



# World Mountains

Ibex



## Teacher Guide

Skiing



Tunnel



Mountain Goats





# World Mountains

Teacher Guide



Core Knowledge®

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# World Mountains

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# Introduction

## ABOUT THIS UNIT

### Big Idea

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Maps provide a scaled-down version of the features of Earth, as well as a system for locating those features. World mountains and mountain ranges influence the weather and the lives and activities of both animals and humans.

Throughout history, mountains have acted as barriers for trade and conquest. Traditionally people who lived in the mountains tended to be isolated from other groups and to develop different ways of living. Mountains are the sources of rivers that provide water for many purposes, including the production of electricity. Many mountain ranges contain a variety of important minerals. Mountains also attract people for recreational uses.

# What Students Should Already Know

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Students in Core Knowledge Schools should already be familiar with the following:

## Kindergarten through Grade 3

- What maps and globes represent and how to use them
- What rivers, lakes, and mountains are and how they are represented on maps and globes
- The location of the Atlantic, Pacific, Indian, and Arctic Oceans, the North and South Poles, and the seven continents
- The name and location of their continent, country, state, and community
- The use of map keys and symbols and directions (east, west, north, south) on a map
- The location of Central America, the Northern American countries (Mexico, Canada, and the United States), the Rocky Mountains, the equator, and the Northern and Southern Hemispheres
- The meaning of *peninsula, harbor, bay, island, coast, valley, prairie, desert, oasis, boundary, channel, delta, isthmus, plateau, reservoir, and strait*
- Measuring straight-line distances using a map scale
- Using an atlas and, if available, online resources to find geographic information
- Identifying important rivers on the continents of North and South America, Europe, Asia, Africa, and Australia

## Grade 4

- Measuring distances using map scales
- Reading maps and globes using longitude and latitude, coordinates, and degrees
- Prime meridian (0° longitude); Greenwich, England; international date line (180° line)
- Reading relief maps for elevations and depressions



## What Students Need to Learn

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- Major mountain ranges by continent (South America: Andes; North America: Rockies and Appalachians; Asia: Himalayas and Urals; Africa: Atlas Mountains; Europe: Alps, Caucasus)
- High mountains of the world by continent (Asia: Everest; North America: Denali; South America: Aconcagua; Europe: Mount Elbrus, Mont Blanc; Africa: Kilimanjaro)

## AT A GLANCE

The most important ideas in Unit 2 are the following:

- Major mountain ranges by continent include the Andes (South America), Rockies and Appalachians (North America), Himalayas and Urals (Asia), Atlas (Africa), and Alps and Caucasus (Europe).
- High mountains of the world by continent are Everest (Asia), Denali (North America), Aconcagua (South America), Mont Blanc and Elbrus (Europe), and Kilimanjaro (Africa).

## WHAT TEACHERS NEED TO KNOW

### Mountains and Mountain Ranges

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#### Background

A mountain range is a series of connected mountains considered as a single system because of geographical proximity or common geologic origin. Mountains are considered to have a common geologic origin if they formed at the same time by the same set of geologic events.

A large mountain system, like the Appalachian Mountains in northeastern Canada and the United States, may be called by different names in different areas. For example, the Appalachians in the southern United States are called the Blue Ridge, Great Smokies, Cumberland Plateau, and Black Mountains.

#### South America: Andes

The Andes Mountains are over five thousand miles (8,046 km) in length, the longest mountain system in the world. The mountains begin as four ranges in the Caribbean area on the northeastern coast of South America. In Peru and Bolivia, the mountains form two parallel ranges that create a wide plateau known as the *Altiplano*. The Andes then form a single range that separates Chile from Argentina.

With an average height of 12,500 feet (3,810 m), the Andes are the second highest mountain range in the world. The Himalayas are the highest.

Approximately 50–60% of Peru's people live in the Altiplano. About one-third of the nation's population live in the narrow lowlands between the Andes and the Pacific Ocean. Because the Andes run north to south along the entire length of Chile, most Chileans live in the Central Valley region between the Andes and low coastal mountains.

The Andes Mountains were the home of the Inca people, whom students in Core Knowledge schools studied in Grade 1 and will study again in Grade 5.

## North America: Appalachians and Rockies

The Appalachian Mountains are the oldest mountain chain in North America and stretch from Newfoundland to central Alabama. They are about 1,800 miles (2,897 km) long and range from 120 to 375 miles (193 to 604 km) wide. The highest peak is Mount Mitchell in North Carolina, named for Maria Mitchell, an astronomer from the 1800s. The Appalachians are divided into various ranges, such as the White Mountains in Maine and New Hampshire; the Alleghenies in Pennsylvania, Maryland, and Virginia; the Blue Ridge Mountains in Maryland, West Virginia, Virginia, North Carolina, and Georgia; and the Great Smokies in North Carolina and Tennessee. Major rivers that flow through the mountains are the Hudson, Delaware, Susquehanna, Potomac, and Tennessee. The mountains are rich in iron and coal deposits but proved a barrier to westward movement in the colonial era until Daniel Boone built the Wilderness Trail, also known as the Wilderness Road, through the Cumberland Gap in 1775.

The Rocky Mountains extend for more than three thousand miles (4,828 km) from Alaska to New Mexico. The highest point in North America is Denali in Alaska. The major ranges of the Rocky Mountains are the Southern, Central, and Northern Rockies in the contiguous United States, the Brooks Range in Alaska, and the Canadian Rockies. The Rocky Mountains were more formidable barriers to travel than the Appalachians because the Rockies are in general twice as tall as the Appalachians. The major pass through the Rockies for travelers in the 1800s was South Pass in Wyoming. The Oregon Trail took this route.

Of major topographical interest is the Continental Divide that runs north and south through the Rocky Mountains. Rivers to the east of this long, high crest flow to the east toward the Arctic or Atlantic Oceans, and rivers to the west of the divide flow toward the Pacific to the west. Lewis and Clark, whom students should have studied in earlier grades, crossed the Continental Divide in 1805 as part of their voyage of discovery.

## Asia: Himalayas and Urals

Running 1,500 miles (2,414 km) in length, the Himalayas extend across south central Asia in India, Tibet, Pakistan, Nepal, and Bhutan. (Note that there are two acceptable pronunciations of Himalayas: /him\*uh\*lae\*uhz/, which is the more traditional English pronunciation, and /him\*al\*yuhz/, which reflects the Hindi/Sanskrit pronunciation.) The Himalayas are actually parallel ranges—the Great Himalayas, the Lesser Himalayas, and the Outer Himalayas, which break into smaller ranges in Kashmir, a disputed area along the India/Pakistan border. The Indus, Brahmaputra, and Ganges Rivers all have their sources in the Himalayas.

The Himalayas are the highest mountain range in the world. Mount Everest, the highest mountain in the world, is located in the Great Himalayas, and eleven other peaks in the Great Himalayas rise above twenty-six thousand feet (7,925 m). The Tibetan Plateau at the northern boundary is sometimes referred to as the “roof of the world.”

For many years, no human being had climbed to the summit of Mount Everest, though many had died, or nearly died, trying. However, in 1953, Edmund P. Hillary and Tenzing Norgay finally reached the peak. Since 1953, thousands more climbers have accomplished this most demanding of all mountain climbing feats, and more than two hundred have died trying.

The Himalayas protect Tibet from the monsoon rains that batter the rest of South Asia, but as a result, that area of China is dry and desert-like.

The Urals are much lower mountains that form part of the border between Europe and Asia. The Urals extend for about 1,500 miles (2,414 km) north to south through Russia from the Kara Sea to Kazakhstan. Mount Narodnaya is the highest peak, at 6,214 feet (1,893 m). The mountains are rich in minerals and forests, and as a result, mining and lumbering are important industries.

### **Africa: Atlas**

The Atlas Mountains rise in North Africa and extend for 1,500 miles (2,414 km) through Morocco, Algeria, and Tunisia. There are seven ranges within the Atlas Mountains, and they run generally southwest to northeast and along the Mediterranean coast. The highest peak in the Atlas is Mount Toubkal in Morocco. It rises to 13,671 feet (4,164 m).

### **Europe: Alps and Caucasus**

The Alps swing in a 650-mile (1,046 km) arc through France, Italy, Switzerland, Germany, and Austria. The mountains are divided into a series of parallel chains: the Western, Central, and Eastern Alps. Several important European rivers—the Po, Rhone, and Rhine—have their sources in the Alps. The defining characteristics of the Alps are their tall, snowy peaks; glacially scoured valleys; beautiful lakes; and glaciers.

The Caucasus Mountains rise along the border of Europe and Asia, between the Black Sea and the Caspian Sea. They stretch 684 miles (1,100 km) across parts of four countries: Russia, Georgia, Azerbaijan, and Armenia. Two ranges form these mountains: the Greater Caucasus and the Lesser Caucasus. Mount Elbrus, the highest peak in the system at 18,481 feet (5,633 m), is part of the Greater Caucasus range.

## High Mountains

To qualify as a mountain, a landform must be at least one thousand feet (three hundred m) high.

Anything lower is considered a hill. Mountains also tend to be more jagged and sharply pointed than hills, which are generally rounded and less steep. The mountains listed here represent the highest on their respective continents.

For one hundred years, Denali was called Mount McKinley after one of the U.S. presidents. In 2015, the name officially changed back to Denali—the Native American name for the mountain. The national park in which the peak is located is called Denali National Park and Preserve.

Mountain Name	Major Range or System	Location	Elevation (in feet)	Elevation (in meters)	Highest in (the):
Mt. Everest	Himalayas	Asia (Nepal/ Tibet)	29,028	8,848	World
Mt. Aconcagua	Andes	South America (Argentina)	22,835	6,960	Western Hemisphere
Denali	Alaska	North America (United States)	20,320	6,193	North America
Mt. Kilimanjaro	none	Africa (Tanzania)	19,340	5,895	Africa
Mt Elbrus	Caucasus	Europe (Russia)	18,481	5,633	Europe
Mont Blanc	Alps	Europe (Alps)	15,771	4,807	Alps
Mt. Jebel Toukal	Atlas	Africa (Morocco)	13,671	4,167	North Africa
Mt. Narodnaya	Urals	Eurasia (Russia/ Kazakhstan)	6,214	1,894	Russian Urals

To learn more background about specific topics taught in *World Mountains*, go to [www.coreknowledge.org/about-mountains-and-mountain-ranges](http://www.coreknowledge.org/about-mountains-and-mountain-ranges)

### Student Component

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*World Mountains* Student Reader—four chapters

### Teacher Components

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*World Mountains* Teacher Guide—four chapters. The guide includes lessons aligned to each chapter of the *World Mountains* Student Reader, with a daily Check For Understanding and Additional Activities, such as review and vocabulary activities, designed to reinforce the chapter content. A Unit Assessment, Performance Task Assessment, and Activity Pages are included at the end of this Teacher Guide in Teacher Resources, beginning on page 38.

- » The Unit Assessment tests knowledge of the entire unit, using standard testing formats.
- » The Performance Task Assessment requires students to apply and share the knowledge learned during the unit through either an oral or written presentation. In this unit, the presentation is written.
- » The Activity Pages are designed to reinforce and extend content taught in specific chapters throughout the unit. These optional activities are intended to provide choices for teachers.

## USING THE TEACHER GUIDE

### Pacing Guide

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The *World Mountains* unit is one of ten history and geography units in the Grade 4 *Core Knowledge Curriculum Series™*. A total of seven days have been allocated to the *World Mountains* unit. We recommend that you do not exceed this number of instructional days to ensure that you have sufficient instructional time to complete all Grade 4 units.

At the end of this Introduction, you will find a Sample Pacing Guide that provides guidance as to how you might select and use the various resources in this unit during the allotted time. However, there are many options and ways that you may choose to individualize this unit for your students, based on their interests and needs. So we have also provided you with a blank Pacing Guide that you may use to reflect the activity choices and pacing for your class. If you plan to create a customized pacing guide for your class, we strongly recommend that you preview this entire unit and create your pacing guide before teaching the first chapter.

## Reading Aloud

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In each chapter, the teacher or a student volunteer will read various sections of the text aloud. When you or a student reads aloud, always prompt students to follow along. By following along in this way, students become more focused on the text and may acquire a greater understanding of the content.

## Turn and Talk

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In the Guided Reading Supports section of each chapter, provide students with opportunities to discuss the questions in pairs or in groups. Discussion opportunities will allow students to more fully engage with the content and will bring “to life” the themes or topics being discussed.

## Big Questions

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At the beginning of each Teacher Guide chapter, you will find a Big Question, also found at the beginning of each Student Reader chapter. The Big Questions are provided to help establish the bigger concepts and to provide a general overview of the chapter. The Big Questions, by chapter, are:

Chapter	Big Question
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1	How are mountains formed?
2	How do animals survive in the mountains?
3	How have mountains acted as barriers?
4	How do people benefit from mountains?

## Core Vocabulary

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Domain-specific vocabulary, phrases, and idioms highlighted in each chapter of the Student Reader are listed at the beginning of each Teacher Guide chapter, in the order in which they appear in the Student Reader. Student Reader page numbers are also provided. The vocabulary, by chapter, are:

Chapter	Vocabulary
---------	------------

1	mineral, barrier, weathering, plate, magma, lava, extinct, elevation, erosion, equator
2	surefooted, survive, hibernate, myth
3	pass, tunnel, gap, wagon train, plateau
4	crystal, generator, dam, hydroelectric plant, industry, yak, terrace, peak

## Activity Pages

Activity Pages



The following activity pages can be found in Teacher Resources, pages 48–54. They are to be used after students read the chapter(s) specified, during class time or for homework. Be sure to make sufficient copies for your students prior to conducting the activities.

- Chapter 1—Cool Facts About World Mountains (AP 1.1), Major Mountain Ranges and Mountains of the World (AP1.2)
- Chapter 4—*World Mountains* Domain Vocabulary (AP 4.1)

## Additional Activities and Website Links

An Additional Activities section, related to material in the Student Reader, may be found at the end of each chapter in this Teacher Guide. While there are many suggested activities, you should choose only one or two activities per chapter to complete based on your students' interests and needs. Many of the activities include website links, and you should check the links prior to using them in class.

## CROSS-CURRICULAR CONNECTIONS

### Science

#### Geology: The Earth and Its Changes

- How Mountains Are Formed

## BOOKS

Jenkins, Steve. *The Top of the World: Climbing Mount Everest*. Orlando: Houghton Mifflin Harcourt, 2002.

Reynolds, Jan. *Himalaya (Vanishing Cultures)*. New York: Lee & Low Books, Inc., 2007.

Reynolds, Jan. *Only the Mountains Do Not Move: A Maasai Story of Culture and Conservation*. New York: Lee & Low Books, Inc., 2011.

Reynolds, Jan. *Sahara (Vanishing Cultures)*. New York: Lee & Low Books, Inc., 2007.

Taylor-Butler, Christine. *Sacred Mountain: Everest*. New York: Lee & Low Books, Inc., 2014.

Veregin, Howard. (ed.) *Goode's World Atlas 22nd Edition*. Chicago: Rand McNally, 2009.



# WORLD MOUNTAINS SAMPLE PACING GUIDE

For schools using the *Core Knowledge Sequence* and/or CKLA.

TG—Teacher Guide; SR—Student Reader; AP—Activity Page

## Week 1

**Day 1**

**Day 2**

**Day 3**

**Day 4**

### **World Mountains**

(Finishing <i>Using Maps</i> , Unit 1)	"Introducing Mountains" (TG & SR—Chapter 1)	"Cool Facts About World Mountains" (TG—Chapter 1, Additional Activities, AP 1.1)	"Mountain Animals" (TG & SR—Chapter 2, AP 1.1)	"Mountains as Barriers" (TG & SR—Chapter 3, AP 1.1)
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### **CKLA**

"Personal Narratives"	"Personal Narratives"	"Personal Narratives"	"Personal Narratives"	"Personal Narratives"
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## Week 2

**Day 5**

**Day 6**

**Day 7**

### **World Mountains**

"Making the Most of Mountains" (TG & SR—Chapter 4, AP 1.1)	Finish "Making the Most of Mountains" (TG & SR—Chapter 4, AP 1.1)	Unit Assessment (TG)		
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### **CKLA**

"Personal Narratives"	"Personal Narratives"	"Personal Narratives"		
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# WORLD MOUNTAINS PACING GUIDE

\_\_\_\_\_’s class

(A total of seven days have been allocated to the *World Mountains* unit in order to complete all Grade 4 history and geography units in the *Core Knowledge Curriculum Series*™.)

TG–Teacher Guide; SR–Student Reader; AP–Activity Page

## Week 1

**Day 1**

**Day 2**

**Day 3**

**Day 4**

**Day 5**

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## Week 2

**Day 6**

**Day 7**

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# Introducing Mountains

**The Big Question:** How are mountains formed?

## Primary Focus Objectives

- ✓ Describe why mountains are important. (RI.4.2)
- ✓ Explain how mountains are formed. (RI.4.3, RI.4.7)
- ✓ Identify the continents on which the following mountain ranges are located: Andes, Rockies, Appalachians, Alaskan, Himalayas, Urals, Alps, Caucasus, and Atlas. (RI 4.7)
- ✓ Identify the continents on which the following high mountains are located: Mount Everest, Denali, Mount Aconcagua, Mont Blanc, Mount Elbrus, and Mount Kilmanjaro. (RI 4.7)
- ✓ Understand the meaning of the following domain-specific vocabulary: *mineral, barrier, weathering, plate, magma, lava, extinct, elevation, erosion, and equator.* (RI.4.4)

## Core Vocabulary (Student Reader page numbers listed below)

**mineral, n.** a naturally occurring substance found in Earth's crust (4)

*Example:* Copper is a mineral found in the Rocky Mountains.

*Variation(s):* minerals

**barrier, n.** something that blocks movement (4)

*Example:* The Sierra Nevada Mountains form a barrier that blocks moisture from traveling east of the mountains.

*Variation(s):* barriers

**weathering, n.** the breaking up of Earth's materials into smaller pieces (4)

*Example:* Weathering has made the Appalachian Mountains much smoother than younger mountains.

*Variation(s):* weather, weathered

**plate, n.** a large section of Earth's crust that is able to move (5)

*Example:* When one of Earth's plates folds up over another, it can create a mountain range.

*Variation(s):* plates

**magma, n.** melted rock from inside Earth's crust (6)

*Example:* When magma pushes up against Earth's surface, it can create a mountain.

**lava, n.** magma, or melted rock, that reaches Earth’s surface (7)

*Example:* When a volcano explodes, lava often flows down its sides.

**extinct, adj.** having died out completely (8)

*Example:* An extinct volcano no longer explodes.

*Variation(s):* extinction

**elevation, n.** the distance above sea level of a spot on Earth’s surface (9)

*Example:* Mount Everest has the highest elevation of any mountain on Earth.

*Variation(s):* elevations, elevate

**erosion, n.** the carrying away of soil and rock by water, ice, or wind (9)

*Example:* Hills without plants often experience erosion when it rains.

*Variation(s):* erode

**equator, adj.** the imaginary east/west line on a globe or map that is an equal distance from the North and South Poles; 0° latitude (9)

*Example:* The equator marks the boundary between the Northern and Southern Hemispheres on Earth.

## THE CORE LESSON 35 MIN

### Introduce the *World Mountains Student Reader*

5 MIN

Distribute copies of the *World Mountains Student Reader*, and suggest students take a few minutes to look at the cover and flip through the Table of Contents and illustrations in the book. Ask students to brainstorm individual words or simple phrases describing what they notice in the Table of Contents and various illustrations; record this information in a list on the board or chart paper. Students will likely mention mountain, animals, snow, volcanoes, or the name of various mountains.

Explain to students that they will be reading about different mountains in the world and how they affect the lives of animals and humans.

### Introduce “Introducing Mountains”

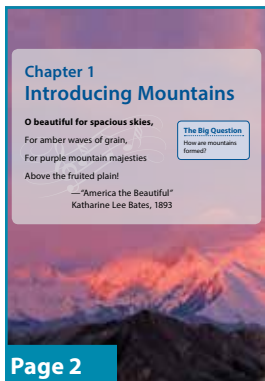
5 MIN

Invite volunteers to name mountains and mountain ranges they have heard of. Have them share any interesting facts they know about the mountain, such as where it is located or how people use it. Explain that in this chapter, they will read about different kinds of mountains all over the world.

Call students’ attention to the Big Question. Ask students to define the word *formed*. Encourage students to look for details about how mountains are made as they read.

When you or a student reads aloud, **always** prompt students to follow along. By following along, students may acquire a greater understanding of the content. Remember to provide discussion opportunities.

“O beautiful for spacious skies,” Pages 2–3



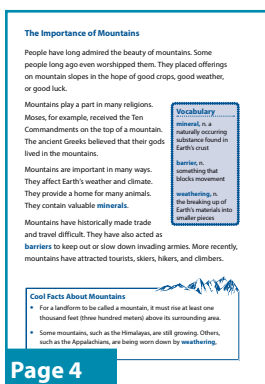
Invite a volunteer to read the four lines on page 2 aloud.

**SUPPORT**—Explain that the lines are from the poem “America the Beautiful,” written by Katharine Lee Bates. Bates wrote the poem after visiting the Rocky Mountains in the late 1800s. The Rocky Mountains are located on the continent of North America in the United States—specifically, in the states of Colorado, Idaho, Montana, Wyoming, and New Mexico. Her poem was combined with music to create the song of the same name.

**SUPPORT**—Direct students’ attention to the image on pages 2–3, which shows another North American mountain, Denali, located in the state of Alaska. Point out how the sunset makes the snow-covered mountain appear purple. Explain that a similar phenomenon occurs in the Rocky Mountains, hence the “purple mountain majesties” in “America the Beautiful.”



“The Importance of Mountains,” Page 4



Scaffold understanding as follows:

**CORE VOCABULARY**—Read aloud the three paragraphs in this section on page 4, explaining the meaning of *mineral* and *barrier* as they are encountered. Explain that gold, copper, and silver are all minerals.

**Note:** Students who completed the Core Knowledge program in Grade 3 may recall the word *barrier* from their study of ancient Rome. Remind students that the European mountains called the Alps presented a barrier to Hannibal’s army from Carthage.

**SUPPORT**—Direct students’ attention to the Cool Facts box on the bottom of page 4. Invite a volunteer to read the list of facts. Point out and explain the Core Vocabulary term *weathering*.

**After reading the text, ask the following questions:**

**LITERAL**—How have mountains been important to people?

- » Possible answers: They have played a role in world religions. They have made trade, travel, and invasion difficult. They have been used by tourists, skiers, hikers, and climbers.

**LITERAL**—How are mountains important in nature?

- » Possible answers: They affect weather and climate. They provide a home for animals. They contain minerals.

**“How Are Mountains Made?” Pages 5–11**

**Scaffold understanding as follows:**

**Invite a volunteer to read aloud the first paragraph in the section on page 5.**

**CORE VOCABULARY**—Point out the vocabulary box at the top of page 5, and explain the meaning of *plate*. Point out that the word *plate* has many different meanings, such as a dish from which food is eaten. The meaning used in this unit is unique to the study of physical geography.

**Read aloud the second paragraph about *folded mountains* on page 5.**

**SUPPORT**—Call attention to the fact that the phrase at the start of the paragraph, *Folded mountains*, is italicized. Explain that this change in text font helps call attention to the fact that this paragraph will be about folded mountains. Also call attention to the diagram of folded mountains on page 5. Compare the diagram to the description in the text. Point out the pictures of the Himalayas and Appalachians as examples of folded mountains, making sure students note the folds shown in the image of the Appalachians.

**Read aloud the paragraph about *fault-block mountains* at the top of page 6.**

**SUPPORT**—Call attention to the italicized text and the diagram of fault-block mountains on page 6. Compare the diagram to the description in the text of the Sierra Nevadas.

**CORE VOCABULARY**—Read aloud the second paragraph about *dome mountains* on page 6. Review the Core Vocabulary word *magma*, using the diagram at the bottom of page 6 to illustrate the word’s meaning.

**SUPPORT**—Call attention to the diagram of dome mountains on page 6. Compare the diagram to the description in the text and the image of the Black Hills.

**CORE VOCABULARY**—Read aloud the next two paragraphs, about *volcanic mountains*, on pages 7–8. Point out the Core Vocabulary terms

**How Are Mountains Made?**


Mountains are formed in several different ways. To understand how mountains are formed, you need to remember that the Earth has a crusty shell made up of gigantic plates. These plates can shift, crack, and wrinkle.

**Vocabulary**  
*plate*, n. a large section of Earth's crust that is able to move.

Folded mountains are created when Earth's crust shifts. As it shifts, one piece of rock folds on top of another. The Himalayas (*hūm'uh'lee'ah'zūz*) in Asia are folded mountains. Some of the Appalachian (*ap'uh'lee'ah'chūn*) Mountains in the eastern United States are folded mountains, too.

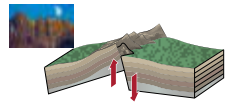


The Indian-Australian Plate moved slowly northeast, bumping India with it.



Page 5

Two pieces of rock fold over another. Both the top and bottom are folded mountains.

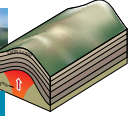



Fault-block mountains are created when pieces of rock are driven up. The Sierra Nevadas are fault-block mountains.

Fault-block mountains are also created by shifting plates. In this case, pieces of rock are broken off and driven upward by the force of the shifting plates. The Sierra Nevadas of western North America are fault-block mountains.

Dome mountains are created when melted rock called magma pushes up below the surface of the Earth. As the magma moves up, it makes bumps on Earth's surface.

**Vocabulary**  
*magma*, n. molten rock from inside Earth's crust.



Magma pushing up below the surface of the Earth forms...


Page 6

These bumps often look more like hills than mountains. The Black Hills of South Dakota are dome mountains.

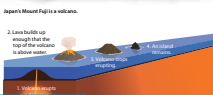
Volcanic mountains form when a volcano erupts and breaks a hole in Earth's crust. Lava and ash flow down the sides of the volcano and harden into a mountain.

**Vocabulary**  
*lava*, n. magma or molten rock that reaches Earth's surface.

Many islands, such as the Hawaiian Islands, are actually the tops of volcanic mountains. Japan's highest mountain, Mount Fuji, is a volcano. It last erupted in 1707.



Japan's Mount Fuji is a volcano.



Lava builds up enough that the top of the volcano is above water.

Volcanic eruptions. The Hawaiian Islands are the tops of...


Page 7

The highest mountain in Africa, Mount Kilimanjaro (kiuh'maun'jar'oei), is an extinct (oh'kwest) volcano.

Volcanic mountains can be produced by a few days of huge eruptions. However, most mountains take thousands, or even millions, of years to form. They form so slowly that, in real life, you can't see them changing.

Some of Earth's mountains, such as the Appalachians, were formed more than two hundred million years ago. Others, such as the Rocky Mountains in western North America, were formed only about a million years ago. You can often tell whether

**Vocabulary**  
*extinct*, *adj.*, having died out completely



**Page 8**

*lava* and *extinct*. Explain that lava is magma that has broken through Earth's surface. Students may be familiar with the term *extinct* as it relates to animals (i.e., extinct species). Explain that volcanoes can also go extinct. An extinct volcano is one that no longer explodes or erupts.

**SUPPORT**—Call attention to and discuss the images of Mount Fuji and the diagram explaining how volcanic islands form on page 7.

**Note:** Students who completed the Core Knowledge program in Grade 3 may be familiar with volcanoes from their study of Pompeii and Mount Vesuvius during the *Ancient Rome* unit.

mountains are young mountains or old mountains by their shape. Young mountains are usually steep, have a high elevation, and are often sharp or pointy. Old mountains have been worn down by many years of erosion (er'ee'shun').

Look at the picture of Mount Everest. You'll notice that there is snow on top of the mountain. Most tall mountains are covered with snow all year long. That is because the farther above sea level you go, the colder it gets. We use the term sea level to explain land elevation in relation to the surface level of the world's oceans. You may have noticed that if you have ever hiked up a mountain or driven to the top of one.

Mountaintops are usually cold, even when they are located in hot places. Snow covers the top of Mount Kilimanjaro, in the African country of Tanzania (tan'zahn'zee'kuh'), all year long even though it is very close to the equator.

**Vocabulary**  
*elevation*, *n.* the distance above sea level of a spot on Earth's surface  
*erosion*, *n.* the carrying away of soil and rock by water, ice, or wind  
*equator*, *n.* the imaginary east-west line on a globe or map that is an equal distance from the North and South Poles of latitude

**Page 9**

**Have students read to themselves the last three paragraphs of the section on pages 8 and 9. After students read the text, discuss both pages, reviewing the Core Vocabulary and image.**

**CORE VOCABULARY**—Review the Core Vocabulary terms *elevation*, *erosion*, and *equator*. Students may remember the terms *elevation* and *equator* from their Unit 1 study of using maps. Explain that the definition of *elevation* used in this unit is more specific than the definition students learned in Unit 1 (the height of something). The definition used here (the distance above sea level of a spot on Earth's surface) is the geographic definition.

**SUPPORT**—Point out to students that when referring to the Rocky Mountains without using the word *mountains*, they are called the *Rockies*.

**SUPPORT**—Call attention to the picture of Mount Everest on page 8. Tell students that the temperature decreases about 3°F for every one thousand feet of elevation. Mount Everest, for example, with a height of more than twenty-nine thousand feet, is about 87° colder at the summit than at sea level.

**Major Mountain Ranges and Mountains of the World**

Mountain Name	Major Range or System	Location	Elevation (in feet)	Elevation (in meters)	Highest Point (in feet)
Mt. Everest	Himalayas	Asia (Nepal/Tibet)	29,028	8,848	World
Mt. Aconcagua	Andes	South America (Argentina)	22,835	6,960	Western Hemisphere
Denali	Alaska	North America (United States)	20,320	6,193	North America
Mt. Kilimanjaro	none	Africa (Tanzania)	19,340	5,895	Africa
Mt. Elbrus	Caucasus	Europe (Russia)	18,481	5,633	Europe
Mont Blanc	Alps	Europe (France/Italy)	15,771	4,807	Alps
Mt. Jebel Toubkal	Atlas	Africa (Morocco)	13,671	4,167	North Africa
Mt. Narchoya	Uzlu	Central Asia (Russia/Kazakhstan)	6,214	1,894	Russia/Uzbekistan

The chart on this page lists some of the most important mountain ranges and tallest mountains in the world. See if you can locate all of these mountains on the map on the next page.

**Page 10**

**Call students' attention to the chart and map on pages 10 and 11. Discuss briefly as time permits.**

**Note:** Students will devote time during the Cool Facts About Mountains activity examining this chart and map in depth.

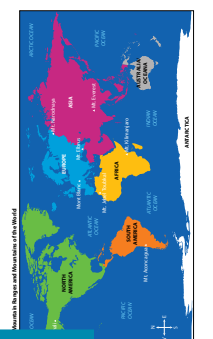
**Ask the following questions:**

**LITERAL**—What are the four types of mountains?

- » The four types are folded mountains, fault-block mountains, dome mountains, and volcanic mountains.

**LITERAL**—How is each mountain type formed?

- » Folded mountains are created when Earth's crust shifts so that one piece of rock folds over another; fault-block mountains are created by shifting plates where pieces of rock are broken off and shifted upward; dome mountains are created by magma welling up below Earth's surface; volcanic mountains are created by volcanic eruption.



**Page 11**

**EVALUATIVE**—Why are the Appalachian Mountains not as high as the Rocky Mountains?

- » The difference in age could explain the difference in elevation. The Appalachian Mountains are more than two hundred million years old, but the Rocky Mountains are only about one million years old. Younger mountains are usually higher and more rugged than older mountains because they have not been worn down by erosion.



## CHECK FOR UNDERSTANDING 10 MIN

### Ask students to:

- Write a short answer to the Big Question, “How are mountains formed?”
  - » Key points students should cite in their answers include: folded mountains are created when Earth’s crust shifts so that one piece of rock folds over another; fault-block mountains are created by shifting plates where pieces of rock are broken off and shifted upward; dome mountains are created by magma welling up below Earth’s surface; volcanic mountains are created by volcanic eruption.
- Choose one of the Core Vocabulary words (*mineral, barrier, weathering, plate, magma, lava, extinct, elevation, erosion, or equator*), and write a sentence using the word.

To wrap up the lesson, ask several students to share their responses.

## Additional Activities

### Cool Facts About World Mountains (RI.4.7)

45 MIN

#### Activity Pages



AP 1.1  
AP 1.2

**Materials Needed:** Sufficient copies of Cool Facts About World Mountains activity page (AP 1.1) and *World Mountains* Student Reader for students; enlarged copy of AP 1.2, Major Mountain Ranges and Mountains

Ask students to turn to pages 10–11 in their Readers and distribute copies of the activity page Cool Facts About World Mountains (AP 1.1) and Major Mountain Ranges and Mountains (AP 1.2). Explain that students will examine in greater detail today the chart and map on pages 10–11, as well as the chart on AP 1.2, and will use AP 1.1 to record information about the particular mountain ranges and mountains they read about in Chapter 1.

Provide a scaffolded review of how to use charts and maps by asking students to find the following information. Begin by displaying the chart on AP 1.2 for reference as well. Point out the abbreviation *Mt.* in the chart, and explain that it is an abbreviation for the word *Mount*.



**Note:** You may want to divide students into teams and challenge them to see which team is able to provide correct information the most rapidly.

After students respond orally, pause to allow time for them to record each “cool fact” on AP 1.1.

- Look at the chart on page 10. What is the highest mountain in the world, and on which continent it is located?
  - » The highest mountain in the world is Mt. Everest in Asia.
- What is the highest mountain in Europe?
  - » Mt. Elbrus is the highest mountain in Europe.
- What mountain range is located on the continent of Africa?
  - » The Atlas Mountain range is located in Africa.
- On what continent are the Alps located?
  - » The Alps are located in Europe.
- Which mountain is the highest mountain in South America?
  - » Mt. Aconcagua is the highest mountain in South America.
- What mountain range is Mt. Aconcagua a part of?
  - » It is part of the Andes Mountains.
- What is the highest mountain in the Alps?
  - » Mont Blanc is the highest mountain in the Alps.

Now, display the map on the second page of AP 1.2, and ask the following questions.

- According to the map on page 11, which continent has three major mountains? What are the names of those mountains?
  - » Europe has three major mountains: Mt. Elbrus, Mont Blanc, and Mt. Narodnaya.
- On what continent is Mount Kilimanjaro located?
  - » Kilimanjaro is located in Africa.
- What is the highest mountain on the continent of North America?
  - » Denali, which was formerly known as Mt. McKinley, is the highest mountain in North America.

Instruct students to use the remaining class time to skim and review Chapter 1, adding more facts about the mountain ranges and mountains discussed in Chapter 1, including how they were formed.

Some information, such as the type of mountain or the name of a famous peak, may not be available in this particular chapter. Students may leave those squares of the chart blank. Students should, however, be able to identify the location and mountain type for the Himalayas, Appalachians, and Mount Kilimanjaro. The chart and map on pages 10 and 11 will help identify the location and names of famous peaks for other ranges, such as the Alps and Atlas Mountains.

Be sure students save AP 1.1 for future reference. Tell students they will add more details to the chart as they learn more about each mountain range in later chapters. These details may include the types of animals that live in the mountain range, the resources that are found in the mountain range, or how people use the mountains in the range.

# Mountain Animals

**The Big Question:** How do animals survive in the mountains?

## Primary Focus Objectives

- ✓ Explain how some animals have adapted to mountain environments. (RI.4.2)
- ✓ Describe the different animals that live on mountains in different parts of the world. (RI.4.1)
- ✓ Understand the meaning of the following domain-specific vocabulary: *surefooted*, *survive*, *hibernate*, and *myth*. (RI.4.4)

## Core Vocabulary (Student Reader page numbers listed below)

**surefooted, adj.** not likely to fall (12)

*Example:* A person who does gymnastics needs to be surefooted.

**survive, v.** to stay alive (14)

*Example:* Some animals grow extra thick winter coats to survive the cold weather.

*Variation(s):* survives, survived, surviving, survivor

**hibernate, v.** to go into a sleeplike state during winter and live off body fat (14)

*Example:* Some animals, such as bears, may hibernate during winter in caves in mountains.

*Variation(s):* hibernates, hibernating, hibernated, hibernation

**myth, n.** an idea or story that many people believe but that is not true (17)

*Example:* The Ancient Greeks used a myth to explain why we have the seasons of winter and summer.

*Variation(s):* myths

## THE CORE LESSON 35 MIN

### Introduce “Mountain Animals”

5 MIN

Ask students to look at several images of mountains from the text. Ask students to name words that describe conditions on mountains. (Possible answers: *cold*, *windy*, *lots of rocks*, *steep slopes*). Write words on the board or

chart paper, clustering words related to weather and climate (e.g., *cold* and *windy*) together and words related to other mountain conditions (e.g., *steep* and *lots of rocks*) together. Ask students to identify what people or animals might need to live in conditions like these.

Draw students' attention to the Big Question. Explain the Core Vocabulary word *survive*. Tell students that they will be reading about the many kinds of animals that live on mountains and how they have adapted to help them survive harsh conditions.

## Guided Reading Supports for "Mountain Animals"

30 MIN

When you or a student reads aloud, **always** prompt students to follow along. By following along, students may acquire a greater understanding of the content. Remember to provide discussion opportunities.

### "An old tall tale" and "Getting Around," Pages 12–13

Invite a volunteer to read the paragraph that begins "An old tall tale" and the first paragraph of the section "Getting Around" on page 12.

**SUPPORT**—If students have difficulty understanding what the text is describing, draw a sketch on the board or on chart paper of an uneven-legged goat going up and then going down a mountain.

**CORE VOCABULARY**—Read aloud the last paragraph on page 12. Explain the word *surefooted*. Point to the image on page 13 to show why goats have to be surefooted. Draw students' attention to the baby goat, which is not falling over or down the mountain even though it is standing only on its back legs.

After you read the text, ask the following questions:

**LITERAL**—How do goats' bodies make it easier for them to move around the mountain slopes?

- » Goats have sharp hooves that can grip the steep slopes of the mountains.

Chapter 2  
Mountain Animals

An old tall tale says that mountain animals, such as goats, are born with the legs on one side of their bodies longer than the ones on the other side. The idea is that this would make it easier for them to walk along steep mountain slopes.

**The Big Question**  
How do animals survive in the mountains?

**Getting Around**  
If you think about it, though, there would be one big drawback to such an arrangement. The animal could only move in one direction! If it turned around so that its short legs were on the downhill side, it would tip over and tumble down the mountain!

Animals such as mountain goats and sheep have bodies that make it easier for them to get around. For example, their hooves have sharp edges that help them grip the steep mountainside. Mountain goats are probably the most surefooted of the mountain animals. Goats sometimes walk out onto a narrow ledge.

**Vocabulary**  
*surefooted*, adj. not likely to fall

Page 12



## “Surviving the Cold,” Pages 14–15

Scaffold understanding as follows:

**CORE VOCABULARY**—Review the meaning of the Core Vocabulary term *survive*. Explain that in this section, students will read how different animals stay alive during cold mountain winters.

Read aloud the first paragraph of “Surviving the Cold” and the numbered list on page 14.

**SUPPORT**—Point out the images that illustrate each method of survival. Use the image of the sleeping bear to explain the Core Vocabulary word *hibernate*. Tell students that the word *hibernate* comes from the Latin word *hibernatus*, meaning to pass the winter. Animals that hibernate store enough food in their bodies to last for several months, and all their body processes slow down. In some animals, the heart beats only one or two times a minute. Hibernation is not sleep. It is a state of extreme inactivity that looks very much like sleep. Some animals hibernate when the weather is very cold, but they venture out on warmer days.

Have students read the rest of the section “Surviving the Cold” on pages 14–15 with a partner. Encourage students to refer back to the images on page 14 as needed to help them understand what they are reading.

**LITERAL**—What are the four ways that animals survive the cold weather?

- » Animals move lower on the mountain where it is warmer and they have more shelter, they grow thicker coats of fur, they find shelter underground or under the snow, or they hibernate.

**Cool Facts About Mountain Animals**

- The Rocky Mountains in western North America are home to 61 different species of mammals, including badgers, and 270 different species of birds, including the three-toed woodpecker.
- The Himalayas are home to 300 different identified species of mammals, including the red panda, 977 identified species of birds, including the Himalayan Griffon Vulture, 100 identified species of amphibians, and 269 identified species of fish.
- Between 2009 and 2014, scientists discovered more than two hundred new species of plants and animals living in the eastern Himalayas. One new discovery is of a blue “walking” snakehead fish. These fish can breathe air and can survive on land for short periods of time.

**Surviving the Cold**

Mountains can get very cold, especially in winter. Mountain animals need a way to survive the cold weather. Animals can deal with that problem in four ways:

1. They can move down the mountain to where it is warmer and there is more shelter.
2. They can grow heavy coats to keep them warm.
3. They can find shelter underground or under the snow.
4. They can hibernate.

**Vocabulary**

*survive*, v. to stay alive

*hibernate*, v. to go into a dormant state during winter and lose body fat

spend the winter lower down the mountain and bighorns sheep move farther

**Page 14**

down. There, they find shelter from the cold and wind among trees and bushes.


Mountain goats, on the other hand, stay high up. They have two layers of fur to keep them warm. One is a soft, woolly undercoat. The other layer is a longer, shaggy outer coat. In the spring and summer, they shed large parts of these coverings. They end up looking rather uncozy.

The meadow vole also stays high up in the mountains. A vole is a small animal similar to a mouse. The vole digs tunnels under the snow. It lives underground during the winter. The snow keeps the wind and cold away.


Some animals, such as ground squirrels, survive by hibernating. They spend the summer and fall eating lots of food. The food is stored as fat in their bodies. In the late fall, they go into their holes and sleep. Slowly their bodies cool off until they are the same temperatures as the hole, about 45°F (7°C) to 50°F (10°C). Their heartbeats and breathing slow down. Their bodies need less energy and can live off their stored body fat.

**A Gallery of Animals**


Many different animals live in the mountains. The mountain lion (North America). The mountain lion is panther, cougar, or catamount. Once



This photo of a yellow-bellied marmot was taken in late June in central Colorado. Marmots survive the winter by hibernating.



This mountain lion, or puma, is found in certain parts of the Rocky Mountains. This photo was taken in Utah.



The ibex has lived in the Alps for a long time. Its image appears in cave drawings made thousands of years ago. Its horns can grow as long as three feet (0.9 meters). Its horns are so long, it can scratch an itch on its rump with the tip of a horn!

**Page 15**

## “A Gallery of Animals,” Pages 15–17

Scaffold understanding as follows:



**CORE VOCABULARY**—Before students read the section, introduce the Core Vocabulary term *myth*. Explain that most mountain animals are real but that there are some that are myths. In this section, students will read about real animals and one mythical beast.

Invite volunteers to read the section aloud.

the mountain lion roamed all over North America. As more and more people moved into the lowlands and built towns and cities, the mountain lion was driven away. Unable to survive in the lowlands, the lions were forced to mostly live in the mountains.

Guanaos (gwañah'koos?) live in the Andes of South America. Guanaos are related to llamas (lāh'moo?). Guanaos are very shy. As they graze, one member of the herd stands guard on higher ground. If they are in danger the guard gives a signal. The herd then runs away.

The ibex has lived in the Alps for a long time. Its image appears in cave drawings made thousands of years ago. Its horns can grow as long as three feet (0.9 meters). Its horns are so long, it can scratch an itch on its rump with the tip of a horn!

**Page 16**

Mountain animals come in many sizes and shapes. The tiny wolf spider lives in the mountains of North America. The much bigger giant panda makes its home in the mountains of China. Many birds, such as eagles and condors, fly through the air above mountains all around the world.

Some mountain animals are probably myth. Local people in the Himalayas tell stories of a huge ape-like creature called the Yeti (yet'ee'). No one has been able to prove that the Yeti is real.

**Vocabulary**  
 myth, n. an idea or story that many people believe but that is not true



The Yeti is a creature of myth. This is what people say it looks like.

Page 17

**After students have read the text, ask the following questions:**

**LITERAL**—Why do mountain lions now live mostly in the mountains?

- » The movement and settlement of people in the lowlands pushed the lions into the mountains.

**LITERAL**—What are three other animals that live in mountains?

- » Possible answers include guanacos, ibex, wolf spiders, giant pandas, eagles, and condors.

**INFERENTIAL**—Why is the yeti considered a myth?

- » No one has been able to prove that it really exists.

Activity Page



AP 1.1

**Tell students to take out AP 1.1 and to add more detail on AP 1.1 under the “Interesting Facts” column about the different animals that live on particular mountain ranges. Encourage students to review the entire chapter, including the Cool Facts box, as well as all images and captions.**

**Be sure to save time for the Check for Understanding.**



**CHECK FOR UNDERSTANDING 10 MIN**

**Ask students to:**

- Write a short answer to the Big Question, “How do animals survive in the mountains?”
  - » Key points students should cite in their answers include: Animals move lower on the mountain where it is warmer and they have more shelter, they grow thicker coats of fur, they find shelter underground or under the snow, or they hibernate.
- Choose one of the Core Vocabulary words (*surefooted*, *survive*, *hibernate*, or *myth*), and write a sentence using the word.

To wrap up the lesson, ask several students to share their responses.

# Mountains as Barriers

**The Big Question:** How have mountains acted as barriers?

## Primary Focus Objectives

- ✓ Understand how mountains act as barriers and how people have found ways around these barriers. (RI.4.2)
- ✓ Understand the physical and social effects of living on a mountain. (RI.4.2)
- ✓ Understand the meaning of the following domain-specific vocabulary: *pass*, *tunnel*, *gap*, *wagon train*, and *plateau*. (RI.4.4)

## Core Vocabulary (Student Reader page numbers listed below)

**pass, n.** a place in the mountains that is lower than the surrounding peaks and that people use as a path through the mountains (18)

*Example:* Construction workers used a low-lying pass to build a road through the mountain range.

*Variation(s):* passes

**tunnel, n.** a passage through or under a natural feature such as a mountain (21)

*Example:* When construction workers need for a road to cross a river or other large body of water, they either build a bridge over the river or dig a tunnel under it.

*Variation(s):* tunnels, tunnel

**gap, n.** a low place in the mountains, often created by a river (22)

*Example:* The Cumberland Gap in the Appalachian Mountains allowed travelers to move between Virginia, Kentucky, and Tennessee.

*Variation(s):* gaps

**wagon train, n.** a line of wagons traveling west in the United States in the 1800s (23)

*Example:* In the 1840s, wagon trains took people to rich farmland in Oregon.

*Variation(s):* wagon trains

**plateau, n.** a large area of high, flat ground (23)

*Example:* Farming is easier on mountain plateaus than on mountain slopes.

*Variation(s):* plateaus

## Introduce “Mountains as Barriers”

5 MIN

Have students look back at the images of Denali (pages 2–3) and Mount Everest (page 8) in Chapter 1. Review the definition of the Core Vocabulary word *barrier*. Ask students to point out details in the images that serve as barriers. (*Students might note the steepness of the mountains and the snow that covers them.*)

Draw students’ attention to the Big Question. Tell students that they will be reading about the ways people have dealt with the challenges of traveling across mountains.

## Guided Reading Supports for “Mountains as Barriers”

30 MIN

When you or a student reads aloud, **always** prompt students to follow along. By following along, students may acquire a greater understanding of the content. Remember to provide discussion opportunities.

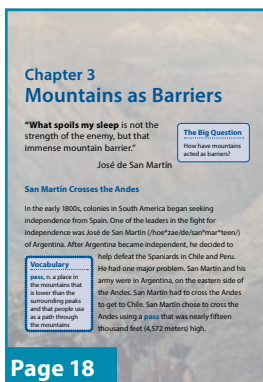
### “What spoils my sleep” and “San Martín Crosses the Andes,” Pages 18–20

Scaffold understanding as follows:

**CORE VOCABULARY**—Read aloud the opening quotation and the first paragraph of the section “San Martín Crosses the Andes” on page 18. Explain the Core Vocabulary word *pass*, using the painting on pages 18–19 to illustrate the term. Note that the pass that San Martín used was much lower than the surrounding mountains.

Read aloud the last two paragraphs in the section, on page 20.

**SUPPORT**—Direct students’ attention to the Cool Facts box on the bottom of page 20. Invite volunteers to each read a bullet in the box. To help students understand how long 5,500 miles is, compare the length or width of your state to the length of the Andes. You could also compare the width of the United States (2,680 miles, or 4,313 km) or the driving distance between Los Angeles and New York City (approximately 2,800 miles, or 4,506 km, along Interstate 80) to the length of the Andes.





The Andes are difficult to climb. They are steep and rugged. Even the passes are high. At such elevations, it is cold and windy. The air has less oxygen. People who aren't used to being so high up can become confused and sick. Some even die in the thinner air.

San Martín and his army set out early in 1817. They had five thousand soldiers, 10,000 mules, 1,000 horses, and seven hundred head of cattle. They also had to get all their supplies, including heavy cannons, over the mountains. The soldiers were lucky—most of them survived. The animals were not so lucky. Only 4,300 mules and five hundred horses made it to Chile, and none of the cattle were left. The struggle paid off, though. The Spaniards in Chile were caught by surprise and were quickly defeated. San Martín also won the battle in Peru. By crossing the Andes, San Martín and his soldiers helped Chile and Peru gain independence.

**Getting Over or Through Mountains**  
Mountains cause difficulties for all travelers, not just for armies. Still, people have managed to find ways to cross mountains.

**Cool Facts About the Andes**

- The Andes are the longest mountain range in the world. They stretch 5,000 miles (about 8,000 km) through seven countries along the west coast of South America.
- José de San Martín crossed the Andes at Los Patos Pass. At fifteen thousand feet (4,572 meters), Los Patos is higher than the tallest Rockies.


**Page 20**

**After reading the text, ask the following question:**

**LITERAL**—Why is it difficult for humans and other animals to cross the Andes?

- » The mountains in the Andes have steep slopes. Because the passes are at high elevations, it is very cold and windy. Because the air has less oxygen, it can be hard to breathe.

## “Getting Over or Through Mountains” and “Mountain Passes,” Pages 20–23



This road uses S-curves to climb the steep mountainside.

Sometimes people build roads that go in S-curves back and forth across the mountainside. That way, cars or trucks don't face such a steep climb all at once. Even so, traveling these mountain roads is tricky.

Sometimes you can't go around or over a mountain. But, you can try going through it. How? By using a tunnel. People have dug tunnels for thousands of years. However, new machines were invented in the 1800s, which allowed people to dig tunnels through mountains. The first mountain tunnel was a railroad tunnel built through the Alps between France and Italy. This tunnel took more than fourteen months to complete. Today, a tunnel for cars, buses, and trucks runs

**Vocabulary**  
tunnel, n. a passage through or under a natural feature such as a mountain.

**Page 21**

**Invite a volunteer to read the section “Getting Over or Through Mountains” on pages 20–21.**

**CORE VOCABULARY**—Review the Core Vocabulary term *tunnel*, using the image on page 22 to illustrate the word's meaning.

**Read aloud the section “Mountain Passes and Gaps” on pages 22–23.**

**CORE VOCABULARY**—Review the Core Vocabulary terms *gap* and *wagon train*. Help students understand the difference between a pass and a gap. Both are low places in the mountains, but a pass is higher, whereas a gap is usually lower and created by a river.

**SUPPORT**—Draw students' attention to the bar graph on page 23. Help students see that although some passes are very high, they are still lower than the peak elevations in their mountain ranges.


**After the reading the text, ask the following questions:**

**LITERAL**—What are ways people have used to travel across or through mountains?

- » People have built and used S-curve roads, and tunnels.

**INFERENCE**—Why do people use gaps and passes to travel across mountains?

- » People use gaps and passes because they are not as high as the rest of the mountain range.



The mountain road in Italy uses a tunnel to pass through the mountain.

**Mountain Passes and Gaps**  
When people need to cross mountains, they look for the lowest places to cross. These are called passes and gaps. In the late 1700s, Daniel Boone helped create a road through the Appalachian Mountains of eastern Virginia, using the Cumberland Gap to cross these mountains. Settlers in the United States followed this road to new homes in Kentucky.

Farther north, engineers and laborers used the Mohawk River Gap in a clever way to pass through the Appalachian Mountains. In the early 1800s, engineers and laborers built the Erie Canal across

**Vocabulary**  
gap, n. a low place in the mountains, often created by a river.

**Page 22**

## “Mountains and People,” Pages 23–25

Scaffold understanding as follows:

**CORE VOCABULARY**—Read aloud the first two paragraphs of the section on page 23. Review the meaning of the Core Vocabulary term *plateau*. Explain to students that the word *plateau* comes from a French word *plat* that means flat. Make sure students understand that a plateau is different from other mountain terrain because mountain terrain is usually steep. A plateau, by contrast, is flat. Consider drawing on the board or chart paper to illustrate the difference.

Ask students to read the rest of the section on pages 24–25 quietly to themselves.

After reading the text, ask the following questions:

**LITERAL**—Who are the Basques? How have mountains helped to shape their culture?

- » The Basques are a people who settled in the Pyrenees Mountains between Spain and France. The mountains cut them off from other people, allowing the Basques to develop a language very different from Spanish and French.

**LITERAL**—What are the effects of higher elevations on people who are not accustomed to them?

- » They tire easily, have difficulty breathing, and get headaches.

**LITERAL**—How have people adapted to living at higher elevations?

- » Their bodies have adapted to the thinner air so they don’t get short of breath or get headaches.

**INFERENTIAL**—Why have some groups of people who lived on mountains developed their own ways of life and have little to do with other people?

- » People who live on mountains do not usually have many visitors, nor is it easy for them to travel and meet new people. This means that there are fewer opportunities to learn about other people’s ideas or ways of life and incorporate these ideas into their own culture.

Tell students to take out AP 1.1 and to add more detail about the different mountain ranges mentioned in this chapter. Encourage students to review the entire chapter, including the Cool Facts box, as well as all images and captions.

Be sure to save time for the Check for Understanding.

Location	Elevation (feet)
Appalachian Mountains	4,861
South Pass	10,900
Rocky Mountains	14,498
Los Pinos Pass	10,004

The graph shows the heights of different mountain chains, gaps, and passes. Notice that South Pass is higher than the tallest mountain in the Appalachians. Does that seem strange to you?

In settling what eventually became the western United States, wagon trains needed to cross the Rockies to reach the Pacific Coast. They used passes including the South Pass of Wyoming.

**Mountains and People**

Long ago, people began to settle and create villages. Most people chose to settle in valleys and on plains. But some people chose to settle in the mountains. Some settled on the mountainsides, others on plateaus in the mountains. A plateau is a flat area of high ground. Sometimes plateaus stand on their own. Sometimes they are part of a mountain range.

**Vocabulary**

wagon train, n. a line of wagons traveling west in the United States in the 1800s.

plateau, n. a large area of high, flat ground.

So, why did people settle in these high places? Maybe they went to enjoy the beauty of the mountains.

Page 23

People who live in the mountains often are separated from other people. For example, the Basques (/baskʊ/) settled thousands of years ago in the Pyrenees (/paɪˈneɪz/), which are the mountains separating Spain and France. The mountains cut the Basques off from other people. Over time, their language became quite different from Spanish and French.

People living in the Andes Mountains live at very high elevations. So do the people living in the Himalayas. When people from lower elevations travel high up into the mountains, they tire easily. They find themselves short of breath and get headaches. Yet the people who live high up in the mountains don't have these problems. Why? Because they have lived at high elevations for hundreds of years. Their bodies have adapted to their mountain environment.

Steep high in the Pyrenees.

Page 24

Mountains have had both positive and negative effects on history. Mountains have prevented the spread of new ideas. They have made it difficult for people to communicate with each other. However, mountains have also offered protection and contributed to the creation of unique cultures. Perhaps now when you see mountains off in the distance, or drive over or through them, you will think about how they have helped to shape our world.

Page 25

Activity Page



AP 1.1



## CHECK FOR UNDERSTANDING 10 MIN

### Ask students to:

- Write a short answer to the Big Question, “How have mountains acted as barriers?”
  - » Key points students should cite in their answers include: making travel difficult, preventing invasions, and isolating cultures from one another.
- Choose one of the Core Vocabulary words (*pass*, *gap*, *wagon train*, or *plateau*), and write a sentence using the word.

To wrap up the lesson, ask several students to share their responses.

# Making the Most of Mountains

**The Big Question:** How do people benefit from mountains?

### Primary Focus Objectives

- ✓ Understand how mountains affect rainfall. (RI.4.3)
- ✓ Identify the natural resources provided by mountains. (RI.4.2)
- ✓ Understand the types of farming available to people who live on mountains. (RI.4.2)
- ✓ Explain the roles that mountains play in recreation for people. (RI.4.2)
- ✓ Understand the meaning of the following domain-specific vocabulary: *crystal*, *generator*, *dam*, *hydroelectric plant*, *industry*, *yak*, *terrace*, and *peak*. (RI.4.4)

### Core Vocabulary (Student Reader page numbers listed below)

**crystal, n.** a colorless or lightly colored hard mineral (26)

*Example:* Salt crystals are ground into the table salt we use in our kitchens.

*Variation(s):* crystals

**generator, n.** a machine that makes electricity (29)

*Example:* After losing electrical power during the snowstorm, we were able to use a generator so the house lights still worked.

*Variation(s):* generators

**dam, n.** a wall used to stop the flow of water (29)

*Example:* The Conowingo Dam in Maryland blocks the Susquehanna River.

*Variation(s):* dams

**hydroelectric plant, n.** a place that uses the force of moving water to power generators that make electricity (30)

*Example:* Hydroelectric plants near rivers can provide electricity to thousands of homes.

*Variation(s):* hydroelectric plants

**industry, n.** a group of businesses that use machinery and factories to make a product (31)

*Example:* The automobile industry produces cars and trucks and other vehicles.

*Variation(s):* industries

**yak, n.** an animal similar to an ox that lives in Asia (31)

*Example:* People in the Himalayas raise yaks for milk.

*Variation(s):* yaks

**terrace, v.** to build level surfaces on a mountainside (31)

*Example:* Farmers grow crops on steep mountain slopes by terracing the land.

*Variation(s):* terracing, terraced, terrace (n.)

**peak, n.** the highest point on a mountain (33)

*Example:* The peak of a mountain is often covered with snow.

*Variation(s):* peaks

## THE CORE LESSON 35 MIN

### Introduce “Making the Most of Mountains”

5 MIN

**Note:** This chapter is longer than the previous chapters of this unit, so we recommend that you allocate two instructional days to adequately read and discuss it. You may choose to have students read and discuss pages 26–31 and add details to AP 1.1 on one day, finishing pages 32–35 on the second day, as well as adding more details to AP 1.1. Or you may want to read the entire chapter on the first day and then add detail to AP 1.1 on the second day, as well as reviewing the entire unit.

Draw students’ attention to the Big Question. Ask students to define the word *benefit* (*to affect positively*). Invite volunteers to share examples of how people have benefitted from mountains based on what they have already read. (*Possible answers: mountains provided protection against enemies and helped create new cultures.*) Tell students that in this chapter they will read about other ways that mountains are important to people.

### Guided Reading Supports for “Making the Most of Mountains”

30 MIN

When you or a student reads aloud, **always** prompt students to follow along. By following along, students may acquire a greater understanding of the content. Remember to provide discussion opportunities.

## “In the 1700s a man named Jonathan Carver” and “Mountains and Moisture,” Pages 26–28

Scaffold understanding as follows:

**CORE VOCABULARY**—Invite a volunteer to read aloud the paragraph that begins “In the 1700s a man named Jonathan Carver.” Define the word *crystal* for students. Ask students to brainstorm what else those crystals might be, besides diamonds.

Invite volunteers to take turns reading the section “Mountains and Moisture” on pages 26–28.

**SUPPORT**—Draw students’ attention to the image on page 28. Have students trace the path of moisture as it approaches a mountain, rises, and falls as precipitation. Explain to students that the air that reaches Denver is particularly dry since it passes over two mountain ranges, the Sierra Nevada and the Rockies.

After students have finished reading, ask the following question:

**LITERAL**—Why are the lands east of the Rocky Mountains drier than the lands west of the mountains?

- » Moist winds coming off the ocean are cooled as they rise up the mountains. Since cool air holds less moisture than warmer air does, the moisture falls as rain or snow on the western side. By the time the wind crosses over the mountains to the east, it has lost most of its moisture.

Chapter 4  
Making the Most of Mountains

In the 1700s a man named Jonathan Carver explored the Mississippi River. On his travels, Native Americans told Carver about the Shining Mountains to the west, which were covered with large crystals. Carver thought that these crystals were diamonds.

**Vocabulary** *crystal*, n. a colorless or light-colored hard mineral.

**The Big Question** How do people benefit from mountains?

**Mountains and Moisture**

In fact, the crystals that the Native Americans described to Carver weren't diamonds; they were crystal of snow that melted in the spring and fed the rivers and lakes of western America.

Most people would be disappointed if they went looking for diamonds and found water. However, in the dry West, water is very important. The people of Denver, Colorado, know that very well.

Page 26



Their city is located at the foot of the eastern side of the Rocky Mountains. Denver receives only about fourteen inches of rain a year. The people of Denver need much more water than that to survive. Luckily, the western side of the Rocky Mountains receives more rain than the eastern side. The solution was to tunnel through the Rockies to get more water.

Why is the western side of the Rocky Mountains wetter than the eastern side? Because the winds that blow in from the Pacific Ocean carry a great deal of moisture. When the winds reach the western side of the Rockies, they are forced to rise to cross the mountains. As the air rises, it grows cooler. Cool air can't hold as much moisture as warm air can. Therefore, much of the moisture falls as rain or snow on the western side of the Rockies. By the time the winds get over the mountains, they have lost most of their moisture.

Mountains can block the flow of moisture.

Page 28

## “Mountains and Power,” Pages 29–30

**Mountains and Power**

Mountain streams are valuable not only as sources of water but also as sources of power. As streams and rivers travel downhill, they sometimes form waterfalls. The currents of the waterfalls can be used to make power. Hundreds of years ago, people used the force of the falling water to turn waterwheels. The waterwheels powered machinery. Some machinery ground grain or wove cloth. Today, water gives power to huge generators that make electricity.

Today, when there is no waterfall, people sometimes build a dam to hold back the water in a river. When the water behind the dam is released, it flows downstream rapidly. It has as much or more force than water going over a waterfall. This



**Vocabulary**  
generator, n. a machine that makes electricity  
dam, n. a wall used to stop the flow of water

**Page 29**

Scaffold understanding as follows:

**CORE VOCABULARY**—Read aloud the first paragraph of “Mountains and Power” on page 29. Define the word *generator*. Explain that there are many different ways to power generators. Some generators are powered by burning fuel such as coal or natural gas. Others are powered by wind, water, or solar power.

**CORE VOCABULARY**—Read aloud the second paragraph of “Mountains and Power” on pages 29–30. Review the meaning of *dam* and *hydroelectric plant*. Point out the prefix *hydro-* in *hydroelectric plant*, and explain that it means water. So *hydroelectric* refers to electricity that comes from water.

**Note:** Students who completed the Core Knowledge program in Grade 3 may remember the word *dam* from their study of world rivers.

When you have finished reading, ask the following question:

**LITERAL**—How do hydroelectric plants work?

» Running water turns generators. The generators make electricity.

**INFERENTIAL**—Based on the text in this chapter, why might people build dams?

» Dams allow water to be held back. When it is released, its force turns generators, which create electricity.

## “Minerals,” Pages 30–31

running water turns huge generators in hydroelectric plants that make electricity. Mountains make this possible.

**Minerals**

It's easy to make fun of Jonathan Carver for thinking that the crystals on the slopes of the Rocky Mountains were diamonds. But in a sense he wasn't as far off as you might think. No one has ever found diamonds in the Rocky Mountains, but the Rockies are bursting with other valuable minerals.

Gold was discovered in the Rockies near Pike's Peak in 1858. People rushed to the area to get their share of the riches. Mining camps and towns sprang up overnight. Very few people became rich from the gold. Very little gold is left today, at least near the surface. But people discovered other minerals during the gold rush—silver, lead, copper, zinc, and more.

Other mountain ranges around the world also contain minerals. The Ural Mountains in Russia are rich in zinc, silver, platinum, and

**Cool Facts About Making the Most Out of Mountains**

- Ten percent of the world's population lives in mountains.
- Coal is an important resource. Today, approximately 40 percent of the world's electricity is generated by coal.
- The U.S. state of California depends on the snowpack on the Sierra Nevada mountains for water. Since 2001, the mountains have received 40 percent less snow. This has created an extreme

**Page 30**

Scaffold understanding as follows:

**CORE VOCABULARY**—Review the definition of *mineral* from Chapter 1 with students; ask students to refer to the glossary to locate the definition for *mineral*. Explain that mountains are rich in minerals. In this section, they will read about some of the minerals found in mountains. Introduce the Core Vocabulary term *industry* as a group of businesses that use machinery and factories to make products. Explain that some minerals are important for industry.

Have students read the section “Minerals” to themselves.

When students have finished reading, draw students' attention to the Cool Facts box on the bottom of page 30. Read the list of facts aloud.

**SUPPORT**—Explain that a drought is a situation without enough water. Tell students that even though California does get rain, it is not enough to restore the snowpack in the mountains or provide for Californians' daily

needs. Therefore, people who live in California are subject to restrictions, or limits, on their water usage.

**Ask the following questions:**

**LITERAL**—What mountain ranges were described as being rich in minerals?

- » The Rocky, Ural, Allegheny, and Appalachian Mountains all are rich in different kinds of minerals.

**INFERENTIAL**—On what continents are the Rocky, Ural, Allegheny, and Appalachian Mountains located?

- » The Rocky, Allegheny, and Appalachian Mountains are all located in North America. The Ural Mountains in Russia are part of the boundary between Europe and Asia.

**LITERAL**—How have people benefited from the coal in American mountains?

- » The coal in American mountains such as the Appalachians and Alleghenies helped American industry grow.

**“Farming,” Page 31**

nickel. Miners dig these minerals out of the mountains and send them to nearby factories. Pennsylvania's Allegheny Mountains are full of coal, as are the Appalachian Mountains in Pennsylvania, Ohio, West Virginia, Kentucky, and Tennessee. Coal from the Allegheny and Appalachian Mountains helped American industry to grow in the late 1800s and early 1900s.

**Farming**

Some people make a living farming in the mountains. Often, they raise animals. People in the Andes raise llamas and alpacas (al'pak'uz), and people in the Himalayas raise yaks. Some farmers in the Alps feed goats on the high pastures during the summer. As you have discovered, these animals are all surefooted. They are used to traveling up and down hillsides in search of plants to eat.

Farming is somewhat easier on the flat top of a plateau, but it is hard to grow crops on steep mountainsides. For hundreds of years, the people of the Andes and the Himalayas have used terracing to create fields. In southeastern Asia, terracing is used on a large scale to grow rice. Terracing turns mountain slopes into giant staircases, with lots of flat surfaces for growing crops. Farmers build stone walls on the mountainsides. They then fill the area behind the walls with dirt. This creates a

**Vocabulary**

industry, n. a business that manufactures a product or provides a service

yak, n. an animal similar to an ox that lives in Asia

terraces, v. to build level surface on a mountainside

**Page 31**

**Scaffold understanding as follows:**

**CORE VOCABULARY**—Read aloud the two paragraphs in the section **“Farming”** on page 31. Explain the vocabulary terms *yak* and *terrace* when they are encountered. Draw students’ attention to the image of terracing on page 32. Point out the walls that formed the terraces.

**SUPPORT**—Use images of llamas, alpacas, and yaks to support student understanding of the first paragraph in the section. Such images should be easily accessible through a basic Internet search.

**After reading the text, ask the following questions:**

**LITERAL**—Why are llamas, alpacas, and yaks suited to life in the mountains?

- » They are surefooted and used to traveling up and down mountainsides for food.

**INFERENTIAL**—Why would farming be easier on a plateau instead of a mountainside?

- » Plateaus are flat. It is easier to move and plant on a flat surface than on a steep surface.



## EVALUATIVE—Why do people build terraces on mountainsides?

- » People build terraces to create flat areas on which they can grow crops. While farming on flat surfaces such as fields or plateaus is easier, these options are not always available.

**NOTE:** Stop reading here if you have decided to divide reading the chapters into two parts, and have students complete Activity Page 1.1.

### Activity Page



AP 1.1

**Tell students to take out AP 1.1 and to add more detail on AP 1.1 under the “Interesting Facts” column about the different animals that live on particular mountain ranges. Encourage students to review the entire chapter, including the Cool Facts box, as well as all images and captions.**

**If you are reading the entire chapter in one day, complete the Check for Understanding and AP 1.1 on the second day.**

## “Recreation,” Pages 32–33



People terrace fields to make it easier to farm on a mountainside. These terraces were built on a mountain in India.

**Recreation**

Today mountains also attract lots of tourists. These tourists come to enjoy mountain sports like sledding, snowboarding, and skiing.

Skiing developed long ago in the mountains of Europe and Asia. People used skiing to travel when snow covered the ground. Archaeologists have found skis that they believe were made almost nine thousand years ago! These ancient skis were carved out of bones or wood.

No one knows when skis were first used in warfare. We know that in 1200, Norwegian soldiers traveled on skis to spy on their

**Page 32**


**Ask students to quietly read this section to themselves.**

**After students have finished reading, ask the following question:**

**LITERAL**—How do we know that skiing has been important to people for a very long time?

- » Archaeologists have found skis from thousands of years ago. Norwegian soldiers used skis in 1200. People have held skiing competitions since the 1800s.

## “Mountain Climbing,” Pages 33–35



Downhill skiing is a favorite mountain sport in many parts of the world.

Over the years skiing became a popular sport. Skiing competitions began in the 1800s. It was introduced as an Olympic sport in 1924. Skiing is still a popular mountain sport today.

**Mountain Climbing**

People who are looking for other challenging pastimes can try mountain climbing. Some people enjoy hiking in the mountains. Others like the challenge of trying to climb the tallest mountains in the world.

Perhaps the greatest challenge of all is climbing to the peak of the world's tallest mountain, Mount Everest. The temperatures are very strong. Snowstorms come up in and has little oxygen.

**Vocabulary**  
peak is the highest point on a mountain.

**Page 33**

**Scaffold understanding as follows:**

**Invite a volunteer to read the first two paragraphs of the section “Mountain Climbing” on page 33.**

**CORE VOCABULARY**—Review the Core Vocabulary word *peak*. Direct students to a picture of a mountain, such as the image of Mount Everest on page 8 or Denali on pages 2–3. Ask students to point to the peak of the mountain in the image.

**Read aloud the rest of the section on page 35.**

**After reading the text, ask the following questions:**

**LITERAL**—Who were the first people to reach the peak of Mount Everest?

- » Sir Edmund Hillary and Tenzing Norgay



**LITERAL**—What challenges do mountain climbers face when they try to reach the peak of Mount Everest?

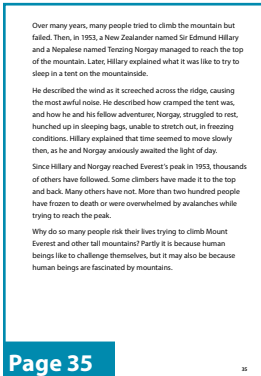
- » They face freezing temperatures, strong winds, thin air, and unexpected snowstorms.

**INFERENTIAL**—Why might someone want to endure difficult conditions to climb to a mountain peak?

- » Answers may vary. Students may cite that some people enjoy challenges. Students may say that it would be an honor to be the first person to climb a mountain. Accept all reasonable answers.

**NOTE:** Stop here if you are reading the entire chapter in one day. Complete the Check for Understanding and AP 1.1 on the second day.

If this is the second day of instruction, complete the Check for Understanding, and ask students to add details from the second half of the chapter to AP 1.1.



 **CHECK FOR UNDERSTANDING 10 MIN**

**Ask students to:**

- Write a short answer to the Big Question, “How do people benefit from mountains?”
  - » Key points students should cite in their answers include: mountains as the source of many rivers; using the downhill flow of water to generate electricity; digging valuable minerals out of the mountains; farming and raising animals; participating in recreational activities such as skiing and mountain climbing.
- Choose one of the Core Vocabulary words (*crystal, generator, dam, hydroelectric plant, industry, yak, terrace, or peak*), and write a sentence using the word.

To wrap up the lesson, ask several students to share their responses.

## Additional Activities

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### *World Mountains Domain Vocabulary* (RI.4.4, L.4.6)

45 MIN

Activity Page



AP 4.1

**Materials Needed:** Sufficient copies of the *World Mountains Domain Vocabulary* activity page (AP 4.1)

Distribute AP 4.1, *World Mountains Domain Vocabulary*, and direct students to use the vocabulary terms they have learned in their reading about *World Mountains* to solve each riddle.

This activity page may also be distributed for homework.

# Teacher Resources

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<b>Answer Key: <i>World Mountains</i>—Unit Assessment and Activity Pages</b>	<b>55</b>

## Unit Assessment: *World Mountains*

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**Circle the letter of the best answer.**

1. Which is not a way mountains are formed?
  - a) shifting plate
  - b) volcanic action
  - c) extinctions
  - d) magma movement deep in the earth
  
2. Which is the highest mountain in Africa?
  - a) Mount Kilimanjaro
  - b) Mount Everest
  - c) Mount Elbrus
  - d) Mount Aconcagua
  
3. An extinct volcano is
  - a) not likely to erupt.
  - b) likely to erupt.
  - c) flat.
  - d) steep.
  
4. Two mountain ranges located in North America are
  - a) the Himalayan and the Ural Mountains.
  - b) the Sierra Nevada and the Atlas Mountains.
  - c) the Rocky and the Appalachian Mountains.
  - d) the Alps and the Caucasus Mountains.
  
5. Which elevation would be the coldest place on a mountain?
  - a) 10,000 feet
  - b) 5,000 feet
  - c) 3,000 feet
  - d) 1,500 feet
  
6. The highest mountain in the world is
  - a) Mount Aconcagua.
  - b) Mount Kilimanjaro.
  - c) Mont Blanc.
  - d) Mount Everest.

- 7.** What mountain range is located in South America?
  - a)** Andes
  - b)** Alps
  - c)** Atlas
  - d)** Himalayas
  
- 8.** What is the highest mountain in North America?
  - a)** Mount Everest
  - b)** Denali
  - c)** Mount Aconcagua
  - d)** Mount Elbrus
  
- 9.** Mount Aconcagua is the highest mountain in
  - a)** Europe.
  - b)** North America.
  - c)** South America.
  - d)** Asia.
  
- 10.** Which is one form of adaptation that allows animals to live on mountains?
  - a)** longer legs on one side of the body
  - b)** large antlers
  - c)** hoofs with sharp edges
  - d)** thin, light hair
  
- 11.** Which of the following describes a mountain pass?
  - a)** goes over the top of a mountain
  - b)** is a tunnel
  - c)** is always close to sea level
  - d)** is an easier way to cross a mountain range
  
- 12.** What is a plateau?
  - a)** a low place in the mountains, often created by a river
  - b)** a jagged place in the mountains lower than surrounding peaks
  - c)** a large area of high but level ground
  - d)** none of the above

- 13.** People living in the Andes Mountains have adapted to the effects of
- a)** frequent, heavy rainfall.
  - b)** volcanic eruptions.
  - c)** earthquakes.
  - d)** high elevation.
- 14.** How do mountains create challenges for people?
- a)** People with common interests may face communication problems.
  - b)** Armies cannot easily invade a country surrounded by mountains.
  - c)** Winds cannot easily carry moisture across mountains.
  - d)** all of the above
- 15.** Why are mountains important to people?
- a)** They contain minerals.
  - b)** They provide places for recreation.
  - c)** They are the sources of rivers that provide hydroelectric power.
  - d)** all of the above

**Match the following vocabulary terms with their definition. Write the correct letter on the line.**

- a) mineral                         \_\_\_\_\_ 16. to stay alive
- b) magma                         \_\_\_\_\_ 17. a passage through or under a natural feature such as a mountain
- c) survive                         \_\_\_\_\_ 18. a wall used to stop the flow of water
- d) hibernate                       \_\_\_\_\_ 19. the distance above sea level of a spot on Earth's surface
- e) elevation                       \_\_\_\_\_ 20. a naturally occurring substance found in Earth's crust
- f) tunnel                         \_\_\_\_\_ 21. a colorless or lightly colored hard mineral
- g) generator                       \_\_\_\_\_ 22. to go into a sleeplike state during winter and live off body fat
- h) dam                             \_\_\_\_\_ 23. a machine that makes electricity
- i) crystal                         \_\_\_\_\_ 24. to build level surfaces on a mountainside
- j) terrace                         \_\_\_\_\_ 25. melted rock from inside Earth's crust



## Performance Task: *World Mountains*

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**Teacher Directions:** In this activity, students will demonstrate their understanding of world mountains using both a map and a written assignment.

Ask students to annotate the Performance Task Activity map with the locations of the mountains and mountain ranges studied in this unit. Then have students write a paragraph discussing the benefits and challenges that mountains present for people.

A sample table, completed with possible notes, is provided below to serve as a reference for teachers, should some prompting or scaffolding be needed to help students get started. Individual students are not expected to provide a comparable finished table. The goal of the sample table is to provide enough detail for students to complete the writing part of their assignment.

<b>Benefits of Mountains</b>	<b>Challenges of Mountains</b>
<ul style="list-style-type: none"><li>• provide homes for animals, such as goats, llamas, and yaks</li><li>• contain valuable minerals, such as gold, copper, and zinc</li><li>• contain coal, which is used to generate electricity</li><li>• keep out or slow down invasions</li><li>• allow unique cultures to develop</li><li>• provide recreational opportunities such as skiing and mountain climbing</li><li>• create downhill flow of water, which can be used to generate electricity</li></ul>	<ul style="list-style-type: none"><li>• act as barriers</li><li>• difficult to farm on steep mountainsides</li><li>• block the flow of moisture</li><li>• can make people sick because of thin air at higher elevations</li><li>• require different constructions, such as S-curve roads, tunnels, and canals, to make travel easier</li></ul>

## Performance Task Scoring Rubric

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**Note:** Students should be evaluated on the basis of their completed maps and paragraphs, using the rubric.

Students should not be evaluated on the completion of the notes table, which is intended to be a support for students as they first think about their paragraphs.

<b>Above Average</b>	Map is labeled with 85% accuracy, i.e., eleven of the thirteen mountains correctly labeled. Paragraph is accurate, detailed, and persuasive. The writing is clearly articulated and focused and demonstrates strong understanding of the benefits and challenges of mountains. A few minor errors may be present.
<b>Average</b>	Map is labeled with 80% accuracy, i.e., ten of thirteen mountains correctly labeled. Paragraph is mostly accurate and somewhat detailed. The writing is focused and demonstrates a solid understanding of the benefits and challenges of mountains. Some minor errors may be present.
<b>Adequate</b>	Map is labeled with 80% accuracy, i.e., ten of thirteen mountains correctly labeled. Paragraph is mostly accurate but lacks detail. The writing demonstrates a basic understanding of the benefits and challenges of mountains. The writing may also exhibit issues with organization, focus, and/or control of standard English grammar.
<b>Inadequate</b>	Map is incomplete or inaccurate, i.e., nine or fewer of the thirteen mountains are correctly labeled. Paragraph demonstrates a minimal understanding of the benefits and challenges of mountains. The writing may exhibit major issues with organization, focus, and/or control of standard English grammar.

# Performance Task Activity: *World Mountains*

On the map that follows, mark the location of the following mountains and mountain ranges with the appropriate letter. In some places, you will use two labels on the same line: one for a mountain, one for a mountain range.

- A. Mount Everest
- B. Mount Aconcagua
- C. Denali
- D. Mount Kilimanjaro
- E. Mount Elbrus
- F. Mont Blanc
- G. Rocky Mountains
- H. Appalachian Mountains
- I. Andes Mountains
- J. Alps
- K. Himalayas
- L. Urals
- M. Atlas

Below, write a paragraph explaining how mountains help and challenge people. If you need more space, you may use your own paper. Use the table that follows the map to take notes and organize your information. You may refer to the chapters in *World Mountains*.

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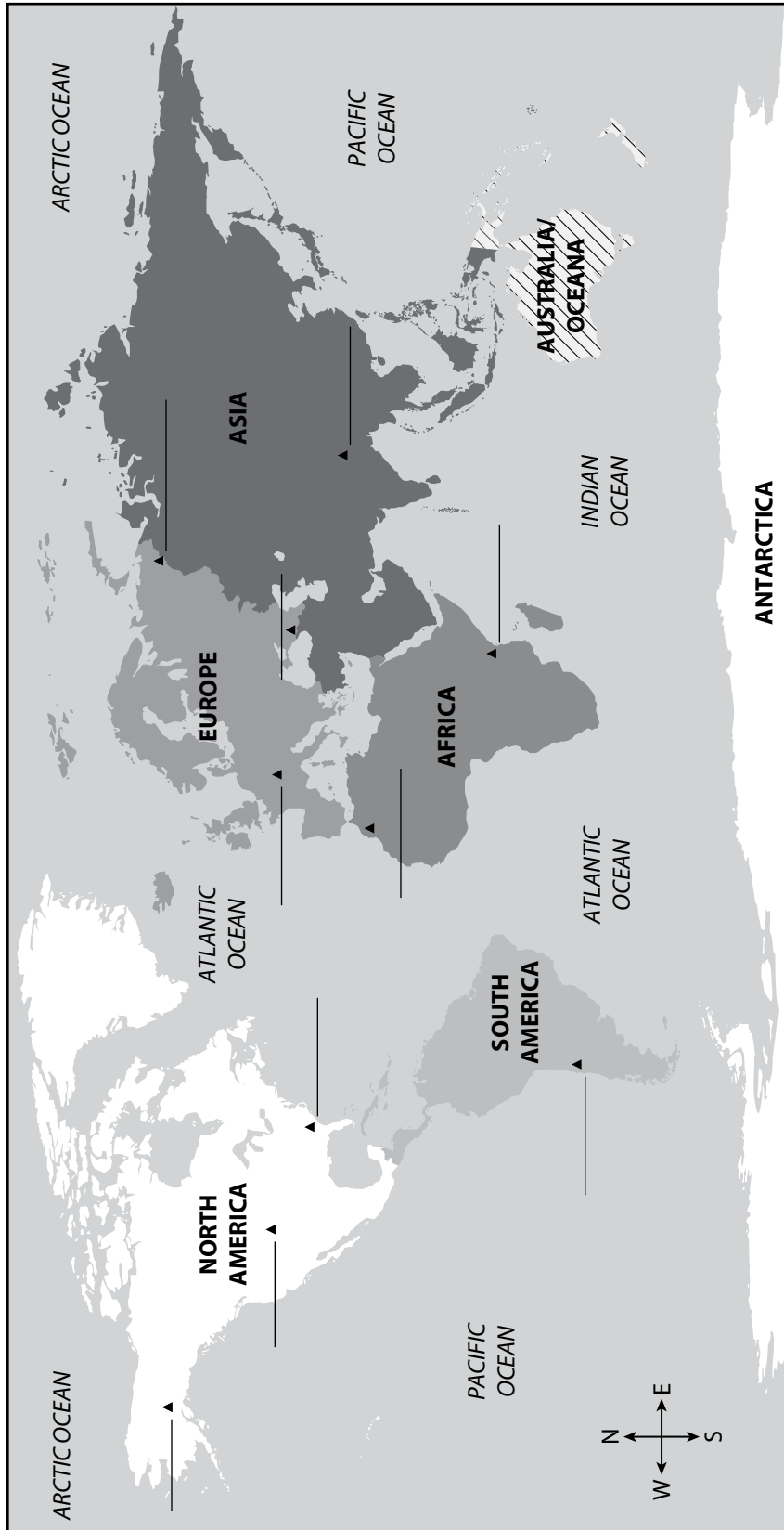
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# Performance Task Activity: World Mountains

Performance Task Activity: World Mountains



### **World Mountains Performance Task Notes Table**

Use the table to help organize your thoughts as you refer to *World Mountains*. You do not need to complete the entire table to write your paragraph, but you should try to have two or three specific examples in each column.

<b>Benefits of Mountains</b>	<b>Challenges of Mountains</b>

Name \_\_\_\_\_

Date \_\_\_\_\_

Activity Page 1.1

Use with Chapter 1

Cool Facts About World Mountains

<b>Mountain Range</b>	<b>Mountain Name or Famous Peak</b>	<b>Location</b>	<b>Type of Mountain</b>	<b>Interesting Facts</b>
Alaska	Denali			
Alps				
Andes				
Appalachians				

Name \_\_\_\_\_

Date \_\_\_\_\_

Activity Page 1.1 (continued)

Use with Chapter 1

<b>Mountain Range</b>	<b>Mountain Name or Famous Peak</b>	<b>Location</b>	<b>Type of Mountain</b>	<b>Interesting Facts</b>
Atlas				
Caucasus				
Himalayas	Mount Everest			
Rockies (Rocky Mountains)				

Name \_\_\_\_\_

Date \_\_\_\_\_

**Activity Page 1.1 (continued)**

**Use with Chapter 1**

<b>Mountain Range</b>	<b>Mountain Name or Famous Peak</b>	<b>Location</b>	<b>Type of Mountain</b>	<b>Interesting Facts</b>
<b>Ural Mountains</b>				
<b>(None)</b>	Mount Kilimanjaro			



Name \_\_\_\_\_

Date \_\_\_\_\_

## Activity Page 1.2

## Use with Chapter 1

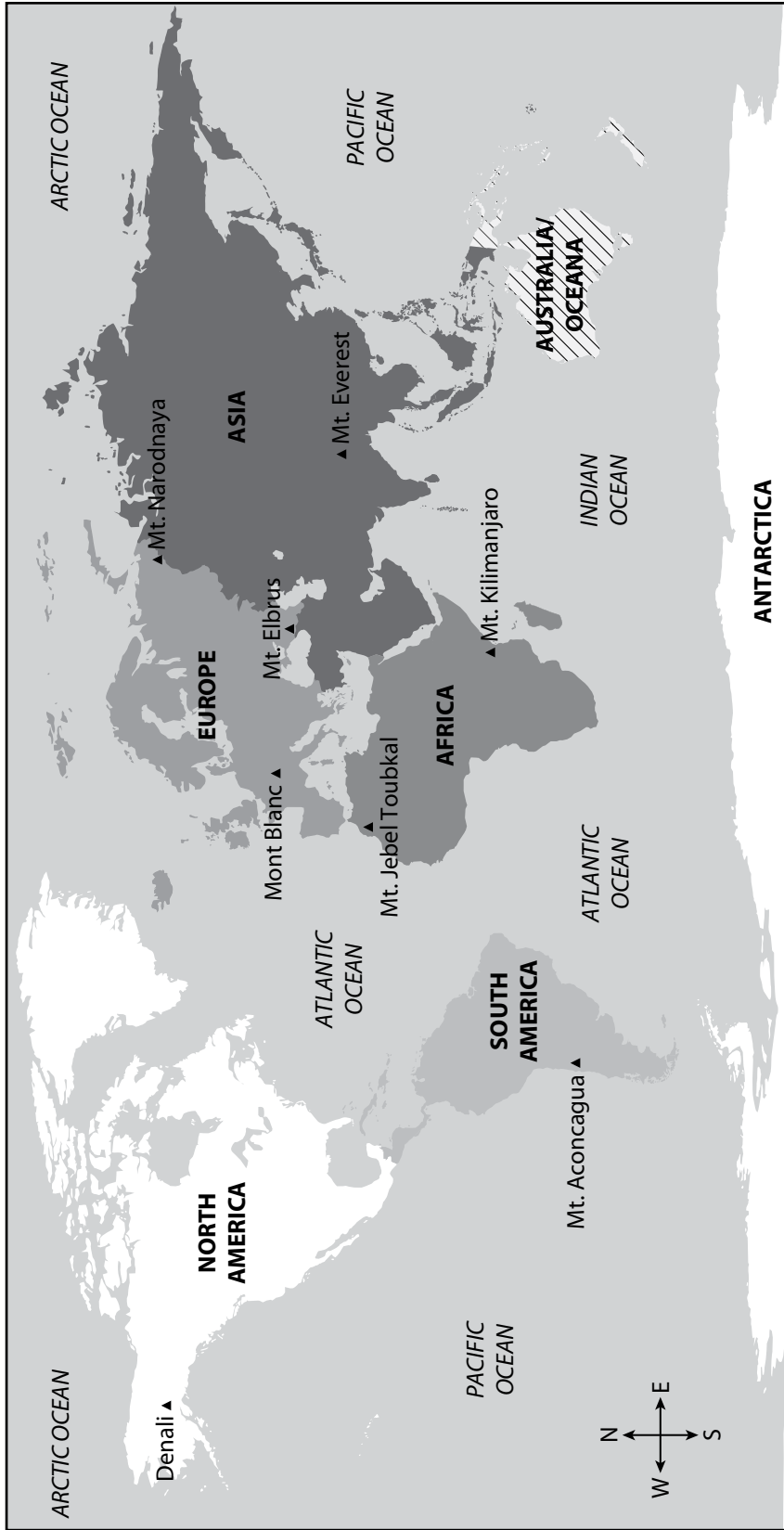
## Major Mountain Ranges and Mountains of the World

Mountain Name	Major Range or System	Location	Elevation (in feet)	Elevation (in meters)	Highest in (the):
Mt. Everest	Himalayas	Asia (Nepal/ Tibet)	29,028	8,848	World
Mt. Aconcagua	Andes	South America (Argentina)	22,835	6,960	Western Hemisphere
Denali	Alaska	North America (United States)	20,320	6,193	North America
Mt. Kilimanjaro	none	Africa (Tanzania)	19,340	5,895	Africa
Mt. Elbrus	Caucasus	Europe (Russia)	18,481	5,633	Europe
Mont Blanc	Alps	Europe (France/Italy)	15,771	4,807	Alps
Mt. Jebel Toubkal	Atlas	Africa (Morocco)	13,671	4,167	North Africa
Mt. Narodnaya	Urals	Eurasia (Russia/ Kazakhstan)	6,214	1,894	Russian Urals

Name \_\_\_\_\_

Date \_\_\_\_\_

**Major Mountain Ranges and Mountains of the World**



## Activity Page 4.1

## Use with Chapter 4

**World Mountains Domain Vocabulary**

**Choose the correct word from the Word Bank to answer each riddle.**

barrier	generator	pass
crystal	hydroelectric plant	peak
dam	industry	plate
elevation	lava	plateau
equator	magma	tunnel
erosion	mineral	weathering
extinct	myth	

- \_\_\_\_\_ 1. I am a section of Earth's crust that is able to move.
- \_\_\_\_\_ 2. I am the line of latitude that marks the boundary between the Northern and Southern Hemispheres.
- \_\_\_\_\_ 3. I am the highest point on a mountain.
- \_\_\_\_\_ 4. I am a volcano that no longer erupts or explodes, like Mount Kilimanjaro in Africa.
- \_\_\_\_\_ 5. I am a naturally occurring substance in Earth's crust, such as gold or copper.
- \_\_\_\_\_ 6. I make mountains smoother by breaking up Earth's materials into smaller pieces.
- \_\_\_\_\_ 7. I create dome mountains by pushing up below Earth's surface.
- \_\_\_\_\_ 8. I am something that blocks movement, like a mountain range.
- \_\_\_\_\_ 9. I wear down mountains by carrying away soil and rock with water, ice, or wind.
- \_\_\_\_\_ 10. I am an idea or story that many believe but that is not true, like the yeti.
- \_\_\_\_\_ 11. I am magma that reaches Earth's surface, as when a volcano explodes.
- \_\_\_\_\_ 12. I am the distance above sea level of a spot on Earth's surface.
- \_\_\_\_\_ 13. I am a place in the mountains that is lower than surrounding peaks. People use me as a path through the mountains.

Name \_\_\_\_\_

Date \_\_\_\_\_

**Activity Page 4.1 (continued)**

**Use with Chapter 4**

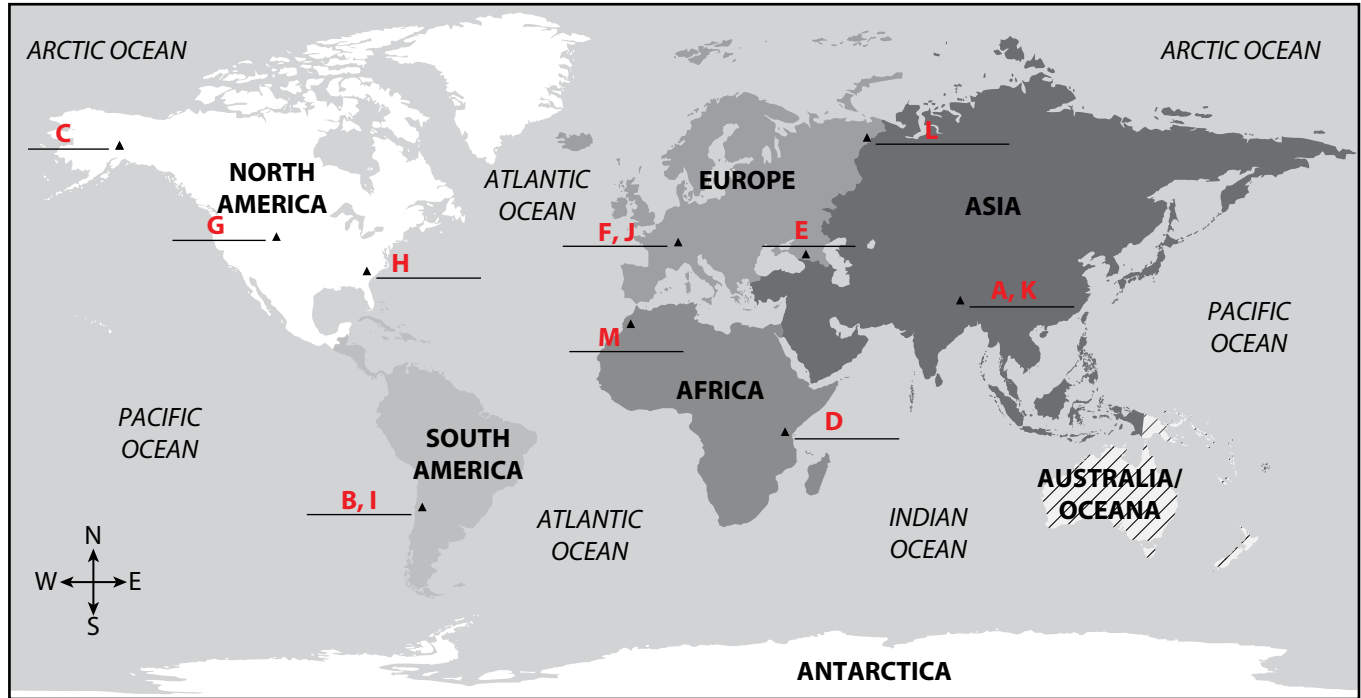
- \_\_\_\_\_ **14.** I am a passage through or under a natural feature such as mountain.
- \_\_\_\_\_ **15.** I am a large area of high, flat ground. I can stand on my own or be part of a mountain range.
- \_\_\_\_\_ **16.** I am a colorless or lightly colored hard mineral.
- \_\_\_\_\_ **17.** I am a wall used to stop the flow of water.
- \_\_\_\_\_ **18.** I am a machine that makes electricity.
- \_\_\_\_\_ **19.** I am a group of businesses that use machinery and factories to make a product.
- \_\_\_\_\_ **20.** I use the force of moving water to power generators that make electricity.

# Answer Key: World Mountains

## Unit Assessment

1. c 2. a 3. a 4. c 5. a 6. d 7. a 8. b 9. c 10. c 11. d  
 12. c 13. d 14. d 15. d 16. c 17. f 18. h 19. e 20. a  
 21. i 22. d 23. g 24. j 25. b

## Performance Task Assessment



## Activity Pages

### Cool Facts About World Mountains (AP 1.1) (pages 48–50)

Mountain Range	Mountain Name or Famous Peak	Location	Type of Mountain	Interesting Facts
Alaska	Denali	North America (United States)		
Alps	Mont Blanc	Europe (France/ Italy)		home to the ibex; site of first mountain tunnel
Andes	Mt. Aconcagua	South America (Argentina)		home to guanacos, llamas, and alpacas; crossed by San Martín's army; use of terrace farming

<b>Mountain Range</b>	<b>Mountain Name or Famous Peak</b>	<b>Location</b>	<b>Type of Mountain</b>	<b>Interesting Facts</b>
<b>Appalachians</b>		North America (United States)	folded	formed more than 200 million years ago; Cumberland Gap road; rich in coal
<b>Atlas</b>	Mt. Jebel Toubkal	Africa (Morocco)		
<b>Caucasus</b>	Mt. Elbrus	Europe (Russia)		
<b>Himalayas</b>	<b>Mount Everest</b>	Asia (Nepal/ Tibet)	folded	Highest mountain in world; home to hundreds of different species; use of terrace farming
<b>Rockies (Rocky Mountains)</b>		North America (United States)		formed about a million years ago; block flow of moisture to Denver; silver, lead, copper, zinc, gold mines
<b>Ural Mountains</b>	Mt. Narodnaya	Eurasia (Russia/ Kazakhstan)		rich in zinc, silver, platinum, nickel
<b>(None)</b>	<b>Mount Kilimanjaro</b>	Africa (Tanzania)	volcanic	snow-covered all year even though near the equator

### **World Mountains Domain Vocabulary (AP 4.1) (page 53)**

1. plate
2. equator
3. peak
4. extinct
5. mineral
6. weathering
7. magma
8. barrier
9. erosion
10. myth
11. lava
12. elevation
13. pass
14. tunnel
15. plateau
16. crystal
17. dam
18. generator
19. industry
20. hydroelectric plant



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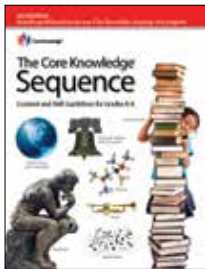
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