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Tropical Rain Forest Adventure

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Glossary
Literacy Overview

Reading Selections

• Welcome to the Rain Forest (reference article)
• Tim Laman: Night in the Rain Forest (third-person narrative)
• Saving the Rain Forests (opinion piece)

COMMON CORE STATE STANDARDS FOR ENGLISH LANGUAGE ARTS

CC.3.RInfo.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

CC.3.RInfo.2 Determine the main idea of a text; recount the key details and explain how they support the main idea.

CC.3.RInfo.5 Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently.

CC.3.RInfo.6 Distinguish their own point of view from that of the author of a text.

CC.3.RInfo.7 Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

CC.3.RInfo.8 Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).

Writing Standards (pages 15 and 17)

CONTENT GOAL

Students will read three selections in Tropical Rain Forest Adventure. They will learn about the layers of the rain forest, its wide diversity of life, and reasons for saving it.

COMPREHENSION GOAL

Remind students that as thinking-intensive readers they must listen to their inner voice to monitor and repair comprehension as they read. Find opportunities to model and teach active thinking strategies to help students access content. You may want to focus on the following strategies for Tropical Rain Forest Adventure.

• Monitor and Repair Comprehension: Readers are aware of their thinking as they read, listen, and view. They notice when the text makes sense and use “fix up” strategies (e.g., re-reading) when it doesn’t.

• Determine Importance: Readers need to sift out the most important information in a text. They must distinguish the important information from the interesting details to answer questions and arrive at main ideas.
What do you think you know about rain forests?

Ask students to **Turn and Talk** about what they think they would see or do in a tropical rain forest.

Students can then **Share** what they think they know or have read about a tropical rain forest.

You may want to return to the graphic organizer to add more information after students read each selection.

**BUILD SCIENCE BACKGROUND**

Pages 4–6 of this teacher’s guide address how certain science concepts relate to each selection in *Tropical Rain Forest Adventure*. This information will provide you with science background knowledge as you plan your teaching for this book.

Help students access background knowledge related to the science concepts. Support the concepts of canopy, extinct, and food chain in ways that are familiar to your students.

- **canopy:** Show students a picture of a cloth canopy and explain that it is used to cover things and is located above those things. Show a photo of a rain forest canopy and have students compare the two. Point out that together, tall leafy trees form a canopy in the rain forest.
- **extinct:** Ask students whether dinosaurs still live on Earth. (no) Explain that when a type of organism has no more living members, it is said to be **extinct**. Dinosaurs are extinct.
- **food chain:** Ask students if they know what a mouse in a field might eat. (Possible response: seeds) Then ask what might eat the mouse. (Possible responses: hawk, owl, or snake) Draw this simple food chain on the board and discuss the sequence:
  
  seed → mouse → hawk
Science concepts are a critical part of each selection in *Tropical Rain Forest Adventure*. These science background pages will help you build content knowledge so that you may more effectively have discussions with students as they read each selection in the book.

The following big idea science concepts apply to several selections in the book.

- **The canopy** (student book, pp. 5, 13) describes the upper layer of a forest. The canopy forms a sort of leafy roof over the forest. Within the canopy, the leafy treetops crowd together; competition for sunlight is high. The trees are often covered with vines growing up from the soil below or with epiphytes—plants that grow right on trunks or branches. A rain forest canopy often reaches from 18 to 30 meters (60 to 100 feet) high. Scientists have studied the canopy and its life with tools such as cherry pickers, climbing ropes, and construction cranes.

- **Extinct** (student book, p. 19) describes a species that is no longer living on Earth. In the tropical rain forest, many species of living things are at risk of becoming extinct. In some cases, relatively few individuals of a species exist. Scattering them, making reproduction less likely, may cause their extinction. Some species live in only a small area; destroying that habitat can lead to their extinction. And some species rely totally on another for survival; extinction of the latter can lead to extinction of the former.

- **A food chain** (student book, p. 6) is a path by which energy passes from one living thing to another. The primary food source in food chains is plants, which use sunlight to convert carbon dioxide and water into food (glucose, a type of sugar) through photosynthesis. In so doing, some of the solar energy is “captured” in the plant food. Some of this energy is passed on to first-level consumers that eat the plants (e.g., beetles, cows) and then to second-level consumers that eat the first-level consumers (e.g., a bird eats the beetle, a human eats the cow).

Pages 5–6 in this teacher’s guide describe how the science concepts above relate to each selection. Additional science background information is given for each selection.
WELCOME TO THE RAIN FOREST

Student Book, pp. 2–9
Teacher’s Guide, pp. 7–8

In this selection, students will learn about the four layers of the Amazon rain forest—the topmost emergent layer, the canopy (student book, p. 5), the understory, and the forest floor. They will also explore some of the plants and animals that live in these layers as well as how food chains (student book, p. 6) link the plants and animals.

In the emergent layer, harpy eagles build large nests from sticks, soft greenery, and animal fur. These carnivores, or meat eaters, catch prey by flying through the canopy, capturing monkeys and other mammals in their sharp talons.

Canopy plants produce about 90 percent of all rain forest leaves, fruits, and seeds. These plant parts provide food for many different species of herbivores, or plant eaters. Sloths are nocturnal mammals that inhabit the canopy. As first-level consumers, sloths form the second link in the plant → sloth → harpy eagle food chain.

Many of the trees of the rain forest’s understory have giant leaves. The increased surface area of these large leaves increases their exposure to limited sunlight needed for photosynthesis. One of the most striking animals found in the understory (as well as in the canopy) is the emerald tree boa constrictor. This carnivorous snake can catch birds in flight but usually eats small mammals such as rodents and bats. As a second-level consumer, the emerald tree boa constrictor is at the top of the plant → insect → bat → boa food chain.

Crawling along the floor of the Amazon rain forest, a Goliath bird-eating tarantula might capture frogs, snakes, lizards, rodents, bats, and, yes, even small birds—hence its name. This spider kills with venom from its inch-long fangs. Then it injects digestive juices that turn the insides of the prey into liquid, allowing the toothless tarantula to suck up its food. The tarantula is at the top of the plant → insect → lizard → tarantula food chain.

TROPICAL RAIN FOREST ADVENTURE

SCIENCE BACKGROUND

TIM LAMAN: NIGHT IN THE RAIN FOREST

Student Book, pp. 10–17
Teacher’s Guide, pp. 9–10

In this selection, students will learn how Tim Laman, a photographer and field biologist, studies and photographs the nocturnal world of the rain forests of Borneo, the tallest forests on the planet.

The level of biodiversity in these rain forests is extremely high. The largest variety of gliding animals is found in the canopy (student book, p. 13). It includes flying squirrels, flying lizards, flying colugos, flying frogs, and even flying snakes.

Many nocturnal animals live in the tropical rain forest. Nocturnal animals are more active at night than during the day. This may be because it is cooler at night. The darkness also makes it easier to hide from predators.

One of the nocturnal animals Tim Laman has photographed is the tarsier, a small primate with large protruding eyes and an excellent sense of smell. Tarsiers eat lizards, insects, and snakes and are the only primate that is solely carnivorous.

Another species Laman has photographed is Wallace’s flying frog, named after Alfred Russell Wallace, the British naturalist who collected it and over a thousand other species in the mid-1800s. This little frog (slightly smaller than a teacup) leaps from branches, spreading its webbed feet and gliding up to 15 meters (50 feet) to land softly on another branch or down on the ground. It is sometimes called the parachute frog.
SAVING THE RAIN FORESTS

Student Book, pp. 18–23
Teacher’s Guide, pp. 11–12

In this selection, students learn why many rain forests are being destroyed and why it is important to save them. Students also learn what they can do to help save the rain forests and prevent some of the species living there from becoming extinct (student book, p. 19).

Scientists estimate that approximately 2,428 hectares (6,000 acres) of rain forest are being destroyed every hour. That’s the equivalent of about 4,000 football fields every hour! Although tropical rain forests account for only about 6 percent of Earth’s surface, they contain more than half of all species on the planet.

Along with the many species of plants and animals that live in the rain forests, there are about 50 million tribal people who call the rain forest home. Tribes of Mbuti and Baka pygmies live in the rain forests of central Africa; the Huli tribe inhabits the forests of Papua New Guinea; and the Yanomami tribe is found in the rain forests of South America.

Not only do rain forests provide products such as medicines, lumber, coffee, chocolate, and rubber, but they also produce oxygen that many organisms need to survive. Rain forests absorb carbon dioxide, a gas that can contribute to global climate change. Cutting down the rain forests can affect the water cycle and the climate of the entire planet.
Welcome to the Rain Forest Reference Article

READING OBJECTIVES
• Use text features to locate information.
• Use information from maps and photographs to demonstrate understanding.

SCIENCE OBJECTIVES
• Understand how organisms interact in the rain forest ecosystem.
• Understand the flow of energy in a rain forest food chain.

COMMON CORE STATE STANDARDS FOR ENGLISH LANGUAGE ARTS
CC.3.RInfo.5 Use text features and search tools (e.g., keywords, sidebars, hyperlinks) to locate information relevant to a given topic efficiently.
CC.3.RInfo.7 Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

A FRAMEWORK FOR K–12 SCIENCE EDUCATION
Core Idea LS2: Ecosystems: Interactions, Energy, and Dynamics
How and why do organisms interact with their environment and what are the effects of these interactions?

Summary  “Welcome to the Rain Forest” is a reference article that describes the four layers of the Amazon rain forest, some of the animals that inhabit each layer, and the food chains that connect the rain forest organisms.

BUILD BACKGROUND FOR THE GENRE
Ask students what kind of information they expect to find in a reference article. Have them turn and talk to share what they know. Tell students that “Welcome to the Rain Forest” is a reference article with the following elements:
• It provides background information about tropical rain forests.
• It defines and explains subject-area vocabulary, and it uses boldface and italics to emphasize the words’ importance.
• It presents information through photos, a map, and other graphics.

BUILD VOCABULARY & CONCEPTS
• emergent layer • understory
• canopy • food chains

Remind students that Using Context Clues is a strategy to infer the meaning of an unfamiliar word. They can “read around” the word, or read a few sentences before and after it, to determine meaning from the context. Remind them to look at the photographs, too.

Another strategy to try is Sketching Words. Encourage students to sketch and label a profile of a rain forest showing the emergent layer, canopy, and understory on sticky notes. Allow several minutes for this activity, and then have students turn and share their sketches with a partner, explaining, comparing, and contrasting their sketches. Use the same strategy for the other term in the selection—food chains—by having students sketch a simple food chain linking together three organisms.

Point out other important words in the selection, such as tropical, energy, fungi, and bacteria. Have students sketch the words or use context clues to determine their meaning. Some words lend themselves to sketching; others may not. Decide which of these strategies is most appropriate for each word.
READ

The **content goal** for *Tropical Rain Forest Adventure* is for students to learn about the layers of the rain forest, its wide diversity of life, and reasons for saving it. Explain that “Welcome to the Rain Forest” describes four different layers of the rain forest and some of the animals that live in each layer. Point out the **Read to find out** statement at the top of page 2 in the student book: **Read to find out what lives in the different layers of a rain forest.**

Help students with the **comprehension goal** of accessing the content by learning how to monitor and repair comprehension. Model this strategy by reading aloud the text on page 3. You might say: **As I read these paragraphs, I know this is about the emergent layer. However, I want to monitor my understanding by making sure I capture the most important information. I’m going to re-read to note a few important things. I think it’s important to know that the emergent layer is the highest, and it’s where the trees get the most sunlight.**

Before students begin reading, say: **As you read, monitor your reading to make sure you are understanding what you are reading and are keeping track of the most important information. Go back and re-read to see if you missed important information. Sometimes you can also continue reading to see if the text offers additional information that helps you understand.**

TURN & TALK

Revisit the **Read to find out** statement. Have students turn and talk about the four layers of a rain forest and the kinds of animals that live in each layer. Check students’ understanding by discussing the **Check In** question: **What are the four layers of the rain forest? List an animal from each layer.** (The four layers and possible animals include: the emergent layer—harpy eagle, morpho butterfly; canopy—toucan, howler monkey, sloth, beetles; understory—emerald tree boa constrictor, pygmy marmoset, poison dart frog, jaguar, spiders, ants; forest floor—green anaconda, tapir, tarantula, casque-headed frog, termites, cockroaches, ants, worms.)

**Use Text Features** Have students scan the selection. Say: **I can see that the information in this article is organized into sections. A heading names each section. Then ask: What are the headings? (The Emergent Layer; The Canopy; The Understory; The Forest Floor) Ask: What information can you expect to find based on the headings? (specific information about each layer)** Have students choose a rain forest layer and work with a partner to focus on the information about that layer. Encourage them to note and use some of the many text features in the article. Ask: **What kinds of text features in the article might you use to find information? (photos, captions, bold words, map, food chain diagram)**

**Use Map and Photos** Direct students to the map on page 2 and ask: **What information can you tell just by looking at the map and reading the caption? (The Amazon rain forest is located in South America. It is on the equator. It is really big!)** Model how to use a photo to understand text. Say: **The photo of the Amazon rain forest on pages 2 and 3 helps me see that the emergent and canopy layers are the highest layers of the rain forest. It also helps me understand why these layers get more sunlight than the layers below them.** Have students turn and talk to a partner about how the photo of the understory layer on page 7 helps them understand the description of the understory on page 6. (Possible response: The photo shows large leaves and sunlight coming through the upper canopy, I can see that the understory is darker than the canopy and emergent layers.)

WRITE & ASSESS

You may want to have students do a “quick write” to assess understanding. It’s always helpful to have students reflect on both the content and their thinking process.

- **How would you describe the rain forest?**
- **What do you still wonder about the rain forest?**
Tim Laman: Night in the Rain Forest  Third-Person Narrative

Summary  “Tim Laman: Night in the Rain Forest” is a third-person narrative that describes some of the challenges of photographing plants and nocturnal animals in the rain forest.

BUILD BACKGROUND FOR THE GENRE

Let students know that they will read a third-person narrative. A narrative can be a true or imagined story. Tell them that the narrative they will read is a true story and that “Tim Laman: Night in the Rain Forest” is a third-person narrative with the following elements:

- It tells about a real person and place.
- The writer brings the rain forest to life by including interesting stories and vivid descriptions.
- Photos with captions are included.

BUILD VOCABULARY & CONCEPTS

- nocturnal
- canopy

Remind students that Using Context Clues is a strategy to infer the meaning of an unfamiliar word. They can “read around” the word, or read a few sentences before and after it, to make meaning from the context. Remind them to look at the photographs, too.

Another strategy to try is Becoming Wordkeepers. Write canopy on a sticky note and ask for volunteers who know the meaning of the word. Call on one of the volunteers to be the wordkeeper for canopy. If no one knows the meaning, ask a volunteer to learn the word and be the wordkeeper. Explain that the wordkeeper is responsible for knowing the meaning, part of speech, and spelling of the word, but especially the meaning. Write the meaning of canopy on the sticky note and give it to the wordkeeper. Tell other students they can ask the wordkeeper about this word if they forget its meaning or spelling. Use this same strategy for the word nocturnal.

Point out other important words, such as blind, overcast, and heady, and discuss their meaning in the context of the selection. Designate wordkeepers for these and any words that might be unfamiliar to students.
READ

The content goal for Tropical Rain Forest Adventure is for students to learn about the layers of the rain forest, its wide diversity of life, and reasons for saving it. In “Tim Laman: Night in the Rain Forest,” a photographer talks about some of the nocturnal animals of the rain forest and what it’s like to photograph them. Point out the Read to find out statement at the top of page 10 in the student book: Read to find out how a field biologist takes pictures of animals at night.

Help students with the comprehension goal of accessing the content by determining importance. Model this strategy by reading the first two paragraphs on page 10 and saying: The sentence that asks “Why go at night?” gives me a clue as to what’s important to remember. I think that the text that answers this question is the most important idea. The next sentence says, “That’s when many animals wake up!” So I know that the most important information is that Tim Laman heads into the rain forest at night because that’s when many animals are awake and active. The paragraph that comes before sets the scene; the paragraphs that come after provide examples and interesting details.

Before students begin reading, say: As you read, think about how to decide which ideas in a text are the most important and which are details. Use subheads as clues about what the main ideas, and therefore the most important ideas, in each section are.

TURN & TALK

Revisit the Read to find out statement. Have students turn and talk about how field biologist Tim Laman photographs nocturnal animals. Check students’ understanding with the Check In question: How does Tim Laman take pictures of animals at night? What equipment does he use? (Sometimes Tim climbs a tree or hides in a blind. Then he waits for animals to come close enough to snap their pictures. He uses flashlights, headlamps, and flashes on his cameras.)

Determine Main Ideas Remind students how to determine the important parts of a text. Explain that determining important ideas is the way to help them identify the main ideas—the most important points. Then ask: What headings are used in this article? (Gliding Through the Forest; Light Up the Night; Super Senses) Tell students those three headings and the photos under them are clues to three main ideas. Have students turn and talk to identify the main idea under each heading. (Possible responses: Gliding Through the Forest—Many animals move through the canopy by gliding. Light Up the Night—Laman produces light in the night using headlamps and flashes, but some nocturnal animals produce their own light. Super Senses—Nocturnal animals might see, hear, smell, and feel in different ways from animals that are active in the daytime.)

Determine Point of View Explain that a third-person narrative is written by an outside observer—someone who is telling about events that happened to someone else. Model how to identify text written in a third-person point of view by saying: I know when something is written in a third-person point of view because the writer uses pronouns like he, she, or they. For example, the text says that “he built a hiding place called a blind.” He refers to Tim Laman. Let students know that even in third-person narratives, writers may use direct quotes, which are written in first person and use the pronouns I, me, my, and so on. Have students work with a partner to find the quotes in this piece. Ask: In what ways do these first-person quotes add to the article?

WRITE & ASSESS

You may want to have students do a “quick write” to assess understanding. It’s always helpful to have students reflect on both the content of the selection and their thinking process.

• What are some of the challenges of photographing animals at night?
• What questions do you still have after reading?
Summary

“Saving the Rain Forests” is an opinion piece that explains why rain forests are being destroyed, why it is important to save them, and how people can help save the forests and the animals that live in them.

BUILD BACKGROUND FOR THE GENRE

Lead students to an understanding of the elements of an opinion piece. Explain that “Saving the Rain Forests” is an opinion piece with the following elements:

• The writer presents facts about a topic in an organized way and states an opinion.
• The text uses reasons and evidence to support the opinion.
• The writer concludes by emphasizing the opinion.

BUILD VOCABULARY & CONCEPTS

• extinct • sustainable harvesting

Remind students that Using Context Clues is a strategy to infer the meaning of an unfamiliar word. They can “read around” the word, or read a few sentences before and after it, to make meaning from the context. Remind them to look at the photographs, too.

Another strategy to try is Using Background Knowledge. Ask students to think about times when they may have heard or read the word extinct. Then have them turn and talk about what they think extinct means. Next, have them read the paragraph on page 19 that uses the word extinct in context. Tell pairs to use the text and any background knowledge to construct an understanding of what extinct means. Use this same strategy for the term sustainable harvesting and the text on page 21.

You may want to point out other important words that are challenging or unfamiliar to students and have them use background knowledge or context clues to determine the meaning of these words.
READ

The content goal for Tropical Rain Forest Adventure is for students to learn about the layers of the rain forest, its wide diversity of life, and reasons for saving it. Explain that “Saving the Rain Forests” gives reasons for protecting the rain forests. Point out the Read to find out statement at the top of page 18 in the student book: Read to find out why we should save the rain forests.

Help students with the comprehension goal of accessing the content by monitoring and repairing comprehension. Model this strategy by starting to read aloud the “What you can do” list on page 23. Stop after the second bulleted item and say: I don’t remember what sustainable harvesting is, so I don’t understand why it could help save the rain forest. I’ll go back and scan the pages until I find where sustainable harvesting is explained. Here it is, on page 21. The text says sustainable harvesting removes products from the rain forest without destroying the trees. By going back in the text, I was able to clarify my thinking.

Before students begin reading, say: As you read, pay attention to what you do and do not understand. If you don’t understand something or have forgotten a key piece of information, you can re-read to clarify your thinking.

TURN & TALK

Revisit the Read to find out statement. Have students turn and talk about reasons to save the rain forest. Check students’ understanding with the Check In question: How are rain forests important to people around the world? (Rain forests provide many useful products, such as wood and other building materials, food, rubber, and medicines. Tourists enjoy the beauty of rain forests.)

Distinguish Point of View Remind students that an opinion piece presents the writer’s opinion about something. Say: This article is an opinion piece. The writer believes we need to save the rain forests. I can see evidence of this in the second paragraph on page 19 where she says we need to save the rain forests because animals and people need them and they are important to the environment. I’m sure there are more examples. Ask students to turn and talk with a partner to find other places where the writer gives evidence of her opinion. (Possible responses: She offers good reasons why the rain forests should be saved. She includes photos that show what the rain forest gives us and how it looks when it’s cut down.) Discuss how a reader’s opinion might differ from the writer’s. Say: The writer believes that the world’s rain forests should be saved. I wonder if some people feel differently. The world is a complex place with complex problems. Some people might feel that only certain rain forests should be saved, or only certain areas within a rain forest should be saved, or even that we could do without any rain forests. Have students turn and talk about which of these opinions they agree with and why.

Describe Connections Point out that there is a cause/effect relationship between human activities and tropical rain forests. Model determining one such relationship. Say: On page 19, I read that when forests are cut down, there are no places for creatures to live. In this example, the cause is cutting down trees. The effect is that animals lose their homes. Have students work together to find other cause/effect relationships. Then say: Now find a cause and its effect that show how human activities can help save the rain forest. (Possible responses: Cause: Brazil nuts are harvested sustainably. Effect: People make money without cutting down Brazil nut trees. Cause: Tourists pay money to visit the rain forest. Effect: People make money without harming the rain forest.)

WRITE & ASSESS

You may want to have students do a “quick write” to assess understanding. It’s always helpful to have students reflect on both the content and their thinking process.

• What are some advantages to protecting the rain forests?
• What surprised you about what you just read?
Welcome to the Tropical Rain Forest Adventure. Ask: In this book, what did you learn about tropical rain forests? (Possible responses are given in the concept map. Students may have more or different information.)

The three selections in *Tropical Rain Forest Adventure* are one reference article, one third-person narrative, and one opinion piece. Life science concepts (canopy, extinct, and food chain) thread through the selections. Guide a discussion about these science concepts.

What makes the selections especially interesting, though, is the interdisciplinary context—real-life stories and events that include not only life science but also geography, technology, and social studies. After explaining what *interdisciplinary* means, have students turn and talk about the interdisciplinary nature of the selections. You might ask: How is reading *Tropical Rain Forest Adventure* different from reading a textbook about rain forests? Also ask them to consider differences in the ways the selections were written (such as genre, text structure, and point of view) and how the writing style helps the science concepts come alive.
DISCUSS

Have students collaboratively answer the questions on page 24 as you move about the room and listen in to support and scaffold student conversations and clarify misconceptions.

1. **How did the information in “Welcome to the Rain Forest” help you understand the other two pieces in the book?** (All three pieces describe life in the rain forest. “Welcome to the Rain Forest” tells about the kinds of plants and animals that live in the different layers and how they are connected by food chains. “Tim Laman: Night in the Rain Forest” describes how Tim Laman takes pictures of rain forest animals that are active at night. Many of these animals live in the canopy. “Saving the Rain Forests” explains how cutting down the rain forests hurts the plants and animals that live there. The article also tells how we can help save the rain forests.)

2. **Compare the canopy layer of a rain forest with the forest floor. How are they alike and different?** (Both the canopy and the forest floor are hot and rainy. The canopy gets lots of sunlight and has the most plants and animals. The forest floor is dark, so not many plants grow there.)

3. **Think about the rain forest at night. How are animals able to find food in the dark? Give some examples.** (Animals find food in the dark by using their senses of sight, hearing, smell, and touch. Examples might include moths, which find the nectar of night-blooming flowers by their smell, and tarsiers, which use their big eyes, keen sense of hearing, and delicate sense of touch to find food. Students might also mention frogs and geckos that glide from tree to tree to find food, or starworms, which may lure their prey by glowing in the dark.)

4. **Explain what will happen to the rain forest animals if the trees are cut down.** (If the rain forest trees are cut down, the animals that live in the rain forest will have no place to live. If too many trees are cut down, the animals or plants may become extinct.)

5. **What do you still wonder about tropical rain forests? What would be some good ways to find out more?** (Answers will vary, but students should describe a variety of references, such as books and magazine articles, reliable Internet sites, documentaries, and talking with experts.)
In small groups or individually, offer students the chance to explore questions they have or ideas they still wonder about, based on their reading in *Tropical Rain Forest Adventure*. Use question 5 on the Discuss page of the student book as a springboard for student questions and ideas for further research.

**EXPLORE**

Encourage students to express their curiosity in their own way. The questions students have matter. You might have students talk with peers, write about they wonder, or create drawings based on what they learned from reading the different selections in *Tropical Rain Forest Adventure*. Guide them to immerse themselves in resources related to what they are most interested in learning more about. They might ask questions or make statements about their interests, for example:

- What rain forest products does my family use?
- What adaptations allow the gliding animals to glide? What are some other rain forest animal adaptations?
- Which rain forest animals are at the zoo closest to me? Are they endangered?

**GATHER INFORMATION**

After students explore, they should arrive at a question that will drive their research. Students may want to read, listen to, and view information with their question in mind. Guide students to use resources, such as reliable sites on the Internet, science texts and articles, library books, and magazines, that address the question they posed. Collecting information may lead students to revise or narrow their question.

You may want students to follow a specific note taking system to keep track of their thinking and findings as they gather information. In addition to taking notes, ask students to make a list of their sources. You may want to model how to take notes by interacting with text, jotting down your thoughts in the margins or on sticky notes, and demonstrating how to summarize the most important information. Remind students that their question will drive their research and note taking.
ANALYZE & SYNTHESIZE

Guide students to carefully and thoughtfully review their notes to determine the big ideas related to their question. As students prepare to use the information they’ve gathered to formulate an answer to their question, support them as they analyze and synthesize. Be sure they do the following:

- Revise any misconceptions.
- Notice incongruities in their information.
- Evaluate all the various pieces of information.
- Pull together the most pertinent information that addresses their question.

While analyzing and synthesizing their research, students may realize that the more they learn, the more they wonder. To help focus their thinking, students may want to talk with classmates or write in a research notebook. Remind them that just as in real-world scientific research, there may not be a final answer to the question they posed.

SHARE

When students share their research, they become teachers, consider how their ideas were shaped by the investigation, and pose new questions. Students may express their knowledge by writing, speaking, creating a visual piece, or taking action in the community. The best culminating projects are ones with authentic purposes. For example, a student who is interested in the rain forest animals at the local zoo might take photographs of them at the zoo, research their behaviors, and then become a virtual zoo guide, leading classmates on a photo tour of the rain forest exhibit at the zoo.

When students are given the time to gather information about a topic that interests them, they will find unique and individual ways to share what they learned. Some options you can suggest might include the following:

- eBooks with photos and text to share with other students who want to know more about tropical rain forests
- An information pamphlet about tropical rain forests that emphasizes conservation and sustainable harvesting
- An in-depth profile of a local zoo or arboretum that features rain forest animals or plants
Write

GENRE: OPINION PIECE

Hold up “Saving the Rain Forests.” Review with students the elements of an opinion piece:

- The writer presents facts about a topic in an organized way and states an opinion about the topic.
- The text includes reasons, evidence, or personal experiences that support the writer’s opinion.
- The writer cares about the topic and attempts to persuade the reader to accept his or her opinion.

MENTOR TEXT

Use “Saving the Rain Forests” as a mentor text, or a model, for student writing.

Model the elements of an opinion piece. Walk students through the selection, sharing your thinking as you go. For example, point out the title and text on page 18. Say: On this first page of the selection, I see the title and the first paragraph. The title tells the topic, but I also get a hint of what the author’s opinion about the topic is—that saving the rain forests is a good thing. What gives me that hint? The photo does! It shows what a destroyed rain forest looks like. The text explains why people would cut down the rain forest. Continue through the selection, drawing attention to places where the writer weaves her opinion throughout the piece. Also draw attention to the organization of information: the effects of rain forest destruction, the products (benefits) we get from the rain forests, and how the rain forests can be saved, ending with a personal list of what readers can do.

Explain that students can use the article as a mentor text to help them write their own opinion piece. Tell students that our best writing teachers are the professional writers whose work we read. Suggest that they look closely at what the writer does to convey the information in a clear way. Say: The author lists reasons why people cut down trees in rain forests, then uses evidence and examples to explain why protecting rain forests is important. Point out the information on page 21 about sustainable harvesting. Say: The writer also offers a solution to the problem of cutting down too many trees in the rain forest. By following this strategy, the writer of an opinion piece presents the problem, explains his or her opinion, and suggests possible solutions to the problem.

OBJECTIVES

- Use a mentor text as a writing model.
- Plan and research information on a topic.
- Write and revise an opinion piece.
- Publish and present an opinion piece.

COMMON CORE STATE STANDARDS FOR ENGLISH LANGUAGE ARTS

CC.3.Write.1 Write opinion pieces on topics or texts, supporting a point of view with reasons.

CC.3.Write.4 With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose.

CC.3.Write.5 With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.

CC.3.Write.6 With guidance and support from adults, use technology to produce and publish writing (using keyboarding skills) as well as to interact and collaborate with others.

CC.3.Write.10 Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.
Ask students to **Turn and Talk** about something they feel strongly about or something they think should be changed. (Possible ideas: why their community should have more parks and green space; why animals should be protected; why people should not own pets that come from rain forests)

Have several students **Share** their ideas.

**Wrap up** by explaining that students will be writing their own opinion piece about topics of their own choosing, using "Saving the Rain Forests" as a mentor text for their own writing.

**WRITING PROCESS**

**Plan and Research** Once students have chosen a topic they have an opinion on and care about, they may need to research to find accurate information to support their opinion. Guide students in finding appropriate resources. Stress the importance of finding factual information that supports the opinion they are sharing. Point out that readers will not be persuaded to share the author’s opinion without supporting information.

**Write** Students can use their background knowledge, their planning, and their research notes to begin writing. Remind them to keep looking back at the mentor text to use as a model for their own writing of an opinion piece.

Share that with this genre, writing is a combination of facts and opinions. Say: *Supporting facts and evidence are essential if you want to write an effective opinion piece. They help persuade your reader to accept your opinion. One way to make your facts and evidence more obvious to your reader is to use bulleted lists for them. Also, headings let your reader know what kind of information you'll be presenting next, which helps your reader follow your ideas. Photos or other graphics can help persuade readers too.*

**Conference and Revise** Have students hold a writing conference with a partner to review their drafts. Ask students to look for the elements of opinion pieces as they review their partner’s writing. Have them ask the following questions of their partner:

- *What struck you about the piece?* (to highlight interesting parts)
- *What do you wonder or want to know more about?* (to suggest ideas for adding information or revising)
- *Are there any confusing parts?* (to pinpoint areas to revise for clarity)

After students get feedback from a partner, have them revise and edit their writing.

**Publish and Present** Find opportunities for students to publish and present in authentic, relevant, and significant ways. Use or adapt the following ideas to best reflect your classroom goals and individual student interests.

- Have students write their opinion pieces as brochures or pamphlets that they can print a number of copies of and hand out.
- Host a forum in which students read their opinion pieces aloud to their class or other classes. Invite listeners to comment and add any knowledge they have about the topic.
- Have students send their opinion pieces to local or state groups, organizations, or agencies that might find the information valuable.
Grade 3 Common Core State Standards for English Language Arts and
A Framework for K–12 Science Education
correlated to National Geographic Ladders Science

<table>
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<tr>
<th>Common Core State Standards for English Language Arts, Grade 3</th>
<th>Tropical Rain Forest Adventure Teacher’s Guide</th>
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<tr>
<td><strong>Reading Standards for Informational Text</strong></td>
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<tr>
<td><strong>Key Ideas and Details</strong></td>
<td></td>
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<tr>
<td>1. Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.</td>
<td>Pages 13–14</td>
</tr>
<tr>
<td>2. Determine the main idea of a text; recount the key details and explain how they support the main idea.</td>
<td>Pages 9–10</td>
</tr>
<tr>
<td>3. Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.</td>
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<tr>
<td><strong>Craft and Structure</strong></td>
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<td>4. Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area.</td>
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</tr>
<tr>
<td>5. Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently.</td>
<td>Pages 7–8</td>
</tr>
<tr>
<td>6. Distinguish their own point of view from that of the author of a text.</td>
<td>Pages 9–12</td>
</tr>
<tr>
<td><strong>Integration of Knowledge and Ideas</strong></td>
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<tr>
<td>7. Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).</td>
<td>Pages 7–8</td>
</tr>
<tr>
<td>8. Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).</td>
<td>Pages 11–12</td>
</tr>
<tr>
<td>9. Compare and contrast the most important points and key details presented in two texts on the same topic.</td>
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<tr>
<td><strong>Range of Reading and Level of Text Complexity</strong></td>
<td>If the entire NG Ladders Science grade 3 program is used throughout the year, students will have had exposure to multiple genres, multiple levels, and appropriate scaffolding.</td>
</tr>
<tr>
<td>10. By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 2–3 text complexity band independently and proficiently.</td>
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<tr>
<td><strong>Writing Standards</strong></td>
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<td><strong>Text Types and Purposes</strong></td>
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<tr>
<td>1. Write opinion pieces on topics or texts, supporting a point of view with reasons.</td>
<td>Pages 17–18</td>
</tr>
<tr>
<td>2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly.</td>
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<tr>
<td>3. Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.</td>
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<tr>
<td><strong>Production and Distribution of Writing</strong></td>
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<tr>
<td>4. With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose.</td>
<td>Pages 17–18</td>
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<tr>
<td>5. With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.</td>
<td>Pages 17–18</td>
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<td>6. With guidance and support from adults, use technology to produce and publish writing (using keyboarding skills) as well as to interact and collaborate with others.</td>
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### Research to Build and Present Knowledge

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<td>7.</td>
<td>Conduct short research projects that build knowledge about a topic.</td>
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<tr>
<td>8.</td>
<td>Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.</td>
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<td>9.</td>
<td>(Begins in grade 4)</td>
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### Range of Writing

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### A Framework for K–12 Science Education

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<tr>
<th>Core Idea LS2: Ecosystems: Interactions, Energy, and Dynamics</th>
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<tr>
<td>How and why do organisms interact with their environment and what are the effects of these interactions?</td>
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<tr>
<th>Core Idea LS4: Biological Evolution: Unity and Diversity</th>
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<tr>
<td>LS4.D: Biodiversity and Humans</td>
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<tr>
<td>What is biodiversity, how do humans affect it, and how does it affect humans?</td>
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<th>Tropical Rain Forest Adventure Teacher’s Guide</th>
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<td>Pages 4–18</td>
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canopy  (noun) the layer of a forest with the most treetops
emergent layer  (noun) the layer of a forest where a few very
tall trees rise above the canopy
extinct  (adjective) no longer living on Earth
food chain  (noun) a path by which energy passes from one
living thing to another
nocturnal  (adjective) active at night
sustainable harvesting  (noun) collecting products in a way
that is safe for wildlife, people, and the environment
understory  (noun) the layer of a forest with small trees and
tall shrubs

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