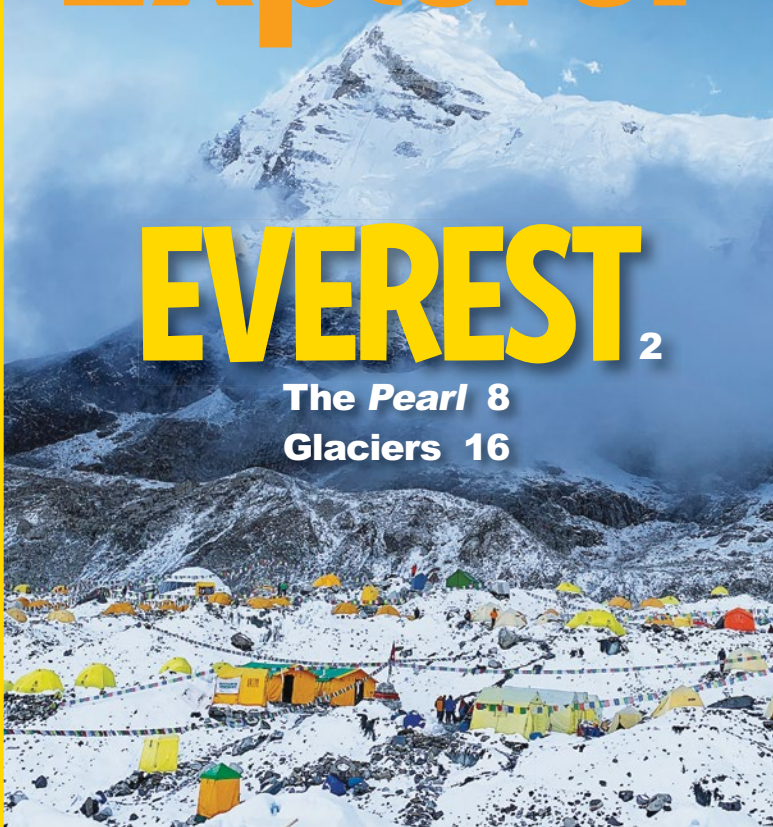




# Explorer

# EVEREST<sup>2</sup>

The Pearl 8  
Glaciers 16



## TEACHER'S GUIDE Pathfinder and Adventurer Vol. 19 No. 3

### IN THIS GUIDE:

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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

#### Pathfinder

Expedition Everest .....	710
Escape on the Pearl .....	730
River of Ice .....	690

#### Adventurer

Expedition Everest .....	920
Escape on the Pearl .....	850
River of Ice .....	800

### Standards Supported

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

**See each lesson for the specific standard covered.**



Looking for a fun way to test your student's recall? Each story in this issue of Explorer has an accompanying Kahoot! quiz.

Log in at [ExplorerMag.org](http://ExplorerMag.org)  
to access additional resources including:

- Interactive Digital Magazine with videos and activities
- Projectable PDF for one-to-one instruction

## 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

### Attitudes



**CURIOSITY** An explorer remains curious about how the world works throughout his or her life. An explorer is adventurous, seeking out new and challenging experiences.

**RESPONSIBILITY** An explorer has concern for the welfare of other people, cultural resources, and the natural world. An explorer is respectful, considers multiple perspectives, and honors others regardless of differences.

**EMPOWERMENT** An explorer acts on curiosity, respect, responsibility, and adventurousness and persists in the face of challenges.

### Skills



**OBSERVATION** An explorer notices and documents the world around her or him and is able to make sense of those observations.

**COMMUNICATION** An explorer is a storyteller, communicating experiences and ideas effectively through language and media. An explorer has literacy skills, interpreting and creating new understanding from spoken language, writing, and a wide variety of visual and audio media.

**COLLABORATION** An explorer works effectively with others to achieve goals.

**PROBLEM SOLVING** An explorer is able to generate, evaluate, and implement solutions to problems. An explorer is a capable decision maker—able to identify alternatives and weigh trade-offs to make a well-reasoned decision.

### Knowledge



**THE HUMAN JOURNEY** An explorer understands where we came from, how we live today, and where we may find ourselves tomorrow.

**OUR CHANGING PLANET** An explorer understands the amazing, intricate, and interconnected systems of the changing planet we live on.

**WILDLIFE AND WILD PLACES** An explorer reveals, celebrates, and helps to protect the amazing and diverse creatures we share our world with.

# LANGUAGE ARTS Think, Write, and Talk About the Text

## Standards Supported

### Fourth Grade Standard Supported

- CCSS Reading Informational Text: Determine the main idea of a text and explain how it is supported by key details; summarize the text. (4-2)

### Fifth Grade Standard Supported

- CCSS Reading Informational Text: Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text. (5-2)

## What You'll Need

- "Escape on the Pearl" (*Explorer*, pages 2–3)
- "Islands Born of Fire" (*Explorer*, pages 4–9)
- Think Sheet (Teacher's Guide, page 5)
- Clipboards
- Pencils

## CONNECT & ENGAGE (20 minutes)

Kids are in a group in front of you. Hold up pages 8–9 in the magazine.

**Say:** "Escape on the Pearl" is a different type of article from the other two in the magazine. It is written by Mary Kay Ricks and has illustrations instead of photos. The illustrations are by Adam Turner. Take a look at these first two pages of the article. Before even starting to read an article, you can learn a lot from the headline and the illustrations. That alone starts you thinking and wondering.

**Say:** But before we really dig into this article, I want to show you how we turn and talk throughout a lesson. It's important to talk to one another about what we are thinking. Sharing our thoughts helps us learn from one another, and it helps us understand what we are viewing and reading in the text.

**Say:** Can I get two volunteers to help me? Wonderful! The two of you can sit down next to each other facing the class. When I ask you to turn and talk, turn and look at each other. You don't need to move your whole body, just turn slightly so you can look at each other and politely have a conversation. That's it. Nice job, volunteers!

**Say:** All right, now that we've seen a good model of turning and talking from our volunteers, turn to the person next to you and talk about pages 8–9. Share your thoughts about the headline and the illustrations.

Kids turn and talk.

## MODEL (10 minutes)

Kids sit in a group, with you in front of them.

**Say:** When we read or listen to an article or a story, we start thinking about what we are reading or hearing. We think about connections we have to the information or to the pictures. We might be reminded of something we know or of a place we've been. Or we could start wondering or have questions about something.

**Say:** Thinking is so important! Thinking is the key to understanding what you are seeing, listening to, or reading about.

**Say:** Let's look at page 9. I'm going to show you how I think about things. On this page, the first thing I notice is the illustrations. I know that often fiction stories have illustrations, so I start to wonder if this is a made-up story or a true story. Then I notice the larger type above the author's name, and I read it. It says, "Follow me as I uncover a story from the past." Now I know this is a true story from the past. That's good for me to know before I read on. Next I'm going to read aloud the rest of the text on the page, so follow along.

Read aloud the text on page 8.

**Say:** All right, now I know a lot about what the title means. These enslaved people are attempted to escape into freedom on a ship called the Pearl. I also learned that this happened 13 years before the Civil War began and that their escape would also include travel on the Underground Railroad. From the illustration, I'm thinking that these young women were two of the seventy-seven people onboard the ship. I'm guessing we will hear more about them. I'm going to write down my thinking on a Think Sheet square. It's your turn. Turn and talk with a partner about what you are thinking about these pages.

Kids turn and talk.

## LANGUAGE ARTS Think, Write, and Talk About the Text

### GUIDE (10 minutes)

Hand out the Think Sheets attached to clipboards. Kids remain grouped in front of you on the floor.

**Say:** *Let's move on to pages 10–11. Look at the map and illustrations as I read aloud. On your Think Sheets, write what you are thinking. I will do the same, after I finish reading aloud.*

**Say:** *When you finish writing, turn and talk about your thinking.*

Give kids time to turn and talk and share what they wrote with a partner.

**Say:** *I'm curious to hear about your thinking. Who would like to share with the class what you were thinking?*

Kids share out.

**Say:** *That's great thinking, everyone. I had some of the same thoughts you did. What a plan they had! If only it would have worked out. Here are some of the things I wrote down about my thinking.*

- *I was glad to have the map to see how far the Pearl had traveled south on the Potomac from Washington, D.C.*
- *I can't believe they were so unlucky to have the wind die down, giving the slave owners time to realize they were gone and then set out to capture them.*
- *It's hard to imagine what happened as a result of the capture and return of the escaped slaves. At least the escape made more people aware of the evils of slavery and influenced Congress to end the slave trade in Washington, D.C.*
- *I see now that the two young women pictured on page 9 were Mary and Emily Edmonson. Just like the author, I want to learn more about them and their brothers.*

### COLLABORATE (25 minutes)

**Say:** *Turn to pages 12–13. This time, work with a partner. Read the text. You can read the text silently or take turns reading it aloud to each other. After reading, turn and talk with your partner. What new information have you found out about the Pearl and about the Edmonsons?*

**Say:** *How was the author able to get this information? What else do you wonder about? What questions do you have? Write your thinking on your Think Sheets.*

Allow kids time to read, turn and talk, and write.

**Say:** *Keeping in mind any questions you wrote down on your Think Sheets, continue reading to the end of the*

*article on page 15. Follow the same process—read, turn and talk, and then write about your thinking.*

Give kids time to read and talk about their thinking and get their thinking recorded on their Think Sheets.

**Say:** *Once again, I'm very curious about your thinking. Were all your questions and wonderings about the Pearl and the Edmonsons answered? Do you have any thoughts about the author and the research and writing she did to tell this story from the past? Who would like to share their thoughts with the class?*

Give kids time to share out.

**Say:** *Your thinking is just awesome, class! I'm so impressed with not only your thinking but also the way you have been talking with one another about your thinking.*

### SHARE THE LEARNING (10 minutes)

Kids join a sharing circle.

**Say:** *Let's get together and talk about what we learned. I learned that it's important to think and write about what you are reading and viewing. Who else would like to share something they learned? You can share something you wrote on your Think Sheet.*

Allow time for kids to share their learning.

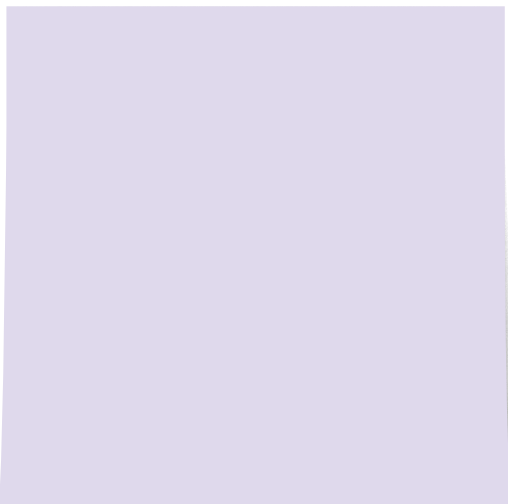
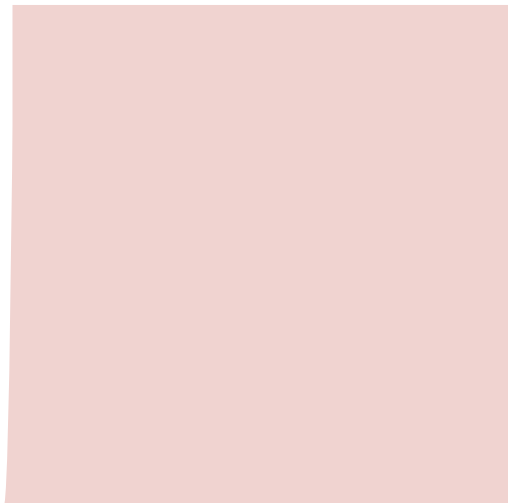
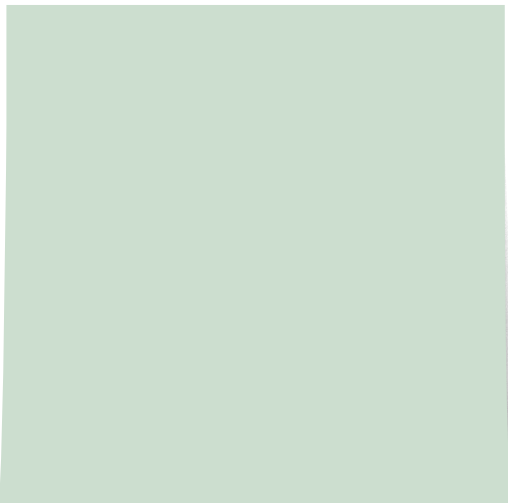
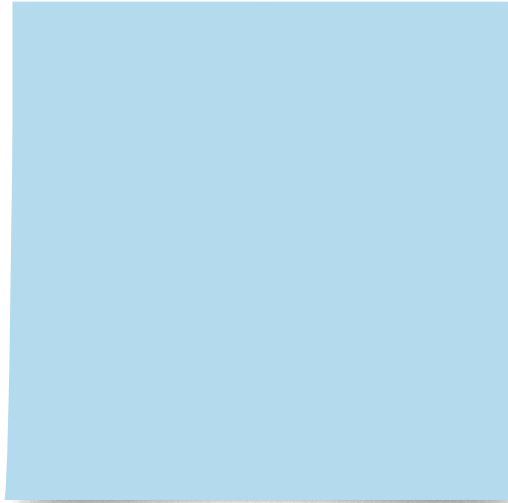
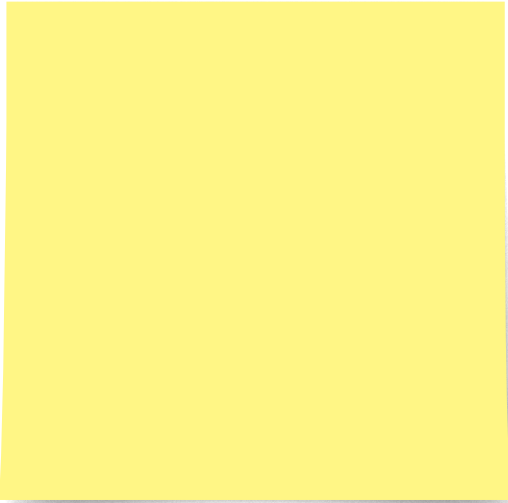
**Say:** *Does anyone want to share something they are still curious about or still wonder about this true story about the escape on the Pearl, the Edmonsons, or the author's research and writing about this story? Remember that as we read, we might have questions that aren't answered in the text. We may need to find those answers somewhere else. We can write down your questions and decide if we'd like to research to find the answers later on.*

If kids have questions they still wonder about any aspect of this story or the author, you might want to write them down and choose a few to research as a class.

*I've always loved reading about true stories of the past, and I really enjoy reading about an author's process for researching and writing. It's amazing how much work goes into telling a true story. It's so important to get all the facts straight, and I'm sure writers have to be prepared not to find everything they had hoped to. Just like readers, writers are sometimes left with unanswered questions. Great work today, class!*

**THINK SHEET**

Use these note squares to write your thoughts about the text.



## LESSON FRAME Think, Write, and Talk About the Text

### What You'll Need

- Nonfiction text
- Think Sheet template
- Clipboards and pencils

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.

### CONNECT & ENGAGE (20 minutes)

Kids are in a group in front of you. Hold up the magazine.

**Say:** *Take a look at the beginning of the article. Before even starting to read, you can learn a lot from the headline and the pictures. That alone starts you thinking and wondering.*

**Say:** *But before we really dig into this article, I want to show you how we turn and talk throughout a lesson. It's important to talk to one another about what we are thinking. Sharing our thoughts helps us learn from one another, and it helps us understand what we are viewing and reading in the text.*

**Say:** *Can I get two volunteers to help me? Wonderful! The two of you can sit down next to each other facing the class. When I ask you to turn and talk, turn and look at each other. You don't need to move your whole body, just turn slightly so you can look at each other and politely have a conversation. That's it. Nice job, volunteers!*

**Say:** *All right, now that we've seen a good model of turning and talking from our volunteers, turn to the person next to you and talk about page(s) \_\_\_\_\_. Share your thoughts about the headline and the pictures.*

Kids turn and talk.

### MODEL (10 minutes)

Kids sit in a group, with you in front of them.

**Say:** *When we read or listen to an article or a story, we start thinking about what we are reading or hearing. We think about connections we have to the information or to the pictures. We might be reminded of something we know or of a place we've been. Or we could start wondering or have questions about something.*

**Say:** *Thinking is so important! Thinking is the key to understanding what you are seeing, listening to, or reading about.*

**Say:** *Let's look at page \_\_\_\_\_. I'm going to show you how I think about things. On this page, the first thing I notice is \_\_\_\_\_. I start to wonder if this is \_\_\_\_\_. Then I notice \_\_\_\_\_. Now I know \_\_\_\_\_. That's good for me to know before I read on. Next I'm going to read aloud the text on the page, so follow along.*

Read aloud the text on page \_\_\_\_\_.

**Say:** *All right, now I know \_\_\_\_\_. I'm going to write down my thinking on a Think Sheet square.*

**Say:** *It's your turn. Turn and talk with a partner about what you are thinking about these pages.*

Kids turn and talk.

## LESSON FRAME Think, Write, and Talk About the Text

### GUIDE (10 minutes)

Hand out the Think Sheets attached to clipboards. Kids remain grouped in front of you on the floor.

**Say:** *Let's move on to page(s) \_\_\_\_\_. Look at \_\_\_\_\_ as I read aloud. On your Think Sheets, write what you are thinking. I will do the same, after I finish reading aloud.*

**Say:** *When you finish writing, turn and talk about your thinking.*

Give kids time to turn and talk and share what they wrote with a partner.

**Say:** *I'm curious to hear about your thinking. Who would like to share with the class what you were thinking?*

Kids share out.

**Say:** *That's great thinking, everyone. I had some of the same thoughts you did. Here are some of the things I wrote down about my thinking.*

### COLLABORATE (25 Minutes)

**Say:** *Turn to page(s) \_\_\_\_\_. This time, work with a partner. Read the text. You can read the text silently or take turns reading it aloud to each other. After reading, turn and talk with your partner. What new information have you found out about \_\_\_\_\_? What else do you wonder about? What questions do you have? Write your thinking on your Think Sheets.*

Allow kids time to read, turn and talk, and write.

**Say:** *Keeping in mind any questions you wrote down on your Think Sheets, continue reading to the end of the article. Follow the same process—read, turn and talk, and then write about your thinking.*

Give kids time to read and talk about their thinking and get their thinking recorded on their Think Sheets.

**Say:** *Once again, I'm very curious about your thinking. Were all your questions and wonderings answered? Who would like to share their thoughts with the class?*

Give kids time to share out.

**Say:** *Your thinking is just awesome, class! I'm so impressed with not only your thinking but also the way you have been talking with one another about your thinking.*

### SHARE THE LEARNING (10 minutes)

Kids join a sharing circle.

**Say:** *Let's get together and talk about what we learned. I learned that it's important to think and write about what you are reading and viewing. Who else would like to share something they learned? You can share something you wrote on your Think Sheet.*

Allow time for kids to share their learning.

**Say:** *Does anyone want to share something they are still curious about or still wonder about this article? Remember that as we read, we might have questions that aren't answered in the text. We may need to find those answers somewhere else. We can write down your questions and decide if we'd like to research to find the answers later on.*

If kids have questions they still wonder about, you might want to write them down and choose a few to research as a class.

**Say:** *It's amazing how much you've learned about the importance of thinking, writing, and talking about your reading. Thank you so much for sharing your thinking and your learning. Great work today, class!*

# Expedition Everest

## SCIENCE

### Standards Supported

- **NGSS ETS1.B: Designing Solutions to Engineering Problems:** Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. (3-5-ETS1-2) (secondary to 4-ESS3-2)
- **NGSS ESS3.C: Human Impacts on Earth Systems:** Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. (5-ESS3-1)

### Resources

- Projectable PDF or interactive digital magazine
- Content Assessment Master (page 9)
- Article Test (page 14)
- Living at High Altitude poster (teacher's edition)
- Test the Science: High Altitude Exploring poster (teacher's edition)

### Science Background

Mount Everest is part of the Himalaya mountain range, which divides most of southern Asia from the India subcontinent. At 8,848 meters (29,029 feet), it is the highest point above sea level on Earth.

To learn more about climate change, National Geographic recently sponsored an expedition of 30 scientists to study this extreme environment. For two months, the experts collected data up and down the mountain. They even installed the highest weather station in the world.

Mount Everest is one of the few peaks high enough to enter the Sub-tropical Jet Stream, which influences everything from climate to growing seasons. Data collected here could help scientists understand these powerful winds.

### 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 Mount Everest.

### EXPLORE

Display the "**Expedition Everest**" article with the projectable PDF or the interactive digital magazine. As a class, brainstorm a list of ways that conditions at the top of Mount Everest would be different from those at those at the bottom of the mountain and how conditions in both places would compare to where you live.

### EXPLAIN

After reading, remind students that Alex Tait and his team went to Mount Everest for a reason. **Ask:** *What is that reason?* (They went to collect data about the climate so they can understand how the mountains are changing.) Have students turn and talk as they discuss reasons why it is difficult but essential to collect data in high mountain environments. Challenge them to identify types of data the team collected and the tools they used, in particular LIDAR, ice cores, and weather stations. Then have students discuss how analyzing the data helps scientists understand global climate change.

### ELABORATE

Display and review the **Living at High Altitude poster**. Have students discuss how a change in climate could impact animals that live at different heights on Mount Everest. Then display the **Test the Science: High Altitude Exploring poster**. Review the two sidebars. Provide supplies and have students conduct the experiment with a partner. Rejoin as a class to analyze the results. Encourage students to share their ideas about why humans struggle to survive in Everest's "Death Zone."

### EVALUATE

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



Click here for the Kahoot! quiz:  
<https://play.kahoot.it/#/k/526d69af-54cc-4648-b453-1d7c434dbd8f>



**CONTENT ASSESSMENT: Expedition Everest**

Describe the connection between climate change and this National Geographic expedition.

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Explain what each of these items is and how it helps geographer Alex Tait study the extreme environment of Mount Everest.

Mapping	Ice Cores	Weather Stations

What do you think the data will eventually reveal about conditions on high mountains? Why?

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# Escape on the Pearl

## SOCIAL STUDIES

### Standards Supported

- **C3: History: Historical Sources and Evidence:** Summarize how different kinds of historical sources are used to explain events in the past. (D2.His.9.3-5)
- **C3: History: Historical Sources and Evidence:** Compare information provided by different historical sources about the past. (D2.His.10.3-5)

### Resources

- Projectable PDF or interactive digital magazine
- Content Assessment Master (page 11)
- Article Test (page 15)

### Social Studies Background

On the evening of April 15, 1848, 77 slaves attempted one of the most daring escapes in the history of the Underground Railroad. That night, small groups of men, women, and children left from their homes in and around Washington, D.C. They boarded a sailboat called the *Pearl*, hoping to make their way to freedom up North.

Unfortunately, shortly after they departed the wind died. The captain was forced to drop the anchor and wait. By the time the wind picked up and they could set sail again, their owners knew they were gone and set out in pursuit. They caught up with the *Pearl* and towed it back to Washington, D.C. The 77 fugitives were jailed, sold to slave traders, and sent to the South.

Although the *Pearl's* journey failed, its mission did not. People were now more aware of slavery and fought to have it abolished. In 1850, two years after the *Pearl* sailed, some members of Congress tried to end slavery in Washington, D.C. It took 12 more years for that to happen, making slaves in the District the first to be freed by federal law.

### 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 Underground Railroad.

### EXPLORE

Display the "**Escape on the Pearl**" article with the projectable PDF or the interactive digital magazine. Have students examine each illustration. Encourage them to explain what they think the pictures show.

### EXPLAIN

After reading, encourage students to express how they would feel if they had been one of the enslaved people attempting to escape on the *Pearl*. **Ask:** *Why do you think a story as important and dramatic as this was forgotten?* (Possible response: It was illegal for enslaved people to learn how to read or write. Many of their stories, like this one, were forgotten.) As a class, discuss how the author used primary sources to rediscover the *Pearl's* tale. Brainstorm ideas about how primary sources could be used to investigate other stories in U.S. history that have disappeared over time.

### ELABORATE

Remind students that the *Pearl* was a stop on the Underground Railroad, a network of people, homes, and hideouts that helped enslaved people in the South escape to freedom in the North during in the 30 years before the Civil War. To learn more about this network, invite students to complete the National Geographic Education interactive "Journey to Freedom: Underground Railroad" (<https://www.nationalgeographic.org/interactive/journey-freedom-underground-railroad/>). This "choose your own" learning experience immerses students in the action as they attempt to escape from a southern plantation and head north toward freedom.

### EVALUATE

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



Click here for the Kahoot! quiz:  
<https://play.kahoot.it/#/k/448bcd50-8c3f-44cb-b3c8-9425ae809820>

**CONTENT ASSESSMENT: Escape on the *Pearl***

Identify six primary sources author Mary Kay Ricks used to learn about the *Pearl*. Explain what she learned from each.

Identify	Explain

Identify other sources she used to write her book. Explain why they are not primary sources. Describe how they still helped her understand what happened.

Identify	Explain	Describe

# River of Ice

## SCIENCE

### Standards Supported

- **NGSS Crosscutting Concepts: Cause and Effect:** Cause and effect relationships are routinely identified, tested, and used to explain change. (4-ESS3-2)
- **NGSS ESS3.C: Earth Materials and Systems:** Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth's surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Wind and clouds in the atmosphere interact with the landforms to determine patterns of weather. (5-ESS2-1)

### Resources

- Projectable PDF or interactive digital magazine
- Content Assessment Master (page 13)
- Article Test (page 16)

### Science Background

Flowing like rivers of ice, glaciers carve and shape the land, leaving trough-shaped valleys, deep fjords, and other features in their wake.

Glaciers form high on mountains and at the poles. Layers of snow build up over time, compress under their own weight, and ultimately transform into dense glacial ice.

Glaciers cover about 10 percent Earth's land, or 15 million square kilometers (5.8 million square miles). Their ice can be thousands of years old. Scientists drill and take out ice cores to study the layers within them. This analysis shows what past environments were like. It also reveals how and why climates changed in the past and how they might change in the future.

### 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 glaciers.

### EXPLORE

Display the "**River of Ice**" article with the projectable PDF or the interactive digital magazine. As a class, brainstorm ideas about why a glacier would be an extreme place to explore.

### EXPLAIN

After reading, remind students that glaciers are huge, slow-moving rivers of ice. Have students turn and talk with a partner to discuss how glaciers form. Instruct partners to then review the glacier-related terms in the Wordwise feature. Challenge them to identify photos that illustrate different terms. Rejoin as a class to discuss how glaciers can change the land. Challenge students to identify various ways glaciers affect the environment and the lives of people who live near them.

### ELABORATE

Point out to students higher temperatures brought on by climate change are causing glaciers to melt. Challenge students to explain how this could change the lives of people who live near melting glaciers as well as those who live far away.

### EVALUATE

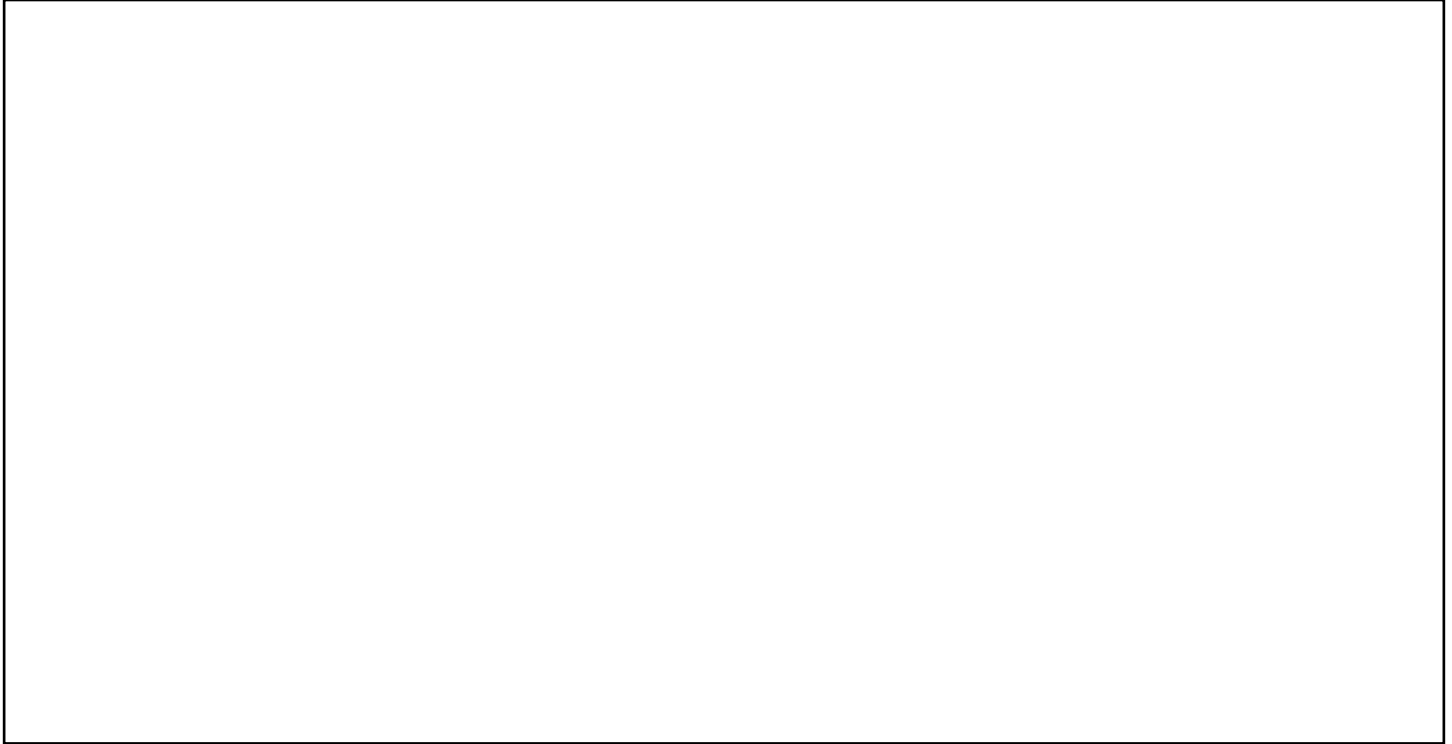
Have students complete the **Content Assessment** for this lesson. Then have them take the **Article Test**. Encourage them to share and compare their results in small groups.



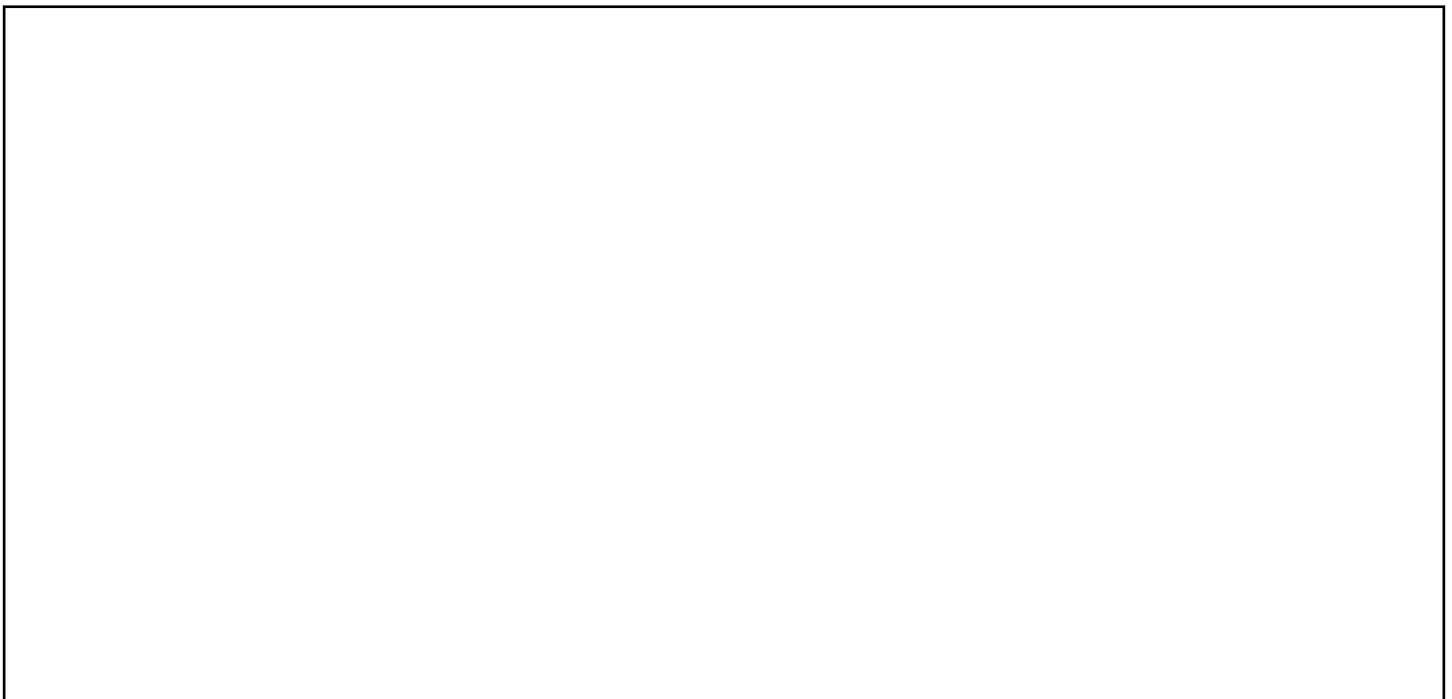
Click here for the Kahoot! quiz:  
<https://play.kahoot.it/#/k/a4a72294-0eea-4491-9546-4a417adfc131>

**CONTENT ASSESSMENT: River of Ice**

Create a diagram to show how a glacier forms.



Create another diagram to show how a glacier melting because of climate change could affect the way some people live.



**ARTICLE TEST: Expedition Everest**

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

1. In what country is Mount Everest located?  
Ⓐ Nepal  
Ⓑ Himalaya  
Ⓒ Lukla
  
2. What does data collected with LIDAR help Alex Tait create?  
Ⓐ drones  
Ⓑ tools  
Ⓒ maps
  
3. What does an ice core help scientists study?  
Ⓐ a glacier's surface  
Ⓑ a glacier's layers  
Ⓒ a glacier's melting rate
  
4. Which tool helps Tait measure the changing climate?  
Ⓐ helicopters  
Ⓑ weather stations  
Ⓒ drills
  
5. How will data collected on this expedition help Tait study climate change?

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**ARTICLE TEST: Escape on the *Pearl***

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

1. What did all of the passengers on the *Pearl* have in common?  
Ⓐ They were free.  
Ⓑ They were slaves.  
Ⓒ They were abolitionists.
  
2. Which river did the *Pearl* sail down?  
Ⓐ Mississippi  
Ⓑ Ohio  
Ⓒ Potomac
  
3. Why was the ship's journey on this April night in 1848 important?  
Ⓐ It made people aware of slavery.  
Ⓑ It brought an instant end to slavery.  
Ⓒ It helped 77 people escape from slavery.
  
4. Why are primary resources a good way to learn about the *Pearl's* journey?  
Ⓐ They are works of fiction.  
Ⓑ They were created at the time under study.  
Ⓒ They were written by people who studied the ship's history.

5. Why is the *Pearl* an important part of the Underground Railroad's history?

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**ARTICLE TEST: River of Ice**

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

1. What are the three ingredients needed to make a glacier?  
Ⓐ ice, mountains, snow  
Ⓑ snow, valleys, fjords  
Ⓒ snow, cold temperatures, time
  
2. What causes glaciers to move?  
Ⓐ gravity  
Ⓑ weight  
Ⓒ temperature
  
3. What is the end point of a glacier called?  
Ⓐ calve  
Ⓑ serac  
Ⓒ terminus
  
4. What does a piedmont glacier look like?  
Ⓐ jagged and steep  
Ⓑ wide and round  
Ⓒ long and narrow
  
5. What is one way melting glaciers could affect the way some people live?

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# Pathfinder and Adventurer

## ANSWER KEY

### Expedition Everest

#### Assess Content, page 10

**Question 1:** National Geographic sponsored this expedition to learn how climate change is affecting extreme environments like high mountains.

**Mapping:** Using tools like LIDAR, which uses light to measure the shape of land, and helicopters and drones, which take pictures, to create a photo-map of the area. Comparing that to past maps will show how the area has changed.

**Ice Cores:** Using a big drill, they get a long piece of ice that is a cross section of a glacier. It shows what the climate was like in the past.

**Weather stations:** Stations with tools that measure temperature, precipitation, pressure, and solar radiation. Satellites send the data to a computer where it is monitored and compared to weather in other places around the world.

**Question 2:** Answers will vary, but students should take the impact of climate change into account as they write their responses.

#### Article Test, page 15

1. A; 2. C; 3. B; 4. B; 5. Possible response: The data will help him measure conditions over a period of time. He can compare data collected at different times to learn how the climate there is changing.

### Escape on the Pearl

#### Assess Content, page 12

Possible answers include:

1. census records: what was on the farm grew: fruit trees, grains, three horses, three cows, and five pigs
2. ship passenger lists: the name of the ship they took to New Orleans, where they were to be sold; their heights and ages
3. court cases: their mother was a slave, owned by a woman who lived nearby
4. newspaper articles: what abolitionists did to bring about the end of slavery
5. land deeds: Their father was a free man who owned a 40-acre farm north of Washington, D.C.
6. city directory: the name of the slave trader who bought them (Jonathan Wilson) and where his slave jail was located
7. school records: where they went to school and their grades (presumably, although the article does not state this)
8. Emily's letters: Accounts in her own words about what happened

#### Article Test, page 16

1. B; 2. C; 3. A; 4. B; 5: The *Pearl's* journey was the largest attempted escape from slavery on the Underground Railroad.

### River of Ice

#### Assess Content, page 14

Students' first diagrams should resemble the diagram on page 18 of the article. Their second diagrams will vary, but may show rising sea levels, water sources drying up, or a variety of ways a rapidly melting glacier could impact people's lives.

#### Article Test, page 17

1. C; 2. A; 3. C; 4: B; 5. Possible responses: People currently living near glaciers might need to find a new water source as glaciers melt and disappear. Or, people living on islands might need to find a new home as sea levels rise.