



**TEACHER'S GUIDE**  
**Pioneer and Trailblazer**  
**Vol. 18 No. 1**

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Educational consultant **Stephanie Harvey** has helped shape the instructional vision for this Teacher's Guide. Her goal is to ensure you have the tools you need to enhance student understanding and engagement with nonfiction text.

**Lexile® Framework Levels**

**Pioneer**

|                                 |     |
|---------------------------------|-----|
| Extreme Animals .....           | 500 |
| Amazon Adventure.....           | 520 |
| Simple Machines: Wedge It ..... | 490 |

**Trailblazer**

|                                 |     |
|---------------------------------|-----|
| Extreme Animals .....           | 610 |
| Amazon Adventure.....           | 580 |
| Simple Machines: Wedge It ..... | 590 |

**Standards Supported**

- Common Core State Standards (CCSS)
- Next Generation Science Standards (NGSS)
- C3 Framework for Social Studies State Standards (C3)

For additional resources to extend your students' learning, visit EXPLORER's website:

**NATGEO.ORG/EXPLORERMAG-RESOURCES**

## INTRODUCTION

### BACKGROUND

Since 1888, the National Geographic Society has funded scientists and explorers and shared their findings with the world. To support educators who use our resources, we have created a Learning Framework, which lays out what we believe students should learn from their experiences with the Society.

### PURPOSE

The Learning Framework was designed to convey the Society's core beliefs and values. It is built around a set of attitudes, skills, and knowledge that embody the explorer mindset.

To determine the learning outcomes within the Learning Framework, we dug deep into national standards in key subject areas. We also sought advice from subject matter and child development experts, along with the combined expertise of NG instructional designers, researchers, and content developers. To learn more, go to: <https://www.nationalgeographic.org/education/learningframework/>.

### IMPLEMENTATION

Each article in this magazine has a knowledge-based link to the Learning Framework.

## MINDSET OF AN EXPLORER

### KEY FOCUS AREAS

#### A — Attitudes

*National Geographic kids are:*

**CURIOS** about how the world works, seeking out new and challenging experiences throughout their lives.

**RESPONSIBLE**, with concern for the welfare of other people, cultural resources, and the natural world. NG kids are respectful, considering multiple perspectives, and honoring others regardless of differences.

**EMPOWERED** to make a difference. NG kids act on curiosity, respect, and responsibility. They are adventurous and persist in the face of challenges.

#### S — Skills

*National Geographic kids can:*

**OBSERVE** and document the world around them and make sense of those observations.

**COMMUNICATE** experiences and ideas effectively through language and media. They are storytellers!

**COLLABORATE** with others to achieve goals.

**SOLVE PROBLEMS** by generating, evaluating, and implementing solutions after identifying alternatives, weighing trade-offs, and making well-reasoned decisions.

#### K — Knowledge

*National Geographic kids understand:*

**THE HUMAN JOURNEY** is all about where we have been, where we live now (and why), and where we are going.

**OUR CHANGING PLANET** encompasses all that coexists on our planet—interconnected through systems that generate and nurture each other.

**WILDLIFE AND WILD PLACES** inhabit our planet—from the butterflies in our backyards to the lions in Africa.

## Standards Supported

Many reading standards for informational text are supported through this lesson. Using active thinking strategies helps students learn and practice engaging with the text in meaningful ways. When students learn to stop, think, and react to new information, they take the time to think about the text and have a better chance at remembering and understanding it.

## What You'll Need

- "Extreme Animals" (*Explorer*, pages 2–7)
- Think Sheet (Teacher's Guide, page 6)

## CONNECT & ENGAGE (20 minutes)

Kids are bunched up on the floor in front of you. Sit on a low chair and hold up the magazine.

**TEACHER TIP:** The reason kids are bunched up on the floor is that the focus needs to be on the teacher. However, the whole point of "Connect and Engage" is to get kids fired up, and there will be plenty of interaction throughout this segment and the entire lesson.

**Say:** *Whoa! Take a look at this cover. What do you think about when you see this creature? Turn to each other and talk.*

Kids turn and talk about the image on the cover.

**Say:** *That's a pretty unusual animal. As a matter of fact, the title is "Extreme Animals." Turn and talk about what you think the title means.*

Kids turn and talk about the word "extreme." Some have an idea; others not so much.

**Say:** *I think extreme might mean "very unusual." I am inferring that because this animal is unlike any I have seen before. Take a minute and preview pages 2 and 3 and see what you notice.*

Kids flip through, oohing and ahing as they peruse.

**Say:** *Is anyone getting a better idea of what extreme animals do? Does anyone want to share what they notice and why these animals might be called "extreme"?*

A few kids share out.

**Say:** *Look! It says "Some animals go to extremes to survive." Let's read on and find out more.*

## MODEL (10 MINUTES)

*This very cool article is nonfiction, which, as you know, includes real, true information. National Geographic Explorer features nonfiction text. Nonfiction writers write nonfiction to give us information, to teach us something. Nonfiction readers read to learn new information. One of the most important nonfiction reading strategies is to stop, think, and react to new information. We need to notice when we learn something new and take time to think about it. In that way, we have a better shot at remembering and understanding it.*

**TEACHER TIP:** While this segment of the lesson is about the teacher modeling for students, be careful not to go on and on. This has to be interactive. Kids should be turning and talking a lot.

*I am going to read through a bit of this article and show you my thinking when I learn something new. I am going to stop, think, and react to new information by marking an L for Learn on a Post-it and jotting down or drawing my new learning as well as any reactions I might have.*

*Turn to each other and talk. Have you ever read any nonfiction and learned something new?*

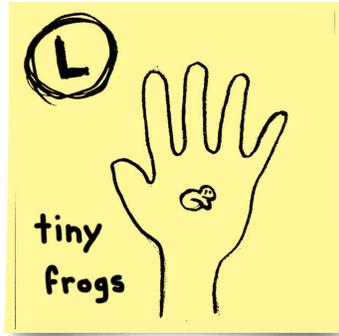
Kids turn and talk. A few share out their ideas.

**Say:** *Okay, let me show you how it works for me.*

Point out the photo on page 4 of the hand holding two crucifix frogs.

**Say:** *Wow! I've already learned something new just from the photo. These crucifix frogs are really tiny! I'm going to mark a Post-it with an L for Learn and draw that image to keep in mind how tiny they are.*

Mark the Post-it with an L and draw a hand with a tiny frog on it. Jot down "tiny frogs" on the Post-it. Then read the first paragraphs on page 4 and stop after **adaptation**.



**Say:** *I wonder what this adaptation is. I'll keep reading and see if I find out.*

Read on to find out that the skin is sticky and insects get stuck.

**Say:** *Wow! That is new information for me! Insects stick to the crucifix frog's skin. That is really surprising information. I'm going to mark my Post-it with an L for Learn.*

Write on the Post-it: "crucifix frogs have sticky skin and insects get stuck to it."



**Say:** *Let's read on. Eewww, I have a reaction.*

*This is a kind of gross, but it's a really amazing adaptation. I'll mark a Post-it with an L for Learn and jot down "They shed skin and eat the insects and the skin." Kinda gross!*



your Post-it with an L for Learn." "I noticed you had reactions like 'gross!'"

**Say:** *I am going to read on about another extreme animal. I'm thinking that this part on Komodo dragons may include some unusual adaptations. What do you think?*

*Now it's your turn. As I read this part, when you learn something new, mark a Think Sheet square with an L and jot or draw your new learning. Feel free to add your reactions, too. We remember information more thoroughly when we react to it.*

Read the first paragraph or two about the Komodo dragon's adaptation.

**Say:** *Wow! Some amazing information here! If you learned anything new, jot it down or sketch it. Don't forget to mark a Think Sheet square with an L for Learn.*

*Okay, now turn and talk, sharing what you learned and any reactions you had.*

Kids turn and talk.

**Say:** *Who would like to share their new learning?*

Several kids share out.

**Say:** *Great, now I'll read on. There is so much new information here. All this stuff about bacteria is new to me and kind of confusing. If you are confused, let me know, and I will check in with you.*

**TEACHER TIP:** It's always good to make sure that confusions get clarified. Otherwise misconceptions abound. When reading nonfiction, continually check in with students to make sure there are no misconceptions.

**Say:** *Okay, go ahead and turn to the person next to you and share any new information you jotted or sketched on your Think Sheet.*

A few kids share out their new learning as well as any clarifications they made.

**GUIDE (10 minutes)**

Hand out the Think Sheets. Kids remain bunched up in front of you on the floor.

**Say:** *So what did you see me do as I was reading the section about the crucifix frog? Turn and talk about what you noticed me doing.*

Kids talk and share out things such as "I noticed you wrote your new learning." "I noticed you mark

**COLLABORATE (25 minutes)**

**Say:** Now it's time for you to read the rest of the article with a partner. As you read, think about why this article was called "Extreme Animals." What was extreme or unusual about these animals? Keep the title in mind and keep that question in mind. Paying attention to the title and thinking about why the author came up with it can help us come up with some of the big ideas.

Kids partner up to continue reading the article.

**Say:** As you are reading, remember to stop, think, and react to new information, and mark your Think Sheet with an L for Learn when you learn something new. If you finish the article, feel free to keep reading and practicing the strategy with your choice of another article in the magazine. Does this make sense? Any questions? Okay, Happy Reading!

Partners read the rest of the article and continue reading their choice of the other two selections, as they practice the stop, think, and react strategy. Move around the room, conferring with partners.

**SHARE THE LEARNING (10 minutes)**

Kids join a sharing circle with you.

**TEACHER TIP:** The sharing phase is done in a circle, so that the focus is on one another rather than the teacher. During the instruction phase, kids are bunched up in front of the teacher, so that the focus is on the instruction.

**Say:** Okay, flip through your article and choose a Think Sheet square that you would like to share. I am going to invite \_\_\_\_\_ to share new learning. We are going to share using respectful language. So when I ask: "\_\_\_\_\_ would you like to share your new learning?" You need to say: "Yes, thank you." Then you can share your learning. After you share, you can invite someone else to share. To do that, you need to call on the person by name and use the same language we just practiced. When we use polite, respectful sharing language, everyone pays closer attention to the important information being shared.

Kids share out and invite others to share, always using the respectful sharing language that was modeled. There should be time for about three or four kids to share out with the whole group. Once they are finished, have everyone turn and share with the person next to them, so that all have a chance to be heard.

**Say:** You learned so much today about these extreme animals. Who has an idea of why that was the title of the article? What was unusual and surprising about these animals? Turn and talk about that.

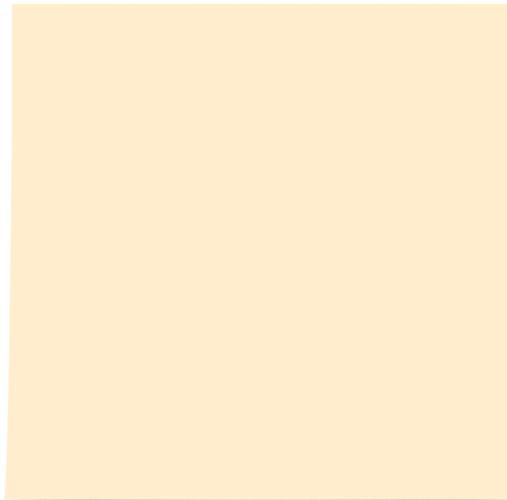
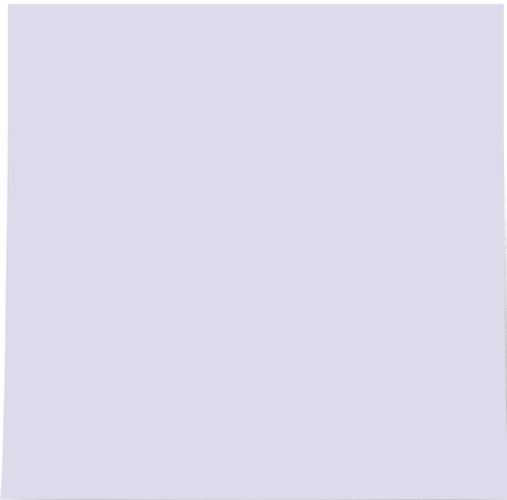
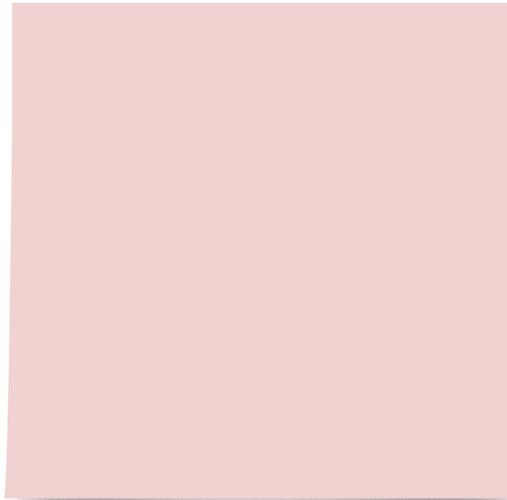
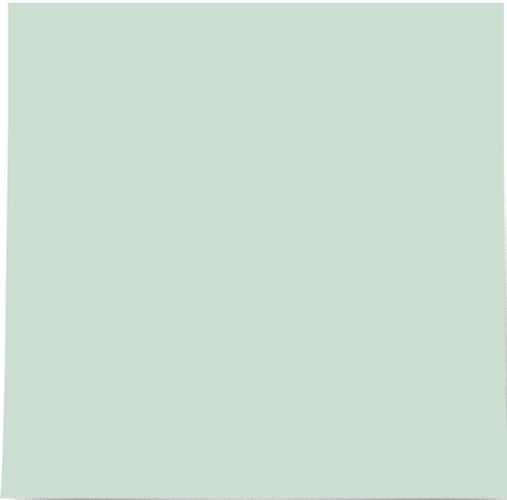
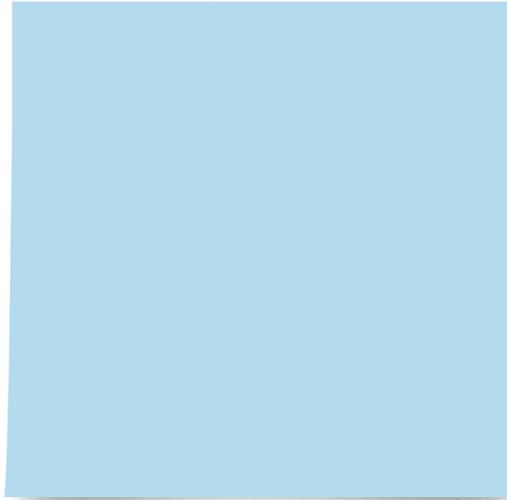
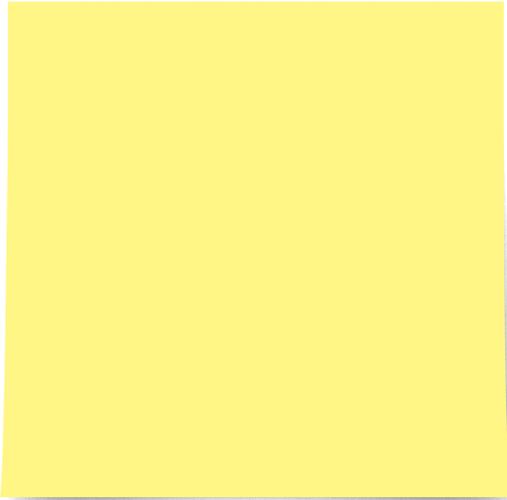
Several kids share out.

**Say:** These animals had extreme adaptations, like tiny frogs eating their own skin and the insects that were stuck to them and komodo dragons with poison in their spit! Do you agree that these animals were unusual and extreme?

*Fascinating information! So remember when you read nonfiction, it is important to stop, think, and react to new information, marking any new learning with an L. Nonfiction is all about reading to learn, so we want to learn, remember, and understand what we have read. Great job today, all of you!*

**THINK SHEET**

Use these note squares to draw or write about things you learned.



When students learn to stop, think, and react to new information, they take the time to think about the text and have a better chance to remember and understand it.

## Resources

- Think Sheet template

This frame is a kind of template of the lesson we just worked on. It has the instructional moves and language of the lesson, but the specific content has been removed. This way you can use the Lesson Frame for the other articles in the issue or for any nonfiction text you might be teaching.

## MODEL (10 minutes)

**Say:** *This very cool article is nonfiction, which, as you know, includes real, true information. Nonfiction writers write nonfiction to give us information, to teach us something. Nonfiction readers read to learn new information. One of the most important nonfiction reading strategies is to stop, think, and react to new information. We need to notice when we learn something new and take time to think about it. In that way, we have a better shot at remembering and understanding it.*

**Say:** *I am going to read through a bit of this article and show you my thinking when I learn something new. I am going to stop, think, and react to new information by marking an L for Learn on a Post-it and jotting down or drawing my new learning as well as any reactions I might have.*

**Say:** *Turn to each other and talk. Have you ever read any nonfiction and learned something new?*

Kids turn and talk. A few share out their ideas.

**Say:** *Okay, let me show you how it works for me.*

Point out a photo.

**Say:** *Wow! I've already learned something new just from the photo. I'm going to mark a Post-it with an L for Learn and draw that image so I keep this new learning in mind.*

**Say:** *I'll keep reading and see if I learn any more new information.*

Read on.

**Say:** *Wow! I just came across something. I never knew... That is really surprising information. I'm going to mark my Post-it with an L for Learn.*

**Say:** *Let's read on. Here I have a reaction to new information. I'll mark a Post-it with an L for Learn and jot down my new learning and my reaction to it.*

## CONNECT & ENGAGE (5 minutes)

Kids are bunched up on the floor in front of you. Sit on a low chair and hold up the magazine.

**Say:** *Whoa! Take a look at the image on the cover. What do you think about when you see \_\_\_\_\_? Turn and talk about that.*

Kids turn and talk about the image on the cover.

**Say:** *Why do you think the author titled this article \_\_\_\_\_? Turn and talk about that.*

*Take a minute and preview page(s) \_\_\_\_\_ and see what you notice.*

Kids flip through the pages.

**Say:** *Is anyone getting a better idea of the reason for the title? Anyone want to share?*

A few kids share out.

**Say:** *Let's read on and find out more.*

## GUIDE (10 minutes)

Hand out the Think Sheets. Kids remain bunched up in front of you on the floor.

**Say:** So what did you see me do as I was reading the section about \_\_\_\_\_? Turn and talk about what you noticed me doing.

Kids talk and share out things they noticed.

**Say:** Now it's your turn. I am going to read a paragraph in this new section. When you learn something new, mark a Think Sheet square with an L and jot or draw your new learning. Feel free to add your reactions, too. We remember information more thoroughly when we react to it.

Read the first paragraph on page \_\_\_\_.

**Say:** Wow! Some amazing information here! If you learned anything new, jot it down or sketch it. Don't forget to mark a Think Sheet square with an L for Learn.

Kids stop and jot on their Think Sheet.

**Say:** Okay, now turn and talk, sharing what you learned and any reactions you had.

Kids turn and talk.

**Say:** Who would like to share their new learning?

Several kids share out.

## COLLABORATE (25 Minutes)

**Say:** Now it's time for you to read the rest of the article with a partner. Keep the title in mind as you read. Paying attention to the title and thinking about why the author came up with it can help us come up with some of the big ideas.

Kids partner up to continue reading the article.

**Say:** As you are reading, remember to stop, think, and react to new information, and mark your Think Sheet with an L for Learn when you learn something new. If you finish the article, feel free to keep reading and practicing the strategy with your choice of another article in the magazine. Any questions?

Clarify any questions or misconceptions kids have.

**Say:** Okay, Happy Reading!

Partners read the rest of the article and continue reading their choice of the other selections, as they practice the stop, think, and react strategy. Move around the room, conferring with partners.

## SHARE THE LEARNING (10 minutes)

Kids join a sharing circle with you.

**Say:** Okay, flip through your article and choose a Think Sheet square that you would like to share. I am going to invite [student name] to share new learning. We are going to share using respectful language.

Kids share out and invite others to share, always using respectful sharing language. There should be time for about 3 or 4 kids to share out with the whole group. Once they are finished, have everyone turn and share with the person next to them.

**Say:** You learned so much today about [title of article]. Who has an idea of why that was the title? Turn and talk about that.

Several kids share out.

**Say:** So remember when you read nonfiction, it is important to stop, think, and react to new information, marking any new learning with an L. Nonfiction is all about reading to learn, so we want to learn, remember, and understand what we have read. Great Job today all of you!

## SCIENCE

### Standards Supported

- **NGSS LS2.D: Biodiversity and Humans:** There are many different kinds of living things in an area, and they exist in different places on land and in water. (2-LS4-1)
- **NGSS LS3.B: Variation of Traits:** The environment also affects the trait that an organism develops. (3-LS3-2)

### Resources

- Content Assessment Master (page 10)
- Article Test (page 17)

### Science Background

Earth is home to many different animals. Some live on land. Some live in water. Some have feathers. Others have fins or fur. Despite their differences, all animals have one thing in common. Each one has adapted to survive where it lives. And some of these adaptations could only be described as extreme.

Some animals use their extreme adaptations to get food. The crucifix frog traps flies with a sticky goo that it releases from its skin. Komodo dragons have a deadly bite. And frogfish are masters of disguise. Unsuspecting fish can't see a camouflaged frogfish hiding in a coral reef. But they swim right to the built-in lure dangling above the frogfish's mouth.

Other animals can survive in extreme environments. Pompeii worms live near hydrothermal vents. Wood frogs freeze and thaw to survive brutal Alaskan winters.

Perhaps one of the most bizarre adaptations is used for defense. When a predator attacks, a Texas horned lizard squirts nasty-tasting blood out of its eyes—right into the predator's eyes and mouth. As the predator recovers, the prey escapes.

### ENGAGE

Encourage students to flip through the article and turn and talk with a partner to discuss what they see. Invite students to ask questions or share what they already know about animals that could be characterized as extreme.

### EXPLORE

Display pages 2-3 of the projectable magazine. Point out that the text identifies several ways animals go to extremes to survive. Challenge students to match each description with an animal in one of the photos.

### EXPLAIN

Remind students that adaptations are traits that help animals survive in their environment. **Ask:** *What are some common animal adaptations?* (Possible responses: lungs, gills, fur, feathers, fins) *Why are some adaptations considered to be extreme?* (They are unusual.) Have students turn and talk as they review the article for examples of extreme adaptations. Challenge them to explain how the adaptations help the animals survive. (crucifix frog, sticky skin helps it get food; Komodo dragon, venomous spit helps it catch prey; wood frog, high sugar level in blood keeps its body from freezing completely in winter; Texas horned frog, squeezes blood from its eyes to deter predators) Point out that some of these animals have additional extreme adaptations. For example, the crucifix frog lives underground until it rains. **Ask:** *How does this help the frog survive?* (It can avoid dry weather.) Invite students to identify other extreme adaptations mentioned in the article.

### ELABORATE

Divide the class into small groups. Instruct groups to conduct research to identify other animals with extreme adaptations. Challenge them to explain how the adaptations help the animals survive.

### EVALUATE

Have students complete the **Content Assessment** for this lesson. Encourage them to share and compare their results in small groups.

Name \_\_\_\_\_

Date \_\_\_\_\_

## CONTENT ASSESSMENT: Extreme Animals

Draw a picture of one animal in the article using its extreme adaptations.



Which animal is it? \_\_\_\_\_

How do its adaptations help it survive? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## SCIENCE

### Standards Supported

- **NGSS ETS1.B: Developing Possible Solutions:** Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. (K-2-ETS1-2)
- **NGSS LS4.C: Adaptation:** For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-4)

### Resources

- Content Assessment Master (page 12)
- Article Test (page 18)

### Science Background

The Matsés are group of about 2,200 indigenous people. They live along riverbanks in the Amazon rain forest in Brazil and Peru. Although they made their first permanent contact with the outside world in 1969, the Matsés have preserved much of their native culture.

Fishing and farming are important parts of the Matsés way of life. But the Matsés consider themselves to be hunters above all else. Unlike many Amazon tribes that use blowguns, the Matsés hunt with bows and arrows. Their bows are intricately carved. And the arrows are huge, each measuring about six feet long.

To the outside world, the Matsés are probably best-known for their facial tattoos and piercings. Women pierce their noses with the thin ribs of palm leaves to mimic jaguar whiskers. Because of this, they are sometimes called the "cat people."

### ENGAGE

Encourage students to flip through the article and turn and talk with a partner to discuss what they see. Invite students to ask questions or share what they already know about the Amazon rain forest.

### EXPLORE

Display and review pages 8-9 of the projectable magazine. **Ask:** *What does it mean to live off the grid or in the wild?* (Possible response: Living without modern conveniences like electricity and plumbing. Using what is naturally available to meet all of one's needs.) Have students brainstorm ideas about how their lives would be different if they lived this way.

### EXPLAIN

Display on page 10 of the projectable magazine. Point out that the large green area represents the Amazon rain forest. **Ask:** *How would you travel through a place like this?* (Possible responses: walk through the jungle or take a boat on a river) *How would you get food?* (hunt or fish) Encourage students to turn and talk as they identify other challenges people would face if they traveled here. (Possible responses: cooking food, finding shelter, keeping away from dangerous animals) **Ask:** *How did 14-year-old Kane Hameister survive this trip?* (He had help from members of the Matsés tribe.) Encourage students to turn and talk as they identify everything the Matsés did to help Kane survive.

### ELABORATE

Point out to students that the Matsés get everything they need to survive from the Amazon rain forest. But they still use one modern tool: the machete. Have students conduct research to identify natural resources in the Amazon rain forest that the Matsés would likely use. Challenge them to identify different ways they could use a machete.

### EVALUATE

Have students complete the **Content Assessment** for this lesson. Encourage them to share and compare their results in small groups.

**CONTENT ASSESSMENT: Amazon Adventure**

Draw pictures and write step-by-step instructions to explain how the Matsés make a fishing pole.

|    |  |
|----|--|
| 1. |  |
| 2. |  |
| 3. |  |
| 4. |  |

### Standards Supported

- **NGSS ETS1.A: Defining and Delimiting Engineering Problems:** Asking questions, making observations, and gathering information are helpful in thinking about problems. (K-2-ETS1-1)
- **NGSS Science and Engineering Practices: Asking Questions and Defining Problems:** Define a simple problem that can be solved through the development of a new or improved object or tool. (3-PS2-4)

### Resources

- Content Assessment Master (page 14)
- Article Test (page 19)

### Science Background

When people think of machines, they generally picture complicated gadgets with lots of moving parts. But not all machines are this complex. Some, called "simple machines," only have a few parts. And they are extremely helpful when you want to get work done.

In this article, the third of a six-part series about simple machines, students will learn about wedges. A wedge is a tool shaped like a triangle. The function of a wedge is to change the direction of the input force.

There are many different types of wedges, and they can be used in different ways. Knives and axes are wedges that separate things. A doorstop is a wedge that holds a door in place. Snowplows use wedges to reach beneath snow and lift it off the road. People even have wedges in their bodies. Think about this the next time you eat!

### ENGAGE

Encourage students to flip through the article and turn and talk with a partner to discuss what they see. Invite students to ask questions or share what they already know about wedges.

### EXPLORE

Display pages 16-17 of the projectable magazine. Read aloud the headline and deck. **Ask:** *What clues show or tell you what a wedge is?* (deck, diagram, photos) Brainstorm examples of wedges students use every day.

### EXPLAIN

Point out to students that wedges are a type of simple machine. **Ask:** *What shape is a wedge?* (triangle) *What causes a wedge to do work?* (An effort creates a sideways force that moves things in opposite directions.) Have students turn and talk as they review the article to explore different types of wedges. Challenge students to identify things wedges help people do. (cut, split, lift, scrape, zip, etc.) Then display and review the activity on pages 22-23 of the projectable magazine. Brainstorm ideas about how to record or graph the results. Select one method. (Suggestion: Have students take photos or draw pictures of the cheese after they attempt to split it with each tool.) Provide the necessary supplies and have students complete the activity in small groups. Invite groups to share and compare their results with the class.

### ELABORATE

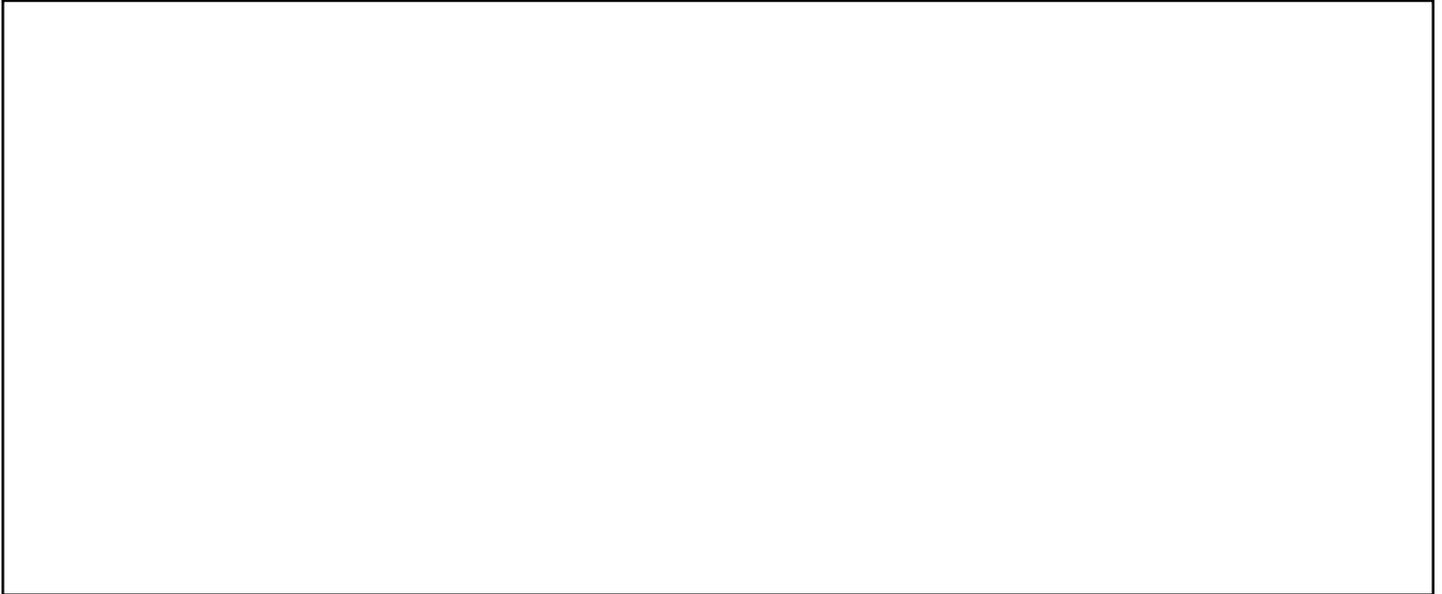
Remind students that many inventions with wedges were inspired by animals with wedge-shaped bodies. Divide the class into small groups. Have groups conduct research to identify animal-inspired wedge-shaped inventions. Invite them to share photos of each invention they find with the class.

### EVALUATE

Have students complete the **Content Assessment** for this lesson. Encourage them to share and compare their results in small groups.

**CONTENT ASSESSMENT: Wedge It!**

Draw a diagram that shows how a wedge works.



Name three wedges. Write a complete sentence to tell how you use each one.

| Wedge | Use |
|-------|-----|
|       |     |
|       |     |
|       |     |

## SOCIAL STUDIES

### Standards Supported

- **C3: History: Change, Continuity, and Context:** Compare life in the past to life today. (D2.His.2.K-2)
- **C3: History: Change, Continuity, and Context:** Compare life in specific historical time periods to life today. (D2.His.2.3-5)

### Resources

- Greece Then and Now poster (teacher's edition)
- Greece Culture and Daily Life poster (teacher's edition)
- Content Assessment Master (page 16)
- Article Test (page 20)

### Social Studies Background

Making comparisons is the first step toward understanding how a place has changed over time. To fully appreciate these changes, students must be able to evaluate them from different perspectives: political, economic, social, cultural, etc. This process takes time to develop. Recognizing that, each month *Explorer* magazine will introduce students to a different ancient civilization. Use the accompanying lessons to guide students as they develop these skills.

### ENGAGE

Encourage students to examine the maps and turn and talk with a partner to discuss what they see. Invite students to ask questions or share what they already know about Greece.

### EXPLORE

Display the **Greece Then and Now poster**. **Ask:** *Where is Greece?* (southern Europe) *What is it made up of?* (a peninsula and many islands) Brainstorm ideas about why the country's borders would have changed over time.

### EXPLAIN

Invite students to examine the **Greece Then and Now poster**. **Ask:** *How are the two maps of Greece the same?* (same land shape; same islands and seas) *How are they different?* (different country borders and names; Greece is larger now.) Have students turn and talk to discuss why these changes occurred. (Geographically, the area where Greece lies is the same. But politically, the area has changed a great deal from ancient times.) Review the timeline as a class. Encourage students to compare and contrast ancient and modern Greece. Then display the **Greece Culture and Daily Life poster**. Review the information as a class. Challenge students to identify similarities and differences between ancient Greek culture and Greek culture today.

### ELABORATE

Remind students that ancient Greeks started the Olympic Games. Brainstorm ideas about why The Games were important to ancient Greeks. Discuss reasons why the Olympics are still important to people today. Encourage students to conduct research to identify ways the Olympics have changed over time.

### EVALUATE

Have students complete the **Content Assessment** for this lesson. Encourage them to share and compare their results in small groups.

Name \_\_\_\_\_

Date \_\_\_\_\_

**CONTENT ASSESSMENT: Greece Culture and Daily Life**

Draw a picture of a modern building with features of ancient Greek architecture. Name the building.  
Label each feature.

**Words You Can Use**

**column**

**pediment**

**frieze**

**inner chamber**

**Building:** \_\_\_\_\_

**ARTICLE TEST: Extreme Animals**

Read each question. Fill in the circle next to the correct answer and then write your response on the lines.

1. What is a crucifix frog's special adaptation?  
Ⓐ sticky skin  
Ⓑ poisonous venom  
Ⓒ a fast heartbeat
  
2. Which word best describes a Komodo dragon's bite?  
Ⓐ sticky  
Ⓑ deadly  
Ⓒ cold
  
3. What protects a wood frog from freezing all the way in winter?  
Ⓐ glue in its skin  
Ⓑ venom in its spit  
Ⓒ sugar in its blood
  
4. Which extreme animal lives underground until it rains?  
Ⓐ crucifix frog  
Ⓑ Komodo dragon  
Ⓒ Texas horned lizard
  
5. How do a Texas horned lizard's extreme adaptations help it survive?

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**ARTICLE TEST: Amazon Adventure**

Read each question. Fill in the circle next to the correct answer and then write your response on the lines.

1. Where did Kane go to visit the Matsés?  
Ⓐ Peru  
Ⓑ Bolivia  
Ⓒ Brazil
  
2. Which tool did the Matsés teach Kane how to make?  
Ⓐ machete  
Ⓑ fishing pole  
Ⓒ knife
  
3. Which of these do the Matsés do with a machete?  
Ⓐ hunt  
Ⓑ chop  
Ⓒ cook
  
4. What do Matsés women want to look like when they pierce their noses?  
Ⓐ a caiman  
Ⓑ an anaconda  
Ⓒ a jaguar
  
5. What are two important lessons the Matsés taught Kane about surviving in the Amazon?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**ARTICLE TEST: Wedge It!**

Read each question. Fill in the circle next to the correct answer and then write your response on the lines.

1. What is a force?  
Ⓐ a push or a pull  
Ⓑ a simple machine  
Ⓒ effort
  
2. What shape is a wedge?  
Ⓐ circle  
Ⓑ triangle  
Ⓒ square
  
3. What direction does a wedge push things?  
Ⓐ upward  
Ⓑ backward  
Ⓒ sideways
  
4. Which of these sentences is true?  
Ⓐ Wedges can only cut through solids things.  
Ⓑ Wedges have many parts.  
Ⓒ Wedge make it easier to do work.

5. How does a wedge work?

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**POSTER TEST: Greece**

Read each question. Fill in the circle next to the correct answer and then write your response on the lines.

1. Where did the first Greek civilization start?  
Ⓐ Macedonia  
Ⓑ Crete  
Ⓒ Olympia
  
2. Which continent is Greece part of today?  
Ⓐ Europe  
Ⓑ Asia  
Ⓒ Africa
  
3. Which city is the capital of Greece today?  
Ⓐ Delphi  
Ⓑ Athens  
Ⓒ Knossos
  
4. Which of these is a feature of ancient Greek architecture?  
Ⓐ steel frames  
Ⓑ columns  
Ⓒ trap doors

5. Why did the ancient Greeks start the Olympic Games?

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## ANSWER KEY

### Extreme Animals

#### Assess Content, page 10

Answers will vary depending on which animal students choose to draw. However, drawings should depict the animal using its adaptations and answers should contain information from the article.

#### Article Test, page 17

1. A; 2. B; 3. C; 4. A; 5: The Texas horned lizard puffs up to look bigger. If that doesn't scare coyotes away, it squirts a stream of nasty-tasting blood from its eyes into their mouths.

### Amazon Adventure

#### Assess Content, page 12

Drawings and directions should depict the following:  
1. Cut off a small, thin tree at its base; 2. Peel off the bark; 3. Attach some fishing line and a hook; 4. Use meat scraps as bait

#### Article Test, page 18

1. A; 2. B; 3. B; 4: C; 5: Possible responses include: how to hunt; how to catch fish; how to build a fire; how to cook fish; which animals to watch out for, etc.

### Wedge It!

#### Assess Content, page 14

Students should create diagram resembling the one on page 18. They should identify three wedges and write complete sentences telling how they work.

#### Article Test, page 19

1. A; 2. B; 3. C; 4: C; 5: Effort pushing down on a wedge creates a force that causes the wedge to push things sideways, or split them.

### Ancient Greece

#### Assess Content, page 16

Students should draw a picture of an existing modern building with features of ancient Greek architecture. They should identify the building and label examples of each architectural feature.

#### Poster Test, page 20

1. B; 2. A; 3. B; 4: B; 5: The ancient Greeks started the Olympic Games to honor the god Zeus.