

TEACHER'S GUIDE



Pioneer (Grade 2)

Vol. 16 No. 4

In This Guide

This guide contains language arts and science lessons for articles in this issue of EXPLORER PIONEER.

Explorer Magazine

EXPLORER classroom magazines are specifically written for each grade, 2-5. Through great storytelling and stunning photographs, the EXPLORER magazines develop literacy skills and teach standards-based science content.

The EXPLORER magazines strive to offer a variety of reading experiences for students with different ability levels in the same class. Thus, all articles have been measured using the Lexile® Framework for Reading. Some articles will be easier to read than others, but all articles in EXPLORER PIONEER will be within the 250-550L range.

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Your Subscription Includes:

- Magazines
- Classroom Posters
- Projectable Magazine
- Interactive Whiteboard Lesson
- Teacher's Guide
- App (additional subscription required)

Objectives

- Students will identify and explain connections between vocabulary words.
- Students will ask and answer questions before, during, and after reading the article.
- Students will use what they learned to write an informational essay about manatees.

Resources

- Vocabulary Assessment Master (page 6)
- Language Arts Assessment Master (page 7)

Summary

- The article “Man and Manatee” introduces students to Florida manatees and examines their coexistence with people.

BUILD VOCABULARY AND CONCEPTS

- aquatic biologist
- endangered

Display the Wordwise section on page 7 of the projectable magazine. Invite volunteers to read aloud the words and their definitions. Encourage students to share what they know about each word.

Give each student a copy of the **Vocabulary Assessment Master**. Instruct students to record each word and its definition. Then have them think about how the vocabulary words are related. With a partner, challenge them to record three connections they see. For example: Aquatic biologists want to save the endangered manatees.

After reading the article, divide the class into small groups. Have partners share the connections they predicted before reading the article. Instruct them to reevaluate each connection based upon what they have learned. If necessary, have students rewrite their ideas to more accurately reflect connections between different vocabulary words.

READ

Let students know in this article they will read about Florida manatees and how humans interact with them. They will learn reasons why some people want to interact with manatees and why others think they shouldn't.

Explain to students that good readers ask questions before, during, and after they read. They ask questions, in particular, when they encounter something they don't understand or something they want to learn more about. Usually, they can find the answer in the text.

Display the photo on pages 2-3 of the projectable magazine. Instruct students to examine the man and the manatee in the photo. **Say:** *When I look at this photo, I see a man swimming next to a large animal. I've never seen an animal like this. What kind of animal is it? Where does it live?* Read aloud the headline and deck. **Say:** *This information answered my questions. The animal is a manatee. It lives in the ocean. Point out how close the man in the photo is to the manatee.* **Say:** *If manatees live in the ocean, they must be wild animals. That makes me ask a few more questions. How did this man get so close to the manatee? And is it safe for him to be this close? To find answers to those questions, I'll have to read the article.*

Give each student a copy of the **Language Arts Assessment Master**. Explain to student how they can use the worksheet to record questions and answers they have before, during, and after they read the article.

As a class, brainstorm a list of questions about the article. Instruct students to record the questions in the appropriate section of their worksheets. Then have students read the article on their own. As they do, instruct them to record additional questions and any answers they find in the text. Remind them to begin all questions with question words. (who, what, where, when, why, how) If students still have questions about manatees after reading the article, instruct them to record those questions, too.

Man and Manatee

LANGUAGE ARTS

TURN AND TALK

Have students turn and talk to discuss what they learned about manatees. **Ask:** *Where do tourists go in winter to see manatees? (Florida) Why? (Manatees go to Florida in winter because the ocean is too cold for them.)* Invite students to share what else they learned about manatees.

- **Finding Connections** Explain to students that reading definitions tells people what words mean. But readers can get a more thorough understanding if they recognize how words are connected. Point out that this is exactly what they did when they wrote sentences about the vocabulary words in the article. Instruct students to turn and share the sentences they wrote on their **Vocabulary Assessment Masters** in small groups. Tell them to discuss similarities and differences in their sentences to get an even deeper understanding of the vocabulary words.

Ask and Answer Questions Remind students that asking and answering questions is a strategy to help them understand what they read. **Say:** *Even the best readers come across words or ideas they don't understand. Asking questions is the first step toward figuring those things out. If you ask questions, you know which answers to search for as you read and re-read the text.* Have students share and compare their **Language Arts Assessment Masters** with a partner. Do they have the same questions? Did they find the same answers? If not, encourage them to identify where in the text they found the answer and make any corrections necessary.

- **Writing About Manatees** Point out to the class that asking and answering questions doesn't just help them understand what they're reading. It's also a great way to learn about a new topic. Instruct students to use the information on their **Language Arts Assessments** to write a paragraph about manatees. Instruct students to write an introduction and to include facts and definitions they recorded while reading the article. Remind them to end the paragraph with a conclusion.

WRITE AND ASSESS

You may want students to write about what they learned to assess understanding. Encourage students to reflect upon what they read and how it affected their ideas about the topic.

- *What is an aquatic biologist?*
- *Why would an aquatic biologist study manatees?*
- *What surprised you about what you read?*

Man and Manatee

SCIENCE

Objectives

- Students will recognize unique characteristics of the Florida manatee.
- Students will understand why manatees live along the Florida coast in winter.
- Students will examine the pros and cons of human interaction with manatees.

Resources

- Content Assessment Master (page 8)
- "Meet the Manatee" poster (Teacher's Edition and pages 8-9 of the student magazine)
- Comprehension Check (page 9)
- "Man and Manatee" Interactive Whiteboard (optional)

Science Background

Manatees are endangered mammals that live in shallow, coastal waters. Unlike many water mammals, they never leave the water. When a manatee is born, its mother helps it reach the surface. That's where the baby takes its first breath. An hour later, it can swim on its own.

Manatees are herbivores that can grow up to 4 meters long and weigh up to 1,200 kilograms. Despite this size, manatees are actually graceful swimmers. Most of the time, they slowly glide along. But if needed, they can swim 15 mph (24 kph) for a short distance.

Resting manatees can stay underwater for up to 15 minutes. But when manatees swim, they must surface every three to four minutes to breathe. This can put them in danger. Many manatees die each year when they are hit by boats. Others get caught in fishing nets.

There are three species of manatees. They live in North America, in the Amazon River, and along the west coast and rivers of Africa. Regardless of where manatees live, they must go somewhere warm in winter. Manatees don't have enough blubber to keep them warm in cold waters.

ENGAGE

Tap Prior Knowledge

As a class, discuss how temperature affects what students can do in summer and winter. Then point out that animals must deal with changing seasons, too. Encourage students to identify different animals they've seen. Challenge them to describe what the animals do to survive when seasons change.

EXPLORE

Preview the Lesson

Display pages 2-3 of the projectable magazine. Point out how close the man in the photo is to the manatee. **Say:** *Looking at this photo, I know that this man wants to take a picture of the manatee. But seeing how close he is to the manatee, it would be pretty easy for him to reach out and touch the manatee if he wanted to. For the man, that might be an exciting experience.* **Ask:** *But do you think it would be good for the manatee?* Invite students to share their opinions. Tell them they will learn more about how humans and manatees interact as they read the article.

Set a Purpose and Read

Have students read the article in order to recognize unique characteristics of the Florida manatee, understand why manatees live along the Florida coast in winter, and examine the pros and cons of human interaction with manatees.

EXPLAIN

Recognizing Manatee Traits

Display the **"Meet the Manatee" poster**. Invite a volunteer to read aloud the headline and deck. As a class, identify six things the deck tells about manatees. (They have (1) egg-shaped heads, (2) flat flippers, and (3) fan-shaped tails. (4) They are often spotted in shallow coastal areas. (5) They graze when they eat. (6) They eat sea grasses and algae.) Review the rest of the poster to learn more about the traits of manatees.

Man and Manatee

SCIENCE

EXPLAIN

(continued)

Understanding Manatee Migration

Display page 4 of the projectable magazine. Zoom in on the partial map of the United States. **Say:** *This map shows where manatees live along the Atlantic and Gulf coasts. They live in areas with both dark and light blue borders during warm-weather months. But when it gets cold, they only live in the dark blue areas.* Display both maps. Point out that the map of Florida is an enlarged area of the other map. Then draw students attention to the dark blue lines in and around Florida. Read aloud the caption. Discuss why manatees live in and around Florida in winter. (The water is warmer. It's too cold for them to live anywhere else.)

Examining Human Interaction with Manatees

Point out to the class that people like to see, touch, and swim with manatees. **Say:** *Some people think this is OK. Others don't. They think there should be rules about how people act around manatees. Each side thinks it's right.* Give each student a copy of the **Content Assessment Master**. Divide the class into small groups. Have groups examine the photos and review the text to identify different ways people interact with manatees. Then have them list what they see as pros and cons on the issue. Based on what they learned, have each student choose a side and write a sentence or two explaining their opinion.

ELABORATE

Find Out More

Display page 7 of the projectable magazine. Zoom in on the sign at the bottom of the page. As a class, brainstorm ideas about what this sign means. Then have the class conduct research to find out. Discuss how the sign helps protect manatees in the water.

Extend Your Thinking About Manatees

Point out to the class that many scientists think there should be rules about how people act toward manatees. But many businesses don't. If there were rules, they would lose a lot of money from tourism. As a class, brainstorm ideas for ways businesses could still make money if the rules were in place.

EVALUATE

Have students record their answers to the assessment questions in their science notebooks or on a separate sheet of paper.

- *What does endangered mean?* (at risk of extinction)
- *Why is Florida a good place for manatees to go in winter?* (The water is warm.)
- *Why is manatee tourism important?* (Businesses make a lot of money.)

If you wish, have students complete the **Comprehension Check** to assess their knowledge of concepts mentioned in the article. You may also wish to examine the optional **Interactive Whiteboard** lesson that accompanies this article.

VOCABULARY ASSESSMENT: Man and Manatee

Record each vocabulary word and its definition.

Word	Definition

Write three sentences to tell how different words are connected.

1. _____

2. _____

3. _____

Name _____

Date _____

LANGUAGE ARTS ASSESSMENT: Man and Manatee

Record questions you have about manatees before, during, and after reading the article.
Search for answers in the text.

	Questions	Answers
Before		
During		
After		

CONTENT ASSESSMENT: Man and Manatee

Do you think there should be rules about how people act around manatees?
Identify pros and cons on the issue.

Pros	Cons

I think there (circle one) should / should not be rules about how people act around manatees.

Explain your opinion.

COMPREHENSION CHECK: Man and Manatee

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

1. Where do manatees go in winter?

- Ⓐ Florida
- Ⓑ California
- Ⓒ Texas

2. Why do manatees go here?

- Ⓐ The days are sunny.
- Ⓑ The water is warm.
- Ⓒ The beaches are nice.

3. What kind of scientists studies animals that live in water?

- Ⓐ a water doctor
- Ⓑ an ocean chemist
- Ⓒ an aquatic biologist

4. Which of these statements is true?

- Ⓐ Manatees have big brains.
- Ⓑ Manatees have small bodies
- Ⓒ Manatees have whiskers.

5. List two rules scientists think people should follow around manatees .

Objectives

- Students will record, define, and sketch vocabulary words and draw a picture to show how the words are related.
- Students will identify the author's purpose for writing the text.

Resources

- Vocabulary Assessment Master (page 14)
- Language Arts Assessment Master (page 15)

Summary

- The article "Wild Land" introduces students to the Hebrides islands and explains how wind and water changed the shape of the land here.

BUILD VOCABULARY AND CONCEPTS

- **erosion**
- **glacier**
- **weathering**

Display the vocabulary words on a word wall or on the whiteboard. Say the words aloud and invite students to share what they know about each.

Give each student a copy of the **Vocabulary Assessment Master**. Instruct students to write each word and its definition on their papers. Then have students draw a picture to remind themselves of what each word means.

When students are finished drawing their interpretations of individual words, discuss with the class how the words are related. Then challenge students to sketch a larger picture showing this connection. Instruct students to label each item in their drawings.

READ

Display pages 10-11 of the projectable magazine. Allow students to see the headline and photo, but cover the text. Ask students what they think this article is about and why the writer wrote it. Ask them to describe what they expect to read.

Then uncover the text. Invite a volunteer to read it aloud. Compare the text to students' expectations for the article. **Say:** *People write for different reasons. Sometimes they want to inform, or teach readers about a new topic. Sometimes they want to persuade by expressing an opinion. And sometimes they just want to entertain readers with a good story.*

Give each student a copy of the **Language Arts Assessment Master**. Have students read the article on their own. As they do, challenge them to find evidence that identifies the author's purpose for writing the article. Instruct students to record those reasons on their worksheets.

LANGUAGE ARTS

TURN AND TALK

Have students turn and talk to discuss what they learned about the Hebrides islands. **Ask:** *Where are the Hebrides islands located?* (off Scotland's coast) *What shaped the land there?* (wind and water) *How?* (through weathering and erosion)

• **Recognizing the Author's Purpose** Invite volunteers to reveal if they thought the writer wrote this article to inform, entertain, or persuade. Encourage them to use the information on their **Language Arts Assessment Masters** to support their ideas. Then guide the class to recognize that the writer's intent was to inform. **Say:** *In this article, the writer isn't trying to convince you that the Hebrides islands is a great place to visit. And she isn't telling a story about her adventures here. Sure, each section is interesting, but there are no characters and there is no plot to follow. Instead, the writer uses the Hebrides islands as a setting to explore how water and wind can change the land. The writer even included definitions and examples to make the purpose of the article clear.* Invite students to share what they learned about what the Hebrides islands and how they formed.

WRITE AND ASSESS

You may want students to write about what they learned to assess understanding. Encourage students to reflect upon what they read and how it affected their ideas about the topic.

- *What is it like on the Hebrides islands?*
- *Why do the Hebrides islands keep changing?*
- *What surprised you about what you read?*

SCIENCE

Objectives

- Students will distinguish between weathering and erosion are.
- Students will recognize how wind and water have changed the land on the Hebrides islands.

Resources

- Content Assessment Master (page 16)
- "Weathering and Erosion" poster (Teacher's Edition)
- Comprehension Check (page 17)

Science Background

The Inner and Outer Hebrides (HEB-ru-dees) islands are located off of Scotland's western shore. Although people have attempted to live on the Hebrides for thousands of years, only a few dozen of the islands are inhabited today.

The islands' landscape is the result of two natural processes, weathering and erosion. During weathering, rocks are dissolved, worn down, or broken into smaller and smaller pieces. Water, ice, acids, salt, plants, animals, and even changes in temperature can cause weathering. Erosion occurs when wind, water, or ice carry the broken rocks away.

Weathering and erosion have created dramatic features on the Hebrides islands. Fingal's Cave is a sea cave formed by crashing waves. The Red Cuillin mountains were formed by volcanic eruptions. But they have slowly been rounded by wind, water, and glaciers.

The Old Man of Storr was created by a landslide. Underlying sedimentary rock collapsed under the dense layers of ancient lava flows. As the base collapsed, the basalt layers tilted. Over time, large chunks slid off, creating pinnacles like the Old Man of Storr.

Glaciers formed Fairy Glen, a lush, green grassy area dotted with smaller pinnacles. Fairy Glen is considered to be the best example of "gully and pillar" formations in the Scottish Highlands.

ENGAGE

Tap Prior Knowledge

Prior to conducting this activity, download photos that show various forms of weathering and erosion. Display each photo for the class. Encourage students to describe what they see. Brainstorm ideas about how the photos might be connected.

EXPLORE

Preview the Lesson

Invite students to read the headline and examine the photo on pages 10-11. Encourage students to share what they know about this place based on the limited bit of information given here. (Possible responses: It is foggy; It is rocky; It looks like a mountain.) Read aloud the comprehension strategy in the upper right corner of the page. Challenge students to identify ways a wind and water could change the shape of the land here.

Set a Purpose and Read

Have students read the article in order to distinguish between weathering and erosion and understand how wind and water have changed the land on the Hebrides islands.

EXPLAIN

Distinguish Between Weathering and Erosion

Display page 14 of the projectable edition. Zoom in on the Wordwise feature and highlight the definitions for *weathering* and *erosion*. Invite volunteers to read aloud each definition. **Ask:** *What key words in the definitions tell you what weathering and erosion do?* (erosion: picking up, moving; weathering: breaking) Display the **"Weathering and Erosion" poster**. Review the poster with the class to learn how wind, waves, rain, and ice can cause weathering and erosion to occur.

SCIENCE

EXPLAIN

(continued)

Identifying the Effects of Weathering and Erosion

After students read the article, remind students that weathering and erosion are processes that work together to change Earth's surface. **Say:** *Weathering and erosion changed the land to form the Hebrides islands. However, around the islands they shaped the land in very different ways.* Display pages 12-13 of the article. Zoom in on the top photo. Invite a volunteer to read aloud the caption. Then review the article for more details on how these mountains formed. Review the other images in this same way. Then give each student a copy of the **Content Assessment Master**. With a partner, have students select one landform found on the Hebrides islands. Instruct students to draw the landform. Challenge them to explain in their own words how weathering and erosion caused it to form.

ELABORATE

Find Out More

Remind students that the third subhead in the article called glaciers a river of ice. As a class, conduct research to learn more about glaciers. Discuss reasons why this is a good description of what glaciers are. If you wish, investigate further to learn about the glaciers that formed round hills on the Hebrides islands.

Extend Your Thinking About the Hebrides islands

Instruct students to examine the photos on pages 12-13 of the article in their student magazines. Point out that rain caused the mountains in the top photo to become rounded. But crashing waves formed square pillars inside the sea cave. Brainstorm ideas about why this might have happened. Guide students to understand that the mountains and the cave are formed out of different types of rock. Weathering and erosion affect them in different ways.

EVALUATE

Have students record their answers to the assessment questions in their science notebooks or on a separate sheet of paper.

- *What is weathering?* (the process of breaking rock into smaller pieces)
- *What is erosion?* (the process of picking up and moving pieces of rocks and other materials)
- *How weathering and erosion work together to change the land?* (Weathering breaks rocks apart and erosion carries the pieces away.)

If you wish, have students complete the **Comprehension Check** to assess their knowledge of concepts mentioned in the article.

Name _____

Date _____

VOCABULARY ASSESSMENT : Wild Land

Write each word and its definition. Draw a small picture to show what each word means. Draw a larger picture to show how the words are connected. Label each word in your drawing.

Word	Definition	Picture	Larger Picture	

LANGUAGE ARTS ASSESSMENT: Wild Land

Complete each sentence to explain why you think the writer wrote this article.

I think the writer wrote this article to _____ readers.
(inform/persuade/entertain)

The first reason I think this is that _____
_____.

The second reason I think this is that _____
_____.

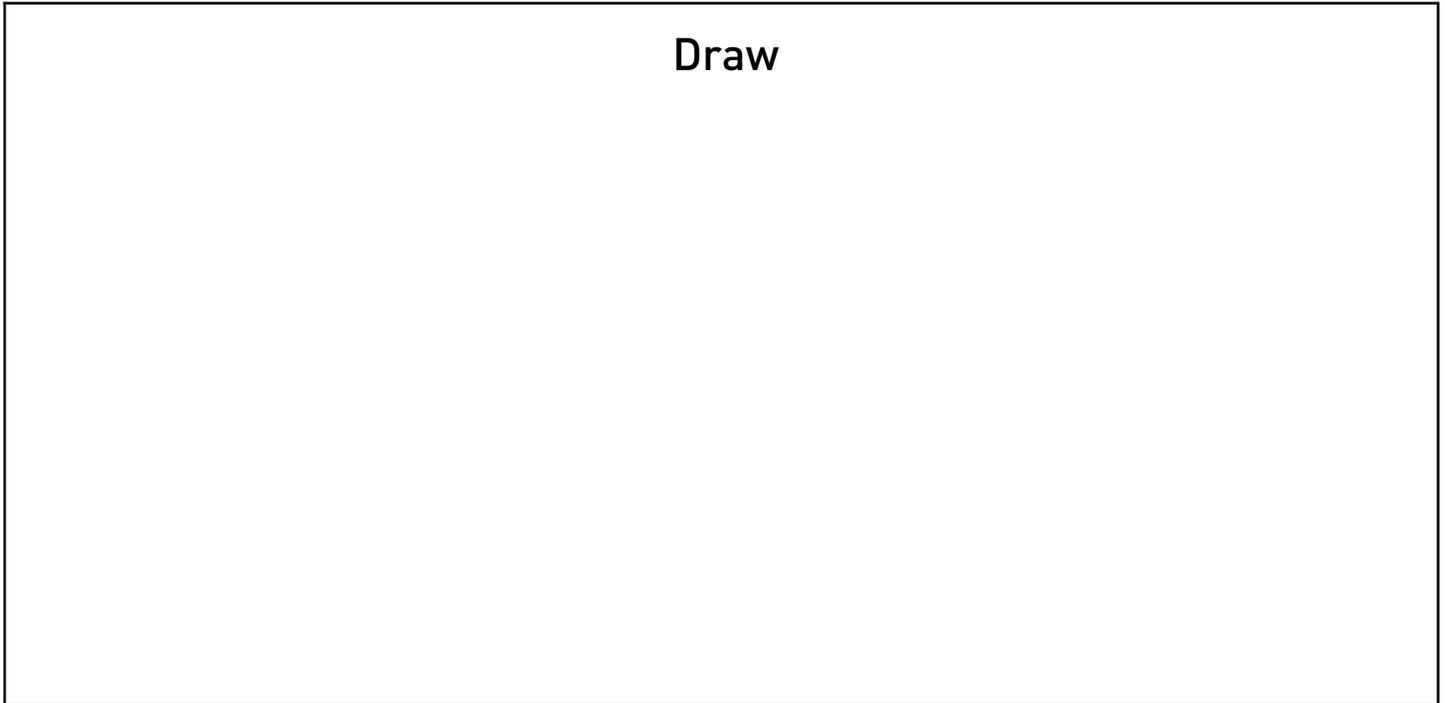
The main reason I think this is that _____
_____.

These reasons explain why I think the writer wrote this article to
_____ readers.
(inform/persuade/entertain)

CONTENT ASSESSMENT: Wild Land

Draw a picture of one landform found on the Hebrides islands.
Explain how weathering and erosion caused it to form.

Draw



Explain

First,
Next,
Then,
Finally,

COMPREHENSION CHECK: Wild Land

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

1. Where are the Hebrides islands?
Ⓐ off England's coast
Ⓑ off Spain's coast
Ⓒ off Scotland's coast

2. What does weathering do?
Ⓐ create rock
Ⓑ break rock
Ⓒ carry rock away

3. What does erosion do?
Ⓐ create rock
Ⓑ break rock
Ⓒ carry rock away

4. What did glaciers create on the Hebrides islands?
Ⓐ tall, rocky towers
Ⓑ smooth, green hills
Ⓒ rocky sea caves

5. Describe how weathering and erosion created one landform on the Hebrides islands.

Objectives

- Students will identify and investigate the definitions of unfamiliar words.
- Students will identify the main idea of the article and explain how it is supported by key details.
- Students will summarize the article.

Resources

- Vocabulary Assessment Master (page 22)
- Language Arts Assessment Master (page 23)

Summary

- The article "Frozen!" takes readers on 14-year-old Jade Hameister's journey to the North Pole. The trek is the first leg in her quest to be the youngest explorer to complete the Polar Hat Trick, or hikes across the North Pole, South Pole, and Greenland.

BUILD VOCABULARY AND CONCEPTS

Display pages 22-23 of the projectable magazine. Point out that there is no Wordwise feature in this article. **Say:** *That doesn't mean, however, that there will be no unfamiliar words in the article.*

Give each student a copy of the **Vocabulary Assessment Master**. As students read the article, instruct them to record each word they find difficult to understand. **Say:** *These may be words you've never seen before or they may be words you do know that are used in a new way.*

Tell students to circle three words on their lists. With a partner, have them predict and write a definition for each word. Tell them to write a sentence using each word, based on the definitions they wrote. Then have pairs find each word in a dictionary and record its definition. If a word has multiple meanings, have students use context clues in the article to find the correct definition. Have partners write a new sentence based on the definition they found.

Invite volunteers to identify the words they defined and read aloud the before and after sentences they wrote. As a class, examine how investigating definitions contributed to students' understanding of each word.

READ

Give students a few minutes to scan the article in their magazines. **Then ask:** *What do you think this article is about? Why?* Encourage students to share their ideas.

Explain to students that what they just attempted to identify was the main idea of the article. Tell students that the main idea is the main topic. Everything in the article is connected to the main idea. Point out that paragraphs have a main idea, too. Everything in a paragraph is connected to its main idea.

Display pages 16-17 of the projectable magazine. Model how to identify the main idea of the article. **Say:** *When I look at these pages, I notice two things right away: the photo and the headline. The photo tells me the article is about someone skiing in a very cold place. The headline tells me it's actually frozen here. These are good clues, but I need to know more. Who is this person? Where is the person going? Why is the person or the trip important enough to be featured in an article? Point out the deck in the lower right corner of the screen. Read it aloud. **Then say:** *Sometimes you have to search for the best clues. After reading this, I know exactly what this article is about. As I read, I will learn a 14-year-old girl who took skied across ice to reach the North Pole.**

Have students read the article in small groups. As students read, encourage them to search for details that support the main idea of the article.

LANGUAGE ARTS

TURN AND TALK

Have students turn and talk to discuss what they learned about Jade Hameister and her trip to the North Pole. **Ask:** *What is Jade Hameister's goal? (to complete the Polar Hat Trick) What is the Polar Hat Trick? (hikes across the North Pole, the South Pole, and Greenland) Which part of the goal did she tackle first? (going to the North Pole)* Encourage students to share other facts they learned about Jade Hameister and her trip to the North Pole.

- **Identify Main Ideas** Remind students that the article has a main idea. But paragraphs have main ideas, too. Explain that they can find the main idea of a paragraph the same way they found the main idea of the article. They must search for important clues. Give each student a copy of the **Language Arts Assessment Master**. Instruct students to write the main idea of the article in the middle circle. Then have them select four more paragraphs in the article. Challenge them to write the main idea of each. Encourage students to turn and talk to analyze and compare results. Challenge them to recognize how the main idea of each paragraph ultimately supports the main idea of the text.

- **Explain Concepts** After reading the article, **say:** *One way to see if you understand information is to try to tell someone else about the topic. If you can't explain the concept, you might need to read the article again.* Have students turn and talk to explain to a partner how Hameister prepared for her trip. Prompt discussion with questions such as: *Who helped her plan for the trip? (her team) What did she do on the beach to train for her trip? (She dragged tires across the sand.) What do you think this helped her do at the North Pole? (drag her sled piled high with gear)*

WRITE AND ASSESS

You may want students to write about what they learned to assess understanding. Encourage students to reflect upon what they read and how it affected their ideas about the topic.

- *Why is it dangerous to explore the North Pole?*
- *Why is it hard to find the North Pole?*
- *What surprised you about what you read?*

Frozen!

SCIENCE

Objectives

- Students will understand what the environment is like at the North Pole.
- Students will explain how Jade Hameister and her team prepared for and adapted to conditions at the North Pole.

Resources

- Content Assessment Master (page 24)
- Comprehension Check (page 25)

Science Background

The North Pole, located at exactly 90 degrees north latitude, is the northernmost point on Earth. It lies in the middle of the Arctic Ocean. The water here is more than 4,000 meters deep. It is almost always covered in floating ice.

Because of its location, sunlight here comes in extremes. In summer, daylight lasts up to 24 hours. In winter, an equal amount of time is spent in darkness. Each year, there's only one sunrise on the March equinox and one sunset at the September equinox.

Few people have explored the North Pole. It's difficult to do. There's no land to build a facility and it's hard to set up equipment.

In 1827, British Admiral William Edward Parry led the first expedition specifically targeting the North Pole. Nobody actually succeeded until the 20th century. And the first verified expedition by foot wasn't accomplished until the late 1960s.

In April 2016, 14-year-old Australian Jade Hameister became the youngest person to ski to the North Pole. Her four-person team succeeded after going more than 150 kilometers in temperatures that fell to -25° Celsius.

For Hameister, the North Pole is just the beginning. In 2017, she plans to cross Greenland. Then, she'll tackle the South Pole. If she succeeds, she'll become the youngest person ever to complete all three treks.

ENGAGE

Tap Prior Knowledge

Display a globe. Spin it. Stop the globe by placing your finger on it. Invite a volunteer to identify the location you selected. Invite students to share what they know about this place. Then tell them to imagine that they're going on an adventure there. As a class, brainstorm ideas about what someone could do in this place. Challenge students to explain how they would prepare for the trip.

EXPLORE

Preview the Lesson

Display pages 16-17 of the projectable magazine. Invite a volunteer to read aloud the headline and deck. As a class, brainstorm a list of challenges people might face as they try to ski across the ice to reach the North Pole.

Set a Purpose and Read

Have students read the article in order to understand what the environment is like at the North Pole to explain how Jade Hameister and her team prepared for and adapted to conditions at the North Pole.

EXPLAIN

Understanding the North Pole

Have students scan the article's photos in their student magazines. As they do, instruct them to describe what it is like at the North Pole. Then display page 19 of the projectable magazine. To give students' proper perspective, invite a volunteer to identify the location shown in the map on a globe. Explain why the North Pole's location causes it to be so icy and cold. (The North Pole doesn't get any direct sunlight. Even in summer, the sun is low on the horizon. In winter, it's below the horizon.) Read aloud and discuss the information below the map. As a class, scan the article for more details about what the environment is like at the North Pole.

EXPLAIN

(continued)

Explaining Preparation and Adaptation

Instruct students to review the article's images in their student magazines. Point out that Jade Hameister is in each of the photos. But in a few of the photos, she's not alone. **Say:** *Reaching the North Pole is an amazing accomplishment. But Jade Hameister didn't do it alone. Nobody could. She had a team that helped her.* Point out that Jade and her team worked together before they left as they planned their trip. They worked together after they got there as they faced everyday problems and overcame unexpected obstacles. Give each student a copy of the **Content Assessment Master**. Instruct students to identify two obstacles Jade Hameister and her team faced when exploring the North Pole. Have them describe the obstacles and explain how the team worked together to overcome each one.

ELABORATE

Find Out More

Remind students that Jade Hameister's trek to the North Pole is the just the first leg of the Polar Hat Trick. To reach her goal, she still has to cross Greenland and reach the South Pole. As a class, conduct research to learn more about those locations. Have students make a list of major obstacles the team could face in each place. Brainstorm ideas for ways the team could overcome each obstacle.

Extend Your Thinking About Climate Change

Remind students that the North Pole is not on land. It sits on a giant layer of ice that floats on the Arctic Ocean. In summer the ice shrinks and gets thinner as it melts. Based on this information and what students already know about winter weather, discuss reasons why spring would be the best season to explore the North Pole.

EVALUATE

Have students record their answers to the assessment questions in their science notebooks or on a separate sheet of paper.

- *Where is the North Pole?* (in the Arctic Ocean)
- *Why is it dangerous to take long breaks when you're at the North Pole?* (You can quickly freeze at the North Pole.)
- *Why is summer a bad time to explore the North Pole?* (The ice shrinks and gets thinner as it melts.)

If you wish, have students complete the **Comprehension Check** to assess their knowledge of concepts mentioned in the article.

VOCABULARY ASSESSMENT: Frozen!

Record unfamiliar words from the article. Circle three words on the list.
Use the organizer to investigate the meaning those words.

Unfamiliar Words			
Word			
Predicted Definition			
Sentence			
Dictionary Definition			
Sentence			

Name _____

Date _____

LANGUAGE ARTS ASSESSMENT: Frozen!

Write the main idea of the article in the middle circle. Pick four paragraphs. Write the main idea of each.

Four horizontal lines for writing the main idea of a paragraph.

Four horizontal lines for writing the main idea of the article.

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Four horizontal lines for writing the main idea of a paragraph.

Four horizontal lines for writing the main idea of a paragraph.

Name _____

Date _____

CONTENT ASSESSMENT: Frozen!

**Describe two obstacles Jade Hameister and her faced on their trip to the North Pole.
Explain how they worked together to overcome each obstacle.**

	Describe	
Explain	Obstacle 1	Obstacle 2

COMPREHENSION CHECK: Frozen!

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

1. Where is the North Pole?

- Ⓐ the Arctic Ocean
- Ⓑ the Atlantic Ocean
- Ⓒ the Pacific Ocean

2. What does the North Pole sit on?

- Ⓐ a huge mountain
- Ⓑ a giant layer of ice
- Ⓒ a continent

3. How did Jade Hameister get to the North Pole?

- Ⓐ on a boat
- Ⓑ on a snowmobile
- Ⓒ on skis

4. Where else does Jade need to go to complete the Polar Hat Trick?

- Ⓐ the South Pole and Greenland
- Ⓑ the South Pole and Iceland
- Ⓒ Greenland and Iceland

5. Explain how Jade and her team crossed gaps in the ice that were filled with ocean water.

ANSWER KEY

Man and Manatee

Assess Vocabulary, page 6

Students' predictions and the sentences they write will vary. They should record the words and definitions from the Wordwise feature on page 7.

aquatic biologist: a person who studies animals that live in water

endangered: at risk of extinction

Sentences will vary depending on the connections students identify.

Assess Language Arts, page 7

Students' questions will vary, but all questions should relate to the article. All answers should come directly from the text.

Assess Content, page 8

The pros and cons students identify may vary but should relate to the content of the article. Students should circle their opinions and write a sentence or two that clearly explains whether or not they think there should be rules about how people act around manatees.

Comprehension Check, page 9

1. A; 2. B; 3. C; 4. C; 5. Possible response: People should not touch manatees. People should not block a manatee's path.

Wild Land

Assess Vocabulary, page 14

Students should record the words and definitions from the Wordwise feature on page 14.

erosion: the process of picking up and moving pieces of rocks and other materials

glacier: a large body of ice that slowly moves across land

weathering: the process of breaking rock into smaller pieces

Sketches should accurately reflect definitions and connections. Students should label all terms in the larger drawing. Evaluate responses for accuracy.

Assess Language Arts, page 15

Students should select one purpose and write it in the blank to complete the first sentence. They should identify three valid reasons for their choice. They should write the same purpose in the final sentence.

Assess Content, page 16

Answers will vary depending on which landform students choose to draw. Details on weathering and erosion should come directly from the text.

Comprehension Check, page 17

1. C; 2. B; 3. C; 4. B; 5. Answers will vary depending on which landform students select.

Frozen!

Assess Vocabulary, page 22

All unfamiliar words must appear in the article. Predicted definitions and sentences will vary. Students may use a printed or online dictionary to find each word's actual definition.

Assess Language Arts, page 23

Students should record the main idea of the article. (A 14-year-old girl went to the North Pole.) Additional responses will vary, depending on which paragraphs students chose to investigate.

Assess Content, page 24

Answers will vary depending on which obstacles students identify. However, students should describe each example and explain how the team worked together to overcome each obstacle.

Comprehension Check, page 25

1. A; 2. B; 3. C; 4. A; 5. They made a raft out of their sleds. They tied them together and floated across.