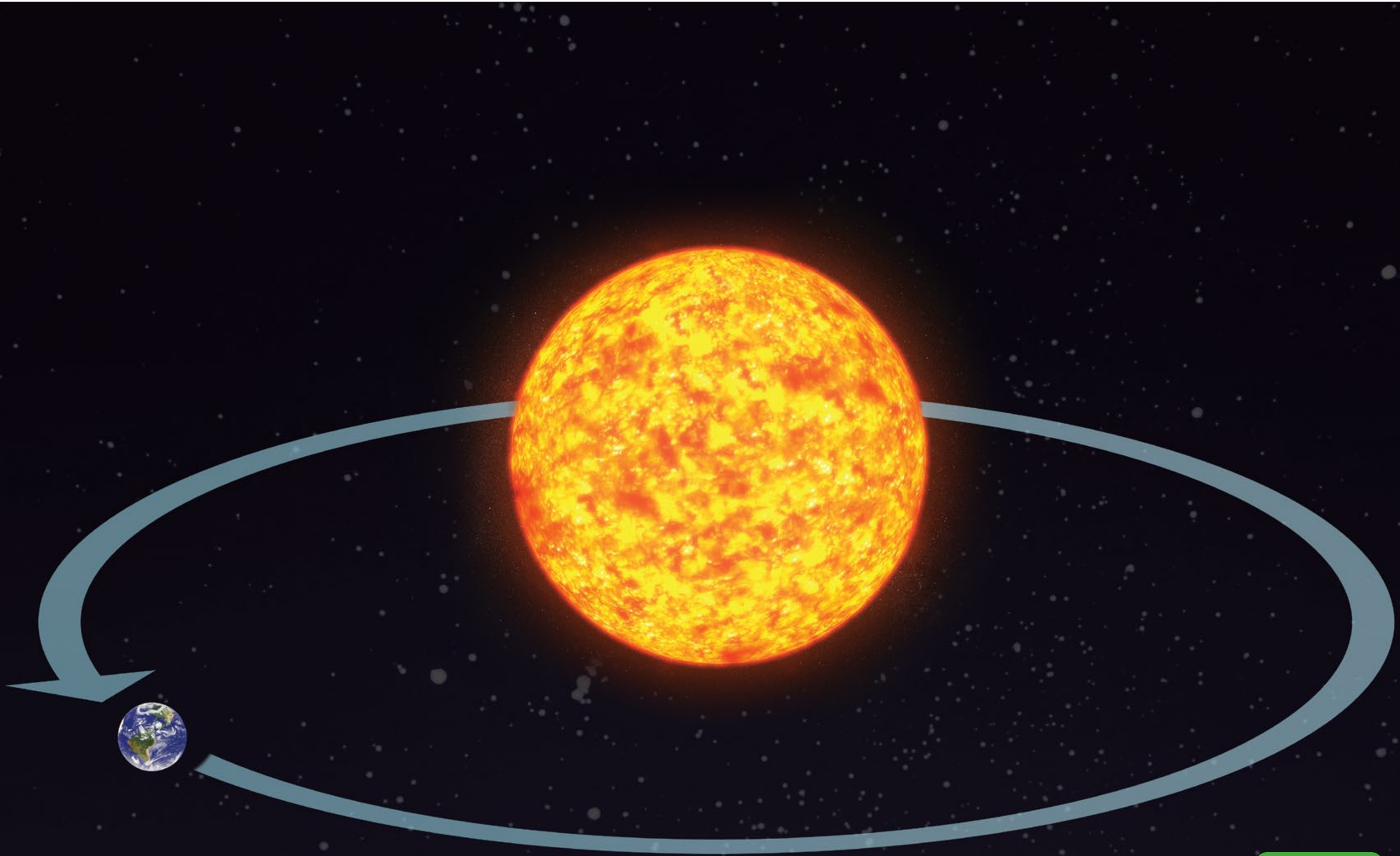


2A-7

2B-1



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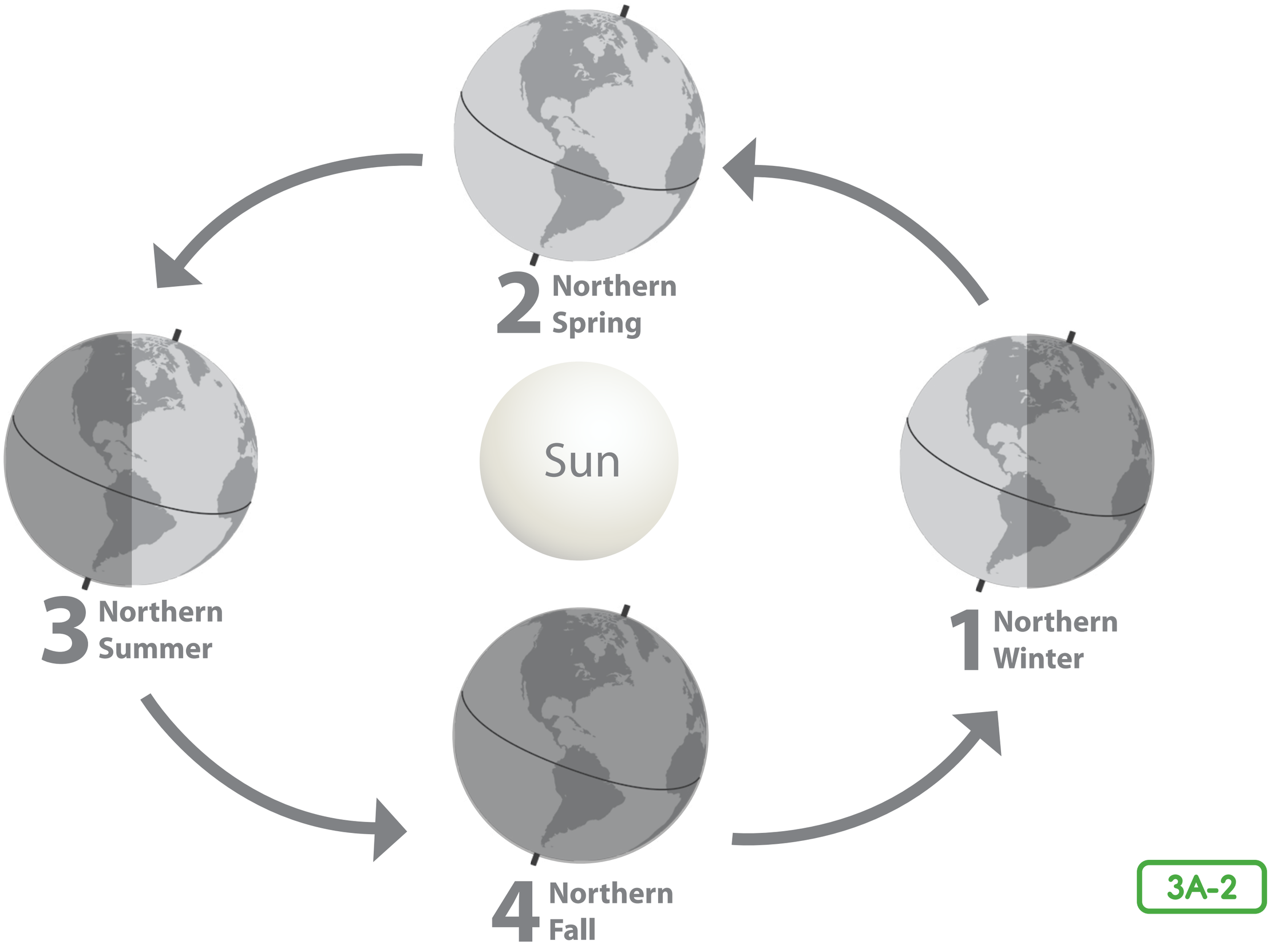
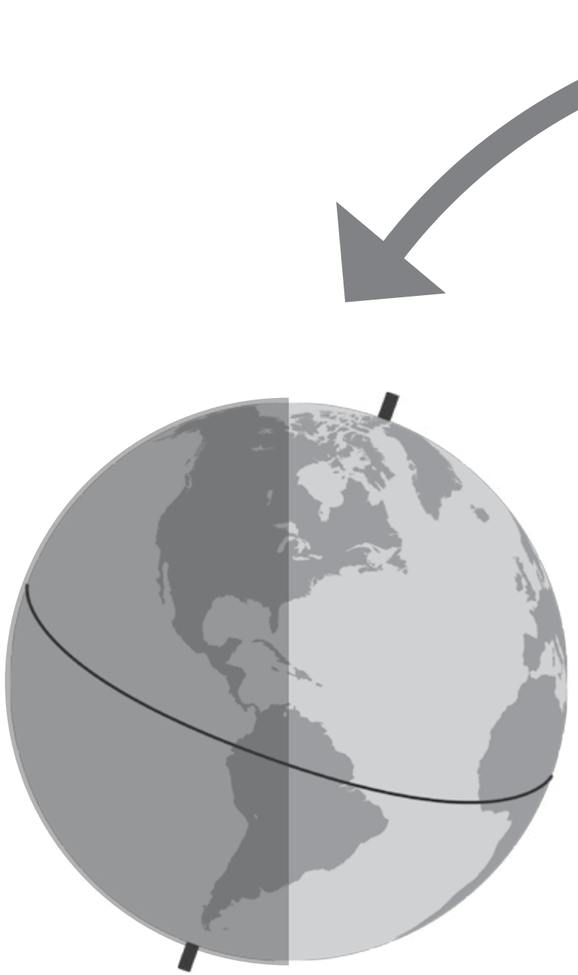

2 Northern Spring
Sun
3 Northern Summer
1 Northern Winter
4 Northern Fall

3A-2


3A-3



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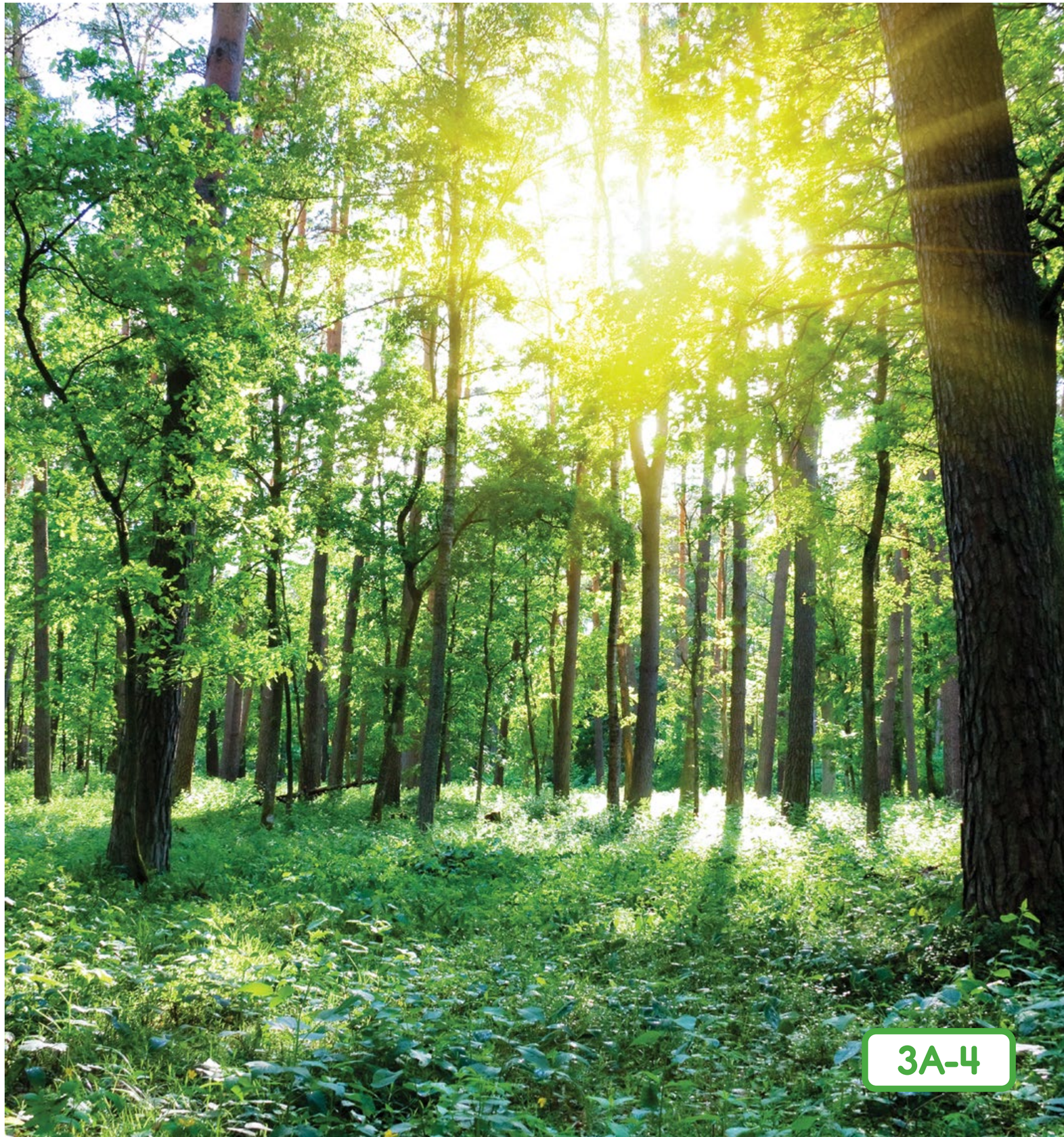


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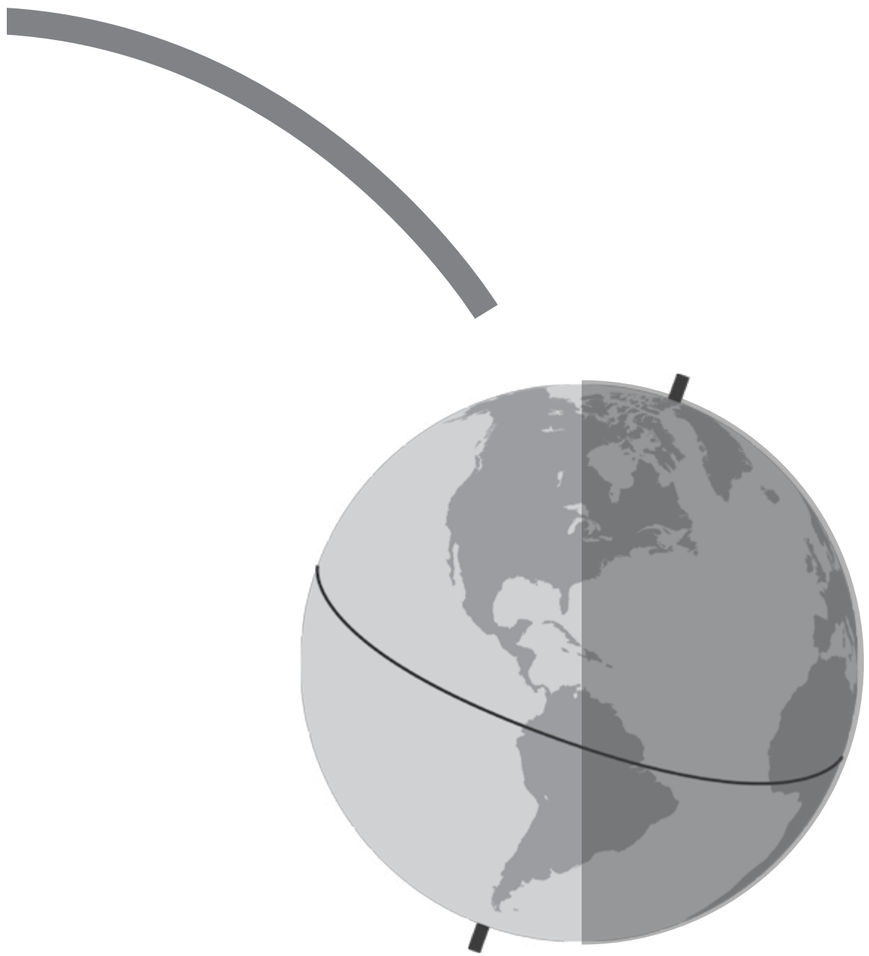


1 Northern Winter

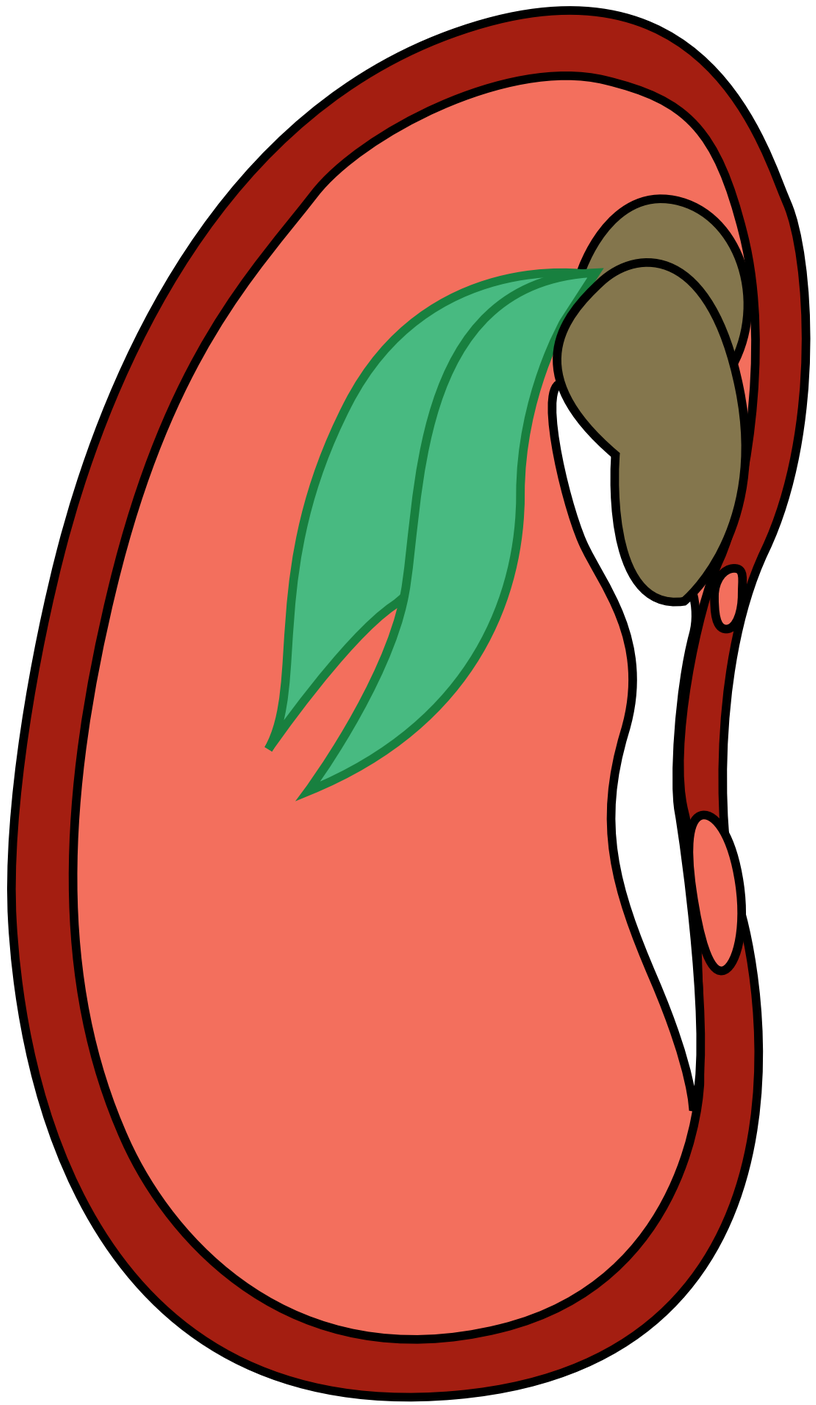
3A-6


3A-7

3A-8

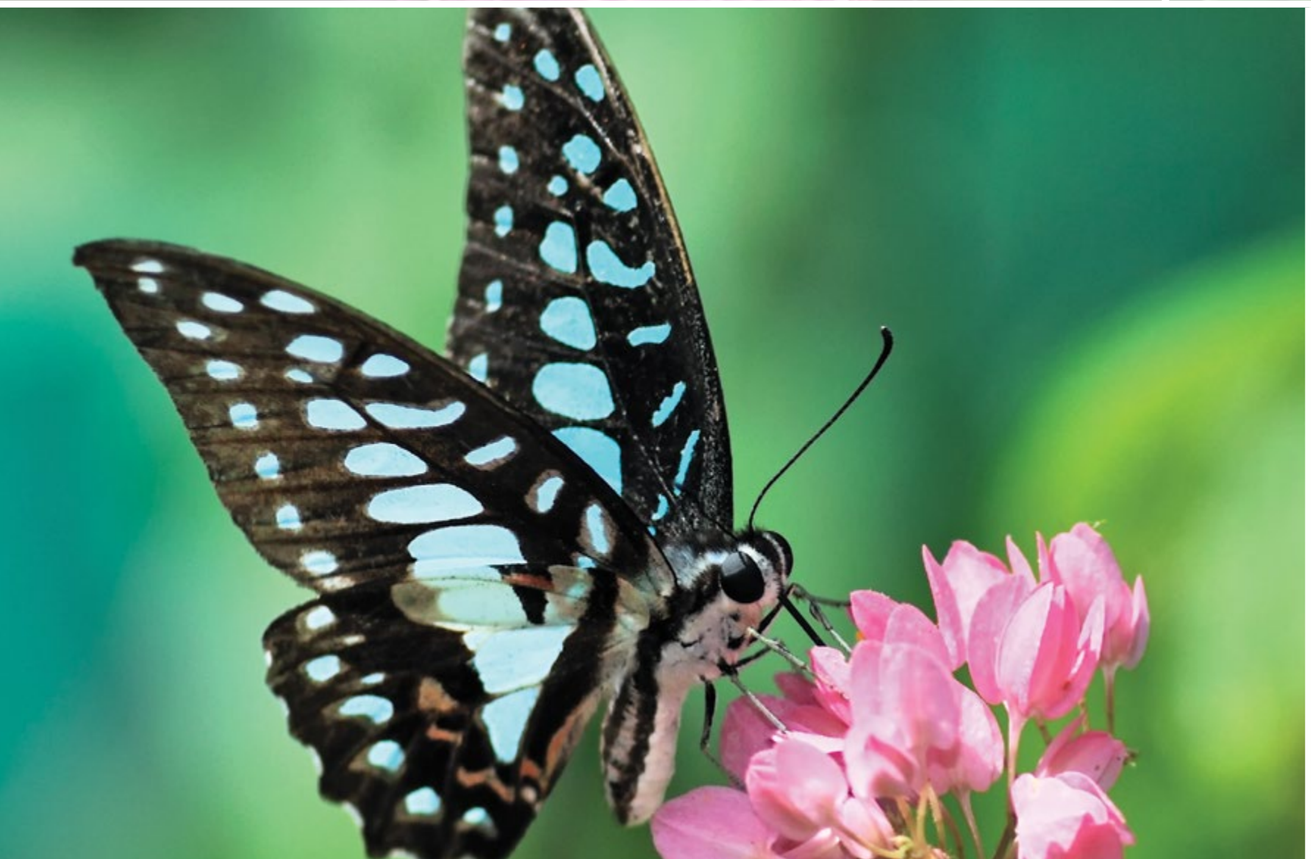

ЧА-1


ЧА-2



ЧА-3

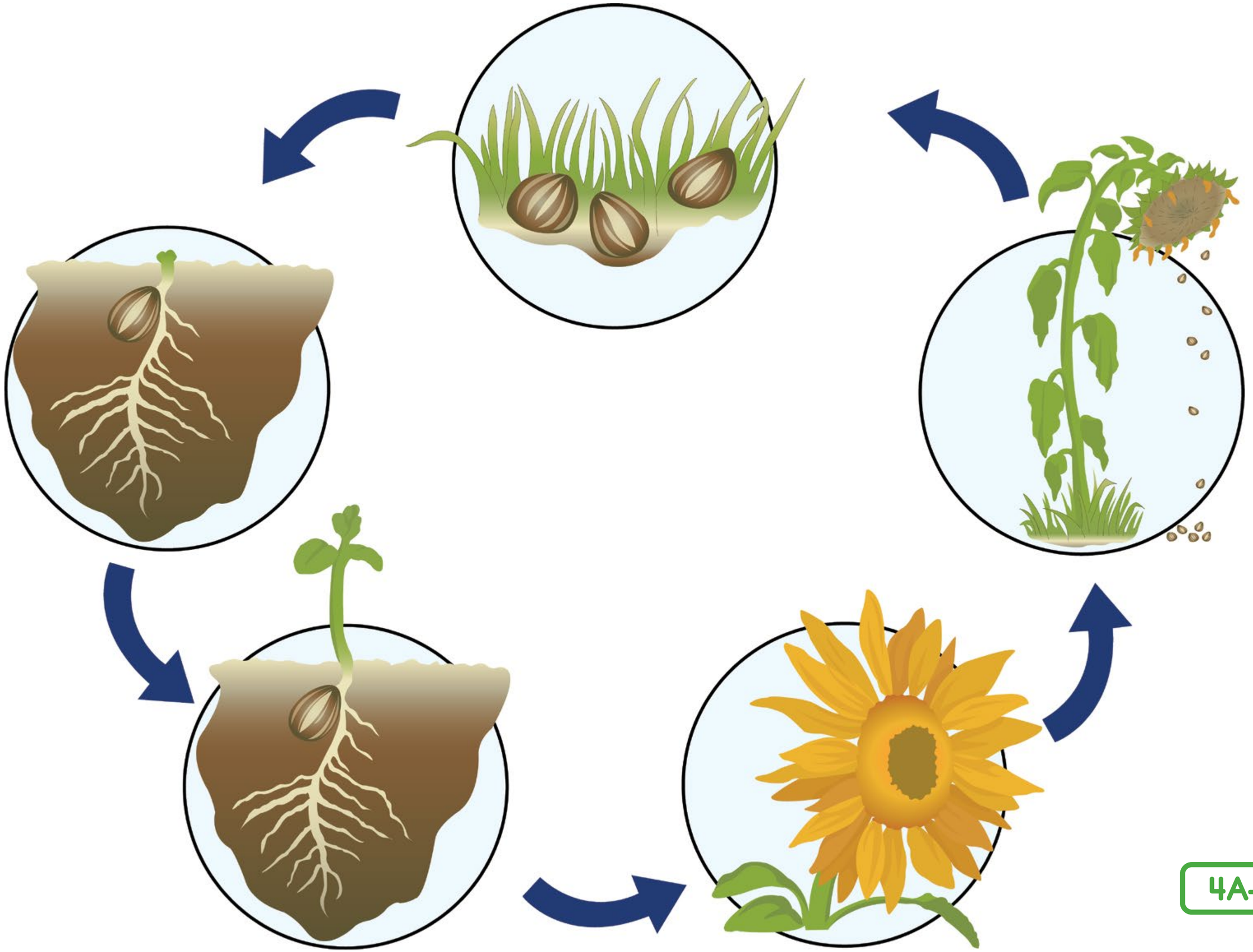
ЧА-Ч



ЧА-5

4A-6

ЧА-7



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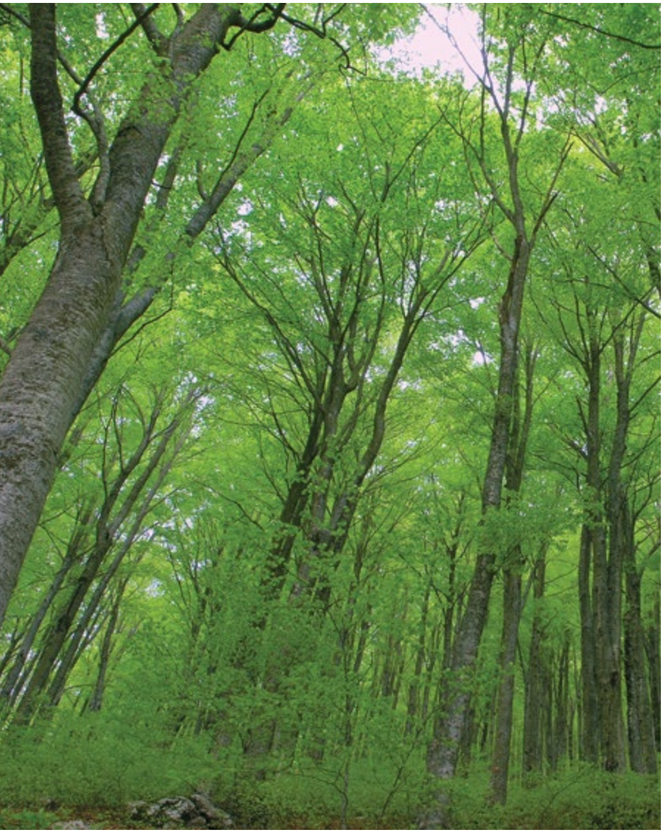


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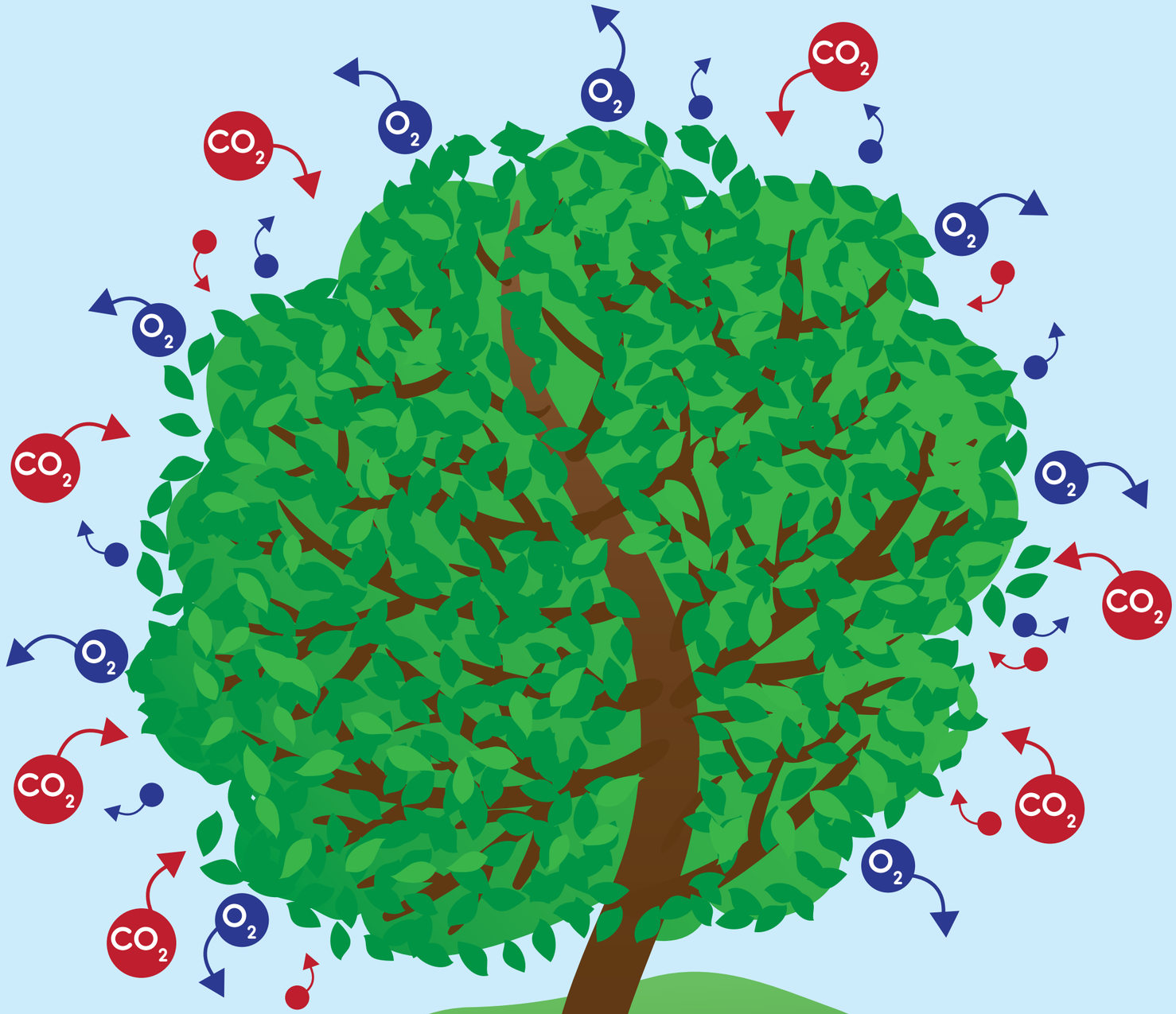
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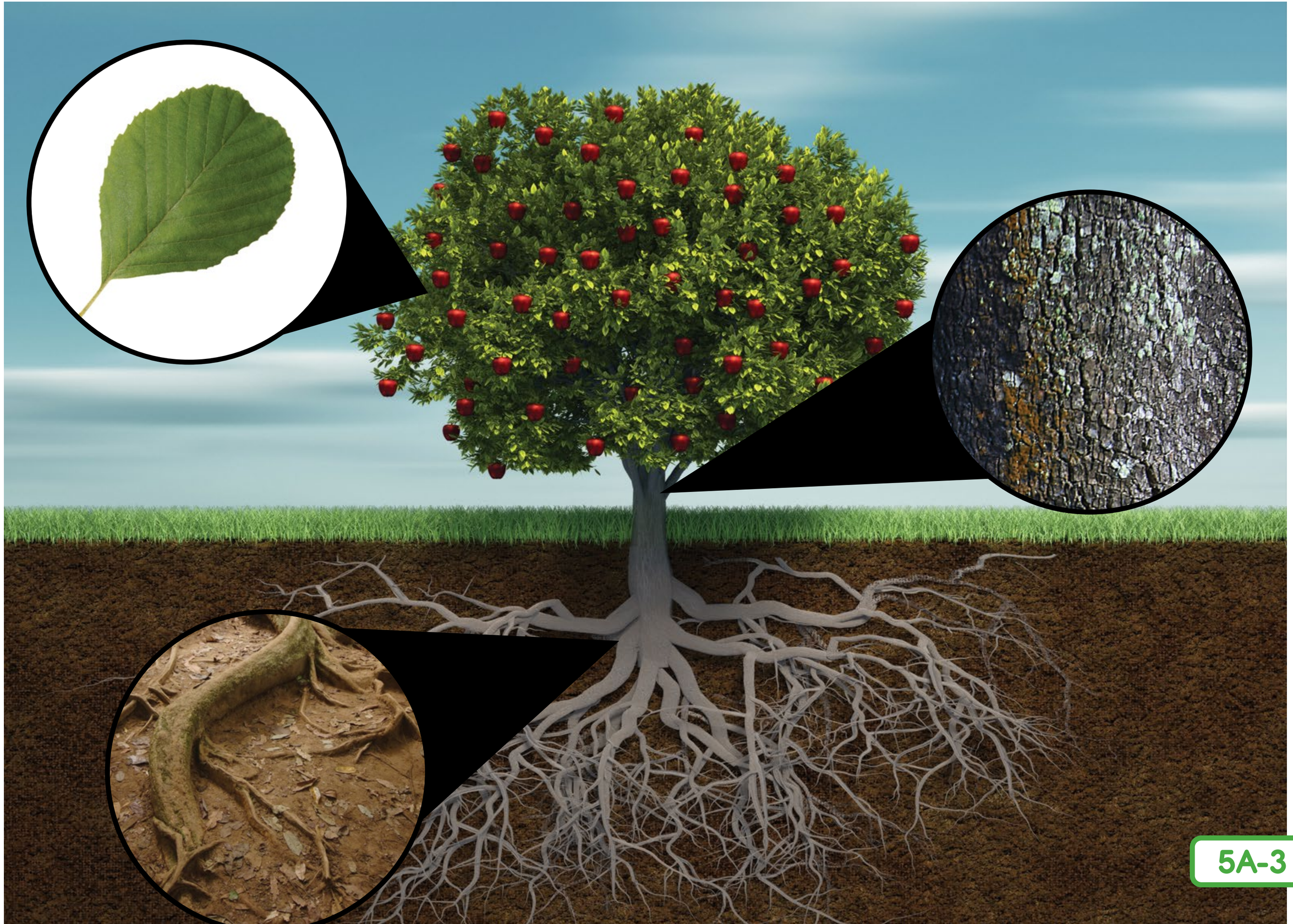

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5A-4

5A-5

5A-6

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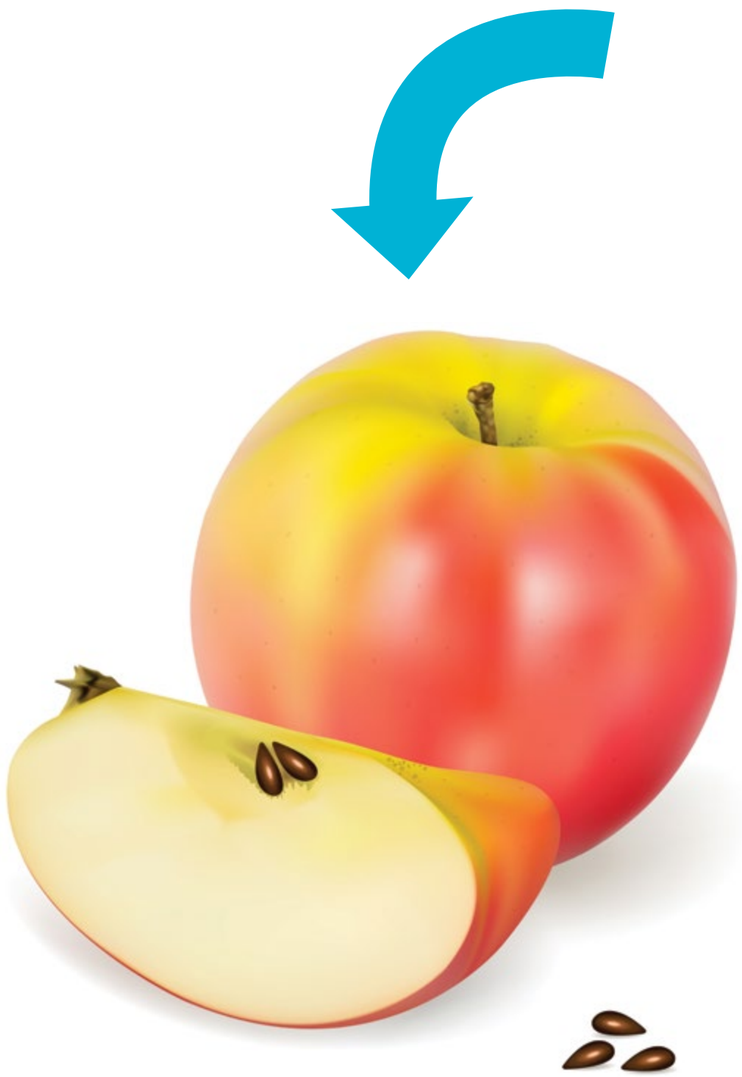
5A-8



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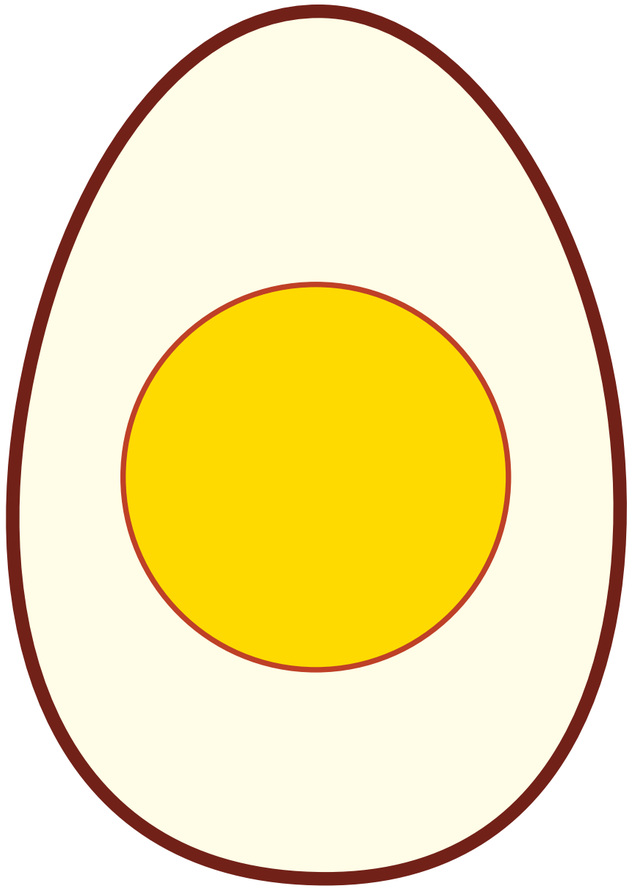


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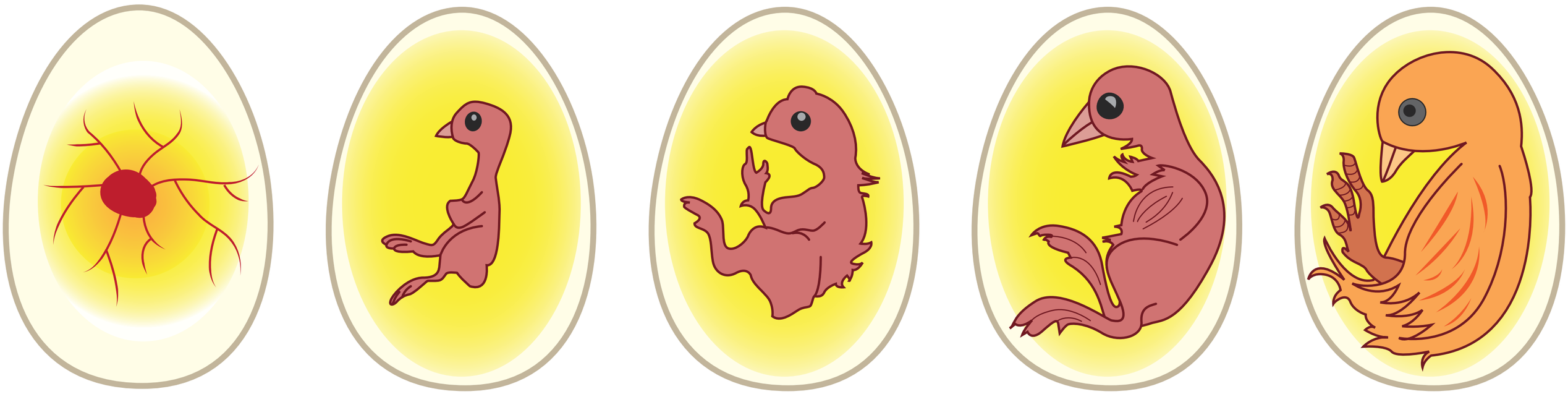
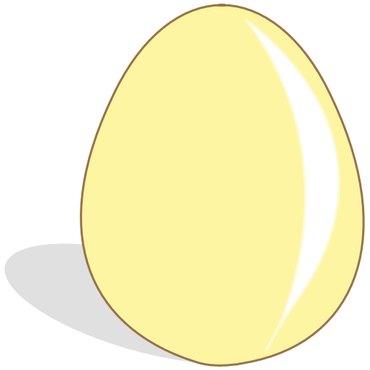
6A-3

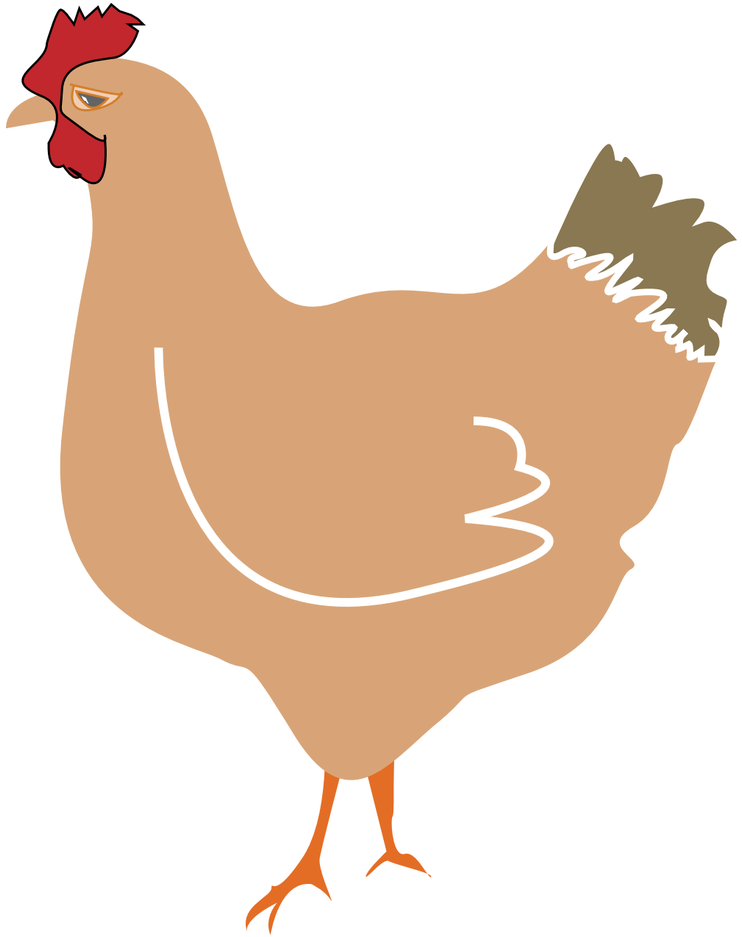


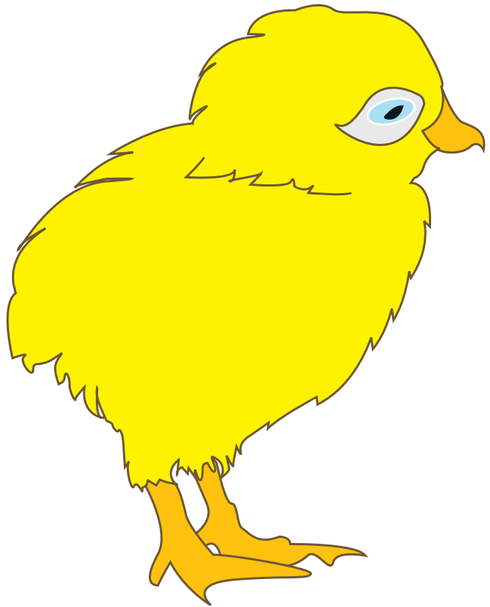
Day 4 Day 8 Day 13 Day 17 Day 20

6A-4

6A-5







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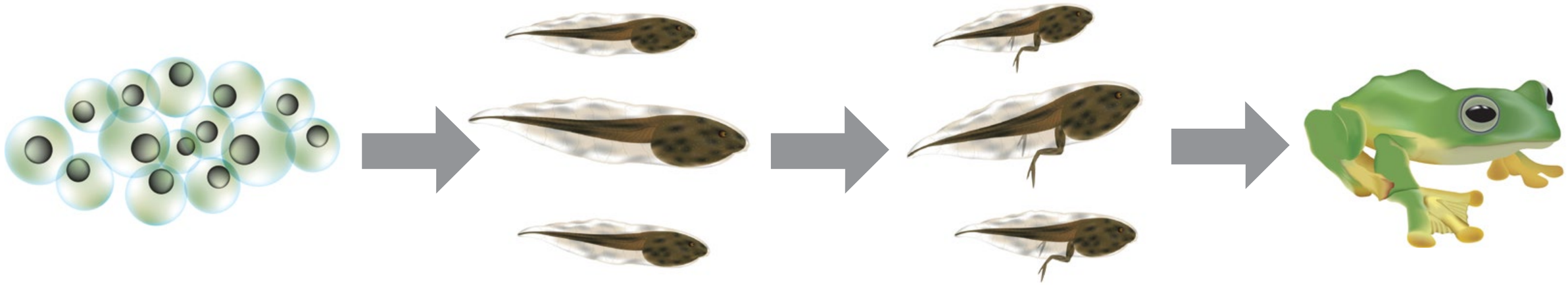
7A-2

7A-3



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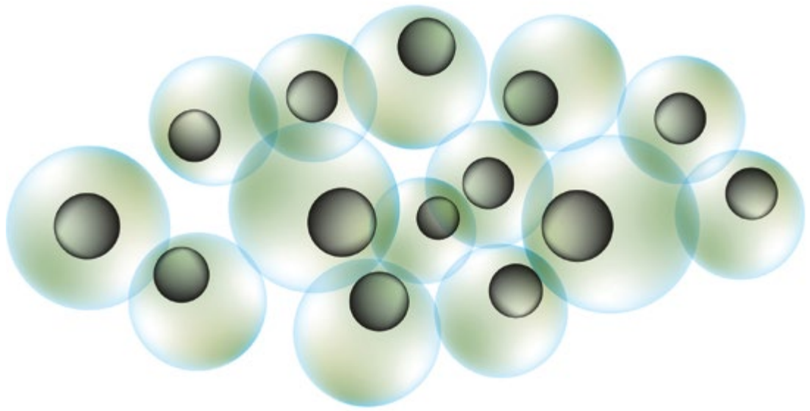
7A-5

7A-6



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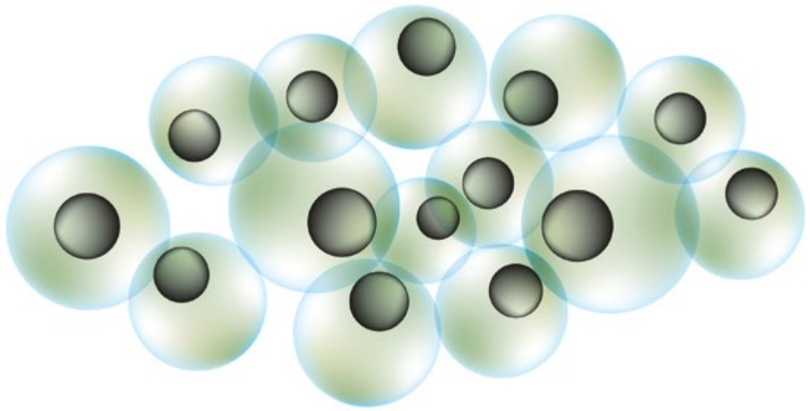

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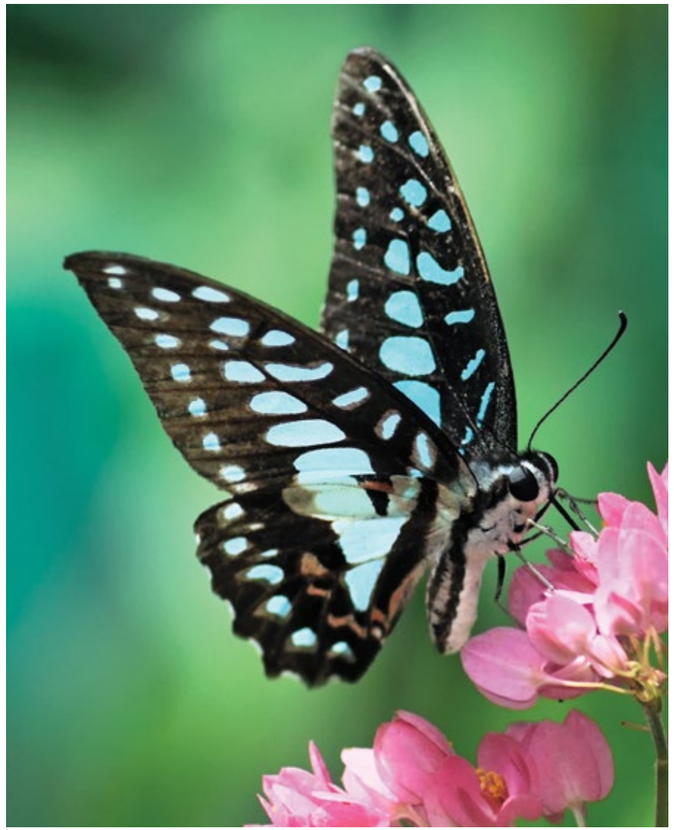

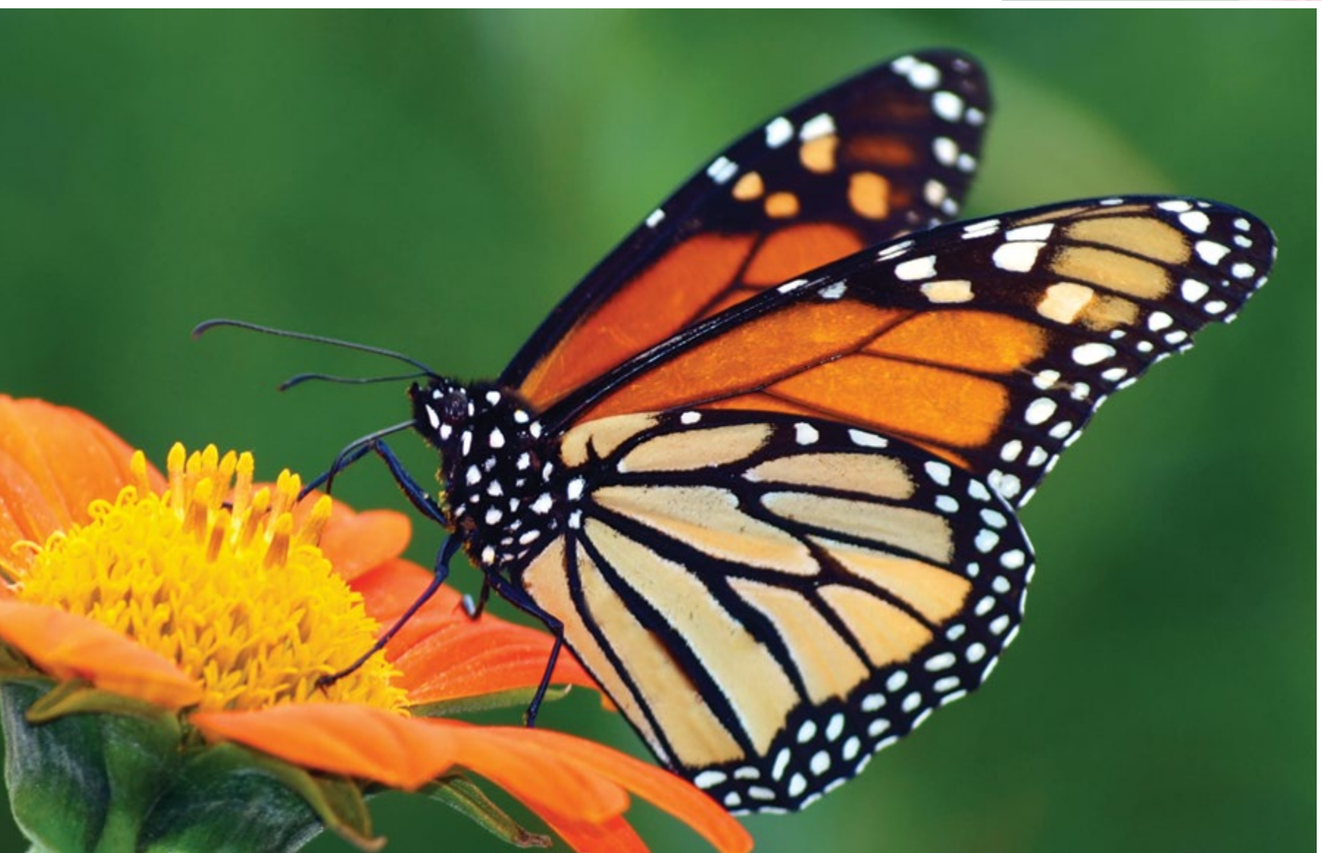

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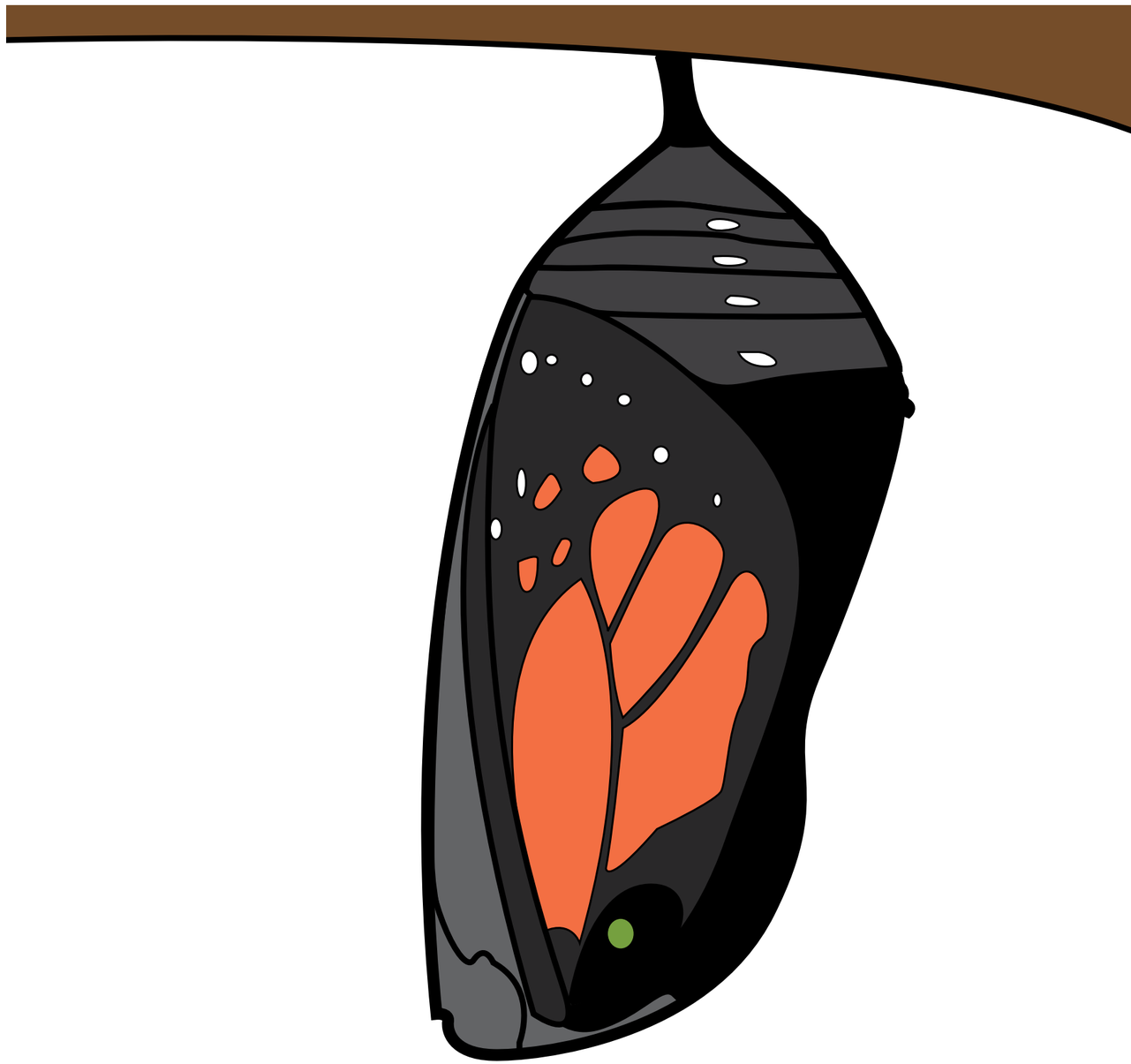
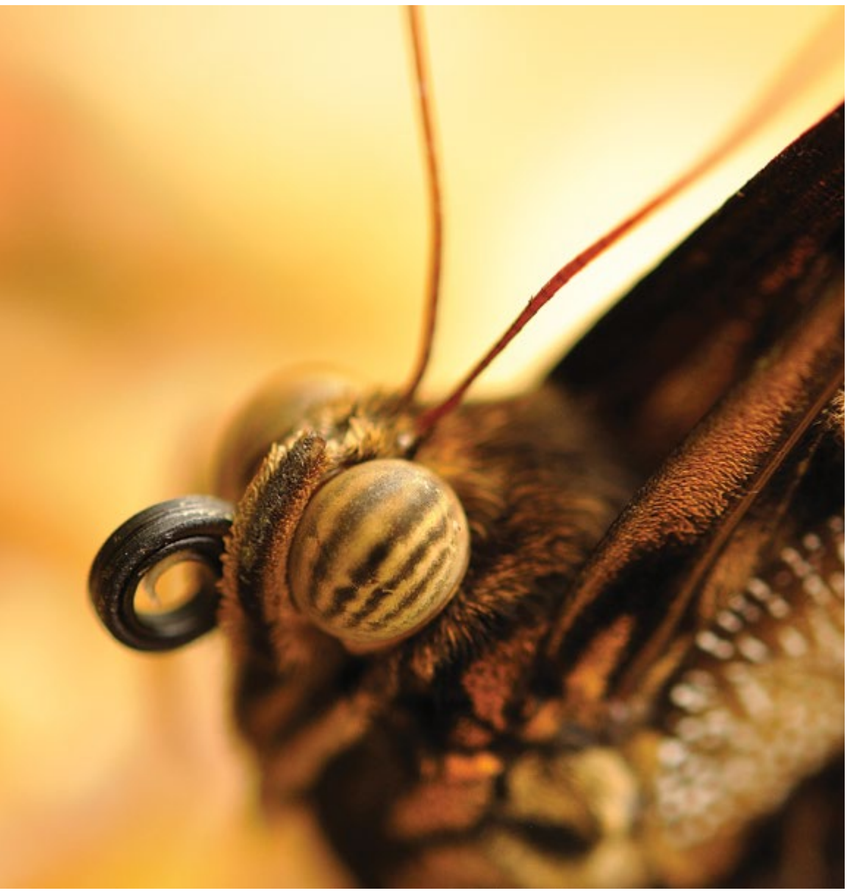
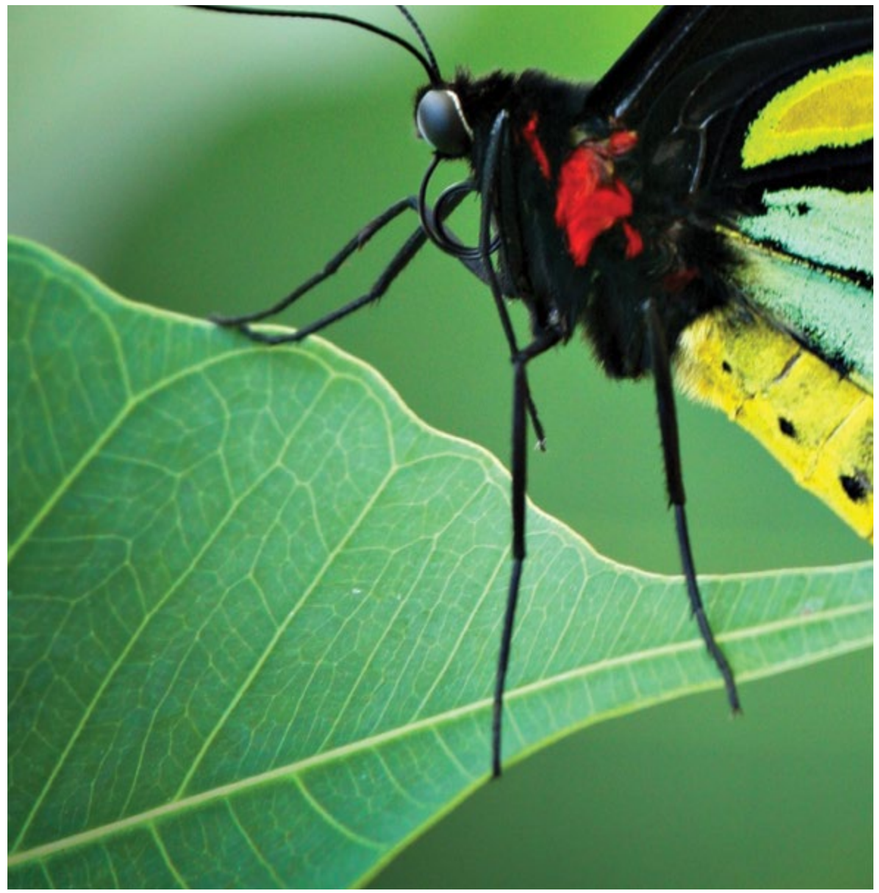
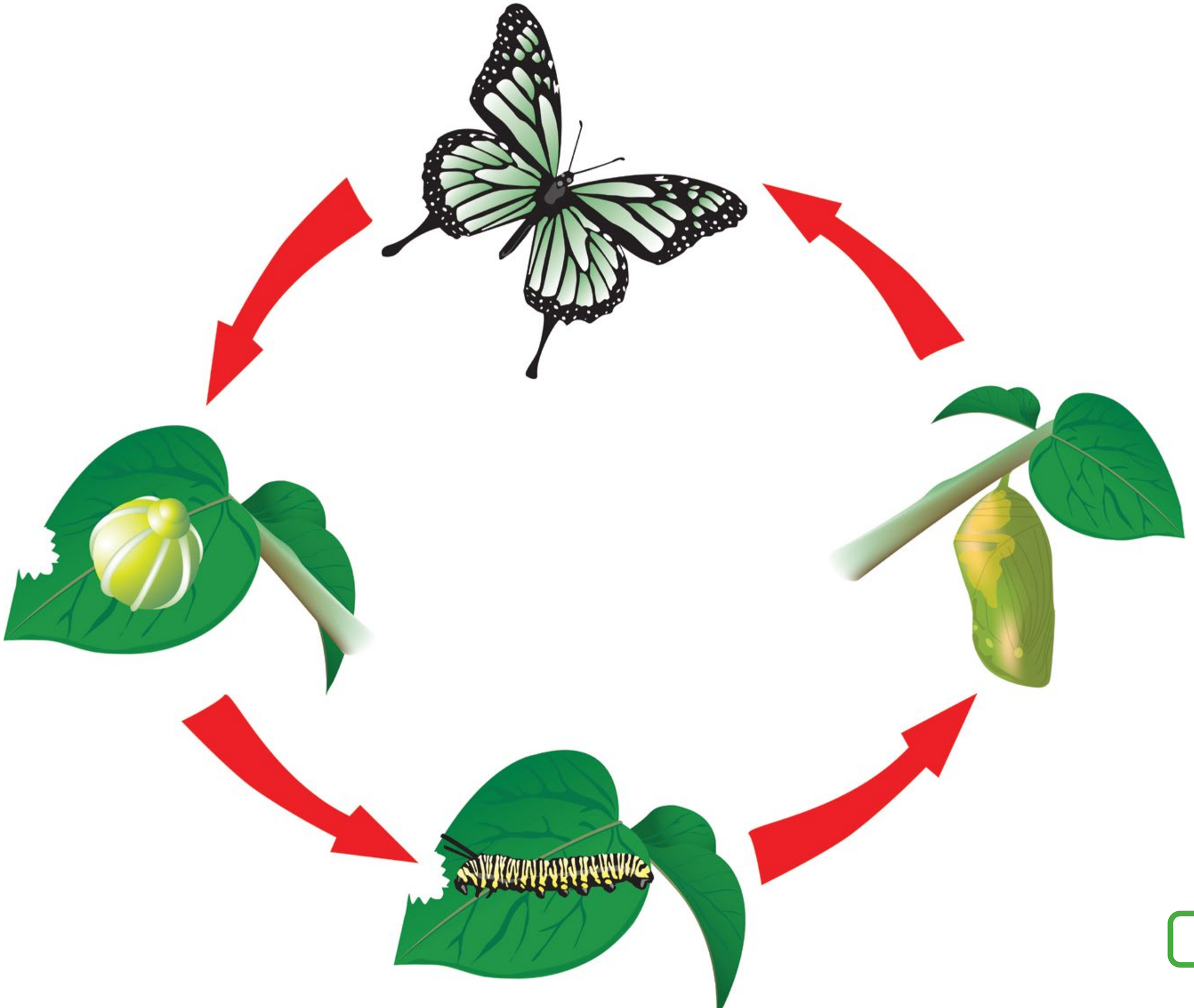
8A-3

8A-4

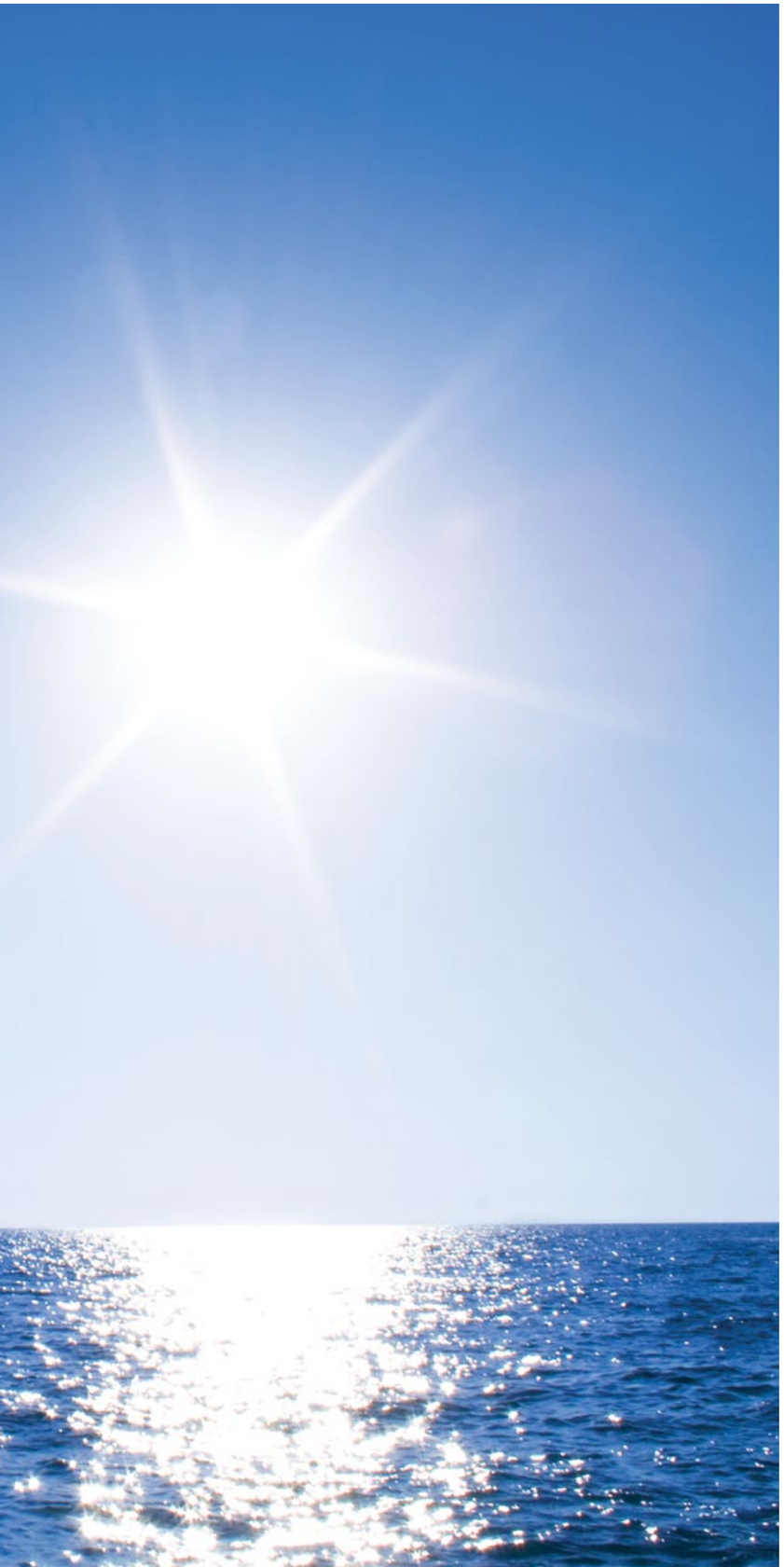


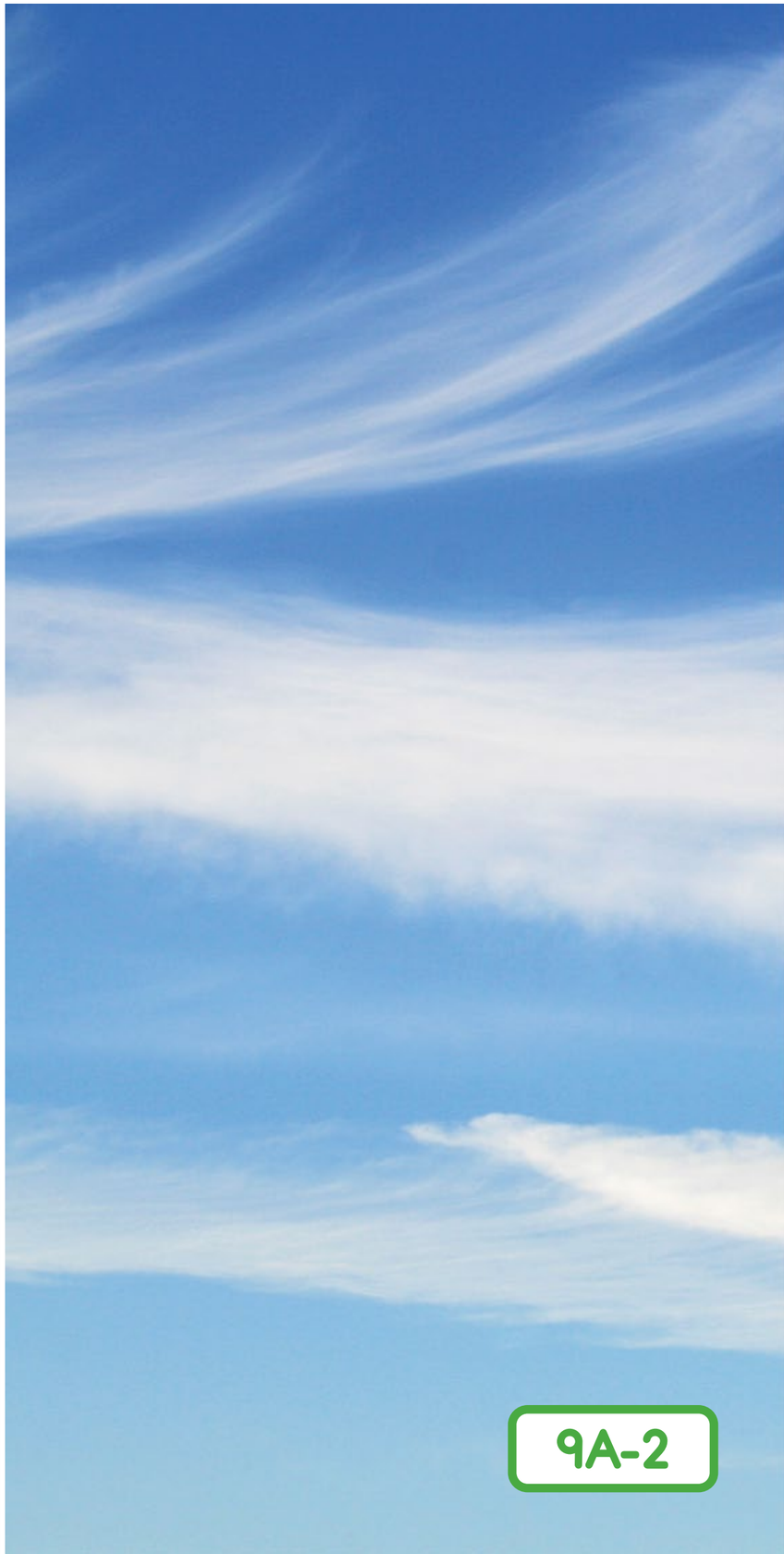






9A-1





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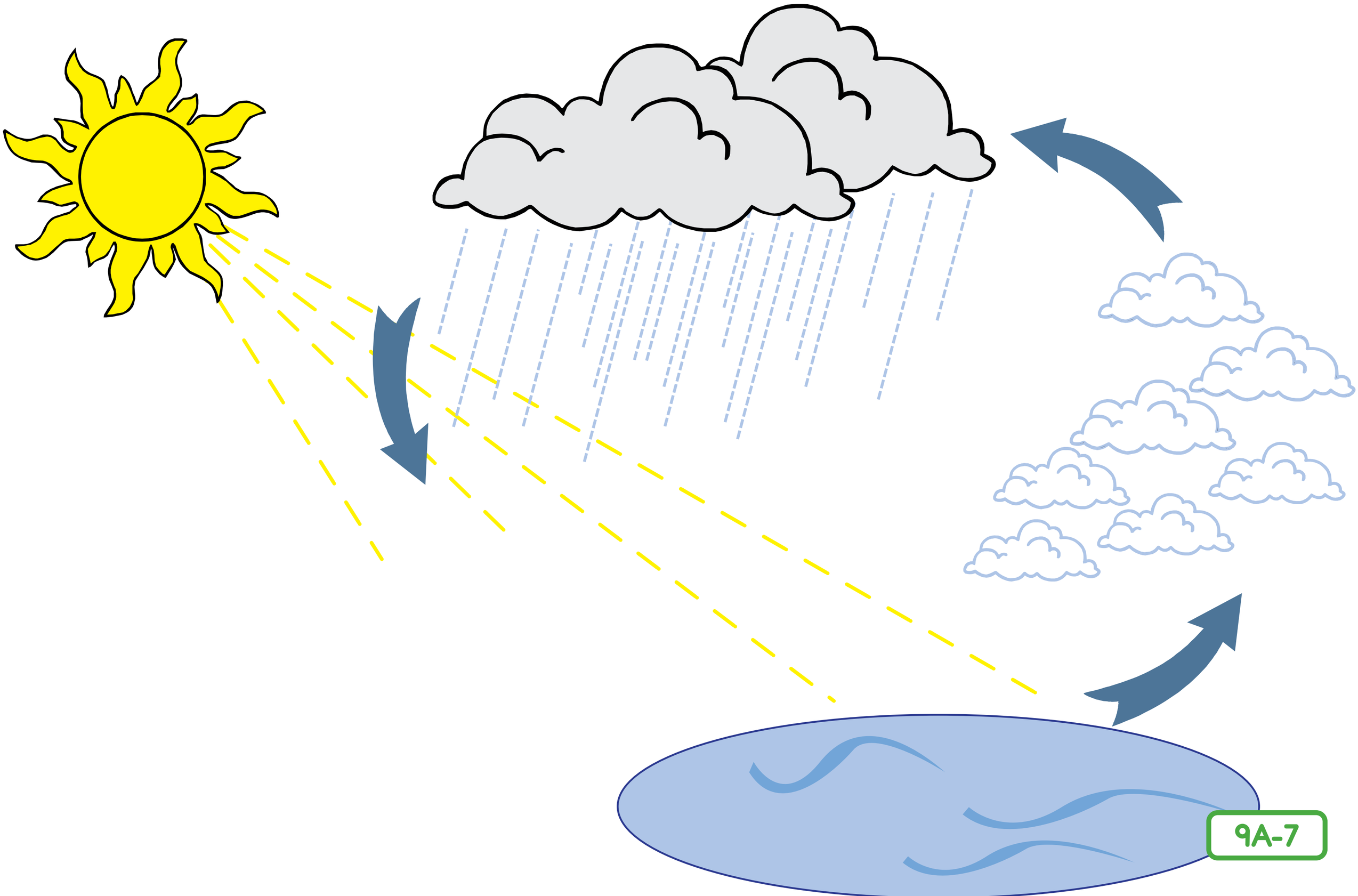
9A-3

9A-4

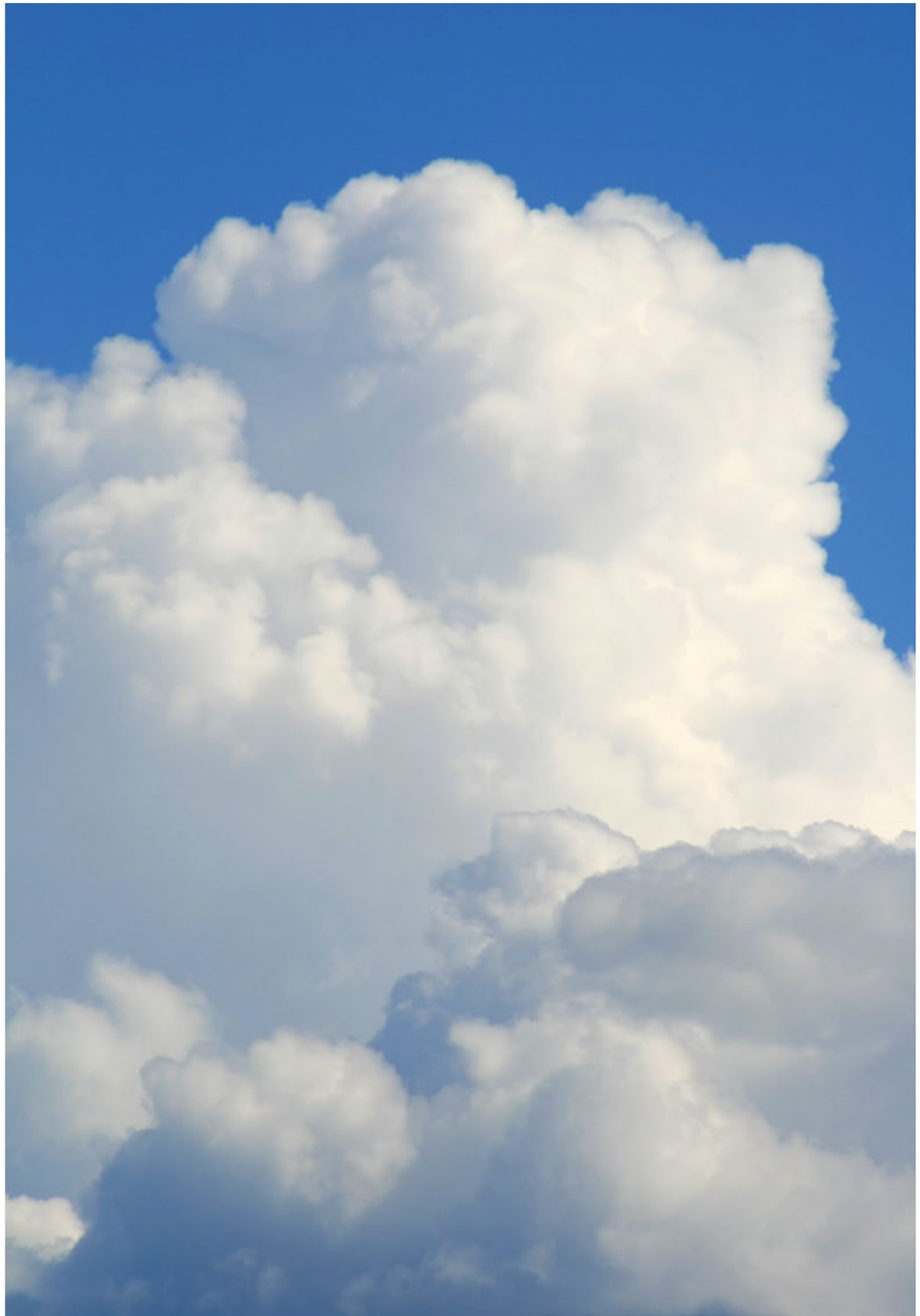
9A-5

9A-6



9A-7

9A-8



9A-11

Grade 2 | Knowledge 5

Cycles of Nature:
Clouds to Raindrops

Posters

Posters

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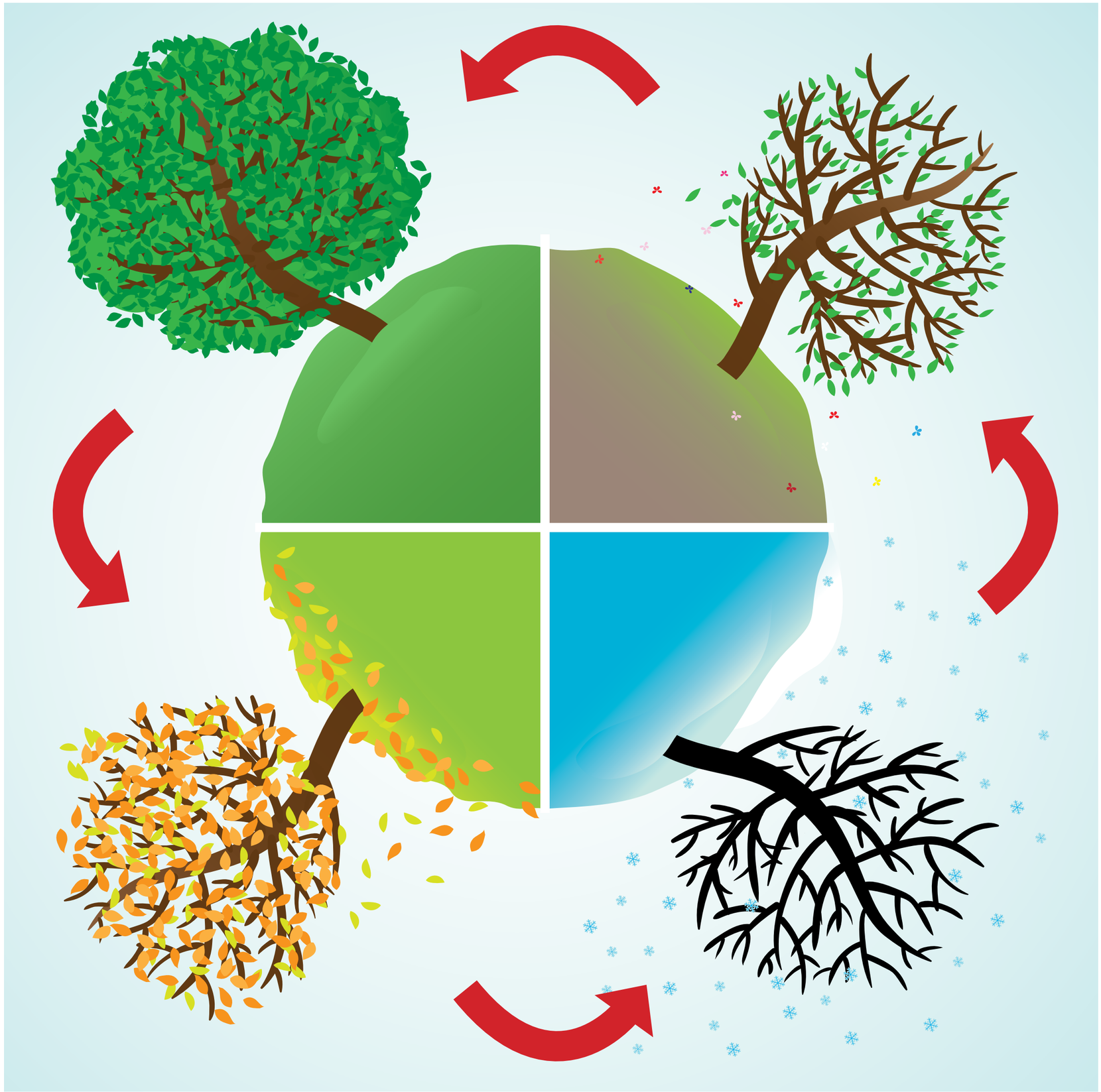
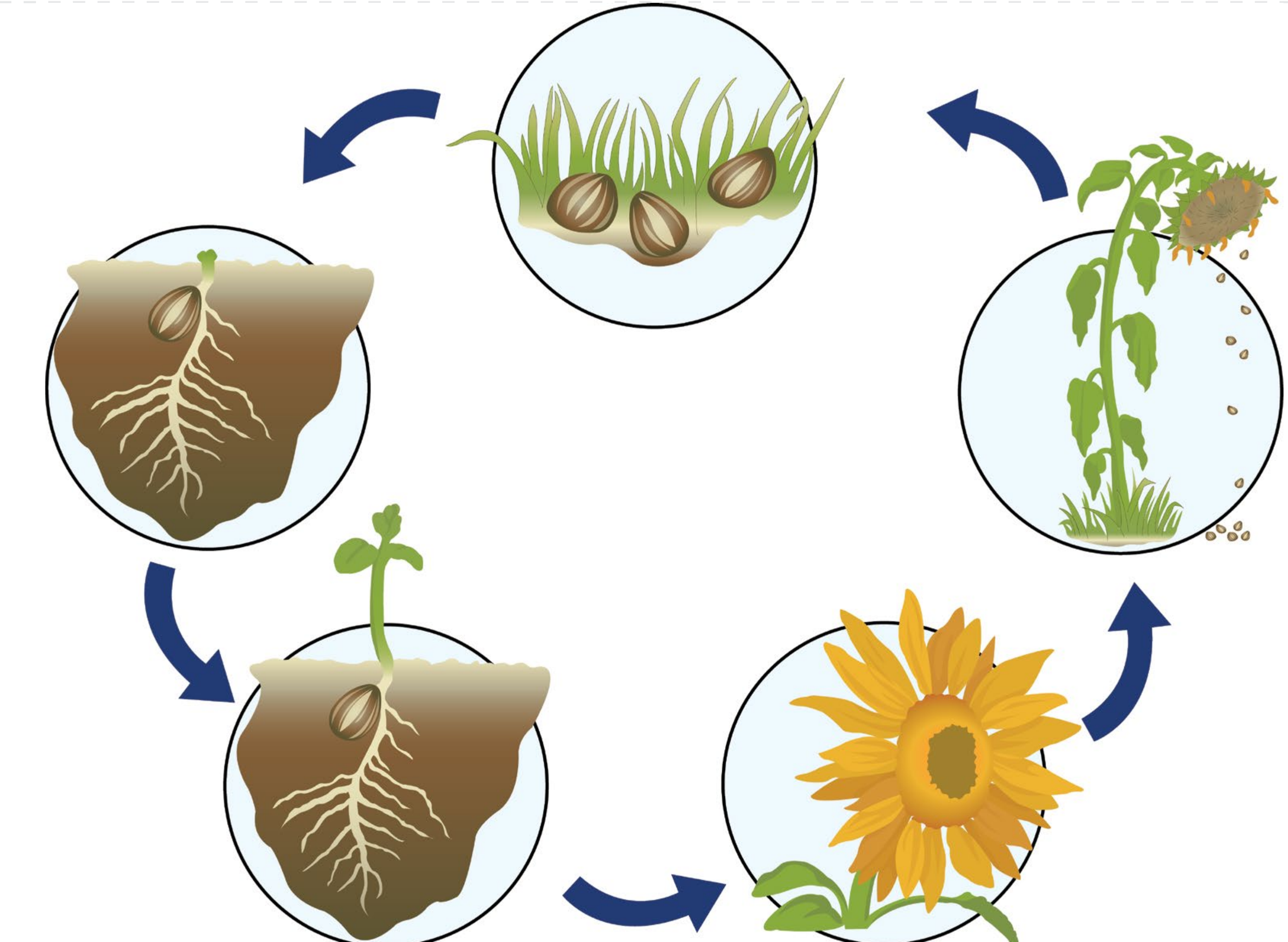


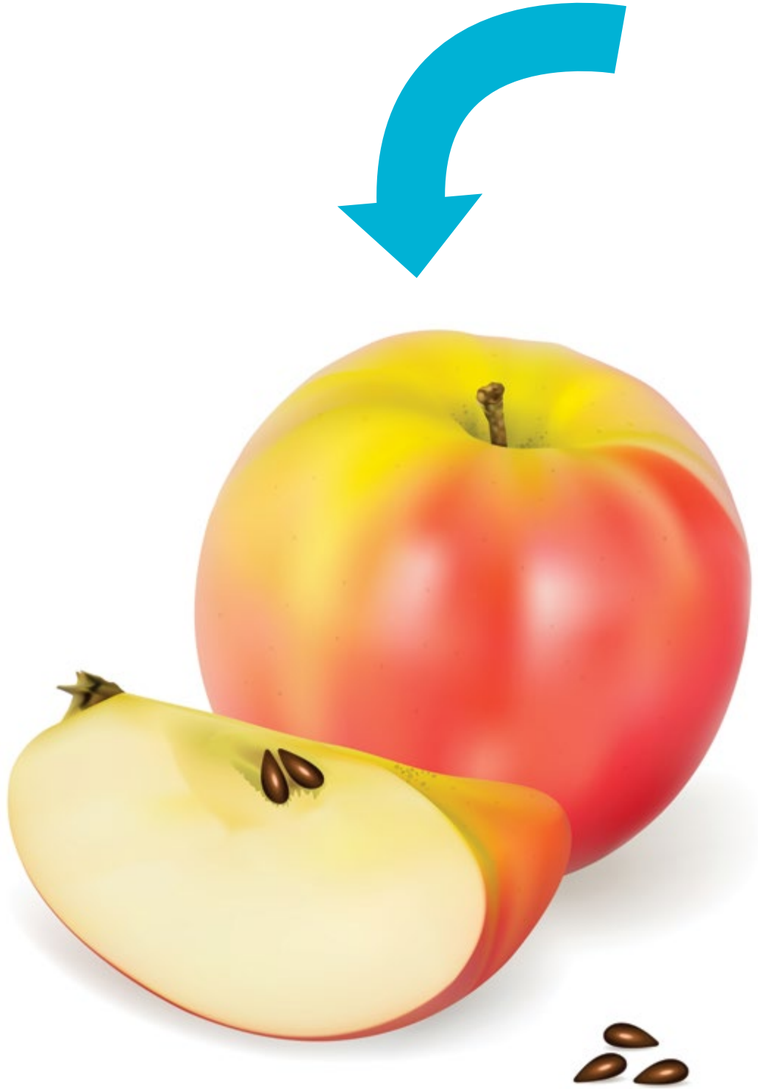
Cycles of Nature: Clouds to Raindrops

Poster 1 of 7: Seasonal Cycle



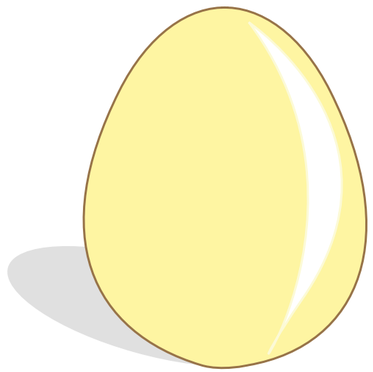
Cycles of Nature: Clouds to Raindrops

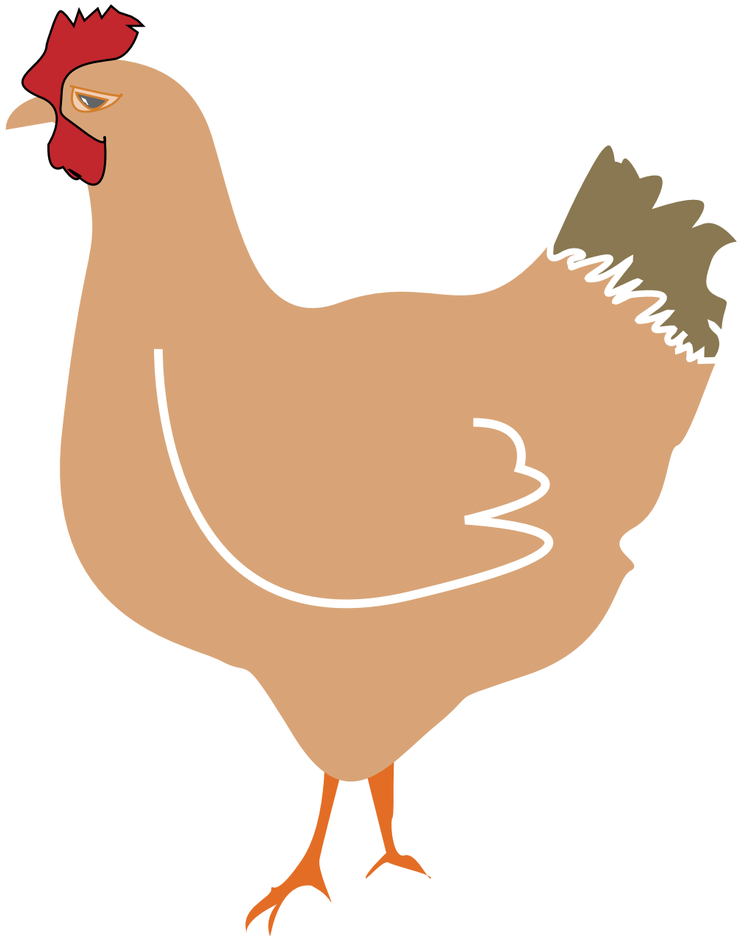
Poster 2 of 7: Flowering Plant Life Cycle

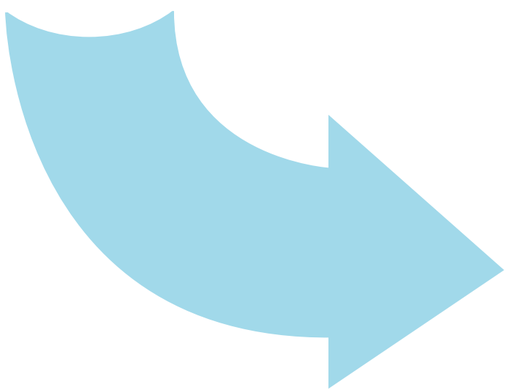


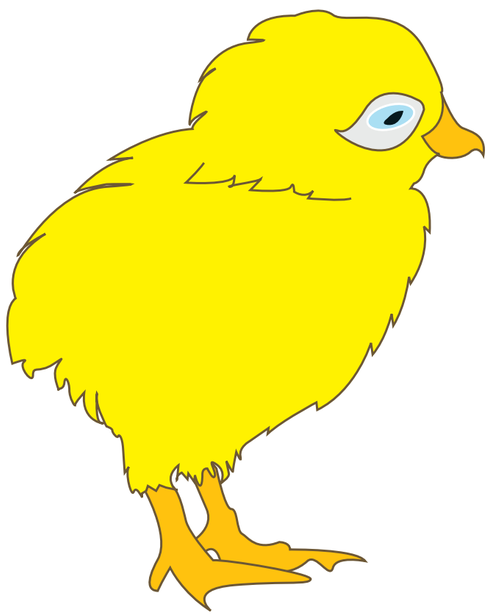
Cycles of Nature: Clouds to Raindrops

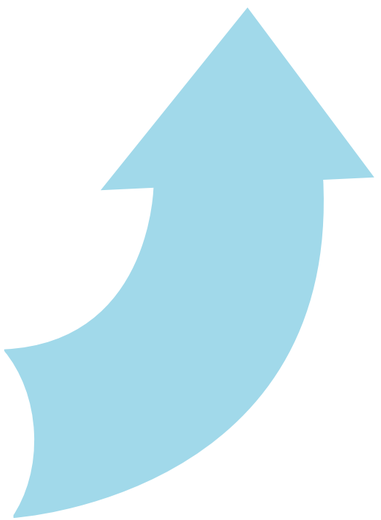
Poster 3 of 7: Life Cycle of a Tree





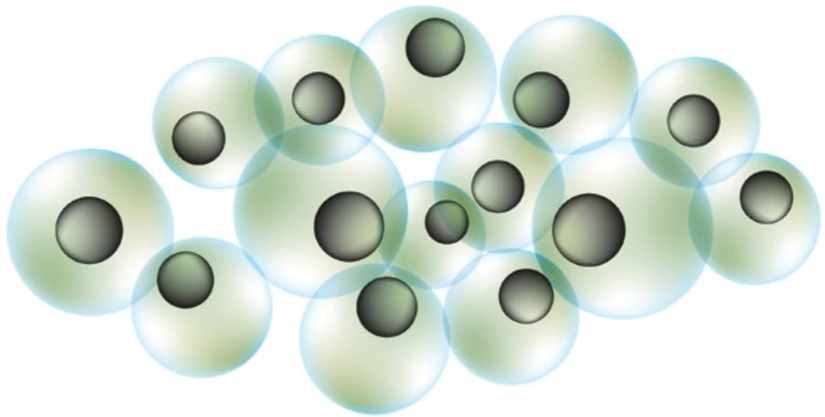






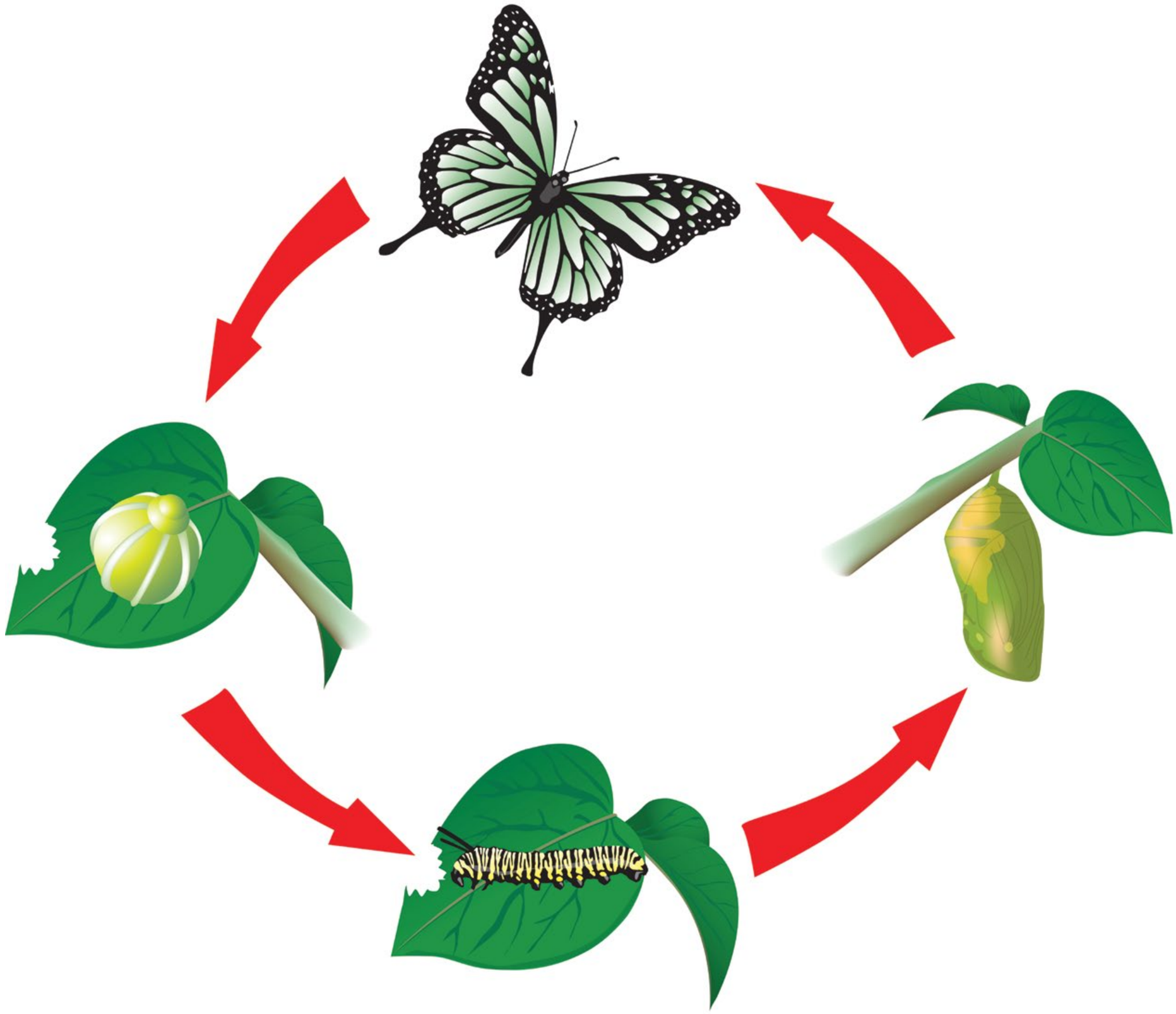
Cycles of Nature: Clouds to Raindrops

Poster 4 of 7: Life Cycle of a Chicken



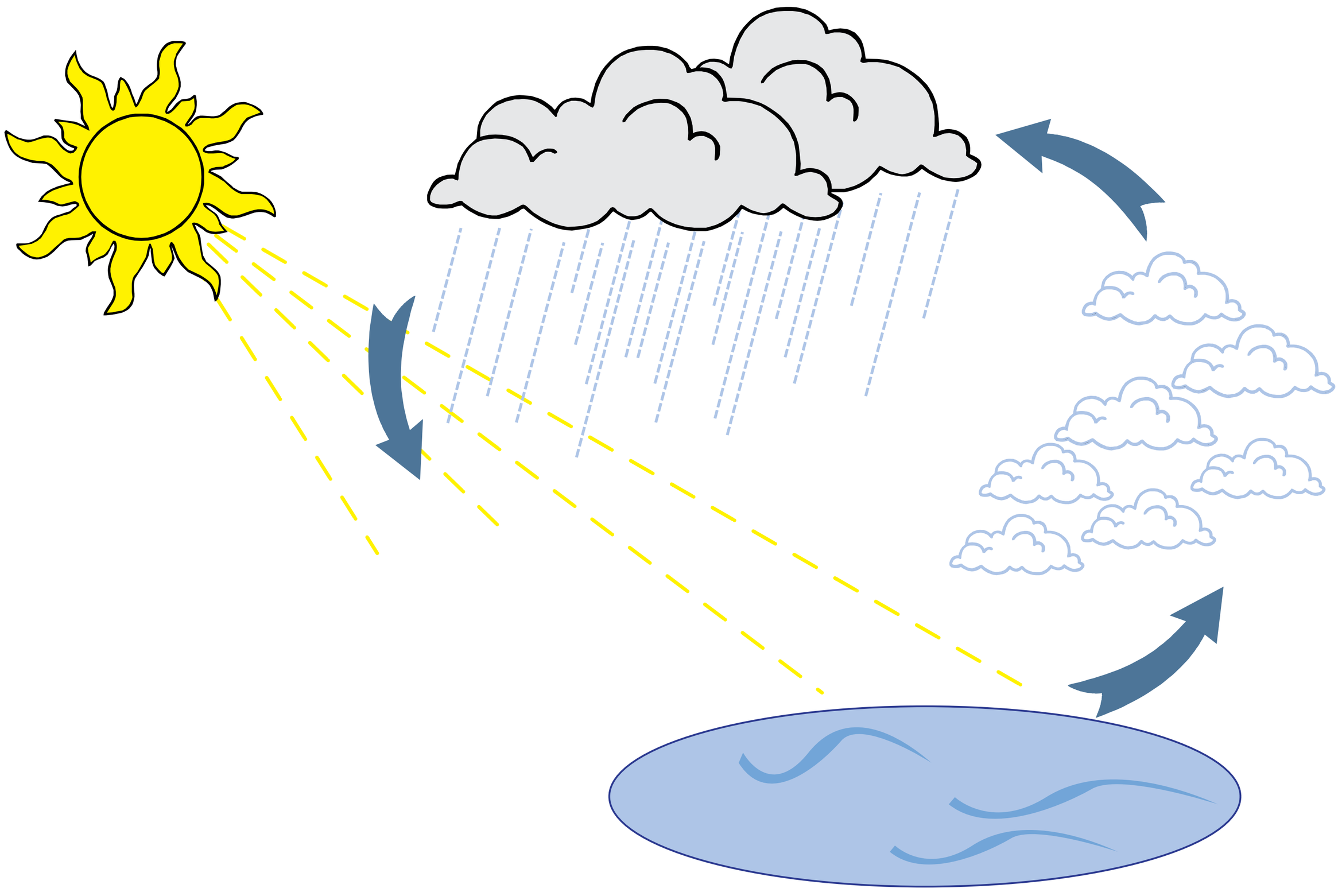
Cycles of Nature: Clouds to Raindrops

Poster 5 of 7: Life Cycle of a Frog



Cycles of Nature: Clouds to Raindrops

Poster 6 of 7: Life Cycle of a Butterfly



Cycles of Nature: Clouds to Raindrops

Poster 7 of 7: Water Cycle

Grade 2 | Knowledge 5

Cycles of Nature:
Clouds to Raindrops

Multiple Meaning Word Posters

Multiple Meaning Word Posters

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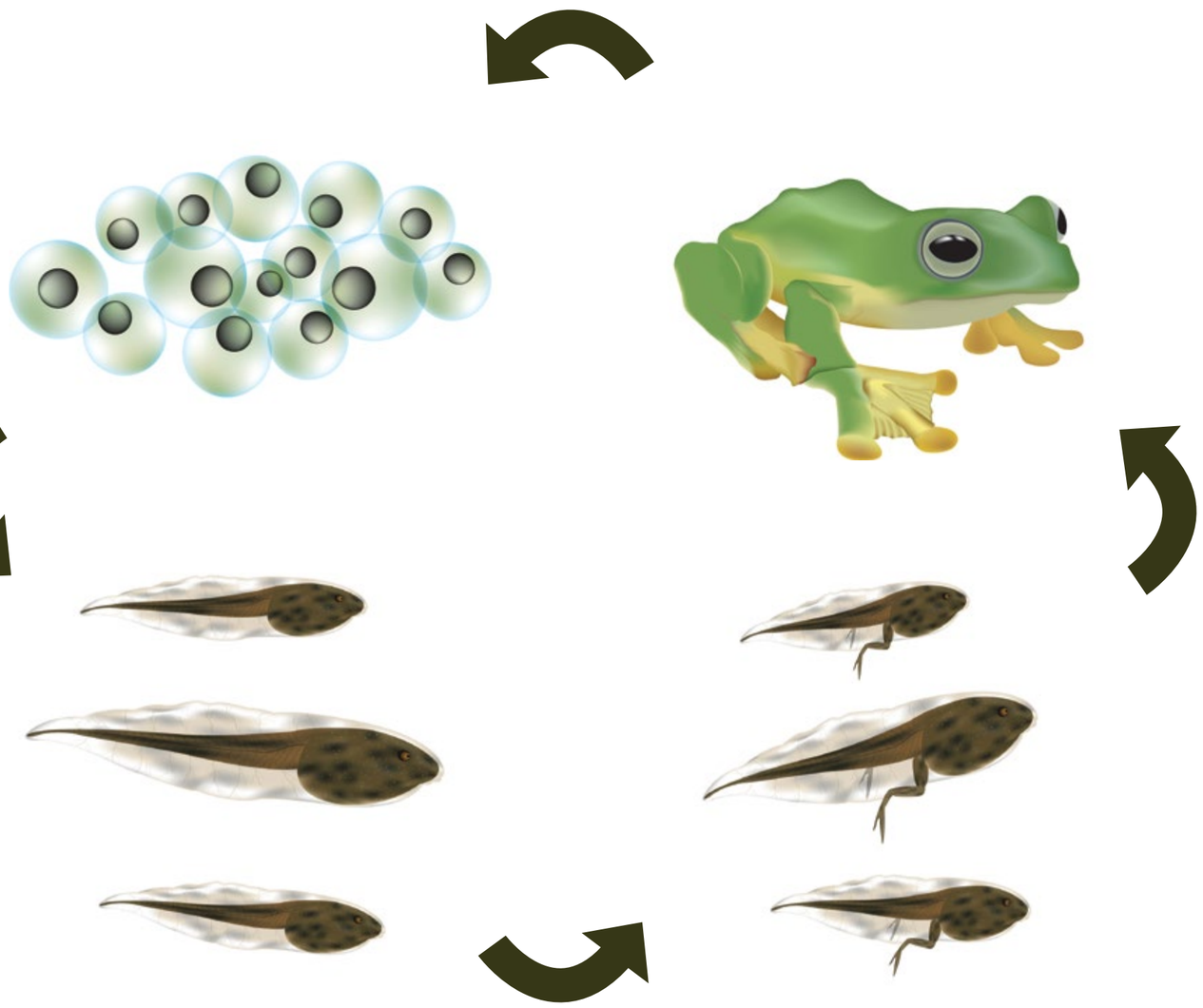
1



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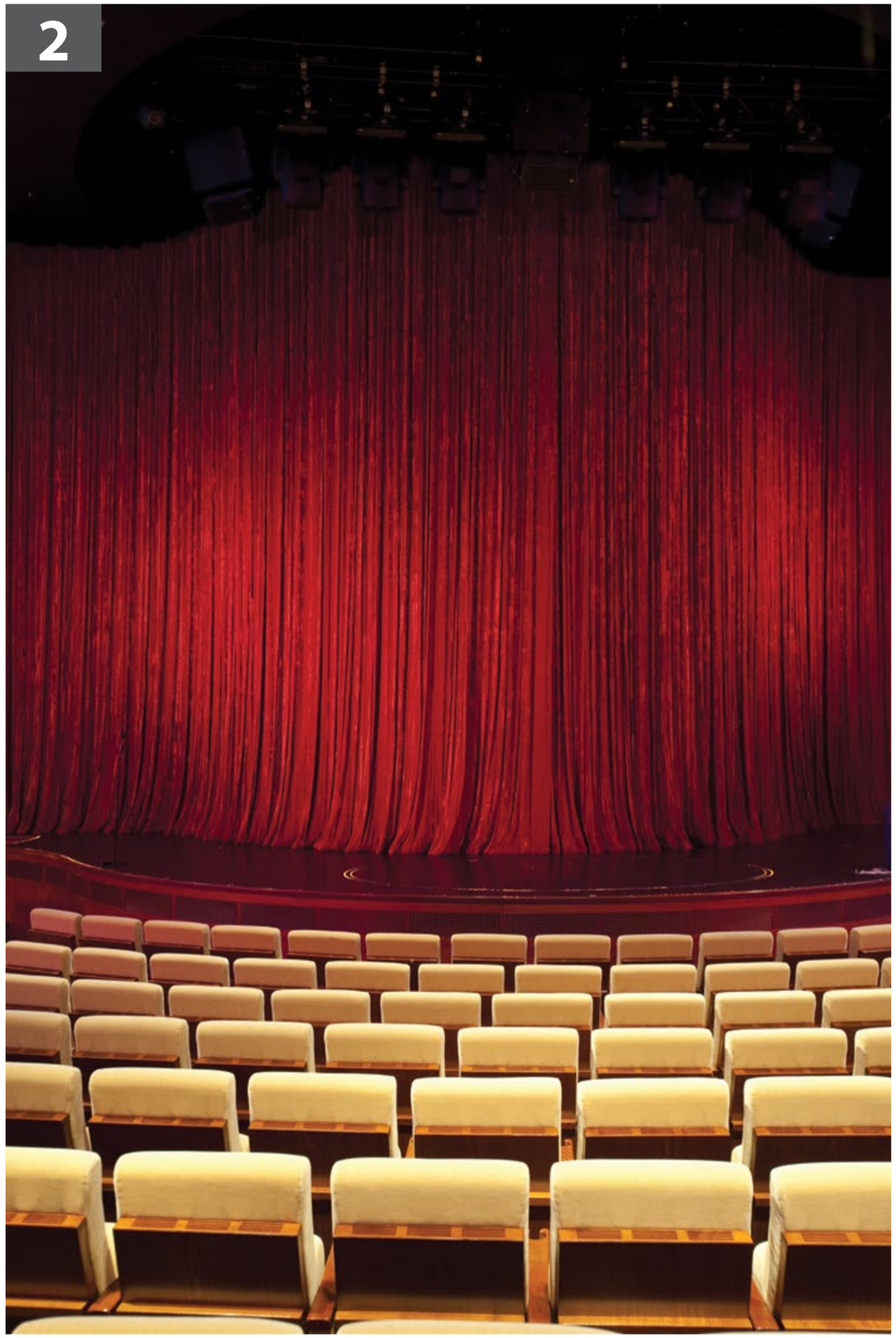


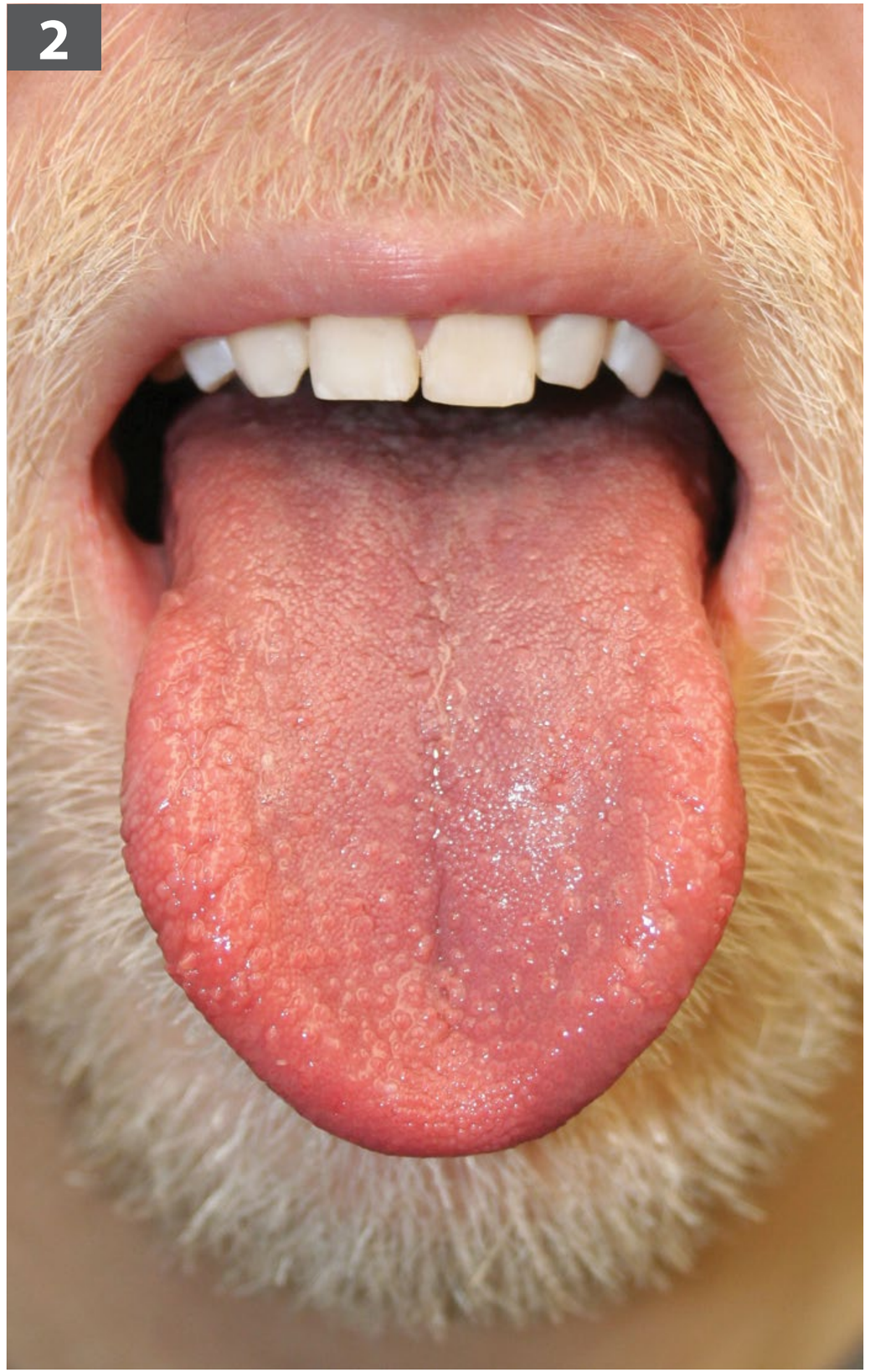
Stage (Poster 1M)

1. **a particular point or period in the growth or development of something** *(noun)*
2. **a raised platform in a theater, auditorium, etc., where the performers stand** *(noun)*

Cycles of Nature: Clouds to Raindrops | Multiple Meaning Poster 1 of 4

1

2



3

Buds (Poster 2M)

1. **small parts that grow on plants and develop into flowers, leaves, or new branches** *(noun)*
2. **small spots on your tongue that give you the ability to taste things** *(noun)*
3. **friends** *(noun)*

Cycles of Nature: Clouds to Raindrops | Multiple Meaning Poster 2 of 4

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2

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4

Bats (Poster 3M)

1. **an animal that has wings and a furry body** *(noun)*
2. **a long, rounded stick that is used to hit the ball in baseball** *(noun)*
3. **to try to hit a ball with a bat in baseball, cricket, or a similar game** *(verb)*
4. **to close and open your eyes or eyelashes very quickly** *(verb)*

Cycles of Nature: Clouds to Raindrops | Multiple Meaning Poster 3 of 4

1

2

3

Round (Poster 4M)

1. **shaped like a circle or ball** *(adjective)*
2. **one of a series of similar events, like a round of applause** *(noun)*
3. **to go, or pass, around something** *(verb)*

Cycles of Nature: Clouds to Raindrops | Multiple Meaning Poster 4 of 4

Amplify.
TEXAS
ELEMENTARY LITERACY PROGRAM

Grade 2 | **Knowledge 5** | Flip Book

Cycles of Nature: Clouds to Raindrops

ISBN 9781643838366

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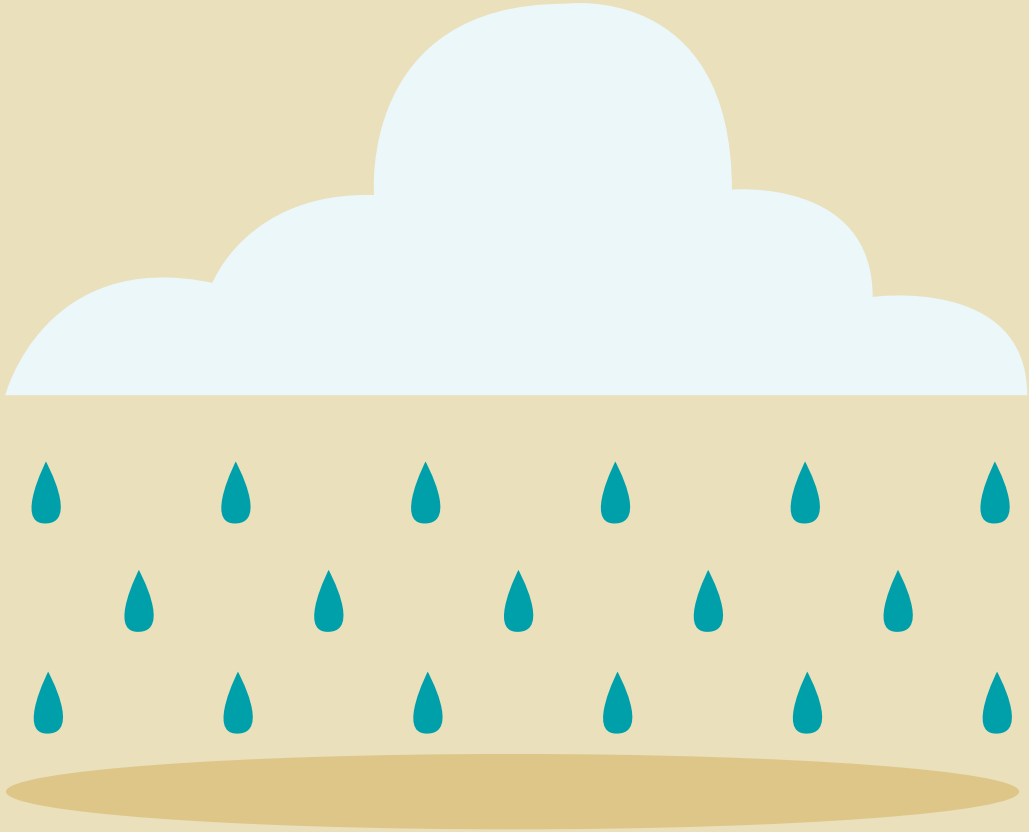
ELEMENTARY LITERACY PROGRAM

ENGLISH



Grade 2

Knowledge 5 | Image Cards

Cycles of Nature: Clouds to Raindrops

ISBN 9781643838199

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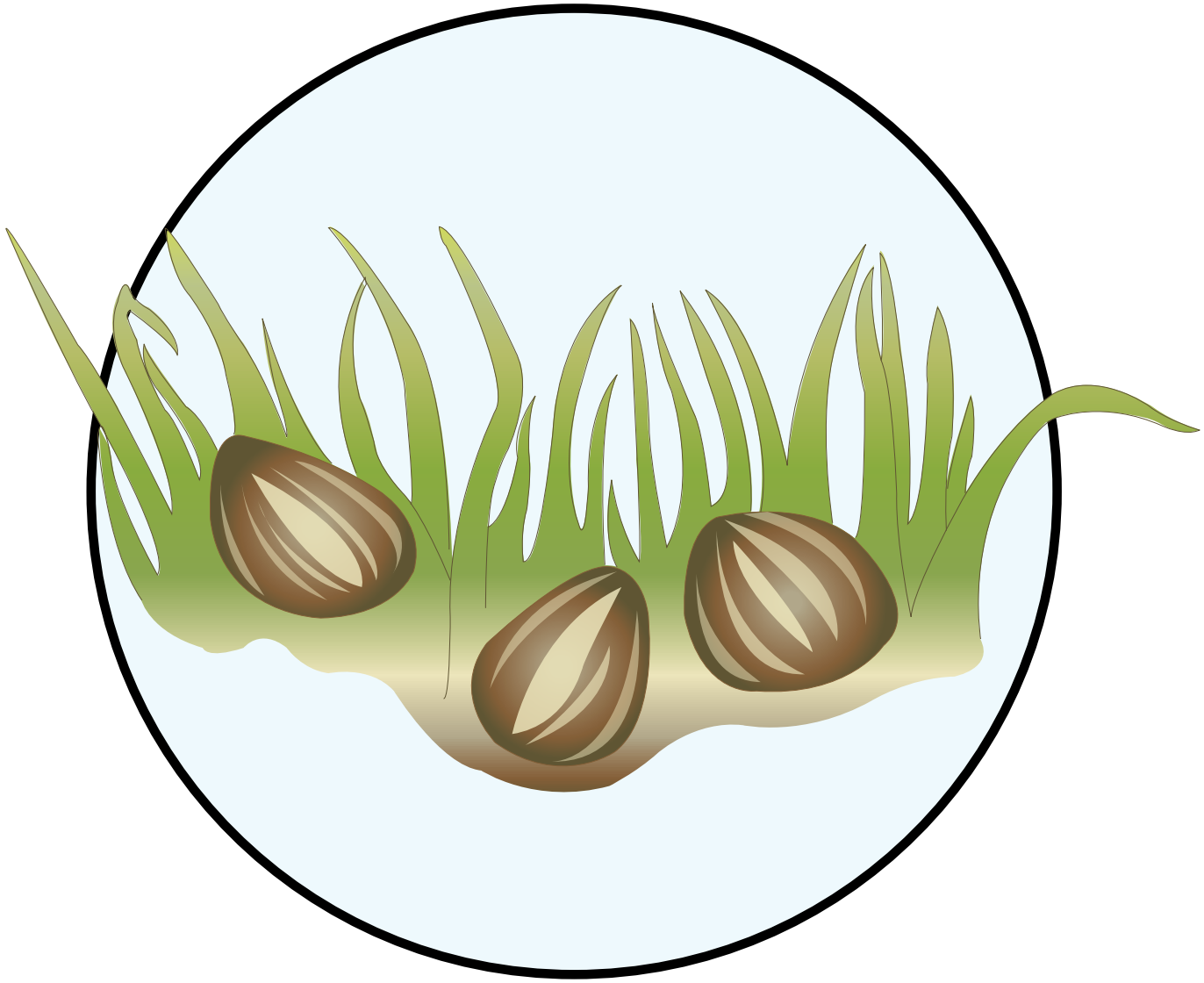

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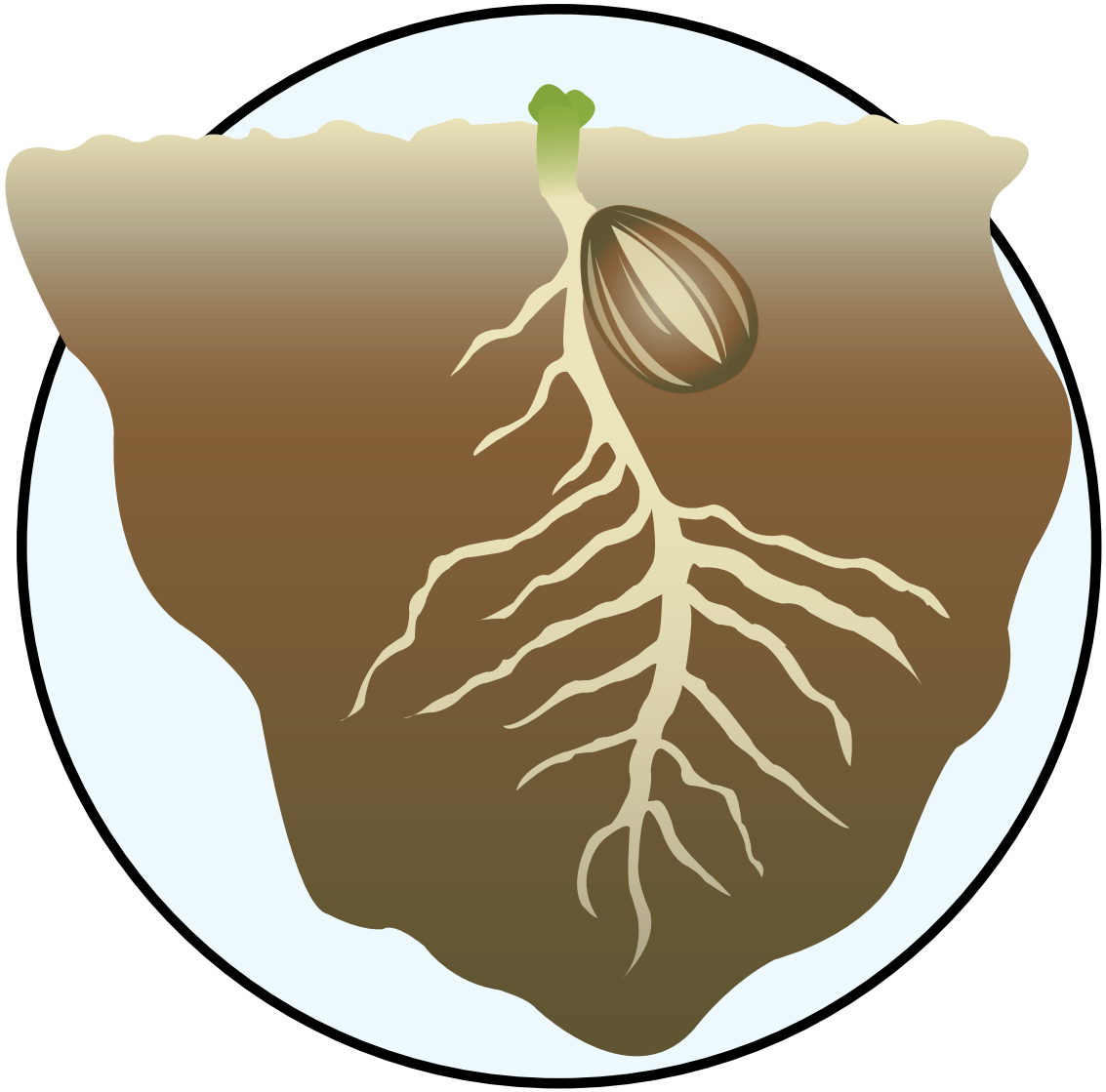

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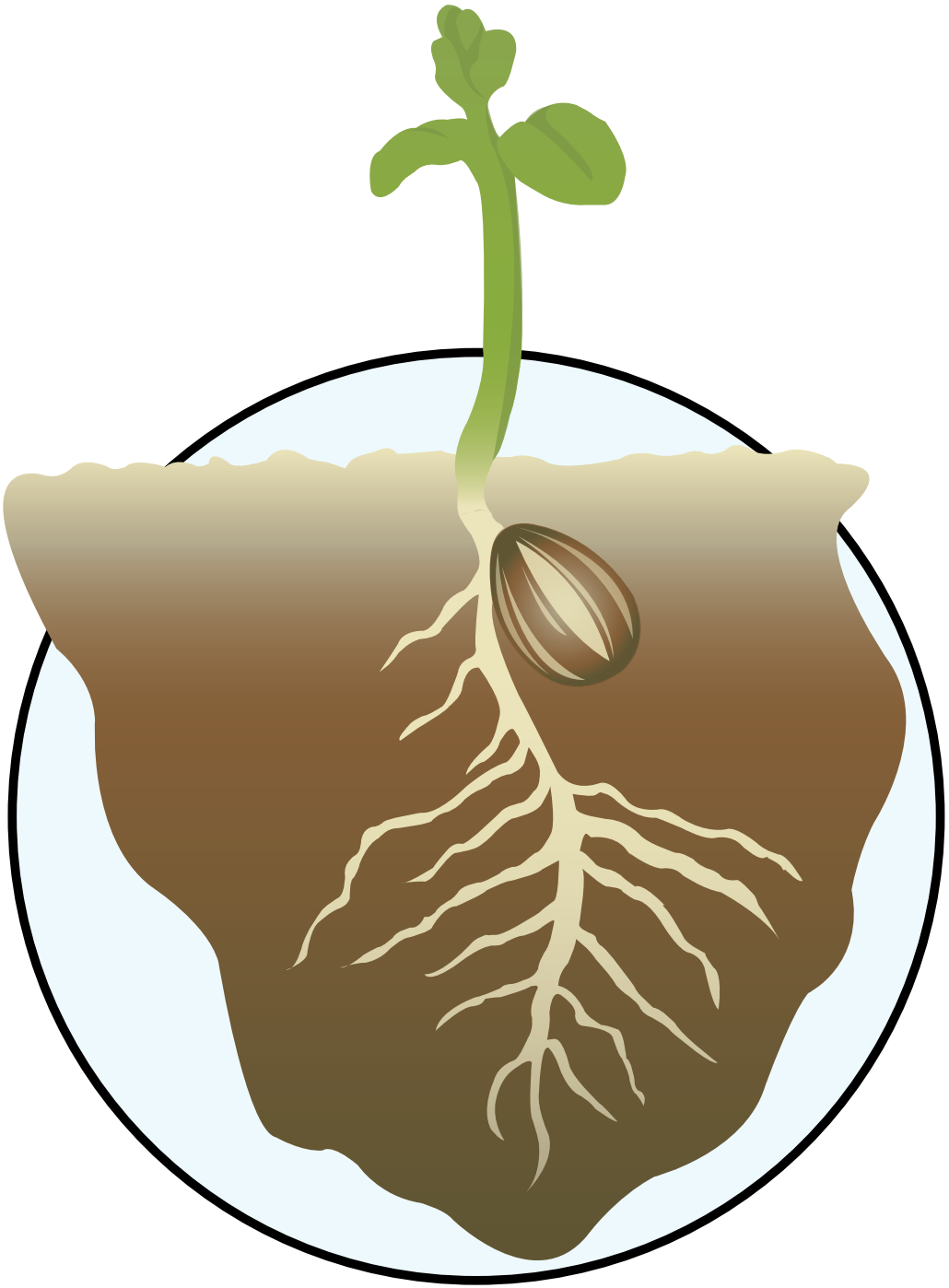

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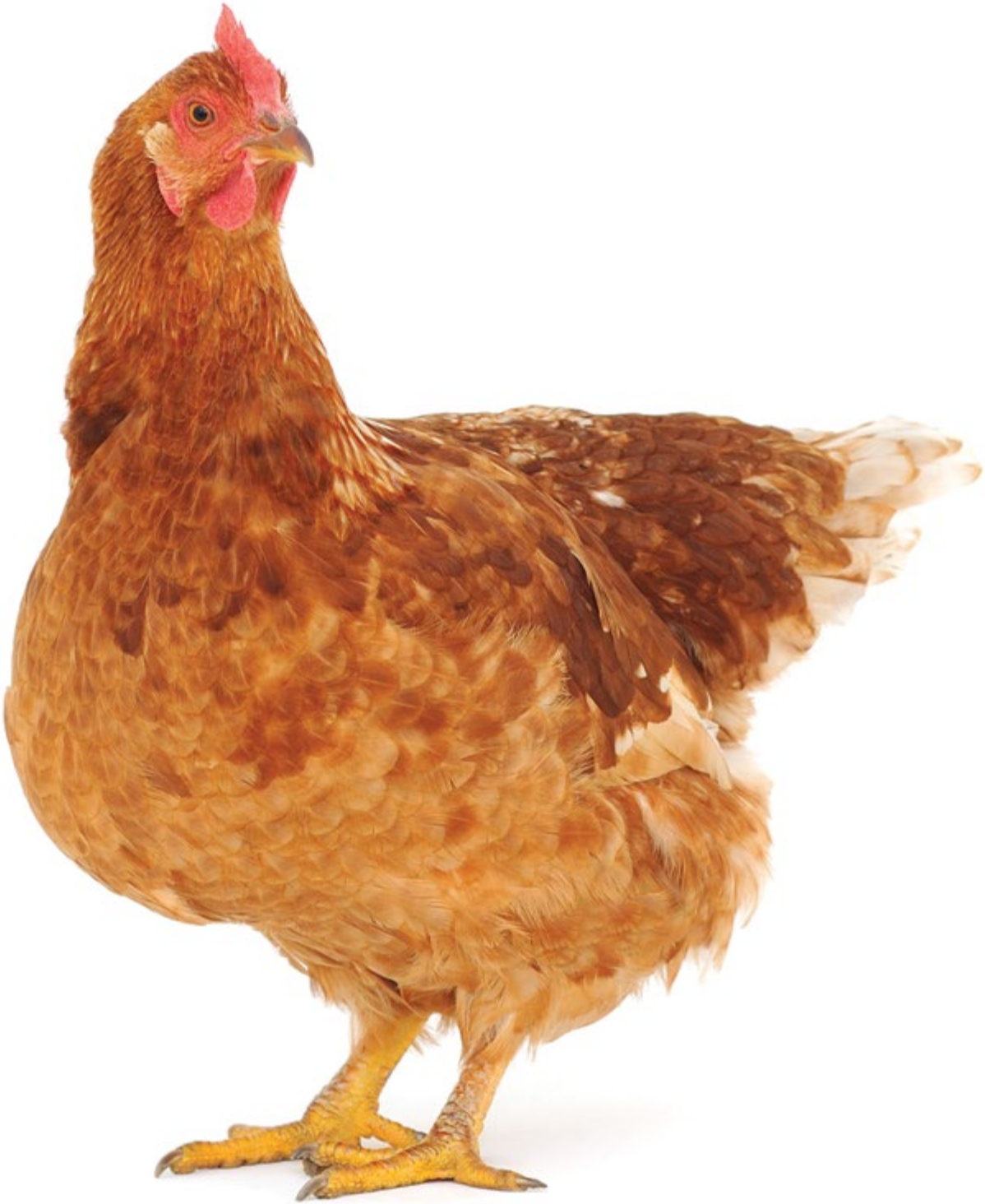

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Amplify.
TEXAS
ELEMENTARY LITERACY PROGRAM

ENGLISH

Grade 2

Knowledge 5 | Digital Components

Cycles of Nature: Clouds to Raindrops

Grade 2 | Knowledge 5

Cycles of Nature:
Clouds to Raindrops

Digital Components

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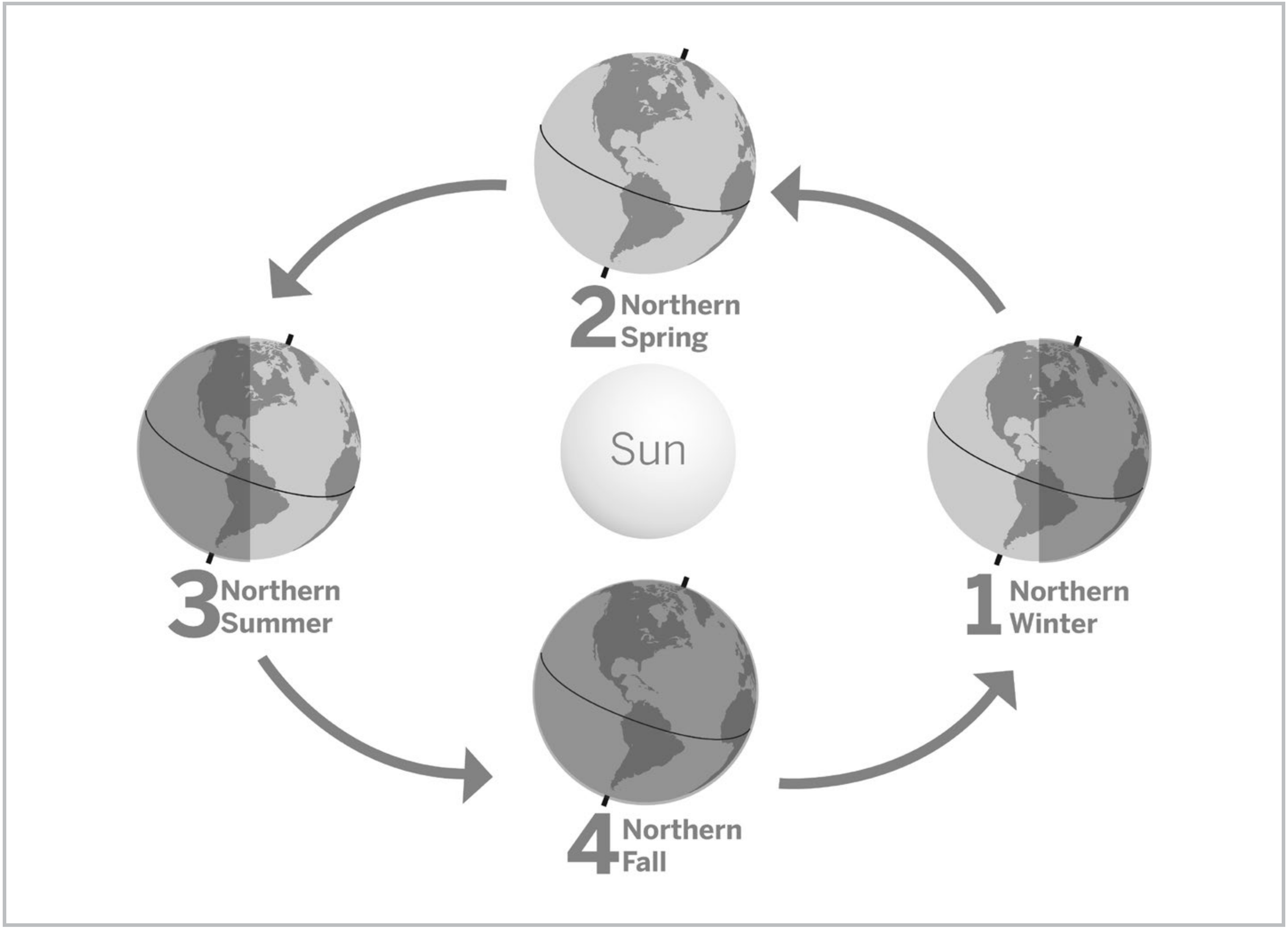
Lesson 2: Position of the Earth at the Start of Northern Seasons



Northern Seasons Chart				
	Spring	**Summer**	**Autumn/Fall**	**Winter**
Date Season Begins				
Amount of Sunshine				
Temperature				
Plants				
Animals				
Activities/Clothing				

Northern Seasons Chart				
	Spring	**Summer**	**Autumn/Fall**	**Winter**
Date Season Begins	Spring equinox; around March 21	Summer solstice; around June 21	Autumn equinox; around September 21	Winter solstice; around December 21
Amount of Sunshine	Roughly the same number of daylight and dark hours	More daylight hours than dark hours; it stays light out later.	Roughly the same number of daylight and dark hours	Fewer daylight hours than dark hours; it gets dark earlier.
Temperature	Warmer	Hotter	Cooler	Colder
Plants	Trees grow new leaves; flowers start to bloom; crops are planted.	Plants and crops grow as they absorb more sunlight.	Leaves change color and begin to fall; farmers harvest crops.	Leaves have fallen from deciduous trees; many plants die.
Animals	Birds return and animals wake up; many animals have babies.	Animals raise their babies.	Many birds migrate; many animals prepare for winter by collecting food.	Many animals hibernate or migrate; there are not as many birds.
Activities/Clothing	Starting a garden; flying kites; etc.	More time outdoors; lighter clothing; swimming; picnics; etc.	Back to school; harvesting crops; etc.	More time indoors; heavier clothing; ice skating; skiing; etc.

Sentence	What to Write	Example Sentence
(Introduction)	This sentence tells the reader what the paragraph is about.	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. (Image Card 13)	First, adult frogs lay eggs in the pond in spring.
Next . . .	Tell about the second stage in the life cycle. (Image Card 14)	Next, tadpoles with long tails hatch in the spring.
Then . . .	Tell about the third stage in the life cycle. (Image Card 15)	Then, tadpoles grow legs and lungs and become young frogs.
Finally . . .	Tell about the fourth stage in the life cycle. (Image Card 16)	Finally, young frogs become adult frogs.
(Conclusion)	This sentence finishes and wraps up the paragraph.	Adult frogs then lay frogspawn, continuing the life cycle of frogs.

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Welcome!

Grade 2, Domain 5
Cycles of Nature: Clouds to Raindrops

In this unit, students will be introduced to the many natural cycles that make life on Earth possible.

What's the story?

Students will learn about **seasonal** cycles, **plant and tree** cycles, **animal life** cycles, and the **water** cycle.

What will my student learn?

Students will explore the developmental stages of the **life cycle** in organisms. They will also learn about how these organisms depend on the **earth's water supply** and how their growth and development relate to **Earth's seasonal cycles**.

In this domain, students will use note-taking tools to **collect and synthesize** information they have learned. They will work on a **shared research project** with their class and will **practice summarizing** what they have learned about the cycles of nature.

Conversation starters

Ask your student questions about the unit to promote discussion and continued learning:

1. How are plants and animals affected by seasons?
   Follow up: Why do some animals migrate south in the fall? Why do plants grow more quickly in the summertime?
2. How are seasons different for the parts of the earth that are near the equator? And for those that are far from the equator?
   Follow up: What are the seasons like where we live? How do we adapt to the different seasons?
3. Tell me about pollination.
   Follow up: How do flowering plants attract honey bees? What would happen if honey bees didn't pollinate flowers?
4. How are the life cycles of a chicken, a frog, and a butterfly similar to one another?
   Follow up: How are they different? How does the seasonal cycle affect the life cycles of living things?
5. Can you draw a picture of the water cycle? (or act out)
   Follow up: What is precipitation? What are some examples of different types of precipitation?

Grade 2: Domain 5
The Snowflake: A Water Cycle Story

Written and Illustrated by Neil Waldman

L

●●● QT: 660L

Read-Alouds with this rating may demonstrate sophisticated syntax and nuanced content.

●●○ QL: **2**

These Read-Alouds may include some complexity in structure and purpose. The language may include some unconventional phrasing, idioms, or other specialized phrasing.

●●● RT: **3**

This unit's tasks and activities contain nuance and complexity, requiring students to draw on the knowledge they have built throughout the program.

Summary: *The Snowflake* shows the water cycle in a totally unique way. Instead of a simple chart, the author/illustrator depicts the cycle in the form of beautiful illustrations. The typical line-drawn arrows showing how water goes from earth to cloud and back again are replaced by a narrative that traces a single snowflake through an entire year. Each month's transformation is illustrated with an exquisite watercolor painting.

Essential Question

How do natural cycles make life on Earth possible?

Read the story aloud, stopping at the month of December, without discussing the water cycle or what it is. As you read each page, encourage students to notice the descriptive language the author chooses and how the illustrations support it. Examples:

- January: great gray cloud, jagged peak
- February: wind whistled, twisted and spun
- March: rocky pond bottom
- June: heavy blanket of fog

After reading the book:

- Ask students to identify the main character of the book—the snowflake.
- Ask students to describe how the snowflake changes during the year. Refer to specific months as needed.
- Refer to the cover and tell students this story represents the water cycle. Remind them that water can exist in three different states—frozen, liquid, or gas.
- Read the book's last two pages and explain that the water cycle represents how water can change from one state to another by freezing, melting, evaporating, and condensing.

Vocabulary Routine

Tier 2 Vocabulary Words	Tier 3 Vocabulary Words
state	freeze
cycle	melt
	evaporate
	condense

Performance Task

Have students follow the directions below to fold a piece of paper into twelve sections.

- Fold paper in half one direction
- Fold paper in half the other direction
- Fold paper into thirds

Jan	Feb	March
April	May	June
July	Aug	Sept
Oct	Nov	Dec

Reread the book and have students draw an illustration of the snowflake's journey, change, and location during each month (e.g., snowflake on mountain, droplet that froze in pond, water in hose, fog over farm, etc).

Writing Prompt

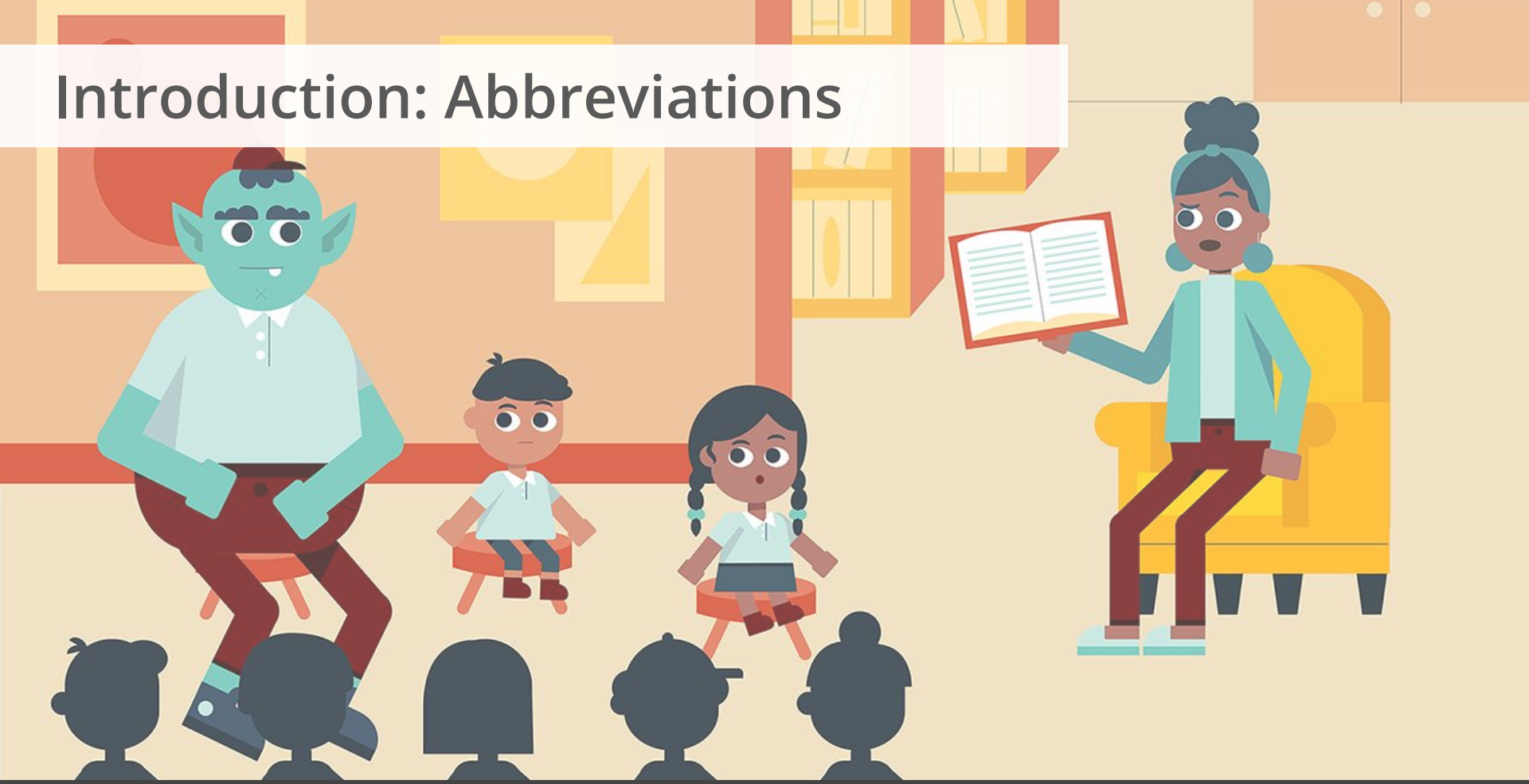
Ask students to pick one month from the chart they created and describe what happens to the snowflake during that month. Encourage students to use descriptive words and complete sentences.

Vocabulary

Grade 2 Domain 5: Cycles of Nature: Clouds to Raindrops

Abbreviations

Introduction: Abbreviations



An **abbreviation** is a shortened form of a word or phrase. When we shorten a word or phrase it is called *abbreviating*.

In the *Cycles of Nature: Clouds to Raindrops* domain we learned about the cycle of daytime and nighttime.

Another cycle we follow is the days of the week.

Every week cycles through Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, and Sunday.

We regularly abbreviate these days of the week.

Abbreviating makes words shorter. We use different abbreviations for each day of the week.

To abbreviate words, we remove letters from the existing words to make them shorter.

To abbreviate days of the week, we do not always take away the same number of letters.

To abbreviate Monday we take away three letters: d, a, y.
Taking those letters away gives us **Mon.**

To abbreviate Wednesday we take away 6 letters: n,e,s,d,a,y.
Taking those letters away gives us **Wed.**

Monday = Mon~~day~~ = **Mon.**

Tuesday = Tues~~day~~ = **Tues.**

Wednesday = Wed~~nesday~~ = **Wed.**

Thursday = Thurs~~day~~ = **Thurs.**

Friday = Fri~~day~~ = **Fri.**

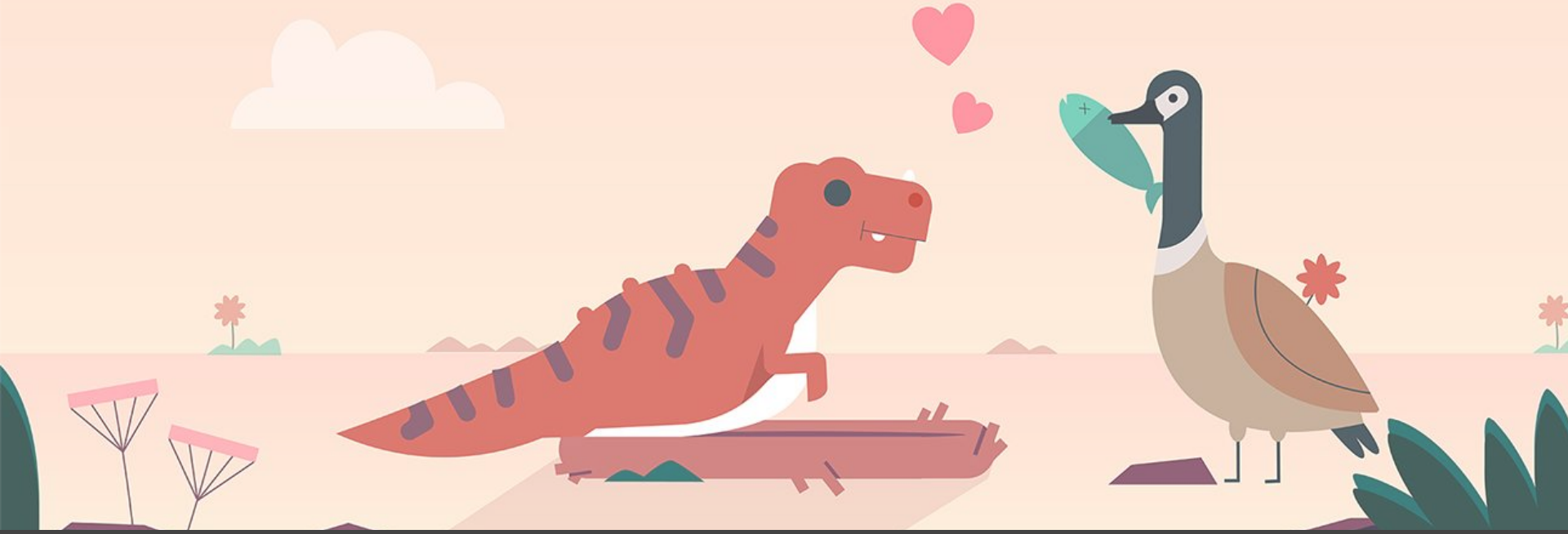
Saturday = Sat~~urday~~ = **Sat.**

Sunday = Sun~~day~~ = **Sun.**

An easy way to remember this is that each day's abbreviation uses the first few letters of the word.

Mon., Tues., Wed., Thurs., Fri., Sat., Sun.

Let’s Try It Together!



Look at the days of the week below. Let’s abbreviate them.

Thursday

Saturday

Thursday

Saturday

Turn to a partner and whisper how many letters in Thursday will need to be eliminated. Now turn to your partner and whisper how many letters in Saturday will need to go.

Hold up **1** finger if you think both words will lose the *same* number of letters.

Hold up **5** fingers if you think both words will lose a *different* number of letters.

Thursday and Saturday will lose a different number of letters when they are abbreviated.

To abbreviate **Thursday** we need to eliminate *3* letters.

To abbreviate **Saturday** we need to eliminate *5* letters.

Thursday will be abbreviated to five letters, and Saturday will be abbreviated to three letters.

Thursday = Thurs~~day~~ = **Thurs.**

Saturday = Sat~~urday~~ = **Sat.**

Now they are abbreviated!

Now try one with a partner. How would you abbreviate the day of the week below?

Tuesday

Raise *3* fingers if you think **Tuesday** is shortened to 3 letters.

Raise *4* fingers if you think **Tuesday** is shortened to 4 letters.

Tuesday is abbreviated by eliminating the d, a, and y.

Tuesday = Tuesday = **Tues.**

Now Try One by Yourself!

Abbreviate the days of the week below:

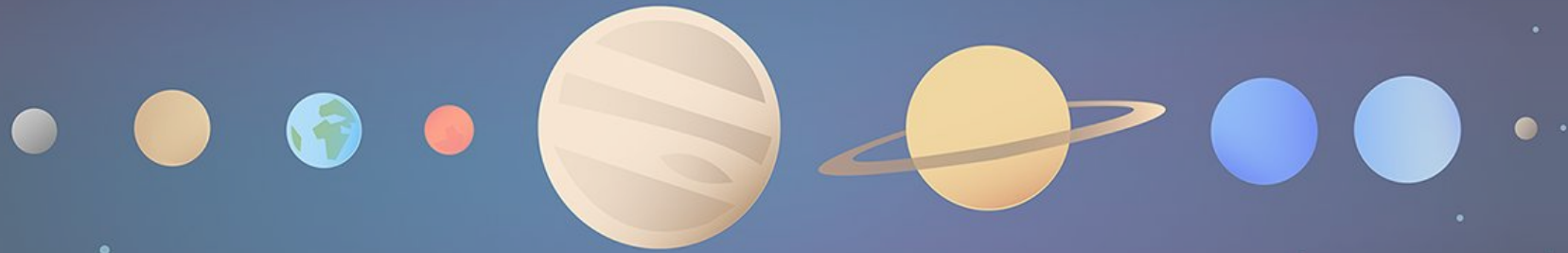
Monday

Friday

Sunday

1. Write down all three words.
2. Cross out the letters that need to be eliminated.
3. Write the abbreviations for the three days of the week.

Answer



Answer

Monday = Mon~~day~~ = **Mon.**

Friday = Fri~~day~~ = **Fri.**

Sunday = Sun~~day~~ = **Sun.**