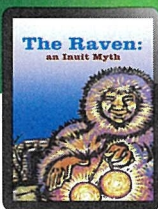
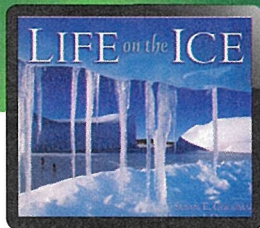


Lesson 20



Q LANGUAGE DETECTIVE

Talk About the Writer's Words

Nouns are words that name people, places, animals, or things. Work with a partner. Find the blue Vocabulary words that are nouns. What clues did you use? Use the nouns in new sentences.

Vocabulary in Context

1 shelter

A tent can make a good **shelter** for an explorer. It is a good place to keep warm.



2 colony

Some people take trips to study a **colony**, or large group, of penguins.



3 constant

Steady, or **constant**, rain can make hiking trails slippery and difficult to use.



4 wilderness

Explorers often travel through **wilderness**, or unsettled areas.



- ▶ Study each **Context Card**.
- ▶ Place the Vocabulary words in alphabetical order.

5 climate

Boaters must avoid ice when exploring regions with a very cold **climate**.

**6 region**

This overgrown jungle is in a hot and rainy **region**, or area.

**7 unexpected**

The **unexpected** view from the top surprised these hikers.

**8 gliding**

Gliding, or moving smoothly, through the air is an exciting way to explore.

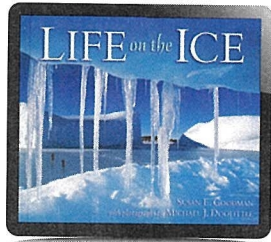
**9 overheated**

Smart explorers find shade and drink water when they feel **overheated**.

**10 layer**

A **layer** of ice must be several inches thick before it is safe to cross.

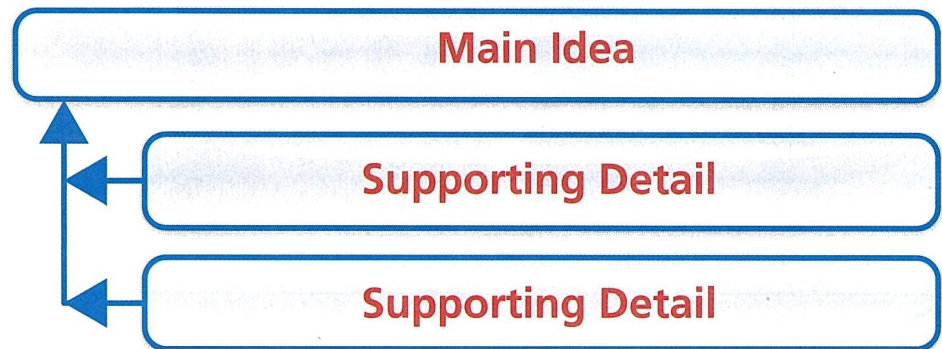




Read and Comprehend

✓ TARGET SKILL

Main Ideas and Details As you read *Life on the Ice*, look for the **main ideas**, or the most important points the author makes. Look for **supporting details**, including facts and examples, that provide more information. Note how this text evidence supports the main ideas. Use a graphic organizer like this one to help you.



✓ TARGET STRATEGY

Infer/Predict As you read *Life on the Ice*, think about what the author is telling you and **predict** what information you will learn. Make your predictions based on text evidence.

PREVIEW THE TOPIC

Climate

Climate is the long-term weather in a certain area of Earth. The climate of Florida, for example, is hot in the summer and mild most of the winter.

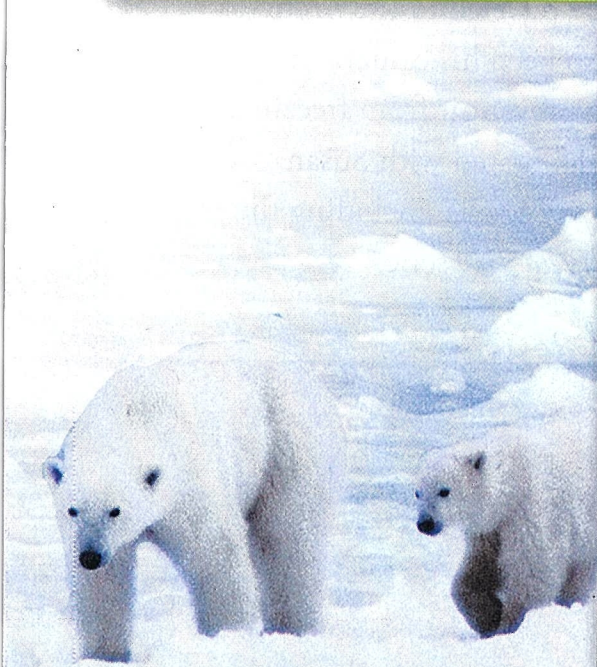
The climate of a place affects how people live. In Florida, people can wear lightweight clothes for much of the year. But what happens when the weather is often more than 30 degrees Fahrenheit below zero? How do people adjust to that kind of climate? How do they even survive in it?

Bundle up and read *Life on the Ice* to learn answers to these questions.



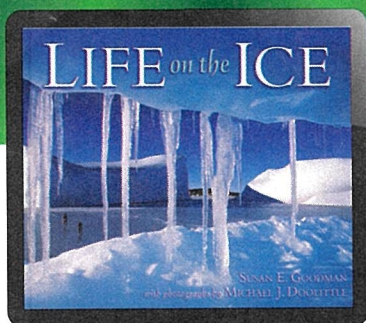
Talk About It

Think about what life is like in a cold climate and what it is like in a warm climate. What are the homes people live in, the clothes they wear, and daily activities like in each place? Draw scenes of daily life in each place. Share your pictures with your classmates as you describe the differences in the scenes. Answer any questions your classmates may ask.



Lesson 20

ANCHOR TEXT



☒ GENRE

Informational text gives you facts and information about a topic. As you read, look for:

- ▶ photographs and captions
- ▶ important details that support big ideas about a topic

MEET THE AUTHOR

SUSAN E. GOODMAN



Susan Goodman's life as a writer has taken her on some exciting adventures. She has gone swimming with dolphins in Florida, made friends with animals in the Amazon rain forest, ridden roller coasters in Pennsylvania, and stayed overnight in an underwater hotel.

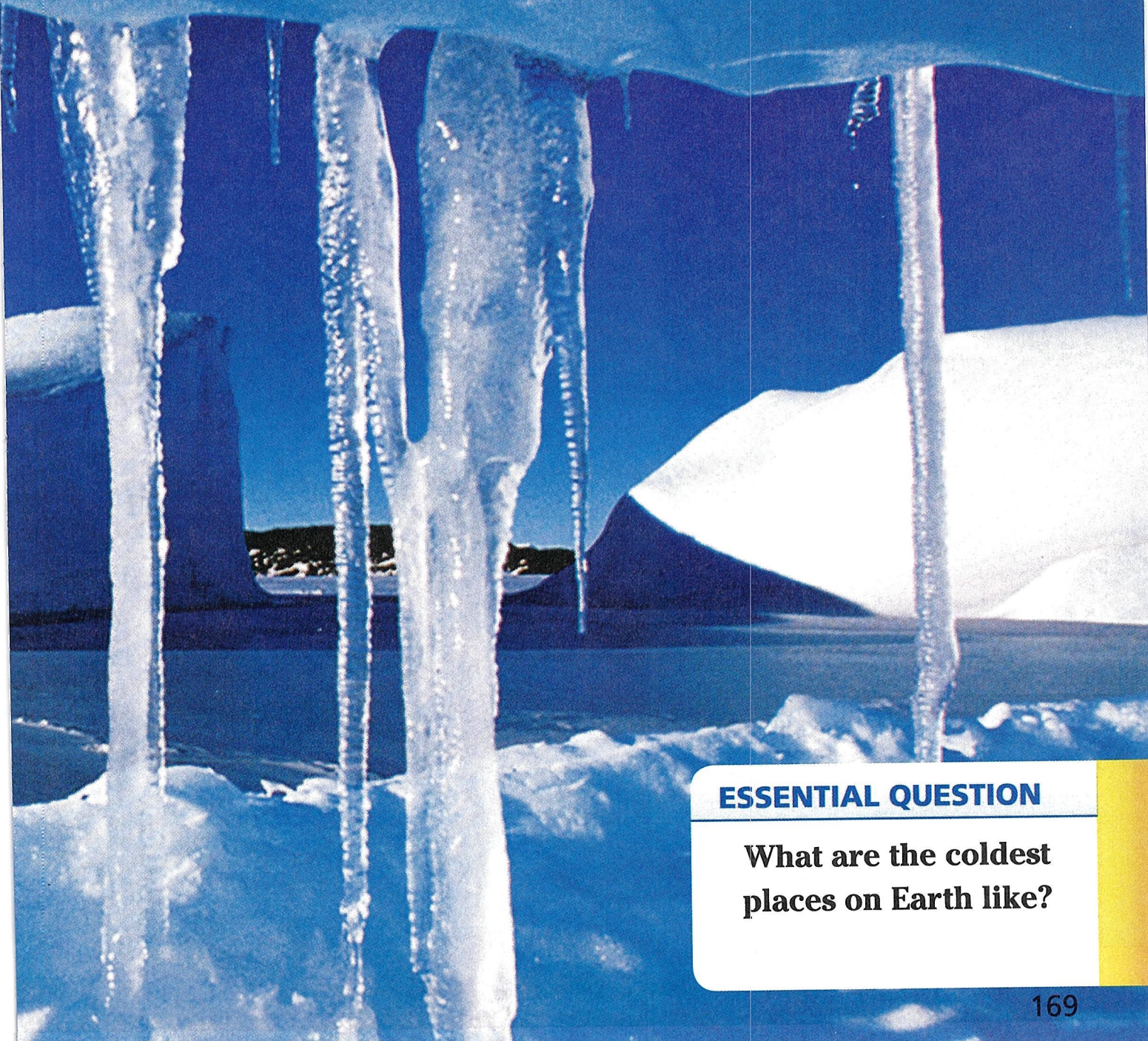
MEET THE PHOTOGRAPHER

MICHAEL J. DOOLITTLE

To capture the photos for *Life on the Ice*, Michael Doolittle traveled to the Arctic Circle. He had to keep his camera inside his heavy coat to prevent it from freezing. Doolittle has collaborated with Susan Goodman on many books, including the whole *Ultimate Field Trip* series.

LIFE on the ICE

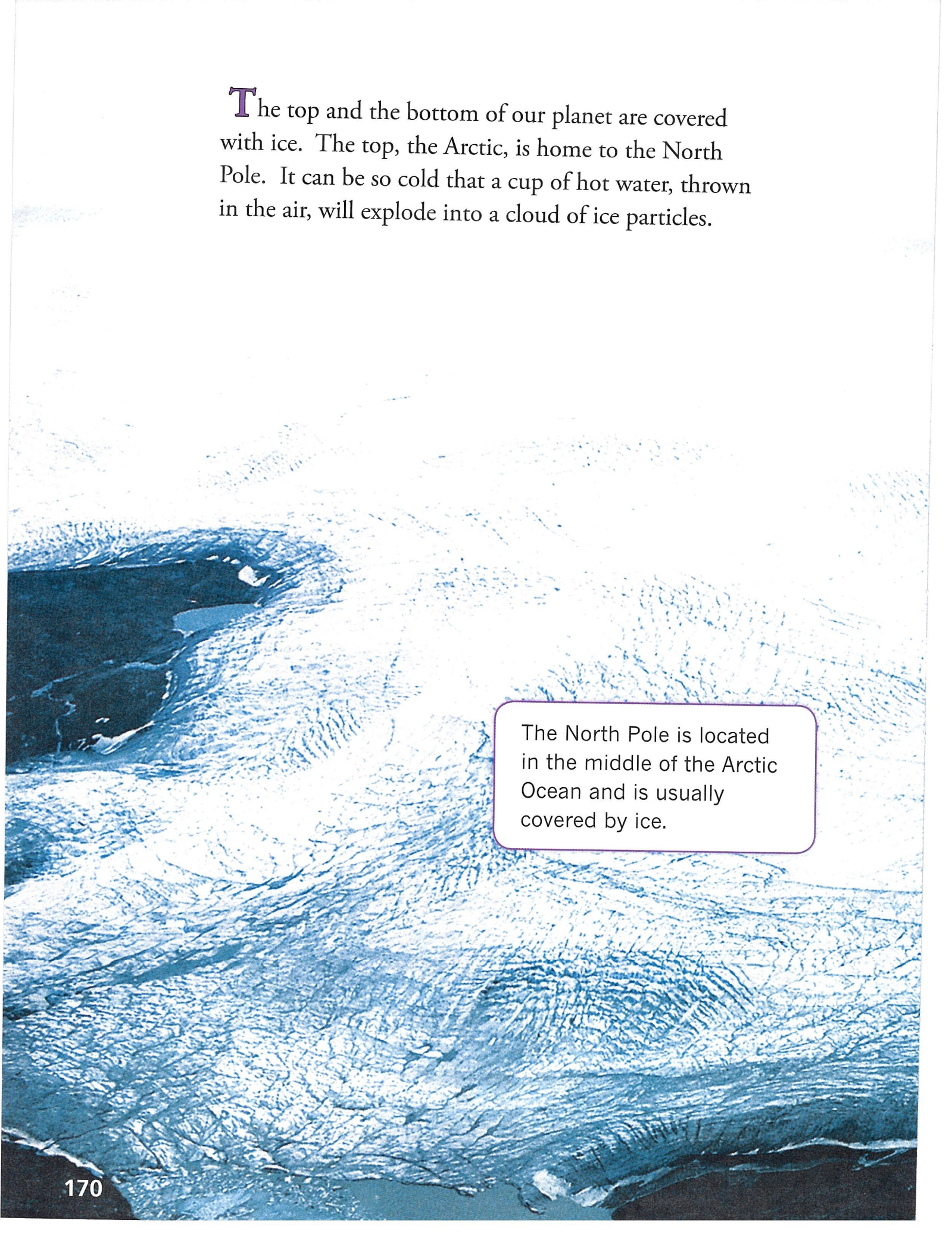
by SUSAN E. GOODMAN
with photographs by MICHAEL J. DOOLITTLE



ESSENTIAL QUESTION

What are the coldest places on Earth like?

The top and the bottom of our planet are covered with ice. The top, the Arctic, is home to the North Pole. It can be so cold that a cup of hot water, thrown in the air, will explode into a cloud of ice particles.

An aerial photograph of a vast, cracked ice field in the Arctic Ocean. The ice is a deep blue color, with numerous fine, intersecting cracks creating a complex, textured pattern across the entire surface. The lighting is bright, highlighting the ridges and valleys formed by the ice cracks. In the lower-left corner, a small, dark, irregular shape is visible, possibly a hole or a small body of water. A white text box with a purple border is positioned in the lower-right quadrant of the image.

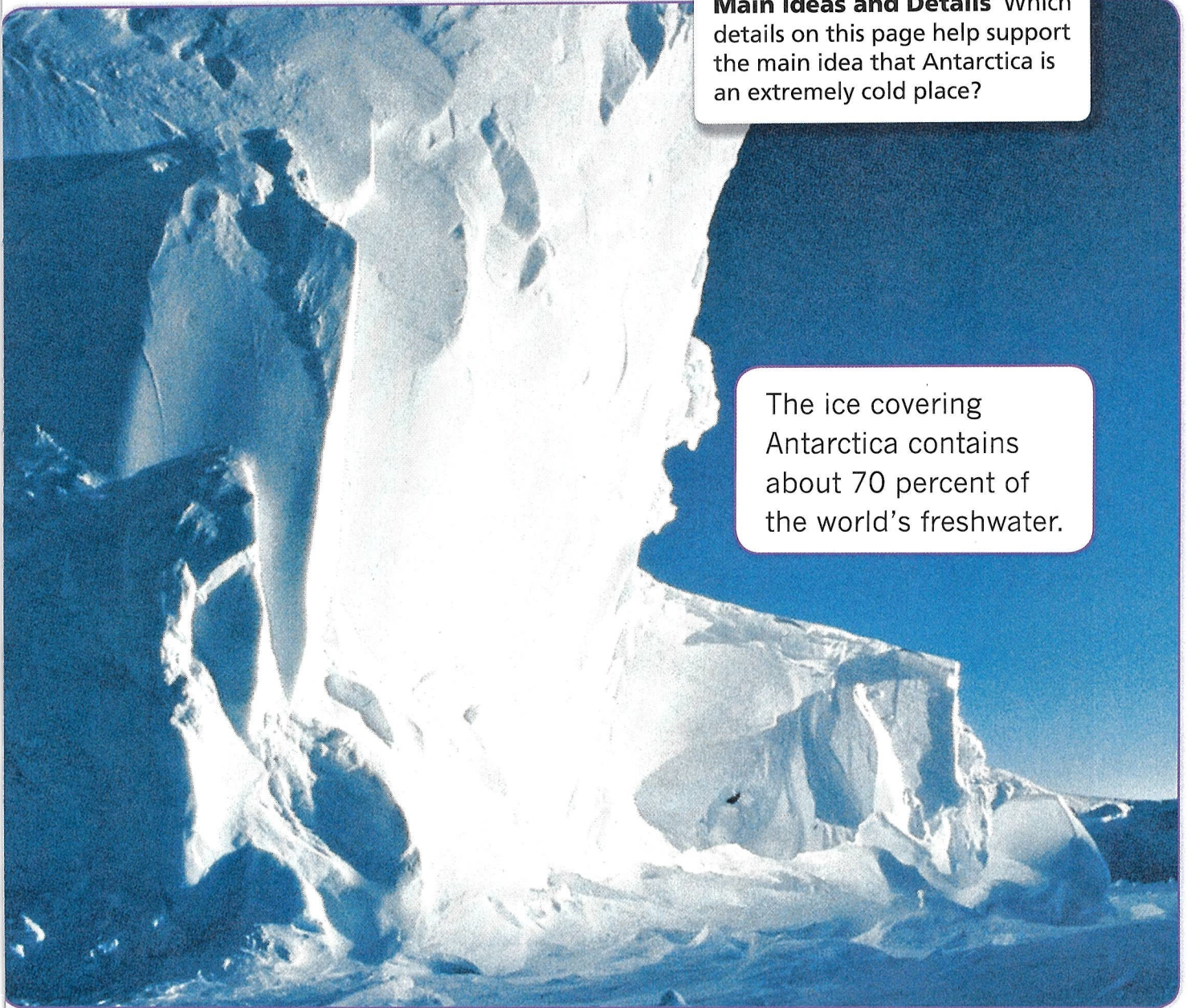
The North Pole is located in the middle of the Arctic Ocean and is usually covered by ice.

The South Pole is at the bottom of our planet on the continent of Antarctica. This **region** is even colder than the Arctic, sometimes plunging to -125°F (-87.2°C). In winter, parts of the oceans surrounding Antarctica freeze over, doubling its size. Antarctica is the coldest, driest, windiest place on Earth. It is so isolated that no human had even seen this continent until two hundred years ago.

ANALYZE THE TEXT

Main Ideas and Details Which details on this page help support the main idea that Antarctica is an extremely cold place?

The ice covering Antarctica contains about 70 percent of the world's freshwater.



Places this cold, this extreme, are hard to imagine. In fall the sun sets and doesn't rise again for the entire winter. Months later, it shines twenty-four hours a day—all summer long.

Even though they are covered by ice, these regions are deserts—dry like the Sahara. Very little snow falls in either place. But when it does, it rarely melts. Over time, the snow becomes ice—in some places, almost three miles (5 km) thick.

Icebergs can be as small as a piano or larger than a small country.

This ice is slowly moving, inching from the middle of the Arctic and Antarctica to their coasts. By the time pieces break off into the ocean and become icebergs, the ice is 100,000 years old.



People fly thousands of miles to reach the Poles. And when the winds kick up and blow the snow around, it's hard to know where the sky ends and the land begins. Pilots say that it's like flying inside a Ping-Pong ball.

Many of the instruments normally used to guide planes won't work there. In fact, navigators flying to the Poles are the only ones left in the U.S. Air Force who still help map their route with the stars. This is some of the hardest flying there is.

ANALYZE THE TEXT

Literal and Nonliteral

Meanings What do the pilots mean when they say that flying in the Poles is like flying inside a Ping-Pong ball?



Planes do not land in these wintry worlds by rolling down concrete runways. They use skis instead. And they slide like giant sleds until they stop. **Gliding** along, the skis get so hot that they melt the snow they're resting on. Pilots must pull them up when the planes stop. Otherwise, the wet snow would refreeze on the skis and the planes would be stuck to the ground.

When pilots land at the South Pole, they keep their engines running. It's so cold that they might not start up again.



It sounds like an adventure story, doesn't it? It *is* an adventure story—one with science. Scientists are today's explorers, braving the **wilderness** to learn more about our world.

The snow near the North Pole, for example, hasn't melted since the last ice age. Over 100,000 years of it has been pressed into an ice sheet almost 2 miles (3.2 km) thick. But each layer looks separate, like the rings of a tree.



Some scientists use this snow to measure air pollution. Others are drilling through this ice to pull out history. Each sample they bring up tells a story about the time when it was formed. Scientists have found volcanic ash from Italy's Mount Vesuvius, for instance, and pollution from ancient Roman times.

Scientists began this experiment to learn more about how ice ages begin and end. Before, they thought our **climate** needed thousands of years to change. Now they know it can happen much, much faster.




At the South Pole some scientists search for meteorites, rocks from outer space. Meteorites are no more likely to fall there than anywhere else on Earth. But, as one scientist explains, if you want to find something dark, it's easier to look on a big white sheet. His team has given thousands of meteorites to our space agency, the National Aeronautics and Space Administration (NASA), for study.



The Antarctic sky is a perfect window to the stars, the best on this planet. It is very clear because it's so cold and dry—and has a night that is six months long. Some scientists use telescopes to study the age of the universe. Others fly balloons to measure rays coming in from outer space.



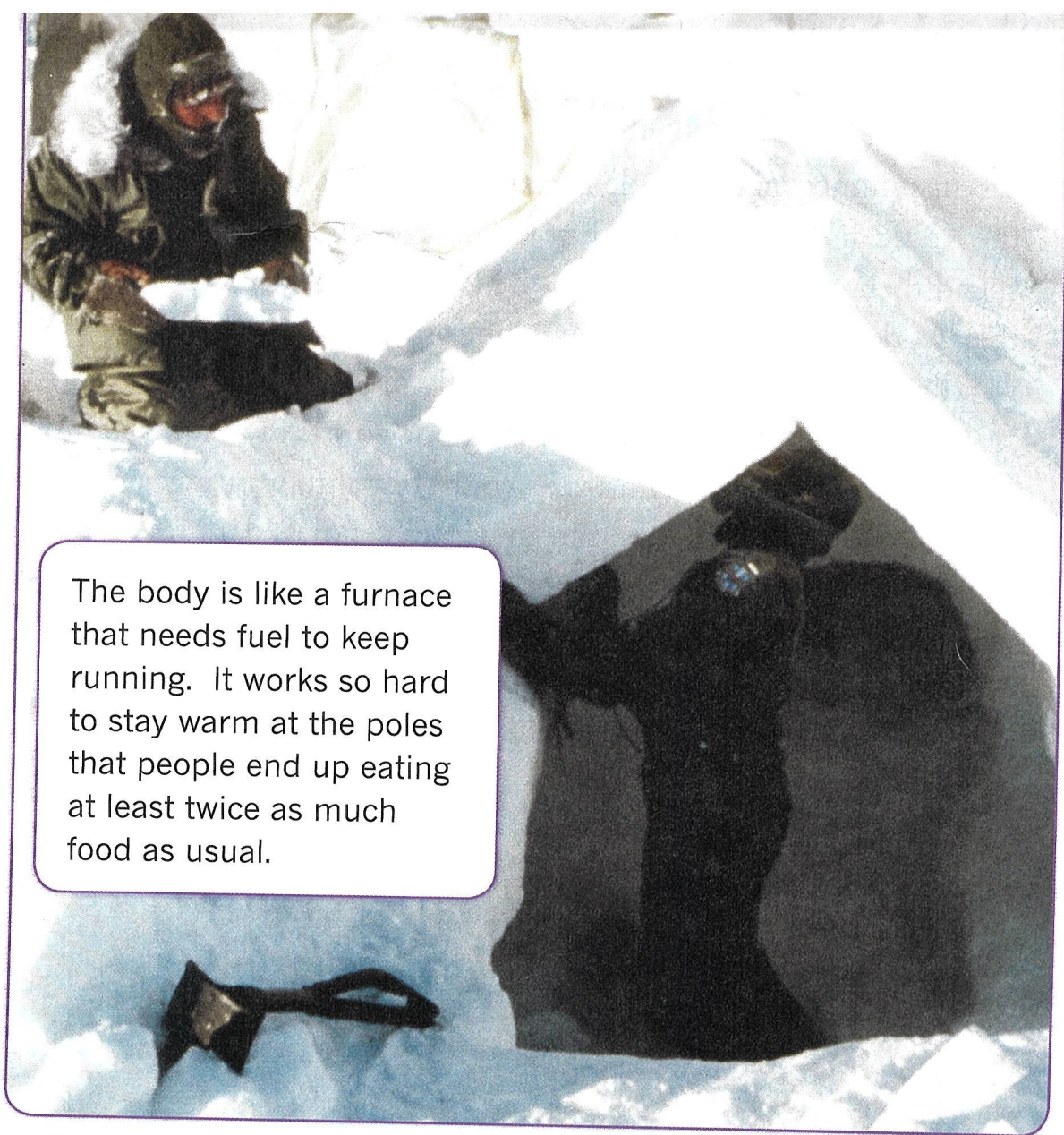


At the Poles people wear many layers of clothing to keep warmth in and wind out. They wear big boots and overalls called fat-boy pants. Their mittens have furry backs to wipe their noses and warm their ears.

They also wear goggles. Without them, their eyes would get sunburned and temporarily blinded by the strong light bouncing off the snow.



No wearing rings, earrings, or sunglasses with metal frames in the extreme cold. Metal gets so cold that it will freeze any skin that it touches.



The body is like a furnace that needs fuel to keep running. It works so hard to stay warm at the poles that people end up eating at least twice as much food as usual.

People who work at the Poles must learn how to survive being stuck outdoors. On an **unexpected** “camping trip,” they first build a quick **shelter** to get out of the wind. Then they build a better one and pack in close to one another, using body heat to stay warm.

Building shelters—doing any work—is much harder in extreme cold. Mittens are very bulky, but it’s unsafe to go bare-handed for long. Getting too cold is dangerous, but so is getting **overheated**. Sweat can freeze into a **layer** of ice next to your body.

In summer many people live at the science stations in the Arctic and Antarctica. They have a gym and videos and spend their spare time skiing on the icy runways. But mostly they work hard, getting as much done as possible while the weather is warm enough for planes to fly in and out.

A few of them stay all winter long. Scientists say that summer's **constant** daylight tricks your body into wanting to keep going without rest. But in winter's endless darkness, you feel tired much of the time. One scientist even studies the people who winter-over at the South Pole. He wants to know what kind of person works well in such a small, isolated group. Someday his findings may help pick the people to live in a **colony** on Mars.




Unlike most refrigerators, the one containing fruit and vegetables at the South Pole is heated.

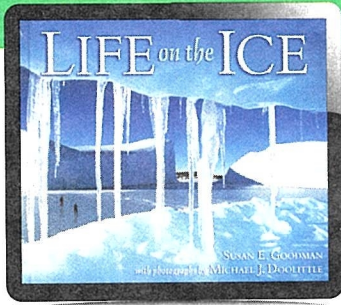


In spring in Antarctica, the temperature finally climbs up to +10°F (−10°C) and it's warm enough for planes to fly in again. The scientists are eager to get on board and return to the colors and smells of the "green world." Once they buckle up, there is one last frosty problem to solve. The airplane must go 100 miles (160 km) per hour to take off, no easy task when sliding over ice. Sometimes pilots must travel 2 miles (3 km) to reach that speed. And sometimes they need extra help. Then they turn to the eight rockets attached to their plane.





A flick of the switch, a burst of flames and speed,
and they are on their way home.



Dig Deeper

Use Clues to Analyze the Text

Use these pages to learn about Main Ideas and Details and Literal and Nonliteral Meanings. Then read *Life on the Ice* again to apply what you learned.

Main Ideas and Details

Life on the Ice gives information about what scientists do and the challenges they face in Antarctica. The most important idea about the topic is called the **main idea**. Each paragraph or group of paragraphs is also organized around a main idea. **Supporting details** are facts and examples the author uses to tell more about each main idea.

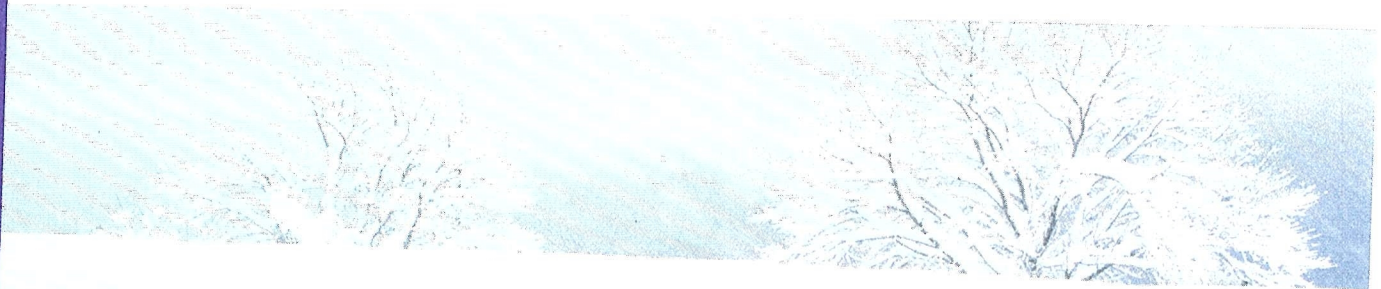
Look back at pages 174–175 in *Life on the Ice*. In the first paragraph on page 174, you will read the main idea for this section. As you read, you will find supporting details that explain why flying to the Poles is so difficult.



Literal and Nonliteral Meanings

Words and phrases have exact meanings, also called **literal meanings**. For example, the literal meaning of *sheet* is "a large cloth used to cover a bed."

Words and phrases can also have **nonliteral meanings**. Scientists look for meteorites at the South Pole because, "if you want to find something dark, it's easier to look on a big white sheet." Here the phrase *a big white sheet* has a nonliteral meaning. The author means that the snow covers the ground the same way that a sheet covers a bed. The **context**, or sentences around the phrase, shows that *sheet* is being used in a nonliteral or figurative way.



Your Turn

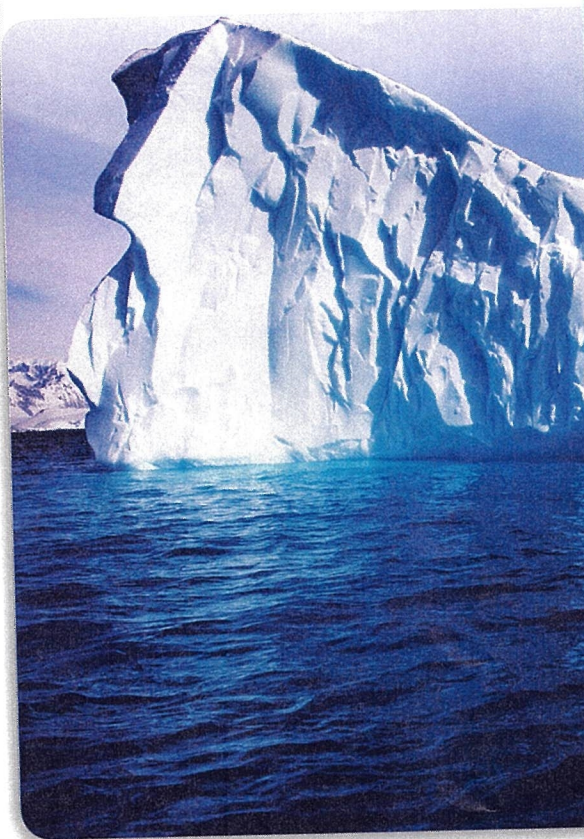
RETURN TO THE ESSENTIAL QUESTION



Review the selection with a partner to prepare

to discuss this question:

What are the coldest places on Earth like? As you discuss the question, look for text evidence in the selection to support your ideas.



Classroom Conversation

Continue your discussion of *Life on the Ice* by explaining your answers to these questions:

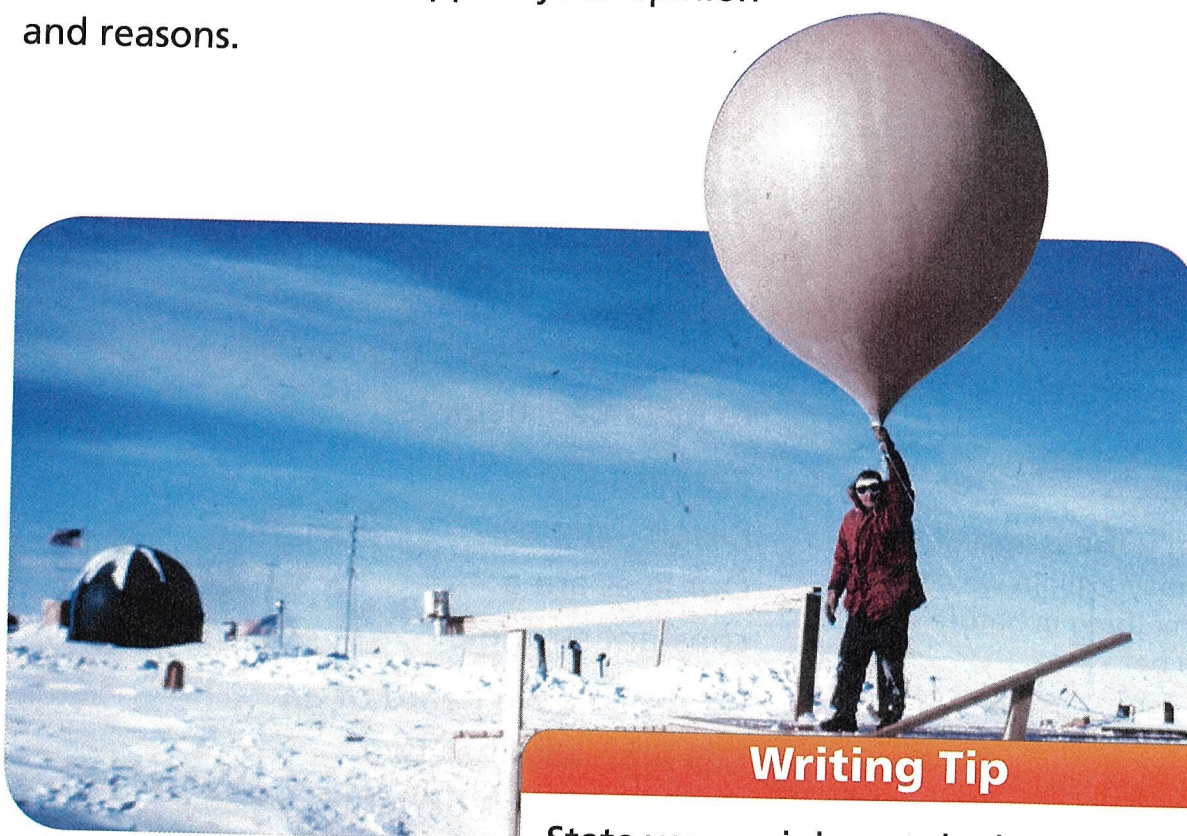
- 1 Which climate is more challenging for humans, the North Pole's or the South Pole's?
- 2 Do you think you could work at either of the Poles? Use text evidence to explain why or why not.
- 3 Why would working in Antarctica be good preparation for an astronaut who plans to go to Mars?

Performance Task

WRITE ABOUT READING



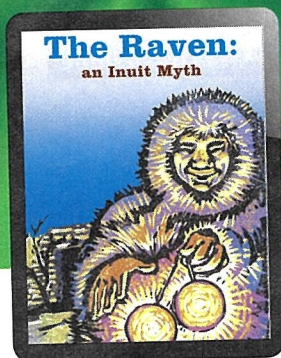
Response The selection discusses many jobs that scientists do. Which job looks most interesting to you? Write a paragraph about the job you would choose and explain your choice. Use main ideas and text evidence to support your opinion and reasons.



Writing Tip

State your opinion at the beginning of your paragraph. Use transition words such as *because* and *so* to link your reasons to your opinion.

MYTH



✓ GENRE

A **myth**, such as this Readers' Theater, is a story that tells what a group of people believes about the world.

✓ TEXT FOCUS

The **story message** of a myth may explain why or how something in nature came to be.

Readers' Theater

The Raven:

An Inuit Myth

retold by Peter Case

Cast of Characters

Narrator

Person

Old Man

Raven

Narrator: Long ago, the People lived in darkness. There was no sun to help things grow. The People called to Raven for help.

Person: Oh, Raven, help us. Our lives are a constant struggle.

Raven: I have heard of an Old Man who has two glowing globes of light. I will try to get these globes.

Narrator: Raven went gliding over the dark wilderness. He came to the shelter where the Old Man lived with his daughter. There, Raven turned himself into a human child.

Old Man: I have a grandson! How wonderful!

Narrator: Raven spoke in the voice of a small child.

Raven: May I please play with the globes of light?

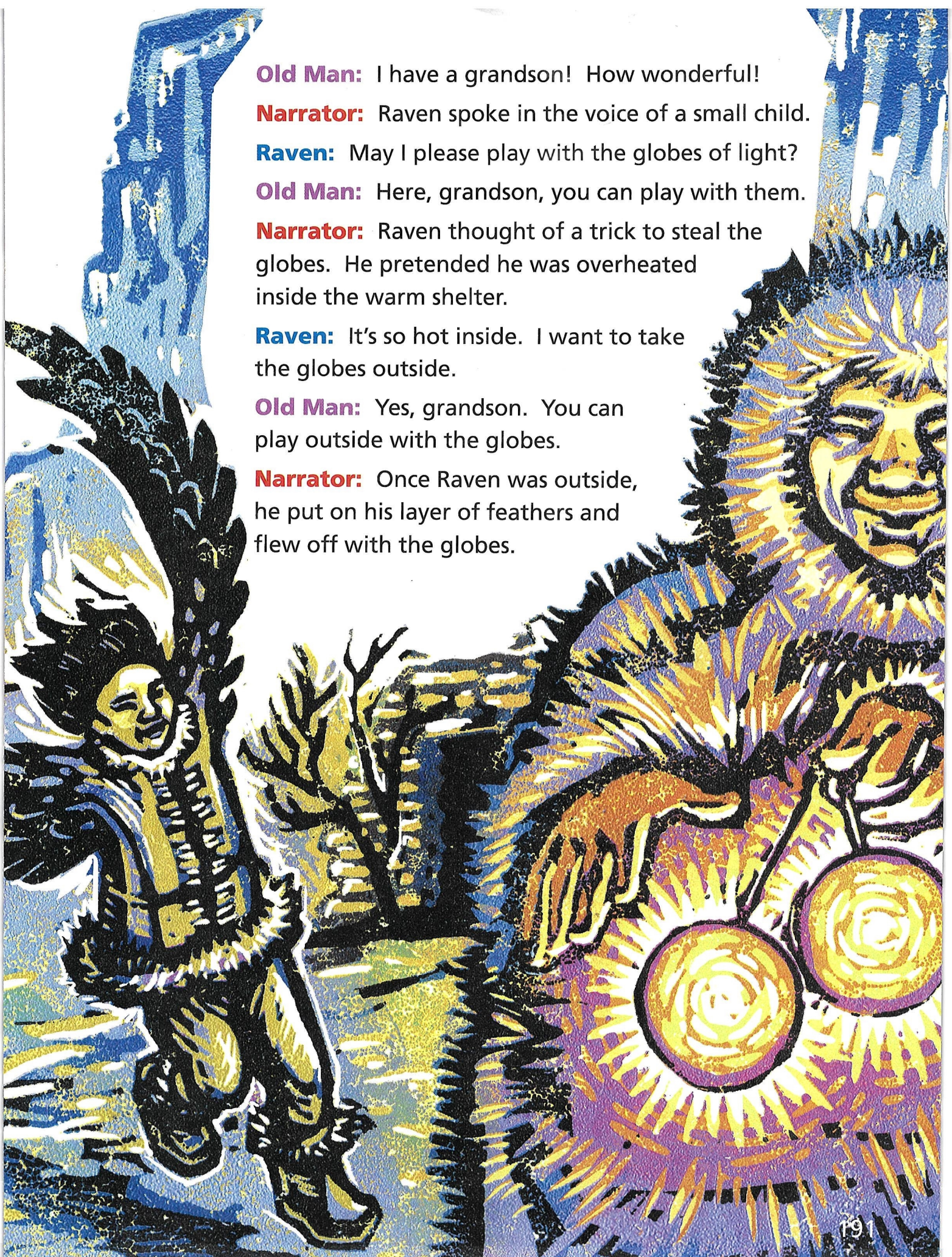
Old Man: Here, grandson, you can play with them.

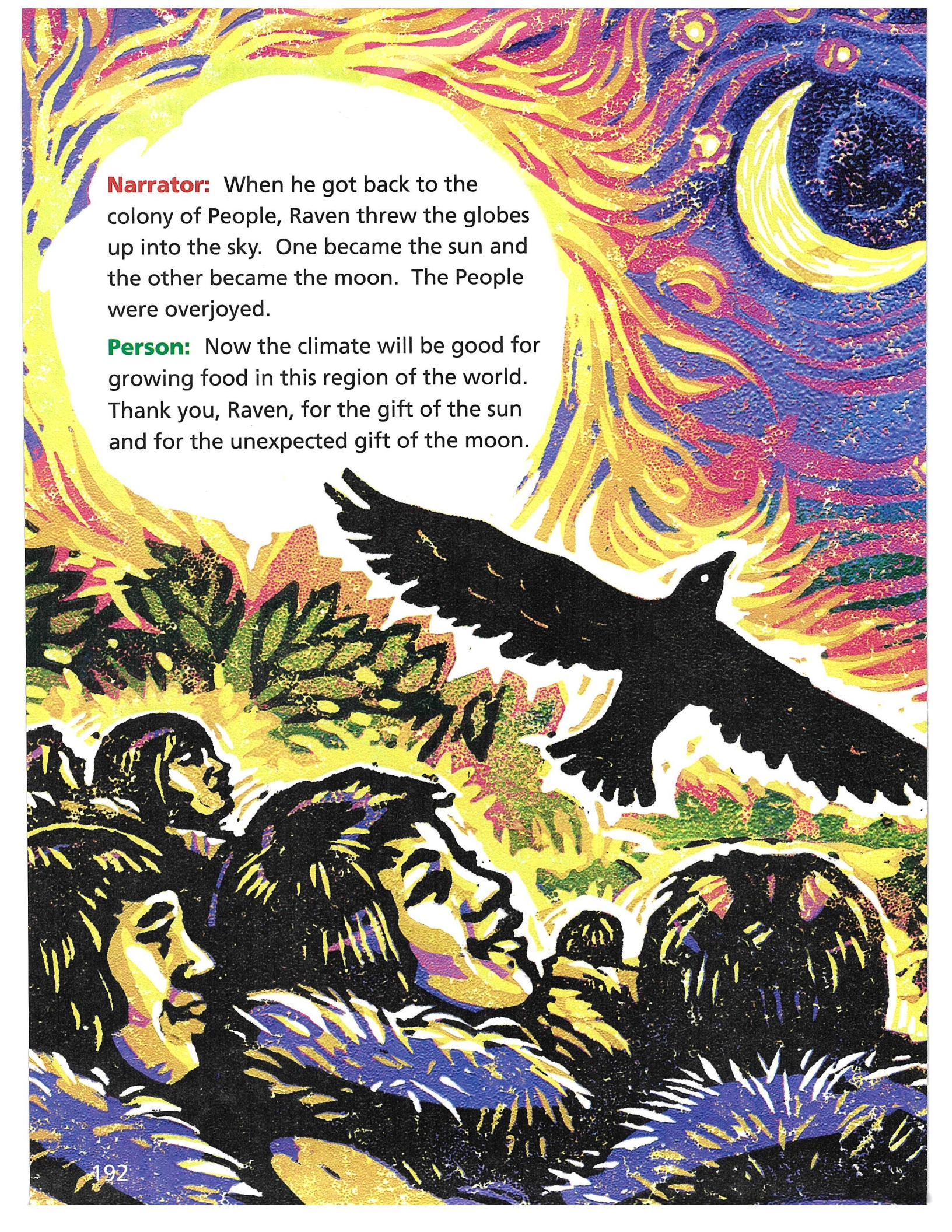
Narrator: Raven thought of a trick to steal the globes. He pretended he was overheated inside the warm shelter.

Raven: It's so hot inside. I want to take the globes outside.

Old Man: Yes, grandson. You can play outside with the globes.

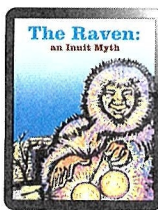
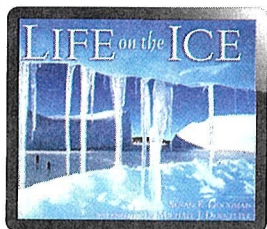
Narrator: Once Raven was outside, he put on his layer of feathers and flew off with the globes.





Narrator: When he got back to the colony of People, Raven threw the globes up into the sky. One became the sun and the other became the moon. The People were overjoyed.

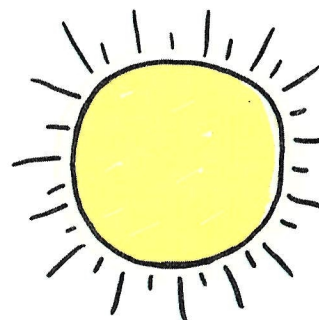
Person: Now the climate will be good for growing food in this region of the world. Thank you, Raven, for the gift of the sun and for the unexpected gift of the moon.



Compare Texts

TEXT TO TEXT

Discuss the Sun Think about why the sun is important to the scientists in *Life on the Ice* and to the people in *The Raven*. In a small group, use text evidence to discuss and explain your ideas. Listen carefully to each other. Ask questions if you are not sure about something.



TEXT TO SELF

Write a Story Imagine that you are a scientist in Antarctica. Write a short story that tells about your adventures there. Include details about characters and setting and an ending that solves a problem in the story.



TEXT TO WORLD

Compare Photographs Study the photos in *Life on the Ice*. Think about what you know about your own state's land and climate. Compare and contrast the land and climate at the Poles with those in your state. Use details in the pictures and text to discuss your ideas.

Grammar

What Is an Adverb? An adverb is a word that describes a verb. Adverbs can tell *how*, *when*, or *where* an action happens. Adverbs can come before or after the verbs they describe.

Kim found a meteorite today. (tells *when*)

She carefully placed it in a box. (tells *how*)

Her team arrives there. (tells *where*)

They talk excitedly about the meteorite. (tells *how*)

Try This!

Work with a partner. Read the sentences aloud. Find the adverb in each sentence.

- 1 Alex ran ahead.
- 2 He reached the campsite first.
- 3 He eagerly searched for Dr. Keller.
- 4 He looked everywhere for his friend.
- 5 Alex found Dr. Keller skiing happily on the trail.

Short, choppy sentences can be combined to make your writing smoother. Combine two sentences by moving an adverb. Often you can choose where to place the adverb in the new sentence.

Two Sentences

I received a new scarf.



I received it yesterday.



Combined Sentence



I received a new scarf
yesterday.

Yesterday, I received
a new scarf.

Two sentences: I wrap my scarf around my neck.
I wrap my scarf snugly.

Combined sentence: I wrap my scarf snugly around my neck.

Connect Grammar to Writing

As you revise your persuasive essay, think about combining sentences by moving an adverb.

- ▶ Writing Opinions: Support Your Argument
- ▶ Writing as a Process: Revise and Edit



Reading-Writing Workshop: Revise

Opinion Writing

Organization A **persuasive essay** explains in detail the reasons for the writer's opinion. To help readers follow along, each reason has its own paragraph, starting with a transition word, such as *another*.

Daniel drafted his essay about joining a club. Later, he separated his reasons into paragraphs and added transition words.

Writing Process Checklist

Prewrite

Draft

▶ Revise

- Did I begin by telling my opinion?
- Did I give strong reasons?
- Did I support my reasons with details and examples?
- Do my new paragraphs use transition words?
- Did I sum up my reasons in a concluding statement?

Edit

Publish and Share

Revised Draft

Do you love penguins? If your answer
~~is~~ *The main reason to join is that* is yes, join the Penguin Club! ~~It's~~ fun and

interesting. We visit the penguin exhibit at the Science Museum, see live penguins at the Aquarium, and do projects. You'll learn lots of cool penguin facts. For

example, did you know that penguins go
~~Another~~ *Another great reason to join the club is that* sledding on their stomachs? ~~Penguins~~
 need your help.

The Penguin Club Is Cool!

by Daniel Boyd

Do you love penguins? If your answer is yes, join the Penguin Club!

The main reason to join is that it's fun and interesting. We visit the penguin exhibit at the Science Museum, see live penguins at the Aquarium, and do projects. You'll learn lots of cool penguin facts. For example, did you know that penguins go sledding on their stomachs?

Another great reason to join the club is that penguins need your help. In some parts of the world, penguins have fewer safe, healthy places to live because of changes caused by people.

These are the main reasons why I joined the Penguin Club. I think that most kids would enjoy the club. You can make new friends while doing things to help the penguins.

Reading as a Writer

Why did Daniel divide his essay into paragraphs? In your essay, where should you divide your writing into paragraphs?

I began a new paragraph for each reason. I was also careful to write contractions correctly.



- ▶ Writing to Sources
- ▶ Writing Opinions: Introduction
- ▶ Writing Opinions: Support Your Argument
- ▶ Writing Opinions: Conclude Your Argument

Write an Opinion Essay

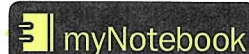
TASK In *The Albertosaurus Mystery*, you read about scientists who study dinosaur fossils. Then in *Life on the Ice*, you read about scientists who conduct research in the icy climates of the Arctic and Antarctica.

Which kind of research do you think is more important to future generations? Do you think that studying fossils will provide valuable information about Earth to people in the future? Or do you think it is more important to study the clues about Earth's climate hidden deep in ice? Write an opinion essay to persuade your readers to support one of these types of research.

In your opinion essay, make sure you:

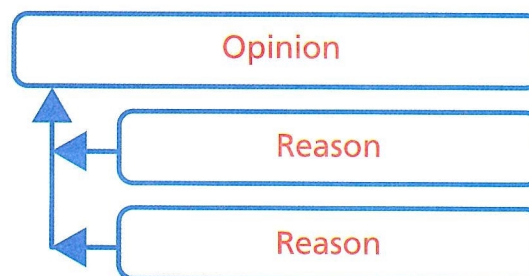
- introduce the topic and state your opinion.
- give persuasive reasons for your opinion, using details and examples from the texts to support them.
- provide a concluding section.

PLAN



Use the annotation tools in your eBook to find evidence to support your ideas.

Gather Information What do scientists learn from the clues they find in fossils and in ice? How is the information helpful to future generations? Use a graphic organizer to record your answers.



Write your draft in myWriteSmart. Focus on getting your ideas down rather than perfecting your word choices.

Write Your Opinion Essay Now begin writing your essay. Use the flow chart and what you already learned about writing an opinion essay to write your draft.

INTRODUCTION

Write the **introduction** to your essay. Introduce your **topic** and state your **opinion**. Your goals are to get your audience interested in your topic and to persuade them to agree with your opinion.

BODY

Think of three **reasons** that support your opinion and organize them in a logical way. Consider saving your strongest reason for last. Support each reason with **evidence** from the texts. Address any arguments your readers might have against your opinion. Remember to use **linking words**, such as *because*, *therefore*, and *since*, to connect your opinion and reasons.

CONCLUSION

In a strong **concluding section**, make a final persuasive point and summarize your **reasons**. This is your last chance to persuade the audience. Include **strong, specific words** that show you care about your topic.

REVISE



Review Your Draft Remember that the revision and editing steps will give you a chance to look carefully at your writing and make changes. Work with a partner to determine whether you have clearly explained and supported your opinion in your essay. Use these questions to help you evaluate and improve your essay.

Have a partner review your opinion essay in *myWriteSmart* and note where the connection between your opinion and reasons is not clear. Discuss how to make improvements.

Purpose and Organization	Evidence and Elaboration	Conventions
<ul style="list-style-type: none">✓ Have I clearly stated my opinion and grabbed readers' attention?✓ Did I present my ideas logically from beginning to end?✓ Do I have a strong conclusion that will persuade readers?	<ul style="list-style-type: none">✓ Have I included evidence from the texts to support my reasons?✓ Is my tone confident and convincing?✓ Did I choose words that were strong and specific?	<ul style="list-style-type: none">✓ Does my essay include a variety of complete sentences?✓ Is my spelling, punctuation, and capitalization correct?

PRESENT

Share Write or type a final copy of your opinion essay. Choose a way to share your paper with your classmates. Consider these options.

1. Read your opinion essay to your classmates.
2. Publish your essay on a school website or social networking page and ask for feedback from readers.
3. Hold a debate between those who support fossil research and those who support research on the North and South Poles. Each side can present its essays to the class.