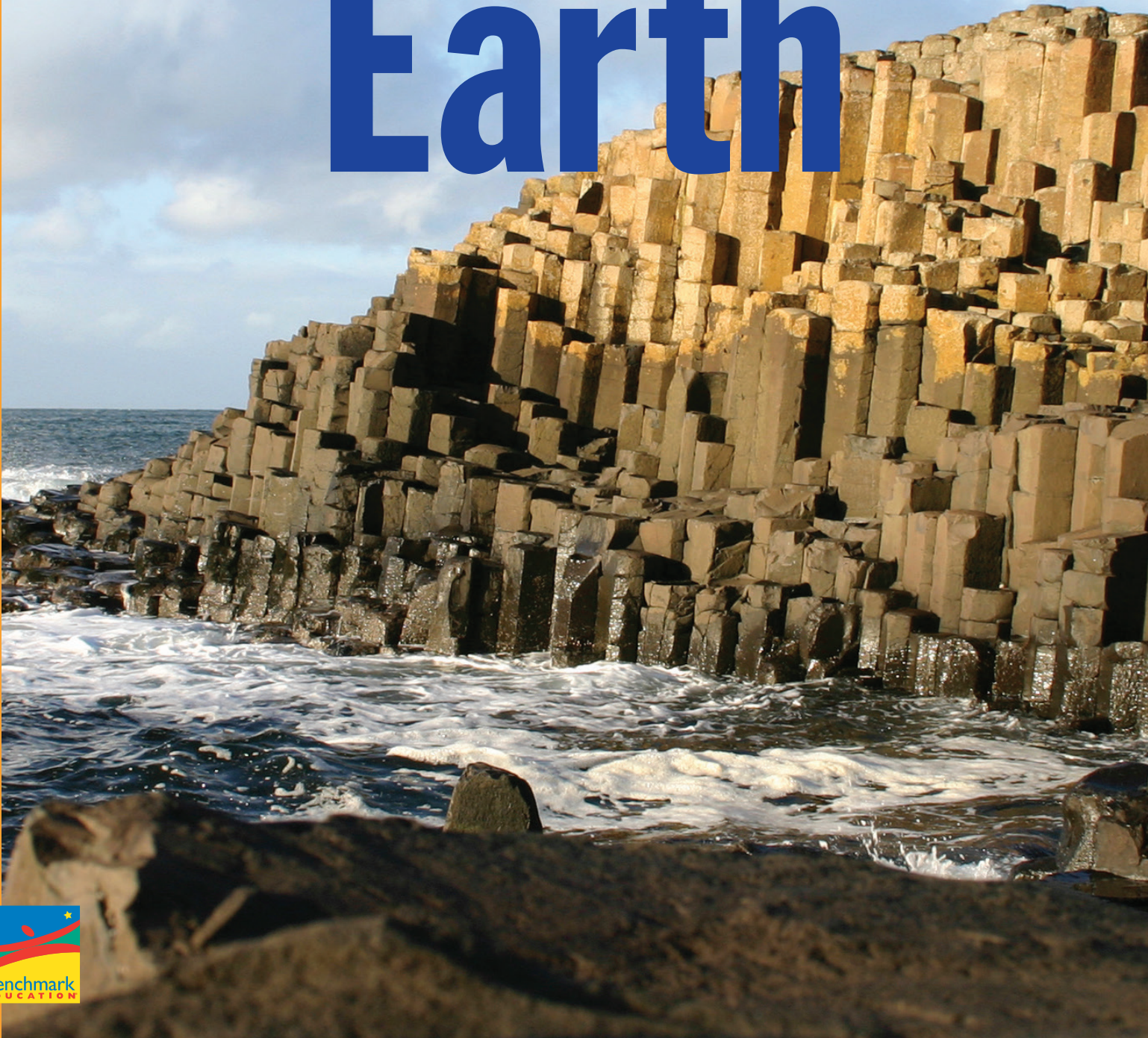


Wind and Water Change Earth



Wind and Water Change Earth

Student Objectives

I will be able to:

- Read and analyze informational and related-opinion texts about Earth's changes.
- Share ideas with my peers.
- Build my vocabulary knowledge.
- Conduct research to write informational texts.

Tips for Text Annotation

As you read closely for different purposes, remember to annotate the text. Use the symbols below to annotate.

Symbol	Purpose
<u>underline</u>	Identify a key detail.
★	Star an important idea in the margin.
① ② ③	Record a sequence of events.
jealous	Circle a key word or phrase.
?	Mark a place in the text where you have a question. Write your question in the margin.
!	Mark a place in the text where you have an idea. Write your idea or thought in the margin.

Your annotations might look like this.

Notes

1 Many moons ago, there lived a brave warrior. He was called the Invisible One.

★ No one could see him except his sister. He pledged to marry the first woman who could see him.

2 Nearby, there lived a man with two daughters. The elder daughter was callous and cruel. The younger, called Rough-Face Girl, was gentle and kind. Rough-Face Girl worked hard. She tended the fire. It made her face rough and chapped. Her idle sister did nothing.

3 One day, Idle Sister announced, "I want to marry the Invisible One!" She hurried

What does the word callous mean?

I wonder why she was called Rough-Face Girl.

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Essential Question

How do we react to changes in nature?



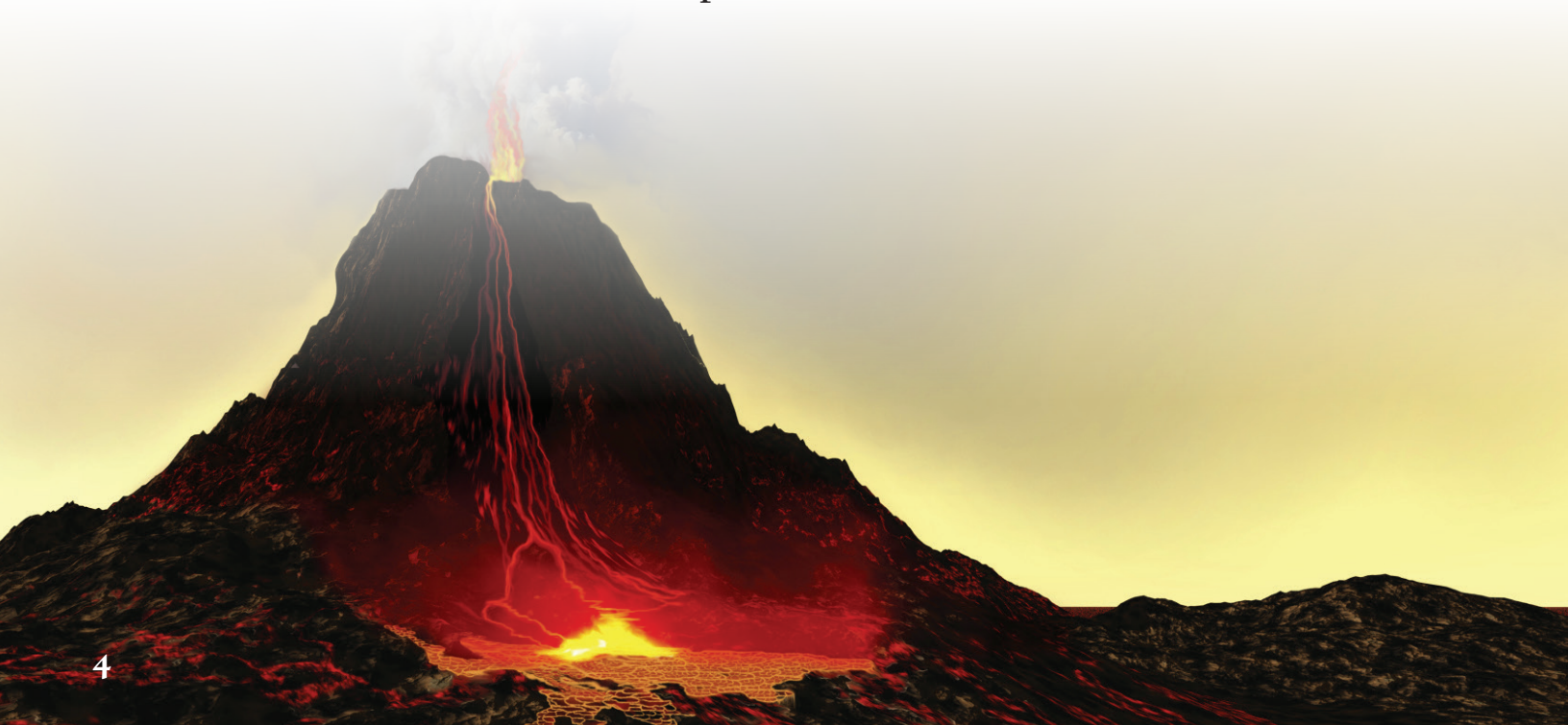


Remember
to annotate
as you read.

Notes

Volcano!

- 1 Under Earth's crust is a layer of large, rocky plates called the mantle. These plates shift and move around.
- 2 Sometimes plates push against each other with so much force that one plate slides on top of the other. This causes the mantle to melt and push up, melting even more rock. The heat and pressure build until a vent or crack opens in the crust. This causes an eruption!
- 3 An erupting volcano spews hot gas, rocks, and ash. Molten rock, or lava, flows down the volcano, changing the landscape forever.



I Am Wind

by Constance Andrea Keremes

I am restless, never still,
I know no bounds, go where I will.
Free to fly, I set my course,
I am wind—a mighty force.
Hear me whisper, hear me moan,
As I carve out shapes from stone.
Round and round the rocks I go,
Never stopping—blow, blow, blow.
Centuries is what I take,
For all the sculptures that I make.
But at last I leave my mark,
For you to see at Zion Park.
Towers made of rock and sand,
All mine—no touch of human hand.
Just an old wind passing through—
But see the wondrous things I do.



*Remember
to annotate
as you read.*

Notes

Tornado!

- 1 It's the fastest, most unpredictable wind on the planet. It spins around, forming a funnel shape, and destroys everything in its path. It tears apart buildings, uproots trees, and tosses cars as if they were toys! Although a tornado may not last very long, its damage can take years to repair.



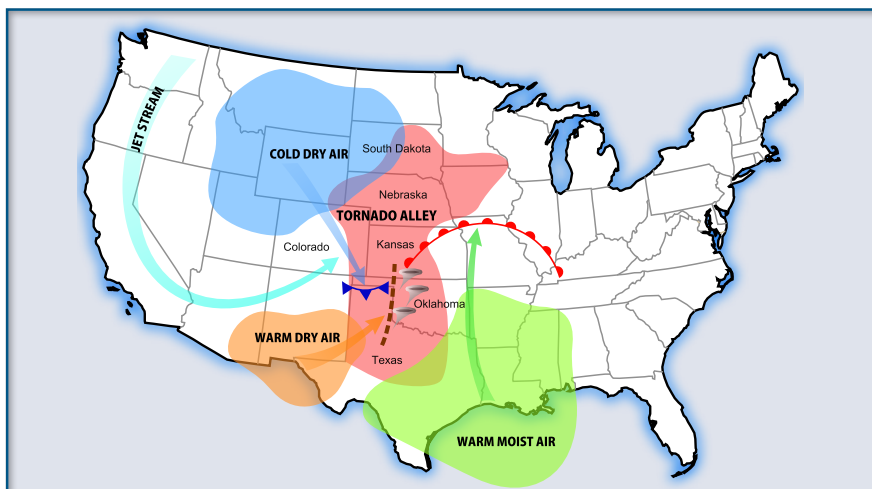
▲ Tornadoes can damage or destroy homes, cars, and land.

- This diagram shows how a tornado is formed.



Notes

- 2 Tornadoes usually come from thunderclouds. Warm air on the ground rises to meet cooler air moving down toward Earth. When the air masses meet, a large thundercloud forms.
- 3 As warm and cool air swirls in the thundercloud, it forms a funnel. If the funnel is strong, it drops from the cloud and becomes a tornado!



- ▲ The area where tornadoes occur most often is known as Tornado Alley.

- 4 Tornadoes can do serious damage to Earth and our environment. Some tornadoes are powerful enough to level forests and foothills. That means many animals end up losing their habitats. Fish are forced to go deeper in lakes and streams. After a tornado, the dirt and debris that remain in the air cause pollution.



Notes

- 5 What if there's a tornado warning?
Read what Adam Reynolds and his family did.
- 6 "We were eating dinner and heard the sirens. The sky became dark, and it started hailing! We rushed to the basement with our transistor radio."
- 7 If you don't have a basement, go inside a closet. Listen to the radio for information and stay safe!



▲ During a tornado warning, people gather in hallways, basements, and shelters.

Remember
to annotate
as you read.

Notes

Water's Awesome Wonder

- 1 Did you know that water can be an artist? It can when it flows downhill and carves rock into amazing shapes!
- 2 When water moves over rock, it slowly wears away the rock. We call that *erosion*. In my opinion, erosion can create something beautiful. The Grand Canyon is a great example of this!

▼ Arizona's Grand Canyon became a national park in 1919.



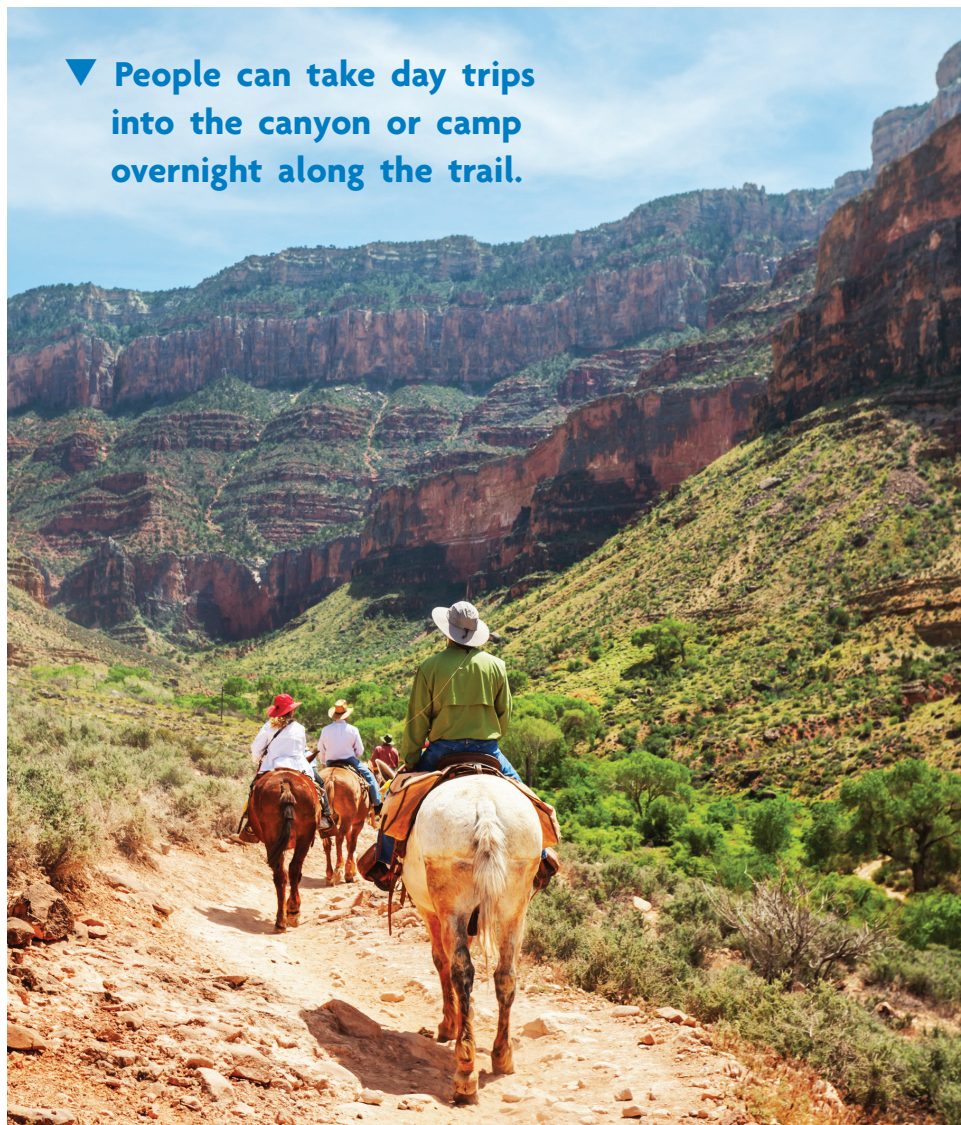
3 The Grand Canyon began to form long ago. The Colorado River flowed across the desert floor, carving through the rock in its path. Wind, sand, and mudslides cut away even more rock. Slowly the gash became deeper and deeper.

4 Today this beautiful canyon is more than a mile deep in some places. It can even be seen from space.

▼ The Colorado River has been carving the Grand Canyon for over five million years.



▼ People can take day trips into the canyon or camp overnight along the trail.



- 5 People visit the Grand Canyon for many reasons. It is one of the most beautiful places on Earth, with its unusually shaped rocks and colorful canyon walls.
- 6 Mule rides, hiking, and rafting down the Colorado River are three exciting ways for visitors to see the fantastic shapes and colors of the canyon.

7 So you see why I think erosion and weathering created something beautiful in Arizona's desert.

8 The Grand Canyon is so much more than just a deep hole in the ground. It is a sculpture that has been carved over five million years by the mighty forces of nature. And it is still being shaped today!

▼ Nearly five million people view the awesome sight of the Grand Canyon every year.



The Big Blizzard

- 1 The TV reporter said a big snow was on its way. We've had several big snows this winter, but tomorrow will be our first blizzard.
- 2 I got up early in the morning to look outside. The farmer's field across the way had at least two feet of snow! I spotted some deer poking around for food. No luck. A blizzard is dangerous for these animals. Their lives are at risk if they can't find food or if it gets too cold. Luckily the farmer's cows and sheep are in his barn. The farmer's pond looked frozen over. I wonder what happens to fish in a blizzard.
- 3 I slowly opened our front door. I heard a roaring sound. The wind was stronger than I had ever felt it. My teeth chattered. I never knew it could be this cold! I know most children like to play in the snow, but when there's a blizzard, it's not safe. People can't get to work, and schools are closed. It's dangerous to drive in a blizzard because it's hard to see the roads. With snowstorms like this, I'm ready for spring!

BuildReflectWrite

Build Knowledge

Identify the causes and effects of wind and water erosion on Earth and our environment.

Cause	Effect

Reflect

How do we react to changes in nature?

Based on this week's texts, write new ideas and questions you have about the essential question.

Research and Write

Choose a famous natural landmark caused by weathering and erosion. Write a short informative/explanatory report in which you describe this landmark and explain how it was formed.

Choose Your Topic

This week, conduct a pre-search to identify the rock formation your class would like to research. Construct guiding questions that will help you focus your research on the information you will need to write your class report.

Remember
to annotate
as you read.

Notes

How a Mountain Changes

- 1 You can tell if a mountain is young or old by looking at it. A young mountain has sharp, craggy peaks. An older mountain is more rounded because it has weathered longer. As centuries pass, wind blows away more and more of the mountain.
- 2 Rains carry debris down the mountainside, wearing away ever more soil and rock. Over time, wind and rain are like carvers, changing a mountain's size and shape.



Hans Saves the Village

- 1 Once there was a little boy named Hans who was on his way to school when he saw a troubling sight. A trickle of water was leaking from a hole in the great dam. The dam held back the river so it would not flood the village.
- 2 Hans knew he must stop the leak, so he put his foot into the hole. All day Hans stood with his foot in the hole, keeping the rushing waters at bay. Finally, three men saw the cold, tired boy. Quickly, they repaired the hole, allowing Hans to remove his foot at last.
- 3 Hans was a hero! The grateful villagers built a statue of him so that everyone would know of his bravery.



Remember
to annotate
as you read.

Notes

Earth's Changes

by Louise Carroll

Introduction

- 1 Water and wind are important elements for our daily lives. Water is in rivers, lakes, and oceans. More than two-thirds of the world is water. Wind is moving air. The air is all around us. Water and wind are also very powerful forces of nature. They shape our world.
- 2 Over time, flowing water wears away the surrounding rock and soil. When water wears away Earth's surfaces, it is called erosion. Strong winds also can cause erosion. Erosion changes the way Earth looks.
- 3 Storms bring strong winds and a lot of rain. They can also change the way our planet looks.





How Does Water Change Earth?

Notes

- 4 Earth has oceans, rivers, lakes, and streams. Most of the time these waters flow smoothly. Ocean water slowly wears away the shoreline. Ocean waves crashing against rocks can also cause erosion.
- 5 Moving water slowly carves the edges of a riverbank. The Grand Canyon in Arizona was formed this way millions of years ago by the flowing water of the Colorado River.



▲ Floodwaters damage homes and cars.

Notes

- 6 Sometimes water can change the land in a short amount of time. Storms can bring so much rain that rivers and lakes overflow. The water runs over the land. This is called a flood. Floodwater pushes things in its way. The land changes from the force of the moving water.

How Does Wind Change Earth?

- 7 The wind can be a gentle breeze. It can feel good when it blows on your face. Wind blows against rocks and soil too. It lifts small bits and carries them elsewhere. The bits are often too small to see or feel.
- 8 Wind can change the shape of a rock. It can change the shape of a sand dune. The results of wind erosion can look very weird—and very beautiful!
- 9 However, wind erosion is not good for farmers' crops. Wind blows away the top layer of soil. That layer has things in it that help plants grow.



▲ Wind makes sandpiles at the beach.



Arches National Park, Utah

How Can We Control Water and Wind?

10 Water and wind can cause a lot of damage to Earth. They can cause damage to people's things too. Scientists have figured out many ways to try to lessen the damage.



▲ Hurricane Katrina caused rivers in New Orleans, Louisiana, to flood. This caused a lot of damage to the city.





▲ Walls called *levees* were built higher to better protect New Orleans in the future.

Notes

11 Walls can be built around rivers that flood when it rains heavily. A wall can also keep ocean waves from striking land. Sometimes homes are built close to shore. A wall can keep them safe from ocean water.

12 A wall of trees can help slow wind erosion. It can help keep farmers' crops healthy. The trees can block the wind from blowing away the crops.

Conclusion

13 Water and wind can wear away Earth's surface. They can change the way Earth looks. Some of the changes are brought about by erosion.

14 Storms can have strong winds and cause flooding. Strong winds and floods can change and damage Earth's surface as well as people's possessions.



river in Scandinavia



**Maria Island,
Tasmania, Australia**

Notes

- 15 Erosion and storms occur naturally. They are nature at work. Sometimes beautiful canyons are created. Sometimes rocks with amazing shapes are formed. Sometimes things can get damaged. Scientists are working hard to find ways to lessen the damage that water and wind can cause.

My Beach

- 1 We have a big yard and barn, but my folks are not farmers. Dad is a sailor, and Mom is a teacher. Today I took a short walk near my home. I live very close to the beach. I like to walk for hours. It's fun to hear the waves crash against the beach. It's true, too, that a beach is a great place to think.
- 2 Usually, I see many visitors at the beach—swimmers, divers, surfers, and painters. Not today, though. Today, I noticed something I had never seen before. It was a sign that read: BE CAREFUL! EROSION. A big piece of rock had fallen down and blocked my path. My father warned me about this. "The wind and water affect the beach every day," he said. "Over time, they can change what the beach looks like. They chip away at the rocks. They cause the sand to move."
- 3 It's clear to me that the beach is changing before my eyes. It's not changing fast, but it is changing. I wonder if the area I walk in will be here when I grow up. I hope so!

BuildReflectWrite

Build Knowledge

Summarize what you learned from reading “Earth’s Changes.”

What damage can water cause?	How does wind erosion affect Earth?	What would happen if we could control water and wind erosion?

Reflect

How do we react to changes in nature?

Based on this week’s texts, write new ideas and questions you have about the essential question.

Research and Write

Choose a famous natural landmark caused by weathering and erosion. Write a short informative/explanatory report in which you describe this landmark and explain how it was formed.

Conduct Research

Use your guiding questions to conduct research this week. Gather information from at least three sources, including both print and online sources. Use your sources to plan the report.

Remember
to annotate
as you read.

Notes

Beautiful Sand Dunes

- 1 What do beaches, deserts, and Mars have in common? All three are places where sand dunes usually form.
- 2 Sand dunes are created by wind blowing loose grains of sand into mounds. I think they are some of nature's greatest artworks! Some sand dunes are waves or ripples. Others form star shapes. Dunes that form where the surface is hard may be small in size.
- 3 However, dunes can be as large as the state of Texas if they form in a place where the sand is looser. Another amazing fact about dunes is that they can migrate, or move, several feet each year! No matter what size or shape, I say sand dunes are works of art!

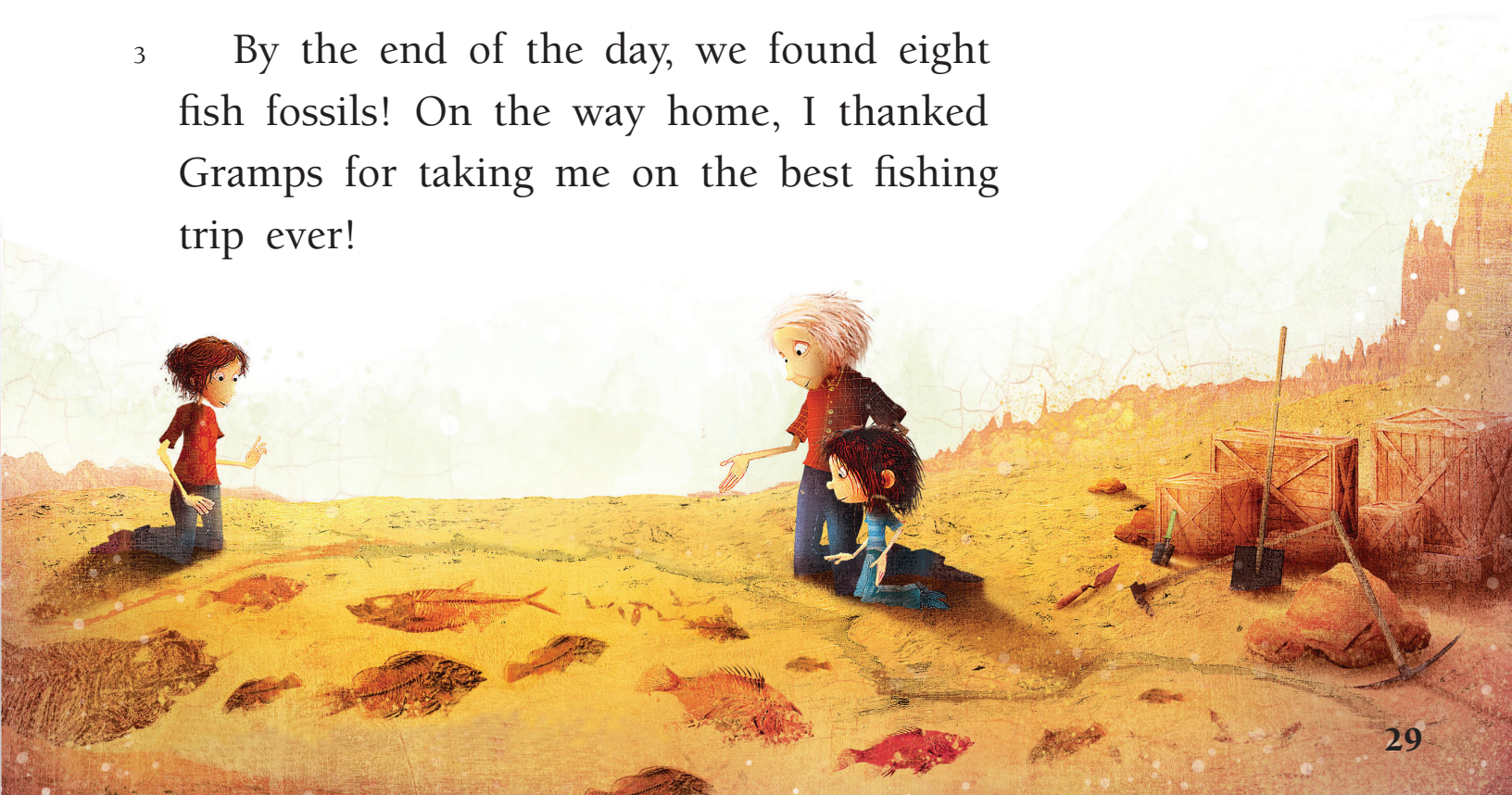


Fishing in the Desert

1 On my eighth birthday, my grandpa came to my house. He said he was taking me fishing. We got into his truck and an hour later, we were in a desert. “Gramps, how are we going to fish here?” I asked. He just smiled and introduced me to our guide Ana.

2 Ana said that millions of years ago, the desert was covered by a lake. The lake was filled with different kinds of marine life. Crocodiles even roamed the shore! Ana showed us how to use the tools she brought to dig.

3 By the end of the day, we found eight fish fossils! On the way home, I thanked Gramps for taking me on the best fishing trip ever!



Remember
to annotate
as you read.

Notes

Surf Haven Times September 21

Surf Haven Debates Its Future

by Jay Forte



- ¹ When Hurricane Stanley hit land last week, the small town of Surf Haven took a pounding. Stanley's powerful winds ripped up the historic boardwalk. High waves flooded the seashore shops. The famous Ferris wheel was broken. The popular arcade collapsed. The town has been cleaning up for days.

- 2 Last night, Surf Haven's mayor, Jan Brill, held a meeting about the boardwalk's future. Two hundred town residents came to the meeting.



Town councilman Matt Fenton gave a damage report. "Forty businesses were destroyed," he said. "Twenty others were badly flooded. The town has lost three hundred jobs. We need fifty million dollars to repair all the damage."

- 3 Mayor Jan Brill said the town should rebuild the boardwalk. "Our future is at stake. Visitors come here every summer. They spend millions of dollars. If we don't rebuild, they won't come. They will go to other towns. They will enjoy other beaches. Our town depends on the visitors. They shop at our stores. They dine in our restaurants. They stay in our hotels. They support our businesses. They come to see our historic boardwalk."

4 Matt Fenton agreed. “We can do this,” he told the large audience at the meeting. “Remember Hurricane Nancy thirty years ago? We rebuilt then. We can do it again. We must do it. We need to keep our town alive.”

5 Dr. Kay Smith from the Climate Study Group disagreed. “Ocean levels are rising. Weather patterns are changing. Scientists know that there will be more bad storms in the future. Rebuilding the boardwalk is a waste of money. We should learn our lesson from Stanley. We should turn the boardwalk into a nature preserve. The nature preserve in Ocean View attracts five thousand visitors a year. So could ours.”



Nature preserve in Ocean View, New Jersey

Notes

6 Local weather expert Tom Lee agreed. “The ocean level is three inches higher than it was when Hurricane Nancy hit us. The National Weather Panel says that in ten years, the water could rise two more inches. That means we will have even worse flooding during storms.”

7 Surf Haven resident John Garcia gave other reasons for making a nature preserve. “Before the storm, the boardwalk was crowded. There was traffic and noise night and day. What people need is a beautiful sandy beach and wildlife. We should build a nature preserve. We can all enjoy its quiet beauty.”

8 Shop owner Phil Pippin objected. “Easy for you to say! You don’t work at the boardwalk. My shop has been there for fifty years. I have ten employees who need a paycheck. What will they do? What will their families do? How many families will have to move away if they can’t find work?”

- 9 Businessman Jack Obler tried to calm the audience. “We could build new shops away from the shoreline. We could have a nature preserve and shops nearby. I will help us do it.” Mr. Obler has built successful outdoor malls in many towns.
- 10 A loud debate followed. The meeting ended with no decision. Another meeting will take place early next week. Meanwhile, the shoreline cleanup continues.



▲ Mr. Obler shows his plans for the nature preserve and shops.

Surf Haven Times *Opinion Pages*

September 22

Rebuild Right Away!

1 After reading “Surf Haven Debates Its Future,” I agree with Mayor Brill. We need to rebuild the boardwalk, because the town depends on it.



2 Visitors come to Surf Haven because of the boardwalk. They spend millions of dollars at the boardwalk. The shops depend on the visitors. A nature preserve sounds nice, but people need jobs. If they don't have jobs, they will leave the town, and the town will die.

3 In my opinion, we need to listen to Mayor Brill. Surf Haven needs a new boardwalk, even if it costs fifty million dollars.

—Jim Logan, Surf Haven Resident

Do the Wise Thing!

4 I read “Surf Haven Debates Its Future” with interest. In my opinion, we should not rebuild the boardwalk. Rebuilding is a foolish idea. Hurricane Stanley was a wake-up call. More big storms will happen in our future. If we rebuild now, we will waste money.



5 Dr. Kay Smith reminded us that weather patterns are changing. The ocean levels are rising. The shoreline will continue to be in danger. Tom Lee gave some important facts from the National Weather Panel. It is true that jobs are important, but we could build new shops somewhere else. Mr. Obler is willing to help.

6 We should pay attention to the scientific facts. More big storms are coming. Rebuilding the boardwalk is not a good idea.
—Jen Lund

Let's Compromise

7 “Surf Haven Debates Its Future” shows us we should work together. In my opinion, we need to listen to the scientists and citizens. They both have important points of view.



8 We need visitors to come to our town. As the scientists said, ocean levels are rising and we can expect many more storms like Stanley. Maybe we can't have our historic boardwalk, but we could have something just as good. According to Dr. Smith, the nature preserve in Ocean View gets many visitors each year. That means people enjoy nature preserves. We could build shops at a safe distance from the shore.

9 My opinion is that we can make the best decision if we listen to both sides of the issue. We can have a nature preserve and great new shops.

—Paula Lopez, Concerned Citizen

Zoos: Yes or No?

- 1 Many animals live in the wild. But some are kept at zoos. The students at one school debated whether or not a zoo is a good home for animals. Here's what two kids said. What do you think?

Pro

- 2 Kaylee: I've been going to zoos since I was three. I'm hoping to be a vet someday. I just love zoos. Usually, I'll stay by the giraffes or the elephant families. They are amazing! Where else could I see the coolest animals in the world? The animals are happier and safer at zoos. In fact, it's the safest place they could be. They'll be fed and loved and helped when they get sick.

Con

- 3 Emma: Zoos are like jails. Some animals live in cages instead of running free. I almost cried when I went to our town's zoo. The animals looked sadder than animals in the wild. In the wild they can live with their families. I have one question for the zookeepers: Would you want to live this way? Animal parks are much better than zoos. Until an animal park opens close by, I'll save my money.

BuildReflectWrite

Build Knowledge

Think about the lives of the people of Surf Haven. What effects do weather and climate changes have on people's lives? List your ideas in the space provided.

Effects of Weather and Climate Changes on People's Lives

Reflect

How do we react to changes in nature?

Based on this week's texts, write new ideas and questions you have about the essential question.

Research and Write

Choose a famous natural landmark caused by weathering and erosion. Write a short informative/explanatory report in which you describe this landmark and explain how it was formed.

Write Your Report

Use your research results to draft, revise, and edit your informative/explanatory report.

Support for Collaborative Conversation

Discussion Prompts

Share a new idea or opinion . . .

I think that _____.

I notice that _____.

My opinion is _____.

An important event was when _____.

Gain the floor . . .

I would like to add _____.

Excuse me for interrupting but _____.

That made me think of _____.

Build on a peer's idea or opinion . . .

I also think that _____.

In addition, _____.

Another idea is _____.

Express agreement with a peer's idea . . .

I agree with [Name] because _____.

I agree that _____.

I think that is important because _____.

Respectfully express disagreement . . .

I disagree with [Name] because _____.

I understand your point of view, but I think _____.

Have you considered that _____?

Ask a clarifying question . . .

What did you mean when you said _____?

Are you saying that _____?

Can you explain what you mean by _____?

Clarify for others . . .

I meant that _____.

I am trying to say that _____.

Group Roles

Discussion Facilitator:

Your role is to guide the group discussion and make sure that everyone has the chance to participate.

Scribe:

Your job is to record the ideas and comments your group members share.

Timekeeper:

You will keep track of how much time has passed and help keep the discussion moving along.

Encourager:

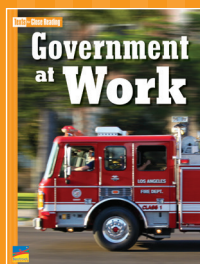
Your role is to motivate and support your group members.

Making Meaning with Words

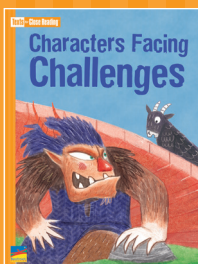
Word	My Definition	My Sentence
canyons (p. 25)		
damage (p. 6)		
debate (p. 34)		
debris (p. 8)		
historic (p. 30)		
opinion (p. 10)		
pollution (p. 8)		
residents (p. 31)		
surrounding (p. 18)		
unpredictable (p. 6)		

Build Knowledge Across 10 Topic Strands

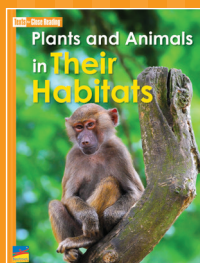
Government and Citizenship



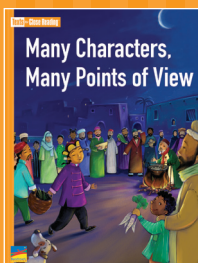
Character



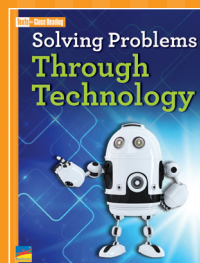
Life Science



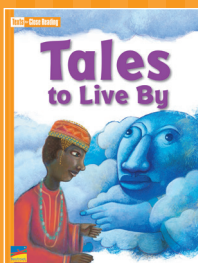
Point of View



Technology and Society



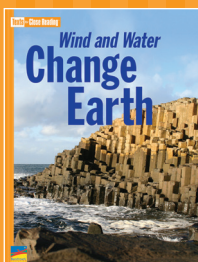
Theme



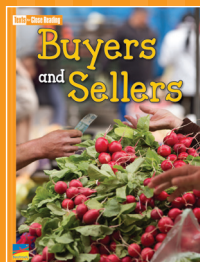
History and Culture



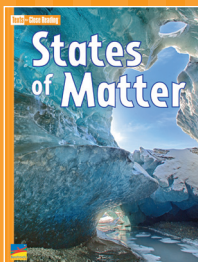
Earth Science



Economics



Physical Science



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