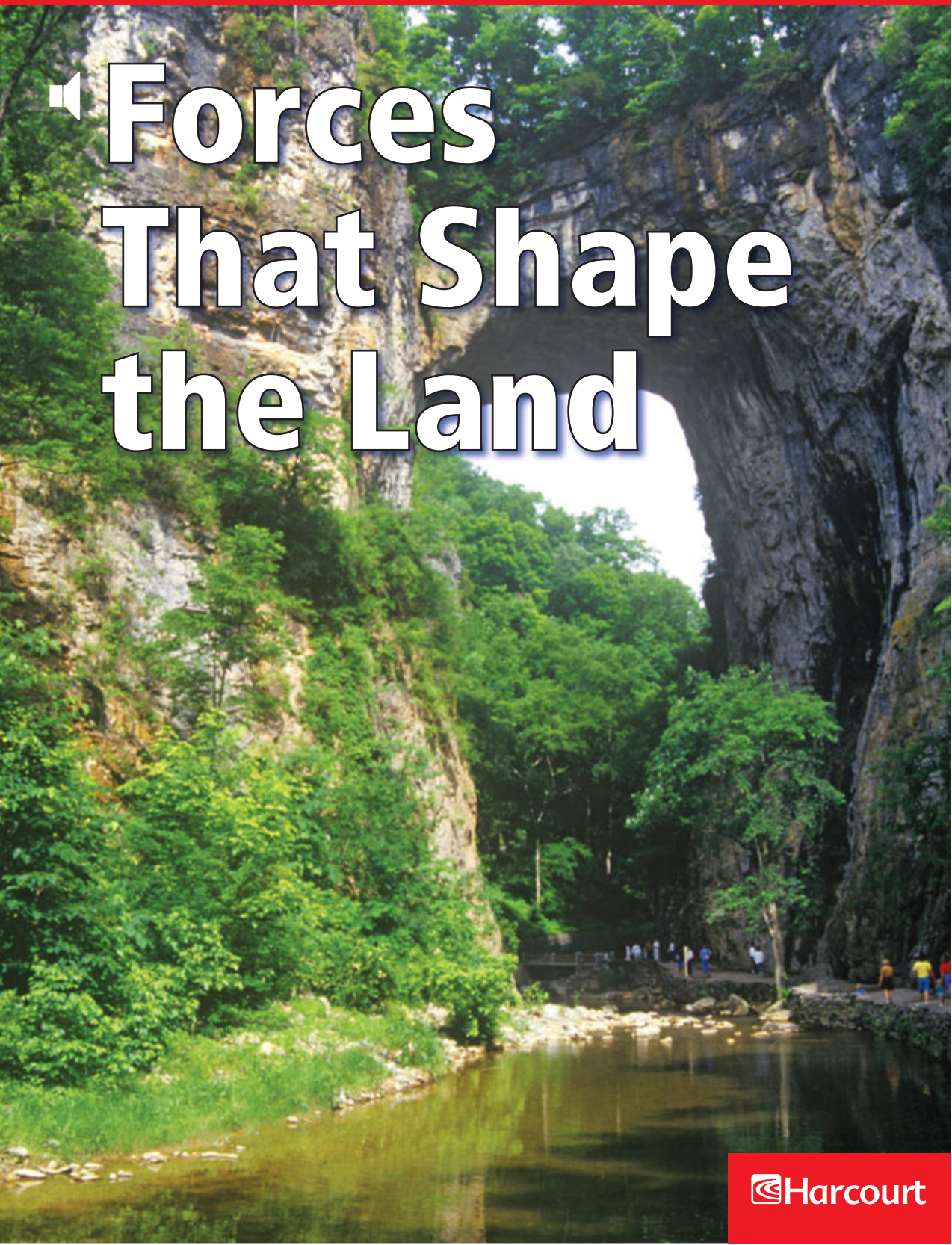
Forces That Shape the Land



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Forces That Shape the Land

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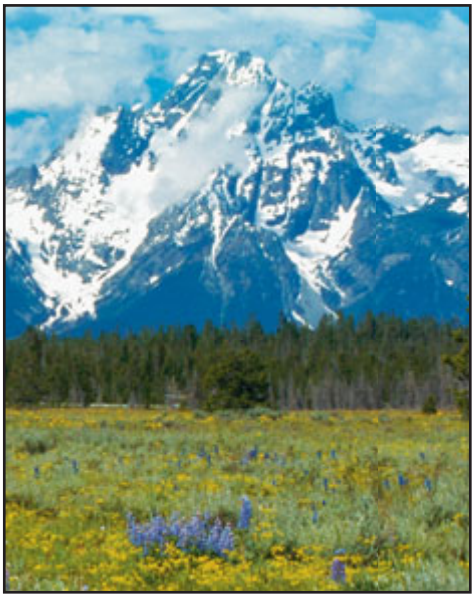
Lesson 1

What Are Landforms?

VOCABULARY

- landform
- mountain
- valley
- canyon
- plain
- plateau

A **landform** is a natural shape on Earth's surface. It can be high or low. It can be flat or pointy.



A **mountain** is the highest kind of landform. A mountain is much higher than the land around it.

A **valley** is low land between mountains or hills.

A **canyon** is a deep valley. It has steep sides.

A **plain** is flat land that is usually lower than the land around it.

A **plateau** is flat land that is higher than the land around it.

READING FOCUS SKILL

COMPARE AND CONTRAST

When you **compare and contrast**, you tell how things are alike and different.

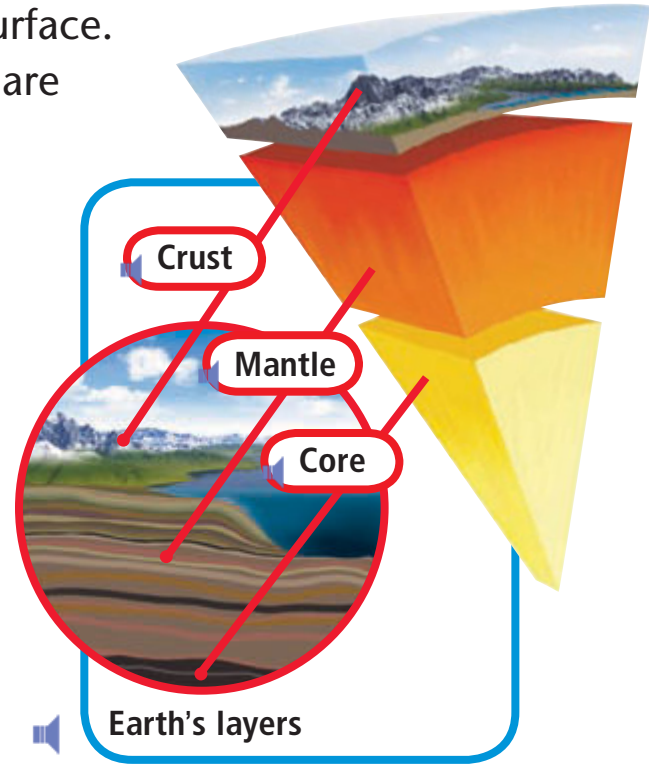
Look for ways to **compare and contrast** landforms.

Earth's Surface

Earth has three layers. They are the crust, the mantle, and the core. Earth's surface is part of the crust, or outside layer. It includes all the dry land and ocean floors.

A **landform** is a natural shape on Earth's surface. Hills and flat areas are some landforms.

Tell how hills and flat areas are alike.



Earth's layers

Mountains

A mountain is a landform. A **mountain** is much higher than the land around it. Hills are also high landforms. But hills are smaller than mountains.

Mountains may be different. Some are rocky and pointy. Some are rounded. Some mountains are taller than others.

Focus Skill **Tell how mountains are different.**

Grand Teton Mountains ▼

Valleys and Canyons

A **valley** is low land between hills or mountains. Valleys have different shapes. Deep, narrow valleys are V-shaped. Wide valleys with flat bottoms are U-shaped.

A **canyon** is a kind of valley. A canyon has steep sides.

Focus Skill **How are valleys and canyons alike?**

◀ Valley

▼ Canyon

Plains and Plateaus

A **plain** is wide, flat land. Most plains are lower than the land around them. Plains may be covered with grass or trees.

A **plateau** is flat land that is higher than the land around it. Most plateaus are wide. Some have steep sides. Streams can cut valleys in plateaus. These can become canyons.

Focus Skill **Tell how a plain and a plateau are alike and different.**

Review

Focus Skill **Complete these compare and contrast statements.**

1. A _____ is the highest landform.
2. A _____ is a valley with steep sides.
3. A _____ is flat and usually lower than the land around it.
4. A _____ is flat and higher than the land around it.

Lesson 2

How Do Landforms Change Slowly?

VOCABULARY

- weathering
- erosion
- glacier

Weathering happens when wind or water breaks rocks into smaller pieces. Weathering caused this rock to crack and break.

Erosion happens when wind or water moves rocks and soil. Wind blows this soil and makes it move.

A **glacier** is a big block of ice. It may change the shape of land when it moves.

Focus Skill

READING FOCUS SKILL

SEQUENCE

A **sequence** is the order in which things happen.

Look for the **sequence** of events that leads to weathering and erosion.

How Rocks Are Broken Down

Rocks make up Earth's surface. Over many years, wind and water wear down rocks. They break rocks into smaller pieces. This change is called **weathering**.

Weathering ▼

Water can cause weathering. Moving water wears away rock. Water can also get in the cracks of a rock. When the water freezes, it takes up more room. The ice pushes against the sides of the crack. This splits the rock.

Wind can cause weathering, too. Wind blows sand against rock. This breaks down the rock.

Focus Skill

What are the steps that tell how ice breaks rocks?

◀ **Water makes rocks smooth.**

▼ **Ice can break rocks.**

How Rock Pieces Move

Rocks that are broken down are very small. Wind and water can move these small pieces. The movement of weathered rocks and soil is called **erosion**.

Moving water can cause erosion. Rainfall carries soil into rivers. Then rivers carry away the soil. When the river water slows down, the soil drops. Over time, the soil can build up and make landforms. It can change the river's shape.

Wind can also cause erosion. Wind picks up soil and carries it. When the wind slows down, the soil drops. This can make new landforms.

Like weathering, erosion is often slow. It can take many years for erosion to change the land.

Focus Skill

What happens after the river water slows down?

▲ **Wind erosion**

◀ **Water erosion**

How Glaciers Change Land

A glacier also causes erosion. A **glacier** is a big block of ice. It forms in very cold places.

▼ Glacier

Glaciers move very slowly. As they move, they pick up rocks and soil. They may scrape the land. Some glaciers dig out valleys as they move. When glaciers melt, they drop rocks and soil. This can make hills.

Focus Skill **Tell how a glacier forms a hill.**

A glacier cut this rock. ▶

Review

Focus Skill **Complete these sequence statements to tell how erosion can change a river's shape.**

1. First, rainfall carries _____ into a river.
2. Next, the _____ carries the soil away.
3. When the river water _____ down, the soil drops.
4. After this happens, the _____ of the river can change.

Lesson 3

How Do Landforms Change Quickly?

VOCABULARY

- earthquake
- flood
- volcano

An **earthquake** is the shaking of Earth's surface. Earthquakes can cause great damage.

A **flood** is a large amount of water that covers dry land. A flood can happen when rivers and streams get too full.

A **volcano** is a hole in Earth's surface. Hot melted rock comes out of the hole.

Focus Skill

READING FOCUS SKILL

CAUSE AND EFFECT

A **cause** is what makes something happen. An **effect** is what happens.

Look for the **causes and effects** of earthquakes, volcanoes, and floods.

Earthquakes

Earth's crust is made of rock. Some of this rock has cracks. When Earth's crust moves along these cracks, the ground may shake. This can cause an earthquake. An **earthquake** is the shaking of Earth's surface.

Earthquakes make big cracks. ▶

Earthquakes can change landforms quickly. They can make big cracks in the ground. They can cause rock to slide down hills.

Earthquakes cause damage. They can split roads. They can destroy bridges and buildings.

Focus Skill **Tell what causes earthquakes.**

Earthquake damage ▼

Volcanoes

Below Earth's crust is melted rock. Sometimes the hot rock moves up through cracks in the crust. The hot rock that flows out is called lava. A **volcano** is the hole through which lava flows.

Volcano ▼

A volcano can change landforms quickly. Lava, rocks, and ash come out of a volcano when it erupts. They can cover the land. Hot gas also comes out. It can burn trees and buildings.

As lava cools, it builds up on the sides of the volcano. This makes the volcano gets bigger.

Focus Skill How can a volcano change land?

Houses trapped in lava and ash ▶

Lava flow ▼

Floods

A **flood** happens when a lot of water covers dry land. Heavy rains can cause a flood. Rivers and streams may not be able to hold all the water that falls. The water overflows onto land and causes a flood.

▼ Flood

Floods can quickly change landforms. They carry away soil. The water can also wash away roads and bridges.

Tell what causes a flood.

Review

Focus Skill

Complete each cause and effect statement.

1. The movement of Earth's crust can cause an _____.
2. When a volcano erupts, hot rock called _____ may cover the land.
3. _____ can cause bridges, roads, and soil to wash away.

GLOSSARY

canyon (KAN•yuhn) A valley with steep sides (6)

earthquake (ERTH•kwayk) The shaking of Earth's surface caused by movement in Earth's crust (18)

erosion (uh•ROH•zhuhn) The movement of weathered rock and soil (12)

flood (FLUHD) A large amount of water that covers normally dry land (22)

glacier (GLAY•sher) A huge sheet or block of ice (14)

landform (LAND•fawrm) A natural shape on Earth's surface (4)

mountain (MOWNT•uhn) A place on Earth's surface that is much higher than the land around it (5)

plain (PLAYN) A wide, flat area on Earth's surface (7)

plateau (PLA•toh) A flat area higher than the land around it (7)

valley (VAL•ee) A low area between higher lands such as mountains (6)

volcano (vahl•KAY•noh) An opening in Earth's surface from which lava flows (20)

weathering (WETH•er•ing) The breaking down of rocks into smaller pieces (10)

Think About the Reading

1. Name three landforms. Describe how weathering or erosion can change one of them.
2. Describe two things that can cause quick changes to landforms. Tell what happens.

Hands-On Activity

Use a pan of soil and some water.

1. Show how rainfall can cause erosion on a steep hill.
2. Show how a flood happens. Explain how a flood can change the shape of a river or land.

School-Home Connection

Take a walk with a family member to look for landforms. Talk about examples of weathering or erosion that you see. Ask the family member to share any experiences with earthquakes, volcanoes, or floods.

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