



Core Knowledge®

HISTORY AND GEOGRAPHY

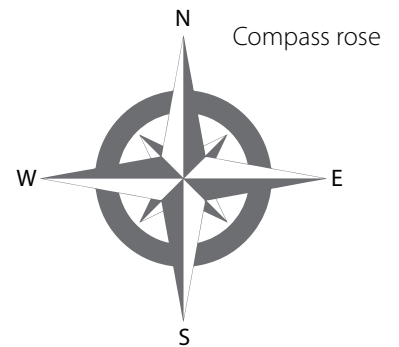
Exploring Maps and World Mountains



Map reading

Teacher Guide

Denali



Compass rose

Ferdinand Magellan



Mountain goats





Using Maps

1-78

World Mountains

79-136

60° W
**SOUTH
AMERICA**

30° W

ATLANTIC
OCEAN



Core Knowledge®

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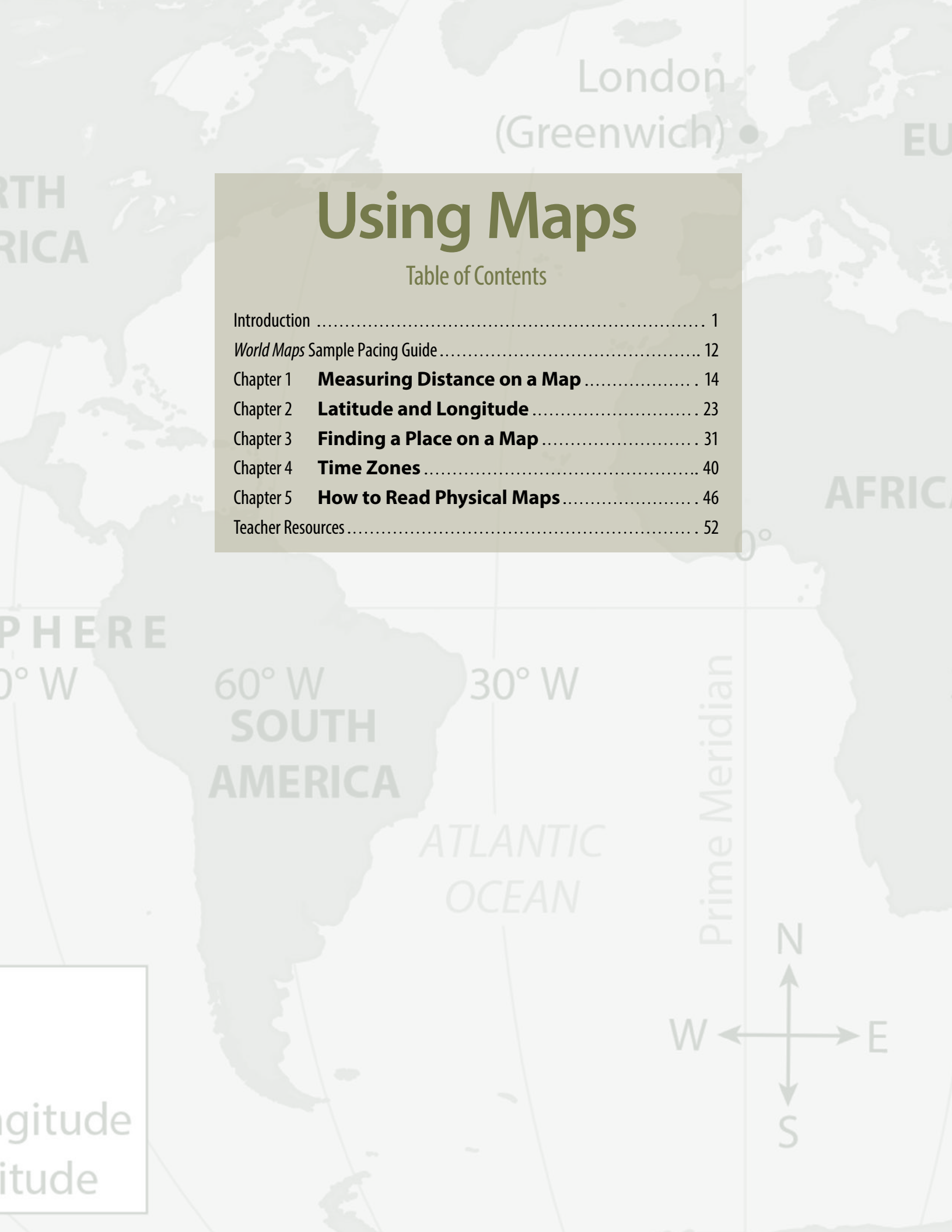
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Using Maps

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Using Maps

Teacher Guide

Core Knowledge History and Geography™ 4

Introduction

ABOUT THIS UNIT

The Big Idea

Maps provide a scaled-down version of the features of Earth, as well as a system for locating those features.

From Kindergarten through Grade 3, students focused on learning about the physical characteristics of specific places while expanding their geographic skills and vocabulary. In Grade 4, students continue to learn and apply geographic skills as they move into more abstract concepts.

Maps represent scaled-down representations of real places. With the aid of map tools such as the scale, key, and compass rose, maps make possible navigation through unfamiliar locations.

Many maps also include abstract devices that aid in locating places and navigating through space. For example, parallels of latitude and meridians of longitude create a grid system on many maps, which enable users to pinpoint any location on Earth.

Maps also provide a visual representation of geographical constructs that have been developed to address the challenges of travel over a moving planet. Examples include time zones and the international date line, which help provide a common understanding of time around the world.

People can also use maps to understand the physical features of Earth. Physical maps provide information about variation in Earth's surface, such as elevation.

What Students Should Already Know

Students in Core Knowledge schools should already be familiar with:

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 use of a map scale, an atlas, and online resources
- the location of the Northern American countries (Canada and the United States), Mexico, Central America, the equator, and the Northern and Southern Hemispheres
- Canada (French and British heritage; French-speaking Quebec; Rocky Mountains; Hudson Bay, St. Lawrence River, and Yukon River; division into provinces; major cities, including Montreal, Quebec, and Toronto)
- Important rivers of the world: Asia's Ob, Yellow (or Huang He), Yangtze (or Chang Jiang), Ganges, and Indus rivers; Africa's Nile, Niger, and Congo rivers; South America's Amazon, Paraná, and Orinoco Rivers; North America's Mississippi, Mackenzie, and Yukon rivers; Australia's Murray and Darling rivers; and Europe's Volga, Danube, and Rhine rivers
- the meaning of *source, mouth, tributary, drainage basin, peninsula, harbor, bay, island, coast, valley, prairie, desert, oasis, boundary, channel, delta, isthmus, plateau, reservoir, and strait*

What Students Need to Learn

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

The first objective regarding the use of a map scale to measure distance was previously taught in Grade 3 in Core Knowledge schools but is also included as a Grade 4 objective to ensure that this fundamental skill is reviewed and practiced.

What Students Will Learn in Future Grades

In Grade 5, students will review and extend their learning about geography.

- Tropics of Cancer and Capricorn in relation to seasons and temperature
- climate zones; time zones; Arctic and Antarctic Circles
- Mercator, conic, and plane map projections
- great lakes of the world

In Grade 6, students will learn about great deserts of the world.

AT A GLANCE

The most important ideas in Unit 1 are:

- Students can use scales on maps and globes to measure distance.
- Students can use longitude and latitude coordinates to locate places on maps and globes.
- The prime meridian is located at 0° longitude, and the international date line, which generally corresponds to 180° longitude, marks the change in days from east to west.
- Physical maps can indicate elevations and depressions in land height.

WHAT TEACHERS NEED TO KNOW

The study of geography embraces many topics throughout the *Core Knowledge Sequence*, including topics in history and science. Geographic knowledge includes a spatial sense of the world, an awareness of the physical processes to which people culturally adapt, a sense of the interactions between humans and their environment, an understanding of the relations between place and culture, and an awareness of the characteristics of specific regions and cultures. Many geographic topics are listed throughout the *Sequence* in connection with historical topics.

Throughout this unit, students should connect the abstract concepts to something more concrete, such as a country of interest or a topic of historical study in this grade. Also look for opportunities to review geography and map concepts as you study the history topics for this grade; for example, share maps of medieval Europe and China.

Maps, Symbols, and Keys

A map is a representation of a place. Different kinds of maps show different things—countries, states, cities, and towns. Maps also show rivers, lakes, mountains, and oceans. A map of a town or city will show streets and important places such as municipal buildings, schools, churches, mosques, synagogues, and shopping centers. A town or city map may also show the location of houses and apartment buildings.

A map is not the same as a picture of a place. It does not show the actual places or things in an area but uses symbols to represent them, such as a thin line for a street and a thicker line for a highway. Map symbols may be lines, colors, shapes, or pictures. To explain the symbols, maps use keys, also known as legends, which show the symbol with an explanation next to it. Symbols represent human and physical characteristics. To reinforce the uses of maps, show students a local map of your community or have them help you draw a map of the school's immediate neighborhood.

Measuring Distance Using Map Scale

All maps are drawn to scale; that is, they are smaller than the things they represent. Scale is the ratio between the representation and the thing it represents. A map may be drawn so that one inch equals 250 miles, so that one inch equals one mile, or to some other scale. Maps, as well as globes, almost always indicate the scale at which they are drawn.

The scale of a map makes a difference in the amount of detail shown on the map and the kinds of questions that can be asked and answered about what is shown. A large-scale map (that is, one closest in size to what it represents) will show less area but provide more detail about the area shown than a small-scale map. For example, a road map of a state, with a scale of one inch per ten miles, may show public campgrounds, points of interest, and county roads, whereas a state map in an atlas with a smaller scale of one inch per sixty miles may show only major highways and major cities. This difference in detail is a function of the scale of the map.

Longitude and Latitude, Coordinates, and Degrees

Around the center of Earth is an imaginary line called the equator. It is 0° latitude and is located halfway between the North and South Poles. The equator divides Earth into Northern and Southern Hemispheres.

Imaginary lines that run parallel to the equator are called parallels of latitude, or parallels. Latitude is measured north and south of the equator, using a measure called a degree. The symbol for degree is °. The North and South Poles are at 90° N and 90° S, respectively. Any area between the equator and the North or South Poles is some measurement from 0° to 90° north or south.

Imaginary lines that run north-south, from pole to pole, are called meridians. The dividing lines for the Eastern and Western Hemispheres are the prime meridian (also called the Greenwich meridian) and the 180° meridian. These two meridians are on opposite sides of Earth. The prime meridian refers to 0° longitude, an imaginary line that runs from the North Pole to the South Pole, passing through the Royal Observatory in Greenwich, a suburb of London, England. The international date line also runs from the North Pole to the South Pole, generally following the 180° meridian (it deviates in a few places to allow all of eastern Siberia, or Alaska's Aleutian Islands, to be in the same day).

Longitude is measured in degrees east and west from the prime meridian, or 0°. When crossing the international date line going west, a traveler moves forward to the next day (Tuesday becomes Wednesday). When going east, a traveler goes back one day (Wednesday becomes Tuesday).

Meridians of longitude are not parallel because Earth is a sphere. The widest distance between lines measuring degrees of longitude is at the equator, and the lines converge as they approach the poles. You can see this clearly on a globe.

Students need to practice finding coordinates on maps. The map on page 21 in the Student Reader of this unit, as well as in AP 2.3, Source World Map: Parallels of Latitude and Meridians of Longitude, provides an opportunity for such practice. Also, the Additional Activities included in this Teacher Guide will reinforce the geographical terms and concepts students are learning. Continue to practice all of these skills throughout the year by asking students to work with maps of countries and regions they will study in later units in this grade.

Time Zones

Time zones were developed to bring uniformity to the hours of the day as the sun moves from east to west. Time zones generally follow the rule of one time zone for every fifteen degrees of longitude (360° of longitude divided by fifteen equals twenty-four time zones, which correspond with the twenty-four hours of the day). However, the lines dividing time zones are not perfectly straight. Sometimes they zig and zag to avoid dividing countries, states, or metropolitan areas.

To understand why time zones are important, consider this. Imagine there are three cities, City A, City B, and City C. City B is one hundred or so miles west of City A, and City C is one hundred miles west of City B.

CITY C CITY B CITY A

The sun rises first in the easternmost city, which is City A. In actuality, of course, the sun is not “rising”; rather, Earth is rotating. But from our position on Earth, it looks as if the sun is rising. After some time passes and the planet rotates a little more, the sun will rise in City B. Then, after a little more time and a bit more rotation, the sun will come up in City C. If each city based its time completely on its position relative to the sun, then the time would be slightly different in each city, and this could be very confusing. It might be 8:20 in City C, 8:10 in City B, and 8:00 in City C. And if you were on a train halfway between City B and City C, it would be 8:05. To avoid this kind of confusion, people have agreed to divide the globe into twenty-four time zones, each one hour apart. If City A, City B, and City C are all in the same time zone, this means that the people in these locations have agreed to refer to a particular moment in time as 8:00 a.m. even though the actual “solar time” may be a few minutes earlier than that in one of the cities and a few minutes later in another.

As noted earlier, longitude is measured east and west from the prime meridian, or 0° , located at Greenwich, England. The 180° meridian is in the Pacific Ocean. Closely following the 180° meridian is the international date line. The international date line marks the difference in time between east and west. (The international date line actually zigs and zags from north to south to avoid running directly through settled islands.) The international date line is a hard concept to explain.

From a Round Globe to a Flat Map

Although globes are more accurate models of Earth than flat maps, you can't fold a globe up and take it with you on a trip. Maps—pictorial representations of the location of various places—are a way to make the information on a globe portable.

If Earth were flat, it would be easy to make a map of it on a flat sheet of paper. But Earth is a sphere. This poses certain difficulties for mapmakers and cartographers.

Whenever you transfer information about a spherical planet onto a flat piece of paper, there will be a certain amount of distortion. The act of transferring information from a globe to a flat map is called projection. There are various ways of projecting information from a globe onto a flat page. Each way distorts the original information in a distinctive way.

To understand how projection works, take a long, blank sheet of paper and wrap it around a globe in such a way that the paper touches the globe at the equator but not at the poles. Now imagine that the globe is made of transparent plastic with the continents and other features drawn on the plastic in a darker color. Also imagine that this transparent globe has a light bulb in the center. If the light bulb were turned on, the light would shine through the transparent orb and the marked parts would cast shadows on the paper. You could trace the shapes cast by the shadows and then unroll the paper to make a rectangular map. In the places where the paper sits right next to the globe, the sizes and shapes of the continents and oceans on your map would be very accurate. However, in those areas where the paper is a long way from the globe, there would be distortion. Thus, the areas around the equator will be rendered very accurately and the areas near the poles will be distorted and rendered less accurately.

All maps contain some distortion, but different types of maps, or projections, are more or less distorted in certain areas of Earth or in terms of shapes and relative sizes. For example, one type of projection may be very good at showing small areas with very little distortion but show larger areas with significant distortion.

Physical Maps: Elevations and Depressions

Washington, D.C., lies at twenty-five feet (7.62 m) above sea level. This is its elevation. Certain types of physical maps, called relief maps, show elevations and depressions of land areas. A relief map shows height and depth above (elevation) and below (depression) sea level. The map uses different colors to show different levels of land, and the map key reproduces those colors in boxes along with numerical equivalents in feet or meters. A relief map, like a road map or a natural resources map, is a special-purpose map.

For background information, download the CKHG Online Resource “About Working with Maps, Globes, and Geographic Tools”:

www.coreknowledge.org/ckhg-online-resources

UNIT RESOURCES

Student Component

The *Using Maps* Student Reader—five chapters

Teacher Components

Using Maps Teacher Guide—five chapters. This includes lessons aligned to each chapter of the *Using Maps* Student Reader, with a daily Check for Understanding and Additional Activities designed to reinforce the chapter content. A Unit Assessment, Performance Task Assessment, and activity pages are included in Teacher Resources, beginning on page 52.

- » 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.
- » 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

The *Using Maps* unit is one of ten history and geography units in the Grade 4 *Core Knowledge Curriculum Series™*. Eight days have been allocated to the *Using Maps* 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. For this reason, 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

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

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

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
1	Why do we need different kinds of maps?
2	How are meridians and parallels—lines identifying longitude and latitude—helpful?
3	Coordinates include a unit of measure called a “degree.” What does a degree measure?
4	How are time zones and Earth’s rotation connected?
5	What does a physical map reveal that a city road map does not?

Core Vocabulary

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 terms, by chapter, are:

Chapter	Vocabulary
1	map, symbol, “map key,” “map scale,” kilometer, distance, direction, compass rose, interstate highway
2	radar, Global Positioning System (GPS), parallel, latitude, equator, globe, degree, hemisphere, meridian, longitude, prime meridian, coordinates

3	minute, atlas, index
4	international date line, time zone, axis, rotation
5	valley, physical map, elevation, mountain range, peak, “bird’s-eye view,” sea level

Activity Pages

Activity Pages



AP 1.1

AP 1.2

AP 1.3

AP 2.1

AP 2.2

AP 2.3

AP 3.1

AP 3.2

AP 3.3

AP 4.1

AP 4.2

AP 5.1

The following activity pages can be found in Teacher Resources, pages 63–75. The activity pages marked with an asterisk are full-page reproductions of maps that are included in different chapters of the *Using Maps* Student Reader. Some students may find the full-page size of the activity page maps easier to use than the smaller maps in the Reader. We suggest that you make sufficient copies of each of these maps for students to reference, in addition to the maps in their Readers, as they read each chapter.

You may also want to project the activity page maps in a way that all students can see so that you can demonstrate the use of the different map skills that students will be reading about in this unit.

The remaining activity pages—Domain Vocabulary (AP 3.3 and AP 5.1) and Time Zones and Map Skills Puzzles (AP 4.2)—are to be used with the chapter specified either for additional class work or for homework. Be sure to make sufficient copies for your students prior to conducting the activities.

- Chapter 1—Source Map: The Ride of Paul Revere (*AP 1.1)
- Chapter 1—Source Map: Southern California Highways (*AP 1.2)
- Chapter 1—Source Map: Roadways in San Diego, California (*AP 1.3)
- Chapter 2—Source World Map: Parallels of Latitude (*AP 2.1)
- Chapter 2—Source World Map: Meridians of Longitude (*AP 2.2)
- Chapter 2—Source World Map: Parallels of Latitude and Meridians of Longitude (*AP 2.3)
- Chapter 3—Source Map: The United States, 1869 (*AP 3.1)
- Chapter 3—Source Map: St. Joseph, Missouri (*AP 3.2)
- Chapter 3—Domain Vocabulary: Chapters 1–3 (AP 3.3)
- Chapter 4—Source Map: International Date Line (*AP 4.1)
- Chapter 4—Time Zones and Map Skills Puzzles (AP 4.2)
- Chapter 5—Domain Vocabulary: Chapters 4–5 (AP 5.1)

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. You may choose from among the varied activities when conducting lessons. Many of the activities include website links, and you should check the links prior to using them in class.

Cross-Curricular Connections

Language Arts	Mathematics	Science
Sayings and Phrases As the crow flies (map scale)	Measurement Linear measure (measuring distance using map scale)	Geology: The Earth and Its Changes How Mountains Are Formed

Books

The Complete Book of Maps and Geography. Greensboro, NC: American Education Publishing, 2009.

DK Student Atlas, 8th Edition. New York: DK Publishing, 2015.

Geography for Life. Washington, D.C.: National Council for Geographic Education, 2012.

Hopkins, Lee Bennett, Chris Soentpiet, and Christy Hale. *Amazing Places.* New York: Lee & Low Books, 2015.

Lewin, Betsy and Ted. *Top to Bottom Down Under.* New York: Lee & Low Books, 2014.

USING MAPS 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

Day 5

Using Maps

"Measuring Distance on a Map" (TG & SR, Chapter 1; optional AP 1.1–1.3)	"Latitude and Longitude" (TG & SR, Chapter 2; optional AP 2.1–2.3)	"Finding a Place on a Map" (TG & SR, Chapter 3; optional AP 3.1–3.2)	"Map Skills Review Challenge" and "Domain Vocabulary" (TG, Chapter 3, Additional Activities; AP 3.3)	"Time Zones" (TG & SR, Chapter 4; AP 4.1)
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CKLA

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

Day 6

Day 7

Day 8

Using Maps

"Time Zones and Map Skills Puzzles" (TG, Chapter 4, Additional Activities, AP 4.2)	"How to Read Physical Maps" (TG & SR, Chapter 5)	Unit Assessment
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CKLA

"Personal Narratives"	"Personal Narratives"	"Personal Narratives"
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USING MAPS PACING GUIDE

_____’s Class

(Eight days have been allocated to the *Using Maps* unit in order to complete all Grade 4 history and geography units in the Core Knowledge curriculum.)

Week 1

Day 1

Day 2

Day 3

Day 4

Day 5

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Week 2

Day 6

Day 7

Day 8

--	--	--

CHAPTER 1

Measuring Distance on a Map

The Big Question: Why do we need different kinds of maps?

Primary Focus Objectives

- ✓ Find distances on the map using the map scale. (RI.4.1, RI.4.4, RI.4.7)
- ✓ Use a key to find places on a map. (RI.4.1, RI.4.4, RI.4.7)
- ✓ Determine direction on a map by using a compass rose. (RI.4.1, RI.4.4, RI.4.7)
- ✓ Understand the meaning of the following domain-specific vocabulary: *map, symbol, kilometer, distance, direction, compass rose, and interstate highway*; and of the phrases “map key” and “map scale.” (RI.4.4)

What Teachers Need to Know

For background information, download the CKHG Online Resource “About Working with Maps, Globes, and Geographic Tools”:

www.coreknowledge.org/ckhg-online-resources

Materials Needed

Activity Pages



AP 1.1
AP 1.2
AP 1.3

Note: There are many maps included in the Student Reader in this unit. Larger copies of many of these same maps have been reproduced on activity pages found in the Teacher Resources section of this Teacher Guide, pages 63–75. We recommend that you provide students with print copies of the larger maps on Activity Pages 1.1–1.3 for use in calculating distance using map scales in Chapter 1. This is particularly important if students are reading the Student Reader on a digital device.

- A sample paper map, such as a folded map of your state or area
- A globe
- Source Map: The Ride of Paul Revere (AP 1.1)
- Source Map: Southern California Highways (AP 1.2)
- Source Map: Roadways in San Diego, California (AP 1.3)

- An eight-inch piece of string for each student
- A ruler for each student
- Tape
- Colored markers

Core Vocabulary (Student Reader page numbers listed below)

map, n. a drawing or picture on a flat piece of paper of a specific place or area of Earth's surface that shows different features (4)

Example: The visitors used a map to find their way in the foreign city.

Variation(s): maps, mapping, mapped

symbol, n. an object or picture that stands for something else (4)

Example: The star symbol on the map was used to show important cities in the United States.

Variation(s): symbols, symbolize, symbolized

"map key," (phrase), a table or chart that tells you what the parts of a map mean; the key is usually found in one of the corners of the map (4)

Example: The map key helped us figure out the meaning of each symbol.

Variation(s): map keys

"map scale," (phrase), a measuring tool on a map that shows how distances on the map relate to actual distances on the ground (5)

Example: Maggie used the map scale to determine how far it was from Tucson to Phoenix.

Variation(s): map scales

kilometer, n. a distance of one thousand meters, or 0.62 miles (5)

Example: Frankie began his training program by running one kilometer without stopping.

Variation(s): kilometers

distance, n. how far it is from one point to another (7)

Example: Li found that the distance between her home and her school was five miles.

Variation(s): distances

direction, n. where a person or object is facing or moving toward (9)

Example: Peter asked the tour guide which direction he should take to get to the zoo.

Variation(s): directions

compass rose, n. a symbol on a map that shows the directions for north, south, east, and west (9)

Example: Using the compass rose, Sonia figured out that Denver was west of Pittsburgh.

interstate highway, n. a major divided highway that runs through more than one state (10)

Example: The fastest way to get from Carson City, Nevada, to Los Angeles, California, is to take the interstate highway.

Variation(s): interstate highways

THE CORE LESSON 35 MIN

Introduce the *Using Maps Student Reader*

5 MIN

Show students the globe, asking them to identify and describe what it is. Scaffold students' responses as needed to guide them in stating that the displayed object is round in shape, called a globe, and a model or representation that shows the different land areas (such as continents) and bodies of water (such as oceans, lakes, and rivers) located on the planet Earth.

Use this opportunity to briefly review geographic terms and concepts that students have studied in earlier grades, such as naming each of the continents, the Atlantic, Pacific, Indian, and Arctic oceans, the North and South Poles, and the equator, as you point to each on the globe. Be sure to walk among the students, displaying the globe so that all can see.

Now distribute copies of the *Using Maps Student Reader*. 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 point out that the chapter features different types of maps.

Explain to students that they will be reading about different types of maps and how to use them. Explain that maps are drawings or pictures that depict a specific place or area of Earth's surface and show different geographical features. Unlike a globe, however, maps are created on flat pieces of paper. Display the sample map that you have brought in to show the class, calling students' attention to the challenge that mapmakers face when creating maps; that is, even though the planet Earth is round, maps are created on a flat surface; they typically show only a part of or a certain area of the Earth.

Introduce "Measuring Distance on a Map"

5 MIN

Ask students, "What is the purpose of maps?" Have students share their responses aloud. Prompt them to think of all of the different things that maps can be used for and what they can show. Have volunteers share their responses with the class, and record their answers on the board or chart paper. Explain to students that maps can show many different types of information. Call attention to the Big Question, and encourage students to look for reasons why we need different kinds of maps.

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.

“How Far Is It?” Pages 2–6

Scaffold understanding as follows:

SUPPORT—Before reading, call attention to the map on page 3 and its caption. (You may also choose to provide students with AP 1.1, Source Map: The Ride of Paul Revere, found in Teacher Resources Section, page 63.) Remind students in Core Knowledge schools that, in Grade 1, they studied about Paul Revere, the American colonies, and the American Revolution, the war in which the colonists fought for their independence from England. Ask students whether they remember who Paul Revere was, prompting them to recall that he was a colonist who warned American leaders of the movement of English troops in the Boston, Massachusetts, area early in the colonists’ fight for independence from England.

Note: Students will study the American Revolution and Paul Revere in greater depth later this year in Unit 7 of these history and geography materials.

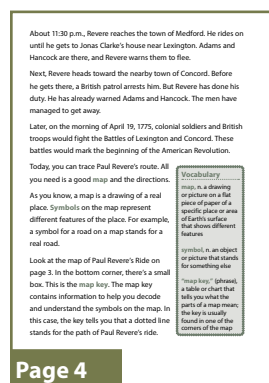
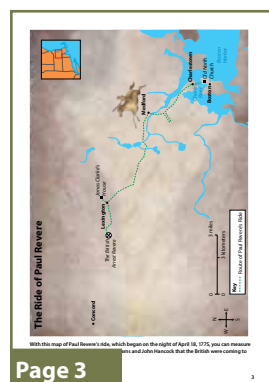
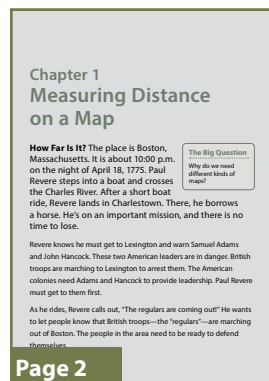
Explain that this map shows the route that Paul Revere took to warn the other colonists that the British were coming.

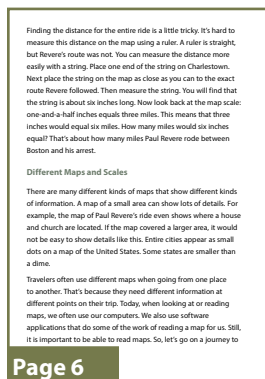
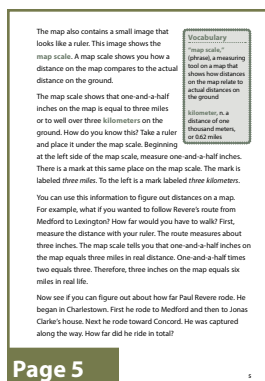
Read the first seven paragraphs of the section “How Far Is It?” out loud. Tell students to follow Paul Revere’s route on the map, as you read aloud. Be sure to pause each time you mention a town or area depicted on the map so that students can point to each location on their map. Students should locate Boston, the Charles River, Charlestown, Medford, Lexington, and Concord.

Finish reading the section for the class as students follow along.

CORE VOCABULARY—Point out the terms *symbol*, “*map key*,” and “*map scale*” as they are encountered in the next three paragraphs. Explain the meaning of each word and phrase, and note that these are all parts of a map. Ask students to point to the dotted line of Paul Revere’s route on their own maps as an example of a *symbol*. Also have them point to the map key and map scale on their own maps.

CORE VOCABULARY—Point out the term *kilometer* when it is encountered. Explain that this term, which means one thousand meters, is a compound of *kilo*, which means one thousand, and *meter*, which is a unit of measure slightly longer than one yard.





After you finish reading the entire section, distribute a piece of string, a ruler, and a small piece of tape to each student. Encourage students to first use their ruler to verify that the map scale is indeed one-and-a-half inches.

Then ask students to work in pairs, using the piece of string, ruler, and map scale, as described on page 6 of the Reader, to determine how far Paul Revere rode.

SUPPORT—Project a display copy of AP 1.1, Source Map: The Ride of Paul Revere so that you can model how to manipulate a piece of string to follow Paul Revere's route on the map.

SUPPORT—Suggest that students tape one end of their string to the place on the map identified as Charlestown because this is where Paul Revere started his ride. Also suggest that, after one student has extended the string to the point on the map where Paul Revere was arrested, the other student should use a colored marker to mark the string at that point so it is easier to use the ruler to measure the string from the starting point, Charlestown, to the end, where Paul Revere was arrested and where the string is marked.

Ask student pairs to share the measurement length in inches of their string tracing Paul Revere's ride from Charlestown to the point of his arrest. (Responses should be approximately six inches.)

Refer students once again to the map scale and ask them to calculate the distance in miles of Paul Revere's ride. (Responses should be approximately twelve miles.)

NOTE: Do point out to students that using a map scale is a way to estimate distance, not an exact or precise measurement of distance. Also note that when people actually use a map scale on a map, they would not take the time and effort required to lay out a string on a particular map route and then measure the string with a ruler. Many times people use a part or all of their thumb in place of the string and ruler as a way to use the map scale to measure distance.

SUPPORT—Project a display copy of AP 1.1, Source Map: The Ride of Paul Revere, and model using your thumb as a way to measure distance. Then ask students to try using their own thumbs to measure the distance of Paul Revere's ride on their own maps.

When students have finished measuring Paul Revere's route using the map scale, ask the following questions:

LITERAL—What information does a map key contain?

- » A map key contains information about the symbols used for items on the map such as towns, highways, schools, or mountains.

LITERAL—What can you tell by using the scale on a map?

- » You can tell the distance from place to place.

INFERENTIAL—Why do mapmakers use map scales to represent distance?

- » The purpose of a map is to represent a very large area in a much smaller space. The map scale is a way to show how the actual area compares to what's shown on the map.

“Different Maps and Scales,” Pages 6–9

Scaffold understanding as follows:

Invite one or more student volunteer(s) to read the first three paragraphs on pages 6–7 out loud as the class follows along.

SUPPORT—At the end of the third paragraph, call students’ attention to the road map of Southern California on page 8. (You may also distribute copies of AP 1.2, Source Map: Southern California Highways, found in Teacher Resources Section, page 64.) Remind students that they are starting out in the city of Barstow and want to travel to San Diego. Ask students to trace—with their finger in the Reader or a pencil on AP 1.2—the path of road(s) they think would be the quickest or most direct route from Barstow to San Diego. There are different options, so ask students to share which route(s) they would take and why.

- » Some students may choose to take only Interstate 15 the entire distance from Barstow to San Diego, while others may choose to take Interstate 15 to the city of San Bernardino and then take Interstate 215 until it rejoins Interstate Route 15.

SUPPORT—Now call students’ attention to the map scale on the map on page 8 or AP 1.2. Ask them to use their rulers to verify that the map scale line is one inch. Then ask student pairs to lay the piece of string over whichever route(s) they have chosen and use the same technique to measure the distance of the route in miles. (Students should find that the route is about four inches. Four inches times forty miles means the distance is about 160 miles.)

When students finish estimating the distance of their route using the string method, ask students to try using their thumbs and the map scale to estimate the distance of the route.

Provide an opportunity for students to share and discuss their findings. Emphasize that using a map scale is a way to estimate distance, so small variations between students’ results are to be expected.

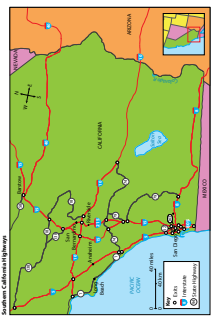
SUPPORT—Call attention to the map of San Diego on page 9. (You may also distribute copies of AP 1.3, Source Map: Roadways in San Diego, California, found in Teacher Resources Section, page 65.) Help students locate Balboa Park on the map. Remind students that the San Diego Zoo can be found inside of Balboa Park.

Suppose that you and your family live in Barstow, California. You want to travel to San Diego to visit the zoo. You might use two maps on your trip. First, you might use a map of Southern California to get to San Diego. Once you reach the city, you might use a map of the city to find the zoo. Look at the maps on pages 8 and 9. The map of San Diego shows one small part of the map of Southern California. It shows a lot of details, including many smaller streets. Can you find the San Diego Zoo? Find the area marked Balboa (bal'boe-uh) Park. The zoo is inside this large park.

You may have noticed a difference between the two maps. Their scales are not the same. The map scale for Southern California shows that one inch on the map represents forty miles on the road. The map of San Diego has a scale of three-quarters of an inch to three miles. Both maps show distance correctly. Because the areas shown in the two maps differ in size, the map scales are different.

In fact, it is true to say that both of these maps will be useful to you if you are traveling from Barstow to the San Diego Zoo. The Southern California map will help you get from Barstow to the San Diego area. The San Diego map will help you find the zoo once you're in San Diego.

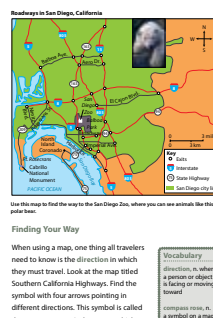
Page 7



Use this map to find your way from Barstow, California, to San Diego, California.

Page 8

Roadways in San Diego, California



Use this map to find the way to the San Diego Zoo, where you can see animals like this polar bear.

Finding Your Way

When using a map, one thing all travelers need to know is the direction in which they must travel. Look at the map titled Southern California Highways. Find the symbol with four arrows pointing in different directions. This symbol is called the compass rose. It shows you which way is north, south, east, and west.

Page 9

Read aloud the final two paragraphs of this section on page 7.

CORE VOCABULARY—Point out the Core Vocabulary word *distance* and its definition when it is encountered.

SUPPORT—Have students look at the road map of Southern California on page 8 or AP 1.2 and compare it to the map of the city of San Diego on page 9 or AP 1.3. Explain to students that they might notice some similarities and some differences between the two maps. Explicitly point out the differences between the map scales on each map. Explain that the map of San Diego represents a much smaller area, so it can show more detail. Meanwhile, the map of Southern California shows a much larger area, so it has less detail.

SUPPORT—Note that today, many people rely on computers and smartphone applications to provide directions such as the type obtained from maps. Students may observe that adults in their lives get directions from handheld or onboard devices. Explain that many of the skills you'll be discussing apply to electronic maps and that it is still important to be able to read and use maps of all types even though new technology sometimes can do some of this work for us.

After students have completed the previous activities, ask the following questions:

LITERAL—Where is the San Diego Zoo located?

- » Students may respond that the San Diego Zoo is located in Balboa Park. It is also located in Southern California.

LITERAL—What information does the map of San Diego show?

- » The map of San Diego shows important roads and locations in the city of San Diego, for example, Balboa Park.

LITERAL—What information does the map of Southern California show?

- » The map of Southern California shows information about how to get between cities, including major highways.

INFERENTIAL—Why might it be necessary for travelers to use both a city and a state or regional map to find their way?

- » Each type of map features different types of information. A regional or state map could be used to get the travelers to their destination city. Meanwhile, the city map can help them find important attractions.

"Finding Your Way," Pages 9–11

home in Barstow to San Diego? If you said south, you're ready to travel in the right direction!

It's 9:00 a.m. when you leave Barstow. Your mother asks, "What is the best way to get to San Diego?" She hands you two maps. It's up to you to find the way!

First, find Barstow on the map of Southern California. Put your finger there. Then find San Diego and put another finger there. Next, look at the roads connecting the two. What is the shortest way to get from one city to the other?

You see that Interstate 15, or I-15, goes all the way from Barstow to San Diego. Interstate highways are a type of road. Interstates, as they are called, have no crossing traffic, no sharp turns, and no stoplights. They cross over or under other roadways. This means cars can travel faster than on other types of roads. You suggest that your mother get on Interstate 15 heading south.

After a few hours of driving, you approach San Diego. You put away the map of Southern California. You pull out the San Diego map. Look at the map titled Roadways in San Diego, California. You will see that the green area shows the city limits. As you enter the city on I-15, you pass signs that show exits from the highway. The exits allow drivers to leave the highway and get onto the many smaller roads that cross the city. One exit is for Balboa Avenue.

Page 10

Vocabulary
interstate highway
a major divided highway that runs through more than one state

How do you find these exits on the map? Look for the white circles. You'll see them where I-15 crosses Balboa Avenue and Aero Drive. Interstate highways do not have exits for every road they cross over or under. For example, you can see on the map on page 9 that there is no exit from I-15 at El Cajon Boulevard.

Tell your mother to keep going south on I-15. Soon she will see signs for Interstate 8. She will follow these signs leading her onto I-8 heading west. After a few miles on I-8, she will come to state highway 163. She will take this road south directly to the San Diego Zoo.

Almost all of the roads on the map from Barstow to San Diego are highways. This map shows interstate highways, and state highways. Some places have other types of roads and highways, too. How many different routes can you find between Barstow and San Diego?

Page 11

Scaffold understanding as follows:

Read the first paragraph of this section aloud to students as they follow along.

CORE VOCABULARY—After reading the first paragraph of the section aloud, call attention to the Core Vocabulary terms *direction* and *compass rose*. Explain that direction is the way a person (or object) is facing or moving. A compass rose can be used to figure out that direction.

SUPPORT—Have students review the map of Southern California on page 8 or AP 1.2. Help students find the compass rose located on the map. Call attention to the four cardinal directions: north, south, east, and west. For further practice in using the compass rose on this map, ask students the following questions; encourage students to put a finger on the map on each location you mention and then examine the compass rose to determine the direction.

- Find the states of Arizona and California on the map. Is California east or west of Arizona? (*west*)
- Find the state of California and the country of Mexico. Is California north or south of Mexico? (*north*)
- Find the Pacific Ocean and the state of Arizona. Is Arizona east or west of the Pacific Ocean? (*east*)

Continue reading the next three paragraphs on page 10 aloud, explaining that these paragraphs summarize how to get from the city of Barstow to the city of San Diego, which students have already discussed during their earlier examination of the map of Southern California on page 8 or AP 1.2. As you read, ask students to follow along on the Southern California map.

CORE VOCABULARY—Call attention to the Core Vocabulary term *interstate highway* when it is encountered. Explain that the prefix *inter-* means between. Interstate highways are major roads that run between two or more states in the United States.

Read the remainder of this section aloud, pausing between paragraphs to ask students to examine the map of the city of San Diego on page 9 or AP 1.3 to locate the various exits and streets described.

When you are finished, ask the following questions:

LITERAL—What does a compass rose show?

» A compass rose shows the directions north, south, east, and west.

INFERENTIAL—According to the map of San Diego, which state highway travels in an east-west direction just south of Balboa Park?

- » State Highway 94 runs in an east-west direction just south of Balboa Park.

EVALUATIVE—Why is it a good idea to know more than one route to your destination?

- » Possible answers: A road might be closed because of construction; you might decide on the way to visit something interesting, which would require you to use a different road.



CHECK FOR UNDERSTANDING 10 MIN

Ask students to:

- Discuss the Big Question, “Why do we need different kinds of maps?” with a partner.
 - » Key points students should cite include: Different kinds of maps show different kinds of information. For example, if you’re trying to get from one city to another, a map of each individual city may not be very helpful. Instead, you’ll need to use a map that shows information about the different routes you can take between the two cities.
- Ask partners to choose one of the Core Vocabulary words (*map, symbol, kilometer, distance, direction, compass rose, or interstate highway*) or the phrases “map key” or “map scale,” and come up with an oral sentence using the word or phrase.

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

CHAPTER 2

Latitude and Longitude

The Big Question: How are meridians and parallels—lines identifying longitude and latitude—helpful?

Primary Focus Objectives

- ✓ Recognize that parallels of latitude run horizontally on a globe or map, from east to west without ever meeting. (RI.4.4, RI.4.7)
- ✓ Recognize that meridians of longitude run vertically on a globe or map, meeting at the North and South Poles. (RI.4.4, RI.4.7)
- ✓ Use latitude and longitude to locate points on a map. (RI.4.4, RI.4.7)
- ✓ Understand the meaning of the following domain-specific vocabulary: *radar*, *Global Positioning System (GPS)*, *parallel*, *latitude*, *equator*, *globe*, *degree*, *hemisphere*, *meridian*, *longitude*, *prime meridian*, and *coordinates*. (RI.4.4)

Materials Needed

Activity Pages



AP 2.1

AP 2.2

AP 2.3

- Source World Map: Parallels of Latitude (AP 2.1)
- Source World Map: Meridians of Longitude (AP 2.2)
- Source World Map: Parallels of Latitude and Meridians of Longitude (AP 2.3)
- A globe

Core Vocabulary (Student Reader page numbers listed below)

radar, n. a tool that uses radio waves to help determine the location, distance, and speed of an object (12)

Example: The policeman used radar to check the speed of cars driving down the interstate highway.

Variation(s): radars

Global Positioning System (GPS), n. electronic equipment that uses radio waves from satellites to provide precise information about location and direction (12)

Example: Many cars come with a Global Positioning System (GPS) to help drivers easily find their way.

parallel, n. an imaginary line on a globe or map that circles Earth in the same direction as the equator. Parallels mark degrees of latitude. (14)

Example: Kathleen learned that her hometown was located along a parallel north of the equator.

Variation(s): parallels

latitude, n. the distance between the equator and a place north or south of the equator; measured in degrees (14)

Example: The city was located at a latitude far to the south of the equator.

equator, n. the imaginary east-west line on a globe or map that is an equal distance from the North and South Poles; 0° latitude (14)

Example: The temperature gets higher the closer you get to the equator.

globe, n. a representation of Earth's surface in the form of a ball (16)

Example: The teacher used a globe to show where the school was located relative to the students' pen pals in China.

Variation(s): globes, global

degree, n. a unit used to measure the distance between parallels and meridians (16)

Example: The teacher pointed out that the two towns were only one degree of latitude apart.

Variation(s): degrees

hemisphere, n. either of two halves of Earth (18)

Example: The students had to identify the hemisphere in which their country was located.

Variation(s): hemispheres

meridian, n. an imaginary line that runs north-south on a globe or map and measures degrees of longitude east or west of the prime meridian (18)

Example: The city was located on the 90° meridian.

Variation(s): meridians

longitude, n. the distance east or west of an imaginary line on the globe that goes from the North Pole to the South Pole and passes through Greenwich, England; measured in degrees (18)

Example: Ingrid's house is located one meridian of longitude west of London.

prime meridian, n. the imaginary north-south line that runs through Greenwich, England; 0° longitude (20)

Example: The prime meridian crosses Europe and Africa.

coordinates, n. a pair of numbers on a globe or map that shows where something is located (22)

Example: Diego used coordinates to find his exact location on the map.

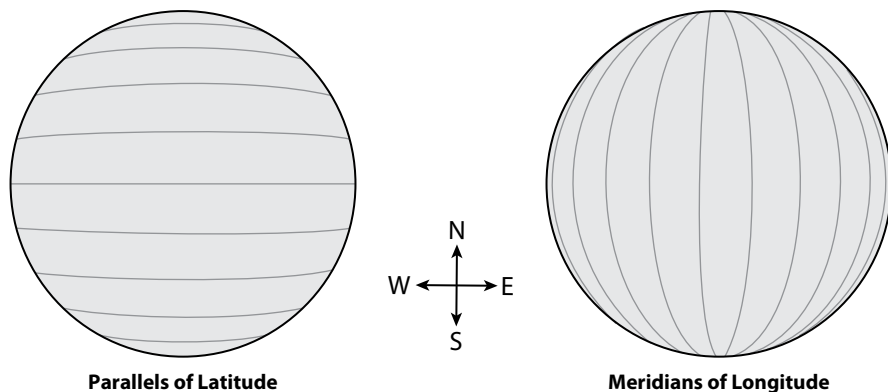
Variation(s): coordinate

Introduce “Latitude and Longitude”

5 MIN

Remind students that previously they learned about why we use different kinds of maps. Tell them that in this lesson, they will learn about an important feature found on many maps.

Show students the globe you have brought in for display, reminding them that you talked about globes when introducing the Student Reader, *Using Maps*, in the previous lesson. On the board or chart paper, draw two large circles, explaining to students that each circle represents a globe. On one circle, mark parallels of latitude. On the other circle, mark meridians of longitude. Remember that parallels run in an east-west direction and never approach each other, and meridians run north-south and converge at both poles. Draw a compass rose indicating direction (north, south, east, and west) between the two circles/globes, and review the name of this symbol and how it is used.



Ask students to describe the lines drawn on each circle/globe, pointing out as many differences as they can between the lines depicted on each circle/globe. Students should notice, for example, that the lines on one circle can be described as running vertically, “up and down,” “top to bottom,” or north to south. The lines on the other circle can be described as running horizontally, “across,” “left to right,” or east to west. Point out that this lesson will explain these two types of lines, which are called *parallels*—the lines that run east to west—and *meridians*—the lines that run north to south. Stress to students that it is important to describe parallels and meridians in terms of *east to west* and *north to south*, rather than as running “top to bottom” or “side to side” on a map. You may wish to add that maps do not always have north, south, east, and west at the top, bottom, right, and left sides of the map. Walk among the students with the globe, pointing out that the globe has both *parallel* and *meridian* lines. Call attention to the Big Question, and encourage students as they read this chapter to look for ways that meridians and parallels are helpful when using and studying maps and globes.

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.

“Where in the World Are You?” Pages 12–13

Scaffold understanding as follows:

CORE VOCABULARY—Call attention to the Core Vocabulary terms **radar** and **Global Positioning System (GPS)** on page 12. Discuss the meaning of each term with students. Explain that both radar and GPS are tools that can be used to help people navigate safely.

SUPPORT—Call attention to the image on pages 12–13, and read the caption aloud. Remind students that navigational tools are not just for people traveling on land, but also for people traveling by water and by air.

Now ask students to read the section “Where in the World Are You?” independently.

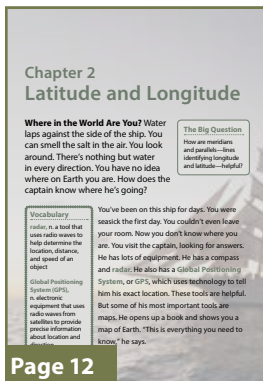
After students read the text, ask the following questions:

LITERAL—What is radar used for?

- » Radar, a tool that uses radio waves, helps determine the location, distance, and speed of an object.

EVALUATIVE—Why would it be especially important for a sailor to have access to navigational tools like radar or GPS?

- » If a sailor is traveling on the open ocean, he or she could easily get lost without landmarks. Navigational tools can help sailors stay on the right course.

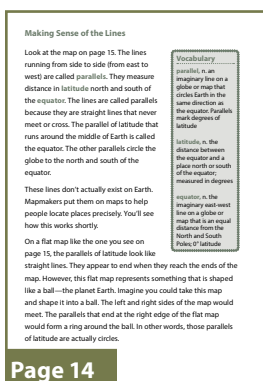


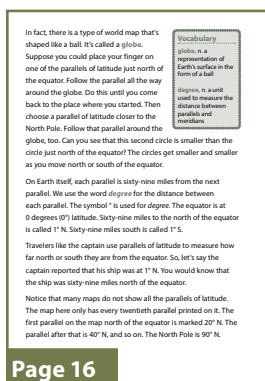
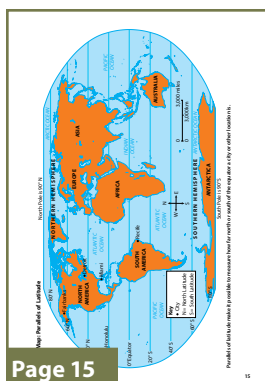
“Making Sense of the Lines” Pages 14–16

Read the entire section aloud as students follow along. Pause to define Core Vocabulary terms as you come to them, and examine the World Map: Parallels of Latitude on page 15. Scaffold understanding as follows:

CORE VOCABULARY—In the first paragraph, pause to discuss **parallel**, **latitude**, and **equator**. Explain to students that these terms are related.

CORE VOCABULARY—Call attention to the Core Vocabulary word **globe** in the fourth paragraph. If possible, point out an example of a globe in the classroom.





CORE VOCABULARY—Point out the term *degree* in the fifth paragraph. Explain that a degree is the main unit of measurement used when talking about the distance between parallels of latitude. Note that this term has many other meanings that students will encounter. For example, *degree* is also the measure of temperature.

SUPPORT—Call attention to the image of the world map on page 15. (You may also choose to provide students with AP 2.1, found in Teacher Resources Section, page 66.) Have students identify the parts of a map they have discussed so far in class. Note how the parallels of latitude never touch. The word *parallel* can be used as an adjective to describe two lines running in the same direction that never touch.

When you have finished reading, ask the following questions. Encourage students to refer to the World Map: Parallels of Latitude on page 15 or AP 2.1.

LITERAL—What are the lines that run east-west on a map or globe called? What do these lines do?

- » The lines are called parallels. They measure the degrees of latitude north or south of the equator.

LITERAL—What degree of latitude is the equator?

- » The equator is 0° latitude.

LITERAL—Between what degrees of latitude is the continent of South America located?

- » South America is located between 20° N and about 55° S latitude.

LITERAL—What North American city is located at approximately 25° N?

- » The city of Miami is located at about 25° N.

LITERAL—Using your thumb and the map scale, what is the approximate distance between North America and Europe at 40° N?

- » The distance is about four thousand miles.

LITERAL—Using the compass rose, is the continent of Africa to the east or west of the continent of Australia?

- » Africa is to the west of Australia.

EVALUATIVE—Why do you think people use maps to locate points and get directions instead of using globes, which can more accurately show distance on Earth's surface?

- » While globes are a more accurate representation, they are not very convenient. It's much easier to carry a map with you to find distance or relative location than it is to carry a globe.

“What Latitude Tells You” Pages 17–18

Scaffold understanding as follows:

Have students read the section “What Latitude Tells You” on page 17 independently.

CORE VOCABULARY—Read the final paragraph of this section on page 18 out loud. When you come to the term *hemisphere*, note that this term includes two parts—*hemi-* which means half, and *sphere*, which means ball. In geography, the term *hemisphere* refers to the two halves of Earth.

After you finish reading the paragraph, ask the following questions. Encourage students to refer to the World Map: Parallels of Latitude on page 15 or AP 2.1.

LITERAL—What happens to the temperature the closer you get to the equator?

» The temperature gets higher closer to the equator.

LITERAL—What is the Northern Hemisphere?

» It is the half of Earth north of the equator.

LITERAL/INFERENTIAL—The text said Fairbanks, Alaska, is located at about 64° N and that Honolulu, Hawaii, is located at 21° N. What do you think the temperature would be like in each of these cities in January? Why?

» The temperature in Fairbanks would likely be very low in January because it is far to the north of the equator. Honolulu is very much closer to the equator, and the temperature would be much higher.

INFERENTIAL—Why is it generally warmer in Mexico than it is in Canada?

» Mexico is closer to the equator than Canada.

What Latitude Tells You

In general, the closer you are to the equator, the warmer the climate is. So, places at low latitude are usually warmer year-round. Places located at a high latitude are usually colder. That is true both north and south of the equator. The North and South Poles, at 90°N and 90°S, are cold all year.

Most of the United States lies between 25° N and 47° N. Miami, Florida is located at about 25° N. The weather in Miami is usually warm. Even in the winter, it is often warm enough to wear shorts. Detroit, Michigan, is located at about 42° N. What do you think the winters are like in that city?

Winters in Detroit are cold. Often, the Detroit River freezes over as ice forms on the surface. The city also gets lots of snow and several months of freezing weather.

Fairbanks, Alaska, is located at 64° N. Honolulu, Hawaii, is located at 21° N. How do you think the January temperatures in Fairbanks and Honolulu compare?

Now look south of the equator. The tip of South America reaches to about 55° S. It's almost as far south of the equator as Alaska is north. The climate there is cold all year long. Farther north in South America, the weather becomes warmer. The city of Recife, Brazil, is located at about 8° S. Recife is warmer than Miami. This is because it is so much closer to the equator.

When you visited the captain, he told you the ship was at 1° N. By good idea what the temperature is likely

Page 17

Parallels of latitude also help us name parts of the globe. The equator divides Earth into two hemispheres (hemi="half," sphere="ball"). A hemisphere is half of a sphere or ball. The area north of the equator is called the Northern Hemisphere. The area south of the equator is called the Southern Hemisphere.

Meridians of Longitude

Imagine that you and 359 of your friends are spread out along the equator. Each of you is sixty-nine miles apart. Together, you make a dotted line around the world. All 360 of you begin walking directly north toward the North Pole. For most of your journey, you can't see your friends. If everyone walks straight toward the North Pole, you will slowly get closer together. By the time you reach the pole, all 360 of you will be trying to stand in the same place.

Now imagine you can see the footprints you left behind you. Your steps make up lines called meridians. Meridians measure the longitude to the east or west of a specific meridian. (You'll learn more about meridians shortly.) Like parallels, meridians are imaginary lines that mapmakers put on maps. They run from the North Pole to the South Pole. They are not parallel, however, as they near each pole.

Page 18

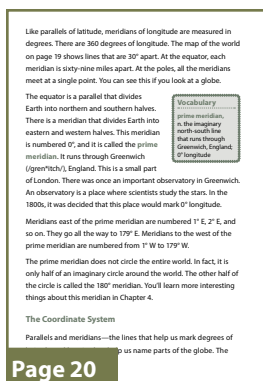
“Meridians of Longitude” Pages 18–20

Ask a student volunteer to read page 18 aloud. Scaffold understanding as follows:

CORE VOCABULARY—In the second paragraph, call attention to the Core Vocabulary terms *meridian* and *longitude*. Clarify for students that while parallels are east-west lines that measure latitude, meridians are north-south lines that measure longitude.

SUPPORT—Call attention to the World Map: Meridians of Longitude on page 19. (You may also choose to provide students with AP 2.2, Source World Map: Meridians of Longitude, found in Teacher Resources Section,

Page 19



page 67.) Ask students to identify how this picture is different from the World Map: Parallels of Latitude (page 15 or AP 2.1) they viewed earlier in the chapter.

Remind students of the discussion you had about the two globes/circles drawn on the board prior to reading the chapters.

Prompt students to recall that they described meridians as running vertically, “up and down,” “top to bottom,” or north to south; they described parallels as running horizontally, “across,” “left to right,” or east to west. Remind them that the proper way to refer to meridians is running in a north-south direction; parallels run in an east-west direction.

CORE VOCABULARY—Have another student volunteer read the rest of the section on page 20 aloud. Call attention to the Core Vocabulary term *prime meridian* when it is encountered, and ask students to locate the prime meridian on the World Map: Meridians of Longitude on page 19 or AP 2.2.

When students have finished reading the text, ask the following questions:

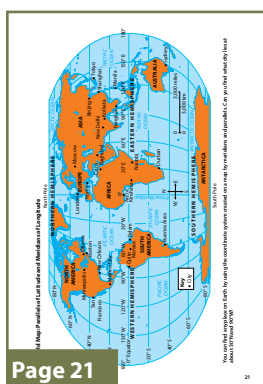
LITERAL—What is the measure 0° longitude called?

» The measure 0° longitude is called the prime meridian.

EVALUATIVE—How are meridians and parallels different?

» Meridians run in a north-south direction and move closer together as they near the North and South Poles. Parallels run in an east-west direction alongside each other but never touch.

“The Coordinate System” Pages 20–23



Ask student volunteers to take turns reading the section aloud. Scaffold understanding as follows:

SUPPORT—Call attention to the map of the world on page 21. (You may also choose to provide students with AP 2.3, Source World Map: Parallels of Latitude and Meridians of Longitude, found in Teacher Resources Section, page 68.) Ask students to identify how this image of the globe differs from the other two they’ve viewed previously in the chapter. Students should recognize that this image includes both parallels of latitude and meridians of longitude. Note that the parallels and meridians crisscross each other, forming a grid. Read the caption out loud, and show students how to use the map coordinates provided to find the answer to the question posed in the caption, “Can you find what city lies at **about 30°N and 90°W?**” (New Orleans).

prime meridian divides Earth into two hemispheres. The area east of the prime meridian is called the Eastern Hemisphere. The area west of the prime meridian is called the Western Hemisphere.

How does longitude help the captain know where he is and where he is going? Do you remember how he reported his boat's location at 1° N? You know he is sixty-nine miles north of the equator—but that's all. Is he in the Atlantic Ocean? The Pacific Ocean? The Indian Ocean? You can't tell. But, what if you knew his longitude, too? Longitude gives you east-west information. Latitude gives you north-south information. When you put them together, you can know exactly where you are. For example, your captain knows that the ship is at 1° N and 90° W. This means that the ship is at the spot where those two lines cross. The two numbers are called coordinates (coe"or'di'nayts). These are sets of numbers that help you find your place on a globe or map.

On the map on page 21 titled World Map: Parallels of Latitude and Meridians of Longitude, find the line of latitude labeled 1° N. Place your right index finger on this line. Then find the line of longitude labeled 90° W. Place your left index finger on it. Now follow the two lines with your fingers until they meet. The point where the two lines meet is exactly where your ship is. You are sailing on the Pacific Ocean. You are off the coast of

Vocabulary
coordinates, a pair of numbers on a globe or map that show where something is located.

Page 22

How do you know you're in the Pacific Ocean. But do you know where you're headed? At that moment, the captain passes by. You ask him, "Where are we going?"

He nods and says, "We're headed for a city located just to the south of 40° N and 120° W. We'll be there in a few days."

Look at the map. Find the coordinates. Trace the lines with your fingers. You can find the spot where your ship is headed.

Page 23

23

CORE VOCABULARY—Point out the Core Vocabulary word *coordinates* in the second paragraph. Coordinates include two numbers—one for a parallel and one for a meridian. These two numbers indicate a point where the parallel and meridian cross each other. Each place on Earth has its own coordinates.

SUPPORT—Instruct students to look at the World Map: Parallels of Latitude and Meridians of Longitude on page 21 or AP 2.3. Help students find the approximate location of the 1° N latitude—just north of the equator; have students place their right index fingers on the line. Help students find the line of longitude labeled 90° W; have students place their left index fingers on the line. Have students follow each line with their fingers until their fingers meet. Explain to students that the coordinate 1° N, 90° W is where the ship described in the text is located.

After students read the text, ask the following questions:

LITERAL—What is a coordinate?

- » A coordinate is the place where a line of latitude and line of longitude cross, or intersect.

INFERENTIAL—Using the map on page 21 or AP 2.3, where is the ship headed if its final destination is just south of 40° N and 120° W?

- » The ship appears to be headed to San Francisco, on the West Coast of North America.



CHECK FOR UNDERSTANDING 10 MIN

Ask students to:

- Write a short answer to the Big Question, "How are meridians and parallels—lines identifying longitude and latitude—helpful?"
 - » Key points students should cite include: Meridians and parallels are helpful because they let us know where we are on Earth relative to the equator and prime meridian. They also define where the hemispheres are. Using meridians and parallels together make up the coordinate system that helps us identify our exact position.
- Choose one of the Core Vocabulary words (*radar, Global Positioning System [GPS], parallel, latitude, equator, globe, degree, hemisphere, meridian, longitude, prime meridian, or coordinates*), and write a sentence using the word.

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

CHAPTER 3

Finding a Place on a Map

The Big Question: Coordinates include a unit of measure called a “degree.” What does a degree measure?

Primary Focus Objectives

- ✓ Understand the map terms *degree* and *minute*. (RI.4.4)
- ✓ Use coordinates to locate points on a map. (RI.4.4, RI.4.7)
- ✓ Use a grid to locate points on a road map. (R.I.4.7)
- ✓ Understand the meaning of the following domain-specific vocabulary: *minute*, *atlas*, and *index*. (RI.4.4)

Materials Needed

Activity Pages



AP 3.1
AP 3.2

- Two scarves or other material that can be used as blindfolds
- Chalk
- Source Map: The United States, 1869 (AP 3.1)
- Source Map: St. Joseph, Missouri (AP 3.2)
- An atlas of maps for display

Core Vocabulary (Student Reader page numbers listed below)

minute, n. a unit of measure equal to one-sixtieth of a degree of latitude or longitude (26)

Example: The captain said the ship was one minute north of 30° N latitude.

Variation(s): minutes

atlas, n. a book of maps (30)

Example: Patrick looked through the atlas to find a map of Colorado.

Variation(s): atlases

index, n. an alphabetical list of names or places that appear in a book; it usually includes the page(s) on which the name or place appears (30)

Example: Juana looked at the index to find the page number on which she could find the map of Philadelphia in the atlas.

Variation(s): indexes

THE CORE LESSON 35 MIN

Introduce “Finding a Place on a Map”

5 MIN

Call students’ attention to the Transcontinental Railroad map, photo, and caption on page 25 of the Student Reader. Remind students in Core Knowledge schools that, in Grade 2, they studied about the building of the Transcontinental Railroad during a period in American history in the 1860s when people living in the United States were eager to travel and move to the western part of the United States. Explain that the United States was less than one hundred years old at that time and very different from the way it is now, including the different means of transportation that were available. Prompt students to recall that the primary means of travel at that time was by horse or covered wagon, so the building of a railroad for travel across the country was an important new and exciting idea because it made travel from the East to the West much faster. Journeys that used to take weeks and months could now be done in days.

Explain that this map shows the cross-country route of the Transcontinental Railroad. Further clarify that several different groups of workers worked to build parts of the railroad at different locations all along the planned route of the railroad.

Choose two volunteers (of different heights) to be part of a demonstration that will give all students an idea of the challenges of having different groups of workers building different parts of the railroad in different locations at the same time. Blindfold both students, and then station one student at the left side of the board. This location is called “Sacramento, California.” Station the other student at the opposite side. This location is called “Omaha, Nebraska.” Give each student a piece of chalk. Tell them that their mission is to each draw a line toward the middle of the board so that the two separate lines will eventually meet in the middle to form one continuous line. Let students begin. Stop them when their lines are about two or three feet apart.

Students can now remove their blindfolds. Discuss whether the two lines as presently drawn look as if they will meet directly in the middle as a single line. Explain that the way the blindfolded students had to draw these lines was similar to the way the different groups of workers had to build sections of the Transcontinental Railroad from west to east and east to west. Point out that workers on each end of the railroad couldn’t see each other, yet the tracks they

built had to meet in the middle. Leave the lines on the board; they will be used for discussion during class.

Explain to students that in this lesson, they will learn more about using degrees and coordinates with maps. Call attention to the Big Question, and encourage students to look for what degrees measure as they read the text.

Guided Reading Supports for “Finding a Place on a Map”

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.

“Crossing the United States” and “Dividing the Lines,” Pages 24–28

Ask students to take turns reading “Crossing the United States” and “Dividing the Lines” aloud on pages 24–28, while the rest of the class follows along. Scaffold understanding as follows:

CORE VOCABULARY—Call attention to the Core Vocabulary term *minute* in the second paragraph of “Dividing the Lines.” Read the definition out loud. Note that students should know that an hour is divided into minutes. Explain to students that each degree of latitude and longitude is also divided into minutes. Knowing that there are sixty minutes in an hour can help students remember that there are sixty minutes in a degree.

After the students finish reading, ask the following questions:

LITERAL—How many minutes are there in one degree?

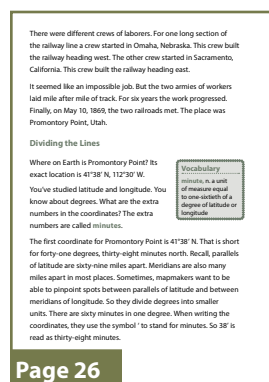
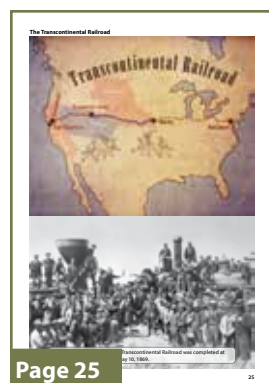
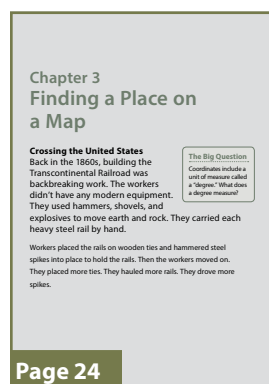
» There are sixty minutes in one degree.

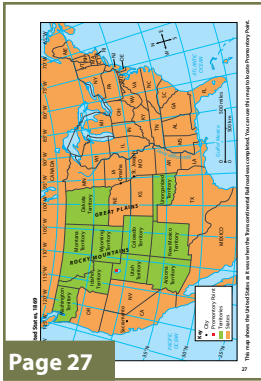
INFERENTIAL—In finding a place on the map, why is it important to know both its latitude and longitude?

» If you know only the latitude or longitude of a place, you cannot pinpoint its location. Knowing both the latitude and longitude enables you to find where the parallel and meridian lines cross and to find the place’s exact location.

EVALUATIVE—The coordinates for Promontory Point are 41°38’ N, 112°30’ W. Why is it important to include the designation ‘N’ for latitude and the designation ‘W’ for longitude as part of the coordinates?

» If the directional designations for latitude and longitude were not included, it would be impossible to identify the precise location indicated by the coordinates. For example, 41° latitude could refer to two possible locations, one at 41° N or another at 41° S. Likewise, 112° longitude could refer to two possible locations at either 112° E or 112° W.





INFERENTIAL—Looking at the “railroad tracks” drawn on the board, why was it so important that the planners of the Transcontinental Railroad used degrees and minutes to find a spot for the two lines to meet in the middle?

- » There were different crews building the Transcontinental Railroad, starting at different places in the country. One crew started in Sacramento, California, and built the railroad heading east, while the other crew started in Omaha, Nebraska, and built the railroad heading west. If the coordinates had been inexact, the two rail lines would not have built near each other. They would not have met. This could have caused construction problems and delays in finishing the Transcontinental Railroad.

“Where Parallels and Meridians Cross” and “Finding an Exact Location” Pages 28–31

Remember, minutes of latitude and longitude are not units of time. Instead, they are units of space. You can't assume that because two points are two minutes apart in latitude that it would take you two minutes to get from one to another.

The coordinates for Promontory Point are: 41°38' N, 112°30' W. You can use these coordinates to find the location of Promontory Point on a map. You know that latitude measures distances north and south of the equator. So the coordinate that ends with “N” for north or “S” for south is the latitude. That would be 41°38' N. Longitude indicates locations east and west of the prime meridian. So 112°30' W is the longitude.

Where Parallels and Meridians Cross

Look at the map on page 27 which shows the United States in 1869. You will recognize most of the states. However, many of the states west of the Mississippi River had not yet been formed. The government called these places territories. Somewhere out in the territories is Promontory Point. Can you find it?

This map shows parallels and meridians every five degrees. See if you can locate the coordinates for Promontory Point. First look along the west side of the map. You won't find 41°38' N, so locate the parallel of latitude closest to it. That is the 40° N parallel. This place you're looking for will be 1°38' north of this parallel. Think about it this way. There are five degrees between each parallel shown on the map. So one degree is less than half of the distance

Page 28

First read the section “Where Parallels and Meridians Cross” out loud. Scaffold understanding as follows:

SUPPORT—Call attention to the map of the United States in 1869 on page 27 of the text, and read the caption out loud. (You may also choose to provide students with AP 3.1, Source Map: The United States, 1869, found in Teacher Resources Section, page 69.)

As you read this section aloud, pause to direct students to follow the directions in the text, using the map found on page 27 or AP 3.1. Go step-by-step through the instructions in the text. Work your way around the room, assisting students in finding each parallel and meridian described in the text. Remind students that before there were GPS or smartphones, people working on the railroad had to rely on maps to make sure that they would meet in the correct location. Minutes helped them be precise with their directions.

CORE VOCABULARY— Now read the section “Finding an Exact Location” on pages 29–31 aloud. Call attention to the Core Vocabulary terms *atlas* and *index* found on page 30. Explain that an atlas is a large book filled with many different maps. An index is a tool found inside an atlas (and other books) that can help you find specific information without having to look through every single page. If you have brought in an actual atlas for display, show it to students and then call their attention to the example of a part of an atlas index on page 31.

between the parallels. Estimate, or carefully guess, where that place is. Put your left index finger there.

Now look along the northern area of the map. Locate the meridian of longitude closest to 112°30' W. Once again, this exact meridian is not shown. But 112°30' W will be about halfway between the 110° and 115° meridians. Put your right index finger on this meridian.

With your two fingers still on the map, move them toward each other, following the parallel and meridian they are marking. The place where your two fingers meet—where the meridian and parallel cross—is Promontory Point.

Now look at the map and find Omaha, Nebraska. Omaha is located at 41°18' N and 96°30' W. Compare the coordinates of Omaha and Promontory Point (41°38' N, 112°30' W). You can see that the railroad went a long way west. But it only went a tiny bit (20°) north.

Finding an Exact Location

The Transcontinental Railroad linked the eastern United States with the West Coast. Even earlier, the Pony Express was the way mail was sent across the “Wild West.” Riders on horseback carried the mail along the Pony Express route. They changed horses about every ten miles. After one hundred miles, a rider handed the mail to another rider. The new rider carried it for another hundred miles. The route

Page 29

After you read the text, ask the following questions:

LITERAL—What was the Pony Express?

- » The Pony Express was a way of delivering mail before the U.S. Postal Service existed. Riders relayed letters and packages throughout the Wild West.

Pony Express riders carried the mail between St. Joseph, Missouri, and Sacramento, California in about ten days.

ran from St. Joseph, Missouri, to Sacramento, California. It was almost two thousand miles long. Mail took about ten days to get from one end to the other.

Today, there is the Pony Express Museum in St. Joseph. There you can learn all about the Pony Express. You can see pictures of the riders. You can also learn about the dangers they faced.

Let's imagine that your parents or relatives have agreed to take you to the museum. First you have to find out where St. Joseph, Missouri, is located. Remember, you can use computers and applications to find this information. But it is also useful to know the skills for finding this kind of information in other ways.

To find St. Joseph, you could start with a book of maps called an atlas. An atlas has an index on page 31.

Page 30

The index for an atlas might look like this.

Place	Page	Lat.	Long.
St. George, Utah	119	37°58' N	113°58' W
St. James, Missouri	121	37°58' N	91°52' W
St. Johnsbury, Vermont	189	44°42' N	72°52' W
St. Joseph, Missouri	121	38°57' N	94°53' W
St. Louis, Missouri	117	38°42' N	90°23' W
St. Paul, Minnesota	118	44°48' N	93°10' W

It shows coordinates for St. Joseph. It also shows the page where you will find the map in which St. Joseph appears.

Using Road Map Coordinates

Let's take a closer look at St. Joseph, Missouri, to learn about different types of coordinates that are used on road maps. Imagine that you are on a sightseeing trip with your family. Since you are such a map expert, you have been given the map. Your task is to find the Pony Express Museum on a map of St. Joseph. Instead of looking all over the map, start with the road map index. This is like the index in a book. It lists all the places shown on the map. It also

Page 31

LITERAL—What is an atlas?

- » An atlas is a large book that contains many different maps.

INFERENTIAL—How is using an index helpful?

- » An index makes it possible to easily locate information in an atlas or other type of book. This can save you time, instead of having to flip through every single page to find the information you're looking for.

“Using Road Map Coordinates,” Pages 31–33

Read the entire section aloud as the class follows along in their Student Readers.

Scaffold understanding as follows:

SUPPORT—Call attention to the map of Saint Joseph, Missouri, on page 32. (You may also choose to provide students with AP 3.2, Source Map: St. Joseph, Missouri, found in Teacher Resources Section, page 70.) Read the caption out loud, and point out how this map differs from other maps the students have seen so far in this unit.

As you read this section aloud, pause to direct students to follow the directions in the text, using the map found on page 32 or AP 3.2 to locate the Pony Express Museum using the coordinates.

When you have finished reading, ask the following questions:

LITERAL—What kinds of coordinates are used on some road maps in place of longitude and latitude?

- » Some maps use number and letter coordinates, for example C-3.

INFERENTIAL—How does the map of Saint Joseph, Missouri, differ from other maps you've seen in this unit so far?

- » It uses coordinates made up of numbers and letters rather than parallels and meridians.

EVALUATIVE—If you were a guide at the Pony Express Museum and someone asked you for directions to the Albrecht-Kemper Art Museum, how would you direct the person to go?

- » Possible Answer: He or she could go north on 10th street to Fredrick Avenue and then turn right and pass Noyes Boulevard on the right. The museum is on the right a little beyond Noyes Boulevard. The distance is about two miles.

St. Joseph, Missouri

Instead of using a coordinate system of latitude and longitude, some maps use a system of letters and numbers to create a grid system.

gives their coordinates. The index gives you these coordinates: C-2. You're puzzled. These are different coordinates from those for latitude and longitude.

Many local highway maps give coordinates as letters and numbers. They are simpler to use on maps of small areas.

Look at the map of St. Joseph above. Notice that the letters run down the side of the map. Meanwhile, the numbers run along the top. You are looking for the coordinates C-2. Put one finger on the space marked 2. Put another finger on the space marked C. Follow the spaces until they meet. Somewhere close to where your fingers meet is the Pony Express Museum.

Page 32

You have a great time at the Pony Express Museum. Your mother decides she wants to see the Albrecht-Kemper Art Museum. But she can't find it on the map. Can you? The map index will tell you that the coordinates are A-4. But how will you get there? And about how far is it from the Pony Express Museum?

Page 33



CHECK FOR UNDERSTANDING 10 MIN

Ask students to:

- Write a short answer to the Big Question, “Coordinates include a unit of measure called a ‘degree.’ What does a degree measure?”
 - » Key points students should cite include: Degrees measure the space between parallels and meridians. Degrees are broken into sixty minutes that make finding an exact location even more precise.
- Choose one of the Core Vocabulary words (*minute*, *atlas*, or *index*), and write a sentence using the word.

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

Additional Activities

Map Skills Review Challenge: Chapters 1–3

30–45 MIN

Activity Pages



AP 1.1

AP 1.2

AP 1.3

AP 2.1

AP 2.2

AP 2.3

AP 3.1

AP 3.2

Materials Needed: (1) A kitchen timer or cell phone timer alarm and (2) access to the following maps in the Student Reader or as activity pages:

- The Ride of Paul Revere (page 3 or AP 1.1)
- Southern California Highways (page 8 or AP 1.2)
- Roadways in San Diego, California (page 9 or AP 1.3)
- World Map: Parallels of Latitude (page 15 or AP 2.1)
- World Map: Meridians of Longitude (page 19 or AP 2.2)
- World Map: Parallels of Latitude and Meridians of Longitude (page 21 or AP 2.3)
- Map of The United States, 1869 (page 27 or AP 3.1)
- Map of St. Joseph, Missouri (page 32 or AP 3.2)

Divide your class into teams of approximately five students each, and have students move desks or chairs so that each team has its own work area. Tell students that you will give them a “challenge” question or task that they will be able to answer by using the maps they have encountered in the first three chapters of this unit. Ask each team to pick a team name and a team captain. Write the team names on the board or chart paper.

Explain that for each challenge question, students should talk quietly with their team members, using the appropriate map, to figure out the correct

response. As soon as a team thinks it knows the correct answer, the team captain should raise his or her hand and wait for you to call on him or her. If the team captain gives the correct response, record one point on the board for this team. If the team captain gives an incorrect response, this team is now disqualified from attempting to give any further response to this particular challenge; other teams should continue to work to solve the challenge.

Set the timer for whatever amount of time you have available to play, and tell students that you will continue asking challenge questions until the alarm sounds. When the alarm goes off, whichever team has the most points should be declared the winner.

Challenge Questions

Do the first challenge question as an example for students to practice, while you provide prompts or scaffolds as needed so that they understand what to do.

Example: Use the Southern California Highways map (page 8 or AP 1.2) to answer the following question:

What is the approximate driving distance in miles between Anaheim, California, and San Diego, California, on Interstate 5? Use a thumb as the unit of measurement with the map scale in order to find your answer.

» The distance between Anaheim and San Diego is equal to about two lengths of the map scale, or eighty miles. (Accept answers from seventy to ninety miles as correct.)

Challenge students with the following:

Use The Ride of Paul Revere map (page 3 or AP 1.1) for the following two questions:

1. What kind of symbol in the map key identifies the route of Paul Revere's ride?
» A dotted line is the map key symbol for Paul Revere's ride.
2. Using the compass rose, how would you describe the direction in which Paul Revere was traveling?
» Paul Revere was generally traveling to the west and to the north—or in a northwesterly direction.

Use the map of Roadways in San Diego, California, (page 9 or AP 1.3) to answer the following two questions:

3. What kind of road is the road marked with the number 163 on this map?
» It is a state highway.
4. You are driving to the San Diego Zoo from the north. You begin your journey on Interstate Highway 15 and then get on State Highway 163. Using your thumb, measure how many miles you will travel on State Highway 163 before reaching the zoo.
» I will travel about seven miles on State Highway 163. (Accept answers from six to eight as correct.)

Use the World Map: Parallels of Latitude and Meridians of Longitude (page 21 or AP 2.3) to answer the following two questions:

5. If you were sailing from 30° W to the prime meridian, which direction you would be sailing?
» I would be sailing in an easterly direction.
6. Which city is located at about 30° S and 30° E?
» Durban
7. About how many degrees of latitude separate the northernmost point in Africa from the southernmost point of Africa?
» About 70° to 75° of latitude separate the northern and southern tips of Africa.

Use the The United States, 1869 map (page 27 or AP 3.1) to answer the following two questions:

8. What are the approximate coordinates of the city of Sacramento, California?
» Sacramento is located at about 38° N and 121° W. (Accept answers of 37°–39° N and 121°–123° W.)
9. About how many degrees of latitude to the north did the rail line that went from Sacramento to Promontory Point go?
» The line went two to three degrees of latitude to the north.

Use the map of St. Joseph, Missouri, (page 32 or AP 3.2) to answer the following question:

10. What are the coordinates for where U.S. Highway 169 intersects with Penn St.?

» The coordinates are C-5.

Domain Vocabulary: Chapters 1–3 (RI.4.4)

15 MIN

Activity Page



AP 3.3

Materials Needed: (1) Sufficient copies of Domain Vocabulary: Chapters 1–3 (AP 3.3) and (2) pens and pencils

Distribute the Domain Vocabulary: Chapters 1–3 (AP 3.3), found in Teacher Resources, page 71. Allow students to work through the activity page independently, in pairs, or in groups. You may also assign this page as homework.

CHAPTER 4

Time Zones

The Big Question: How are time zones and Earth's rotation connected?

Primary Focus Objectives

- ✓ Identify what the international date line is.
- ✓ Understand what happens when you cross the international date line from east to west and west to east. (RI.4.4, RI.4.7)
- ✓ Use time zones to calculate the time of day in different parts of the world. (RI.4.4, RI.4.7)
- ✓ Understand the meaning of the following domain-specific vocabulary: *international date line*, *time zone*, *axis*, and *rotation*. (RI.4.4)

Materials Needed

Activity Page



AP 4.1

- Large clock
- Source Map: International Date Line (AP 4.1)

Core Vocabulary (Student Reader page numbers listed below)

international date line, n. generally follows 180° longitude; by international agreement, the calendar day on the east side of the line is one day earlier than the calendar day on the west side of the line (36)

Example: The day of the week changed from Tuesday to Wednesday as the ship, sailing westward across the Pacific Ocean, crossed the international date line.

time zone, n. one of twenty-four zones around Earth within which everyone observes the same time (38)

Example: Arnav went from one time zone to another when he traveled from South Carolina to Wisconsin.

Variation(s): time zones

axis, n. an imaginary line around which a spinning object spins (42)

Example: Earth's axis is slightly tilted to one side.

Variation(s): axes

rotation, n. the movement of a spinning object (42)

Example: It takes twenty-four hours for the Earth to complete a full rotation on its axis.

Variation(s): rotations

THE CORE LESSON 35 MIN

Introduce “Time Zones”

5 MIN

Ask students to think about different trips they may have taken. Has anyone ever traveled to a different state or even a different country? Did he or she ever notice a change in the time and have to adjust a watch or clock either ahead an hour or more or back an hour or more to make up for the time difference?

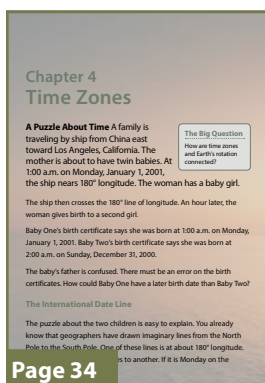
Call attention to the time on the large clock you have brought in for display. Explain to students that the current time in their classroom and (the city, town, or state in which it’s located) is not the same time for everyone around the world. Students who have traveled far away from home may have experienced this time change. Explain that this lesson discusses the idea of time zones. Call attention to the Big Question, and encourage students to look for ways time zones and Earth’s rotation are connected.

Guided Reading Supports for “Time Zones”

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.

“A Puzzle About Time” and “The International Date Line,” Pages 34–36



Read “A Puzzle About Time” on page 34 aloud to the class.

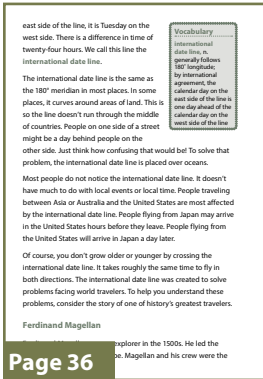
Scaffold understanding as follows:

SUPPORT—Ask volunteers to share their ideas about what happened. After you get several students’ ideas, project and/or distribute the Source Map: International Dateline (AP 4.1) found in Teacher Resources Section, page 72. To the east of the date line, write, and encourage students to do so on their own copies, “Sunday, December 31.” To the west of the date line, write “Monday, January 1.” Ask students to use the map key to locate each of the following on their maps: China, California, and the 0° parallel—that is, the equator.

Now ask students to locate the 180° meridian. Call students’ attention to the map key, and point out that this meridian corresponds closely to a line called the international date line. Explain to students that like



Page 35



Page 36

meridians, the international date line is an imaginary line. This particular line has meaning because countries around the world have agreed that the calendar day on the east side of the line is one day earlier than the calendar day on the west side of the line.

Note: If students ask why the international date line is not a completely straight line like the 180° and other meridians, tell them that they will read an explanation in the next section of this chapter.

Trace the path of the cruise ship as it travels east—that is, from China to California. Just before the path crosses the date line, invite a student volunteer to come to the front of the class to represent the first of the twins to be born, standing on the west side of the date line. Just after the path crosses the date line, invite another student to come forward—the second twin to be born, standing on the east side of the date line. Invite students to help explain how the first baby got a later birth date than the second baby. Students may recognize that when you cross the international date line heading east, you go back one day, so the second baby's birth date was earlier than the first.

Ask student volunteers to read “The International Date Line” on pages 34–36 out loud. After they’ve finished reading, ask the following question:

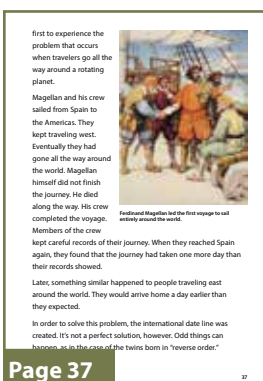
LITERAL—How does the international date line differ from the 180° meridian?

- » Unlike the 180° meridian, the international date line zigs and zags in some places to avoid passing through places where people live.

EVALUATIVE—What does it mean when the text says, “Of course, you don’t get older or younger by crossing the international date line?”

- » This sentence is trying to explain that while the calendar moves forward or back one day when you cross the line, the only thing that is changing is the calendar day. The change in days is only “on paper.”

“Ferdinand Magellan,” Pages 36–38

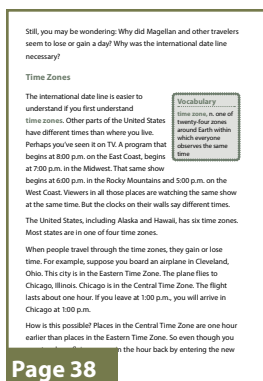


Page 37

Scaffold understanding as follows:

SUPPORT—Call attention to the image on page 37, and read the caption out loud. Explain to students that Ferdinand Magellan’s trip was very important. Before Magellan, no other explorer had circumnavigated, or sailed around, the entire world.

Note: Students in Core Knowledge schools will study more about Magellan in Grade 5.



Read the entire section aloud for the class. When you have finished, ask the following questions:

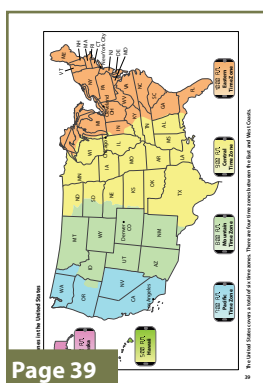
LITERAL—What issue did Ferdinand Magellan's crew discover when they returned from their journey?

» The number of days they recorded on their journey was different from the actual date when they returned to Spain.

LITERAL—What was done to address the experience of Magellan's crew and others who traveled around the world?

» The international date line was established.

"Time Zones" and "International Time Zones," Pages 38–42



Read "Time Zones" on pages 38–40 aloud to the class.

Scaffold understanding as follows:

CORE VOCABULARY—Call attention to the Core Vocabulary term *time zone* in the first title of this section. Read the definition out loud. Explain to students that if they have traveled across different states of the United States, they may have passed through different time zones.

SUPPORT—After reading the first paragraph, call attention to the map of time zones in the United States on page 39, and read the caption out loud. Explain that the four time zones in the continental United States include Eastern, Central, Mountain, and Pacific. Help students identify the time zone in which they live. Return to the TV show example in the first paragraph and ask students to determine what time they would watch a TV show that begins at 8:00 p.m. in the Eastern time zone.

Continue reading the remainder of the "Time Zones" section aloud, pausing to discuss and refer to the map about the "time puzzles" described.

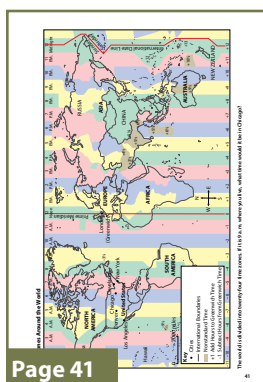
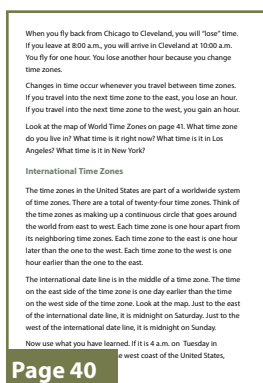
Ask a student volunteer to read "International Time Zones" on pages 40–42 aloud.

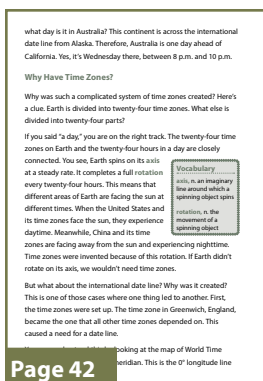
SUPPORT—Call attention to the map of international time zones on page 41, and read the caption out loud. Help students determine the time in London if it's 9 a.m. where your students live.

When the student has finished reading, ask the following questions:

LITERAL—What is a time zone?

» A time zone is a specific area on the globe where everyone living there experiences the same time.





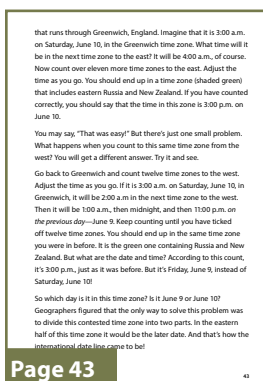
LITERAL—How many time zones are there in total around the world?

» There are twenty-four time zones around the world.

CHALLENGE—If you are flying from the Eastern time zone in New York City in the United States to London in Europe, how many time zones will you cross? How much time are you gaining or losing?

» You are crossing four full time zones and parts of two others. You are losing five hours because it is five hours later in London than it is in New York.

"Why Have Time Zones?" Pages 42–43



Scaffold understanding as follows:

Read the first paragraph of "Why Have Time Zones?" out loud to the class.

SUPPORT—Pose the final question of the paragraph to students. Students should recognize that a day is broken into twenty-four parts called hours.

Continue reading the remainder of the section aloud.

CORE VOCABULARY—In the second paragraph of "Why Have Time Zones?" call attention to the Core Vocabulary terms *axis* and *rotation*, and explain the definitions.

SUPPORT—Have students refer to the map of Time Zones Around the World on page 41. Walk students step by step through the directions in the text, helping students recognize the ways in which time zones work and how they affect travel.

When you are finished reading, ask the following questions:

LITERAL—When it is the middle of the day in the place where you live, what time is it on the opposite side of Earth?

» It is the middle of the night on the other side of Earth.

INFERENTIAL—How does the fact that it is nighttime in China when it is daytime in the United States explain the need for time zones?

» Because it can be day and night at the same moment on different parts of Earth, it is useful to have a system for explaining how times differ in different parts of the world.

INFERENTIAL—If it's 1:00 p.m. in your time zone, what time is it in the next time zone east? What time is it in the next time zone west?

» It is 2:00 p.m. in the next time zone east. It is noon in the next time zone west.



CHECK FOR UNDERSTANDING 10 MIN

Ask students to:

- Discuss the Big Question, “How are time zones and Earth’s rotation connected?” with a partner.
 - » Key points students should cite include: Earth is broken into twenty-four time zones. This relates to the twenty-four hours in a day that it takes Earth to rotate around its axis, completing a full day.
- Choose one of the Core Vocabulary words (*international date line*, *time zone*, *rotation*, or *axis*), and come up with an oral sentence using the word.

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

Additional Activities

Time Zones and Map Skills Puzzles

45 MIN

Activity Page



AP 2.1
AP 2.2
AP 3.1
AP 4.2

Materials Needed: Sufficient copies of Time Zones and Map Skills Puzzles (AP 4.2 found in Teacher Resources Section page 73) and access to the following maps in the Student Reader and/or as activity pages:

- Time Zones in the United States map (page 39)
- Time Zones Around the World map (page 41)
- World Map: Parallels of Latitude (page 15 or AP 2.1)
- World Map: Meridians of Longitude (page 19 or AP 2.2)
- The United States, 1869 map (page 27 or AP 3.1)

Distribute copies of Time Zones and Map Skills Puzzles (AP 4.2), and any other appropriate activity page maps. Read the directions for items 1–4 with students, and instruct them to use the copies of their time zones maps to help them solve each question. Allow students to complete the activity independently, in pairs, or in groups. Review responses to this section after all students have completed items.

As time permits, ask students to complete items 5–10, which will require use of the designated maps in the same way as described in the Chapter 3 Additional Activities “Map Skills Review Challenge.”

How to Read Physical Maps

The Big Question: What does a physical map reveal that a city road map does not?

Primary Focus Objectives

- ✓ Recognize that some physical maps show the features of the land. (RI.4.7)
- ✓ Understand that elevation refers to the height of the land. (RI.4.4)
- ✓ Demonstrate how a physical map can help you plan a route. (RI.4.7)
- ✓ Understand the meaning of the following domain-specific vocabulary: *valley, physical map, elevation, mountain range, peak, and sea level*; and of the idiom “bird’s-eye view.” (RI.4.4)

Core Vocabulary (Student Reader page numbers listed below)

valley, n. an area of low land bordered by land of higher elevation (44)

Example: Shamika planned a picnic lunch in the valley beside the mountain.

Variation(s): valleys

physical map, n. a type of map that shows the distribution of one or more of Earth’s physical features; for example, taller land areas, such as mountains, and lower land areas, such as valleys (44)

Example: Dante looked at the physical map to determine whether there were mountains on his route west.

Variation(s): physical maps

elevation, n. the height of something; on maps, elevation is shown as the number of feet above or below sea level (47)

Example: The city of Pittsburgh is at a higher elevation than the city of Philadelphia.

Variation(s): elevations

mountain range, n. a line or group of mountains (47)

Example: The Appalachian Mountains are a vast mountain range in the eastern part of the United States.

Variation(s): mountain ranges

peak, n. the top or highest point on a mountain (47)

Example: Marybeth climbed to the tallest peak of the mountain range.

Variation(s): peaks

“bird’s-eye view,” (idiom), a view of something from above, as a bird might see it (49)

Example: From the airplane, Cornell had a bird’s-eye view of the countryside below.

sea level, n. land that is the same elevation as the surface of the sea or ocean (51)

Example: Because New Orleans was built below sea level, the city often floods.

THE CORE LESSON 35 MIN

Introduce “How to Read Physical Maps”

5 MIN

Ask students to briefly recall what they’ve learned about maps so far. They should acknowledge that maps include different features that share information with the reader, for example, a map key, a scale, and a compass rose. Some maps show details about cities, while others share information about major highways that can get you from one place to another. Maps also include parallels of latitude and meridians of longitude, or in some cases grid lines. Now ask students whether they can think of any particular information those types of maps do not include. For example, if they were driving from New York City to San Diego, what information might be helpful for them to plan their route? Call attention to the Big Question, and encourage students to look for the differences between city road maps and physical maps as they read the text.

Guided Reading Supports for “How to Read Physical Maps”

30 MIN

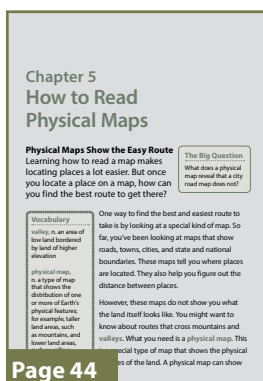
When you or a student reads aloud, **always** prompt students to follow along. By following along, students may acquire a greater understanding of the content. Remember to provide discussion opportunities.

“Physical Maps Show the Easy Route,” Pages 44–47

Ask a student volunteer to read the first three paragraphs of “Physical Maps Show the Easy Route” on pages 44–47 out loud. Note: The third paragraph on page 44 continues to the top of page 47.

Scaffold understanding as follows:

CORE VOCABULARY—In the third paragraph of this section, point out the term *valley*. Note the definition of this term provided on the Student Reader page.





CORE VOCABULARY—Also in the third paragraph, note the term *physical map*. Note that physical maps can show all kinds of physical features of the land, including taller land areas, such as mountains, and lower land areas, such as valleys.

CORE VOCABULARY—Ask another volunteer to read the rest of the text in the section, starting with the first complete paragraph on page 47. Point out the term *elevation*. Read the definition. Then, direct students' attention to the Physical Map of the United States on page 46. Explain to students that elevation maps can show the height of the land in different ways. This map uses colors to show which land is highest and which is lowest.

CORE VOCABULARY—Call attention to the Core Vocabulary words *mountain range* and *peak* on page 47. Explain the meaning of each and how they're related.

Ask the following questions:

LITERAL—What does a physical map show?

- » A physical map shows the physical features of an area, such as hills, mountains, and valleys.

LITERAL—What does the elevation show on a physical map?

- » The elevation shows how high the land is.

INFERENTIAL—Using the physical map on page 46, within which mountain range in the United States, excluding Alaska and Hawaii, is the highest mountain peak located?

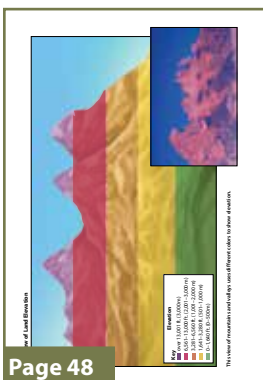
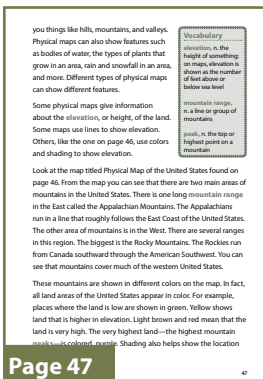
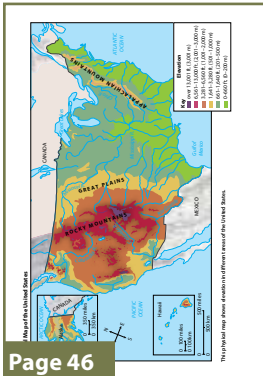
- » The highest mountain peak is in the Rocky Mountains.

INFERENTIAL—Using the physical map on page 46, what is the lowest-lying land region in the United States?

The lowest lying region of the United States is in the eastern part of the United States, particularly along the Atlantic Ocean and Gulf of Mexico.

CHALLENGE—How do you think physical maps were first made? Why do you think physical maps have become more accurate over time?

- » Student responses may vary. The first explorers to an area walked around and kept track of the terrain. The use of modern technology such as satellites can take photos of Earth's surface and accurately measure distances and elevations.



“Understanding a Physical Map,” Pages 48–51

Understanding a Physical Map

To help you understand the colors on a physical map, look at the image of the mountain scene in the diagram on page 48. The lowest part of the image is a valley. The valley is colored green. Look at the elevation key next to the image. The green color shows elevations from 0 to 1,640 feet. That means that the valley is between 0 feet and 1,640 feet in elevation.

Now imagine that you are a bird. You're flying, looking directly down on the mountains from above. Look at the diagram on page 50. This shows a bird's-eye view, or how a bird might see the land from above. It shows areas of higher and lower elevation using color.

Notice the part of the mountain that is colored yellow. This color shows the same part of the mountains as the yellow on the first image. It shows the part of the mountains that is 1,641 to 3,280 feet high. Now look at the part of the mountain that is colored red. How high is this part of the mountain?

You can learn useful information by looking at an elevation map. For example, suppose you want to get the best view of the surrounding land. Where would you go? You would climb one of the peaks, of course. These peaks are shown as the three purple areas on both images located on pages 48 and 50. What if you wanted to build a railroad through this area? Where would you it across the purple areas. That land is

Page 49

Bird's-Eye View of Land Elevation

This is a bird's-eye view of the same scene shown in the diagram on page 48. How do the two diagrams differ?

steep and high. Instead, you'd build it through the green area. That is where the elevation is low.

So you can see how colors can be used to show the elevation of the land. You can learn a lot about the land by studying an elevation map. However, this kind of map has some limits. For example, look at the bird's-eye diagram again. Notice that all three mountain peaks are purple. The purple means the peaks are over 13,000 feet high. One peak may be 13,000 feet high. Another may be 13,500 feet high. You cannot tell the difference between the

Page 50

Now look back at the physical map of the United States on page 46. The elevation key tells you how high the land is. How high are the Great Plains? Most of this area is shaded yellow and light brown. That means the elevation is between 1,641 and 6,560 feet high. Which mountains are higher, the Rocky Mountains or the Appalachian Mountains? The Rocky Mountains are higher. They are shaded red and purple. That means much of the land is more than 6,561 feet above sea level. Some of it is more than 13,000 feet above sea level. The Appalachians, on the other hand, are shaded yellow and light brown. They measure between 1,641 and 6,560 feet high.

Finding Your Way on an Elevation Map

You may be wondering how you can use this information. Here's one way. Take a look at the map of Adventure Valley on page 53. You and your friend are spending the day exploring the area. You start at Butterfly Meadow. It's on the east side of the map near the stream. Your goal is to reach Hidden Treasure Cavern. As you can see, there are two trails to Hidden Treasure Cavern. You could take Pony Path or Brook Trail. You and your friends can't decide which one to choose. Look at your map. What does it tell you about the trails?

On the map, the area around Butterfly Meadow is shown in green. Look at the elevation. Green is land that is between 201 and 400 feet above sea level. It climbs from green to pink, then to orange, and finally to purple.

Page 51

Read the entire section aloud to the class, pausing to explain Core Vocabulary, and use the various physical maps as students follow along in their Student Readers.

Scaffold understanding as follows:

SUPPORT—Refer to the land elevation profile map on page 48. Help students identify the elevation represented by orange on the map.

CORE VOCABULARY—Call attention to the idiom “bird’s-eye view” on page 49. Ask students to explain what they think the phrase means.

CORE VOCABULARY—Call attention to the Core Vocabulary term *sea level* in the last paragraph of this section. Explain to students that they can think of sea level as the number zero when it comes to elevation. Elevation above or below sea level is counted from zero.

After reading the text, ask the following questions:

LITERAL—What is a “bird’s-eye view”?

- » A “bird’s-eye view” is the overhead perspective of an area of land, like what a flying bird might see.

LITERAL—How is sea level used in elevation?

- » Elevation is measured relative to sea level. Sea level can be thought of as “zero”; anything above sea level is measured in positive numbers above this point.

EVALUATIVE—Why do you think geographers and cartographers (people who make maps) use sea level as the basis for elevation?

- » Student responses may vary. Sea level is a fairly constant factor that can be easily adjusted for. Using the level of the sea is a good way to determine relative distance.

“Finding Your Way on an Elevation Map,” Pages 51–53

Hidden Treasure Cavern is shown in the green area. This tells you that you will first climb from Butterfly Meadow all the way to the top of Fracock Hill. Since the top is colored orange, you know the elevation will be over 1,640 feet.

Brook Trail follows Salamander Stream. The map is colored green for all of the way. This means your trail will be level all the way.

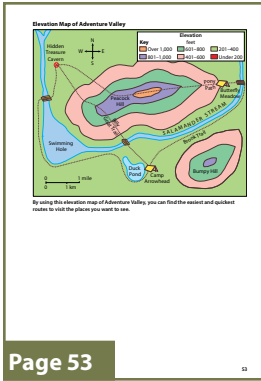
Do you want to climb up the hill and then hike down the hill again to Hidden Treasure Cavern? Or do you want to follow the level trail to get there? Of course, you might also think about the distance. Using a string to measure, you'll find the distance along Pony Path is about five miles. The distance along Brook Trail is over ten miles. Do you want to walk five miles with a big hill, or ten miles on a flatter trail: you pick!

After visiting Hidden Treasure Cavern, you plan to hike to Camp Arrowhead. Again, you have a choice of two trails. Which trail will you choose and why? You can see why being able to read maps is so important!

Page 52

Scaffold understanding as follows:

SUPPORT—Call attention to the Adventure Valley map on page 53, explaining that this is a map of a fictitious place. Have students first identify the places and names that are labeled on the map, such as Butterfly Meadow, Pony Path, and Brook Trail.



Read the first four paragraphs of the section out loud, encouraging students to refer to the map on page 53 as you read, so they can locate each area you name.

SUPPORT—Ask students to compare Pony Path and Brook Trail. What information does the map share about each? (Students might note that both paths are hiking trails but that the Pony Path is a more direct route that goes up a big hill, while the Brook Trail covers a longer distance but stays mostly on flat ground.)

SUPPORT—Direct students to the fifth paragraph. Have students measure and estimate the distance using the scale on the map and their thumbs. Pose the last question of the paragraph to students: Would they rather walk five miles with a big hill or walk about ten miles on a flatter trail?

Have students read the last paragraph silently to themselves. After students have read the text, ask the following questions:

INFERENTIAL—Which trail did you pick to hike from the Hidden Treasures Cavern to Camp Arrowhead? Why?

- » Students should be able to defend their choices by explaining the characteristics of the trail they chose and why they considered it preferable to the option they did not choose.

EVALUATIVE—Why would it be a good idea to check a physical map before you started out on a hike from one place to another?

- » The physical map would show obstacles, such as canyons or mountains, that you should avoid on your hike.



CHECK FOR UNDERSTANDING 10 MIN

Ask students to:

- Write a short answer to the Big Question, “What does a physical map reveal that a city road map does not?”
 - » Key points students should cite include: Physical maps show information about the terrain of the land. Where as a city road map shows only roads and other similar details, physical maps can tell you about features such as rivers, mountain ranges, and elevation that may impact your trip.
- Choose one of the Core Vocabulary words (*valley*, *physical map*, *elevation*, *mountain range*, *peak*, or *sea level*) or the idiom “bird’s-eye view,” and write a sentence using the word or idiom.

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

Additional Activities

Domain Vocabulary: Chapters 4–5 (RI.4.4)

15 MIN

Activity Page



AP 5.1

Materials Needed: Sufficient copies of Domain Vocabulary: Chapters 4–5 (AP 5.1)

Distribute the Domain Vocabulary: Chapters 4–5 (AP 5.1) found in Teacher Resources, pages 74–75. Allow students to work through the activity page independently, in pairs, or in groups. You may also assign this page as homework.

Teacher Resources

Unit Assessment: *Using Maps* 53

Performance Task: *Using Maps* 58

- Performance Task Activity: Identify Parts and Labels of a World Map 59
- Performance Task Activity: Use a Map Grid 61
- Performance Task Activity: Answer Questions About *Using Maps* 62

Activity Pages

The activity pages marked with an asterisk are full-page reproductions of maps that are included in different chapters of the *Using Maps* Student Reader. Some students may find the full-page size of the activity page maps easier to use than the smaller maps in the Reader. We suggest that you make sufficient copies of each of these maps for students to reference, in addition to the maps in their Readers, as they read each chapter.

You may also want to project the activity page maps in a way that all students can see so that you can demonstrate the use of the different map skills that students will be reading about in this unit.

- Source Map: The Ride of Paul Revere (*AP 1.1) 63
- Source Map: Southern California Highways (*AP 1.2) 64
- Source Map: Roadways in San Diego, California (*AP 1.3) 65
- Source World Map: Parallels of Latitude (*AP 2.1) 66
- Source World Map: Meridians of Longitude (*AP 2.2) 67
- Source World Map: Parallels of Latitude and Meridians of Longitude (*AP 2.3) 68
- Source Map: The United States, 1869 (*AP 3.1) 69
- Source Map: St. Joseph, Missouri (*AP 3.2) 70
- Domain Vocabulary: Chapters 1–3 (AP 3.3) 71
- Source Map: International Date Line (*AP 4.1) 72
- Time Zones and Map Skills Puzzles (AP 4.2) 73
- Domain Vocabulary: Chapters 4–5 (AP 5.1) 74

Answer Key: *Using Maps* 76

Unit Assessment: *Using Maps*

A. Circle the letter of the best answer.

1. If you're planning a trip, you might use two different road maps because
 - a) some maps are flat and some are round.
 - b) some maps are very inaccurate.
 - c) maps of different scale provide different information about places.
 - d) different maps have different keys.
2. Which of the following can help you find the distance between two towns on a map?
 - a) the map scale
 - b) map colors
 - c) compass rose
 - d) the map key
3. If a map's scale shows that one inch on the map equals five miles in real life, how many inches on the map would stand for ten miles?
 - a) two inches
 - b) four inches
 - c) five inches
 - d) ten inches
4. Which of the following is the best description of what a map scale looks like?
 - a) It's always round.
 - b) It looks like a ruler.
 - c) It has a list of symbols.
 - d) It has different colors.
5. On a map, what is the name of the symbol with four arrows pointing in different directions?
 - a) altitude
 - b) key
 - c) scale
 - d) compass rose

Name _____

Date _____

- 6.** Ferdinand Magellan's crew found that their trip had taken one more day than their own careful records showed. This helps explain why today we have
- a)** Global Positioning Systems.
 - b)** a system of parallels and meridians.
 - c)** Northern and Southern Hemispheres.
 - d)** an international date line.
- 7.** On a map or a globe, what is the term for the lines that run from east to west?
- a)** coordinates
 - b)** meridians
 - c)** parallels
 - d)** international date lines
- 8.** Which statement is true?
- a)** Parallels of latitude sometimes meet.
 - b)** Parallels of latitude are parallel to each other.
 - c)** Meridians of longitude never meet.
 - d)** Meridians of longitude meet only at the North Pole.
- 9.** Which statement is true about the imaginary line that runs around Earth, halfway between the North and South Poles?
- a)** It's a meridian of longitude.
 - b)** It's called the equator.
 - c)** It's called the prime meridian.
 - d)** It is located at 10° N latitude.
- 10.** Where would 10° S latitude be in relationship to the equator?
- a)** south of the equator
 - b)** north of the equator
 - c)** east of the equator
 - d)** west of the equator
- 11.** What does the small circle stand for in "90° S"?
- a)** temperature
 - b)** degrees
 - c)** longitudes
 - d)** percent

Name _____

Date _____

- 12.** In general, what happens to the temperature as you move from a lower number of degrees of latitude to a higher number of degrees of latitude?
- a)** It does not change.
 - b)** It gets higher.
 - c)** It gets lower.
 - d)** It is likely to go both up and down.
- 13.** If you and a friend both traveled north on different meridians of longitude from the South Pole, which of the following statements would be true?
- a)** You would not meet again.
 - b)** You would get close to each other at the equator.
 - c)** You would meet again at the North Pole.
 - d)** Your paths would cross at the prime meridian.
- 14.** What do map coordinates do?
- a)** They indicate the actual distance between two points on a map.
 - b)** They show where parallels of latitude cross.
 - c)** They help you determine the time of day in different locations.
 - d)** They let you pinpoint a location on the map.
- 15.** When you cross this imaginary line on the map, the calendar shifts to a different day. What is this line?
- a)** the equator
 - b)** the prime meridian
 - c)** the 180° meridian
 - d)** the international date line
- 16.** How many time zones are there on the globe?
- a)** 24
 - b)** 15
 - c)** 4
 - d)** 8
- 17.** In terms of maps and globes, how many minutes are in one degree?
- a)** 1
 - b)** 15
 - c)** 30
 - d)** 60

Name _____

Date _____

- 18.** What does ' stand for in 41°38' N?
- a) degrees
 - b) latitudes
 - c) minutes
 - d) parallels
- 19.** If you were in the Central Time Zone and your watch said 1:00 p.m., what time would it be in the Eastern Time Zone?
- a) 12:00 p.m.
 - b) 2:00 p.m.
 - c) 12:00 a.m.
 - d) 2:00 a.m.
- 20.** A person might cross the international date line when he or she
- a) travels across the United States.
 - b) flies from the Northern Hemisphere to the Southern Hemisphere.
 - c) travels from the Western Hemisphere to the Eastern Hemisphere.
 - d) moves from one time zone to another.
- 21.** What kind of map would show the natural features of the land?
- a) physical map
 - b) international map
 - c) colored map
 - d) time-zone map
- 22.** What is another word for the height of the place?
- a) axis
 - b) coordinates
 - c) elevation
 - d) meridian
- 23.** What do most physical maps use to show differences in elevation?
- a) lines or color
 - b) scale and coordinates
 - c) trails or routes
 - d) a map scale and compass rose

Name _____

Date _____

24. Which of the following would you use a physical map to show?

- a) cities and towns
- b) boundaries of states and countries
- c) tourist attractions in an area
- d) mountains and valleys

25. If you were reading a road map and you wanted to know which roads were interstate highways on the map, you would check the

- a) the map key.
- b) the map scale.
- c) the compass rose.
- d) the map coordinates.

B. Match the following vocabulary terms with their definitions. Write the correct letter on the line.

- | | | |
|------------------------------------|-------|--|
| a) symbol | _____ | 26. electronic equipment that uses radio waves from satellites to give precise information about location and direction |
| b) direction | _____ | 27. how far it is from one point to another |
| c) distance | _____ | 28. a drawing or picture of a specific place or area of Earth's surface that shows different features |
| d) Global Positioning System (GPS) | _____ | 29. where a person or object is facing or moving toward |
| e) map | _____ | 30. an object or picture that stands for something else |

Performance Task: *Using Maps*

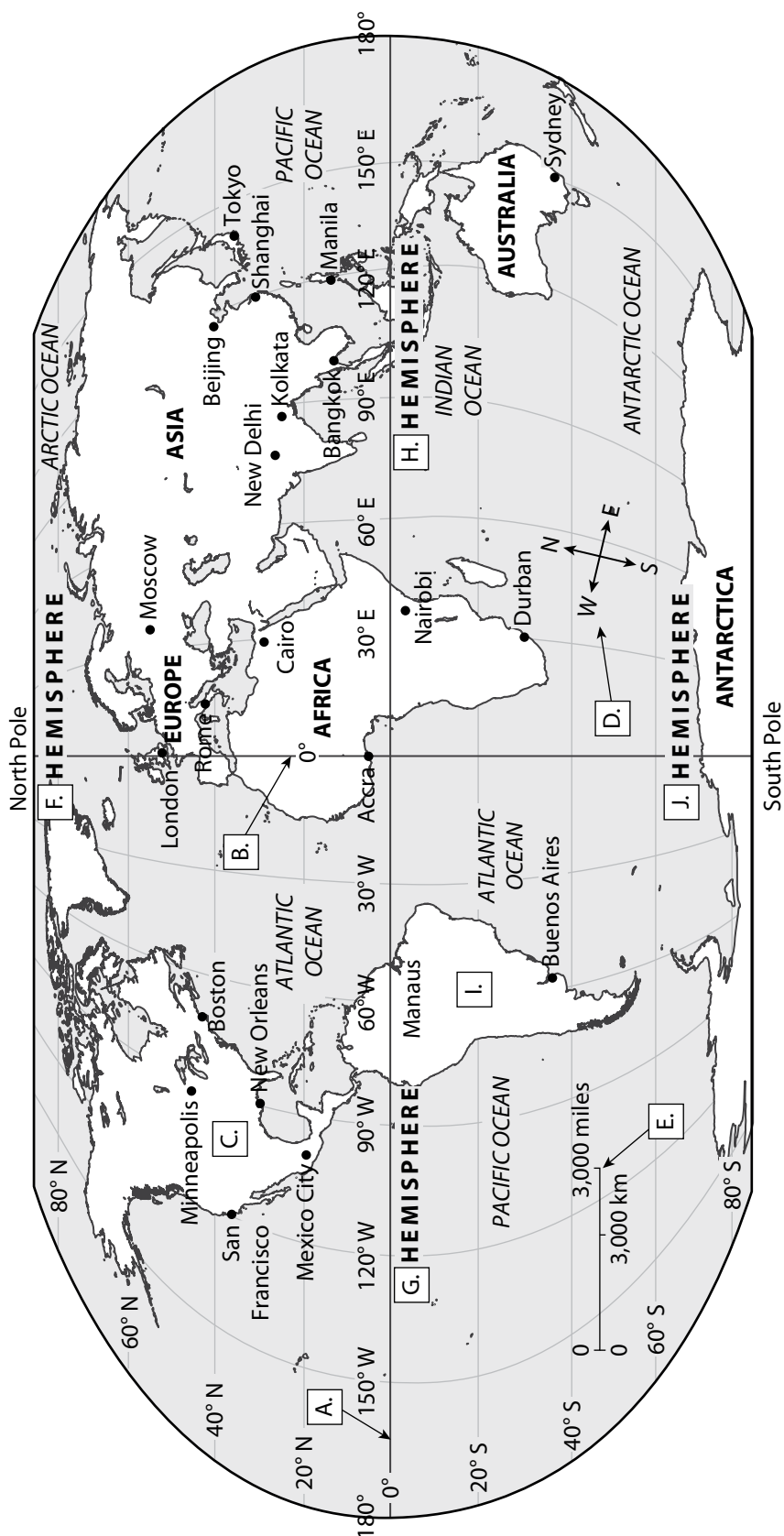
Teacher Directions: Using maps is a fundamental skill that helps students be successful across content areas. Have students use the pages that follow, Identify Parts and Labels of a World Map, Use a Map Grid, and Answer Questions About *Using Maps*, to demonstrate their proficiency at identifying and using parts of a map, using grid lines to locate features on a map, and answering some questions about maps and map features that they have learned about in this unit.

Note: In order to make sure map scales print accurately, please turn off print scaling or “scale to fit.”

Performance Task Activity: Identify Parts and Labels of a World Map

Use this map to answer the questions on the next page.

Name _____ Date _____



Name _____

Date _____

Performance Task Activity: Identify Parts and Labels of a World Map, *continued*.

Use the map on the previous page to answer the following:

Identify the part of the map or the place on the map that each letter represents. Select your answer from the word list provided.

Eastern	North America	map scale	Western	South America
prime meridian	Southern	equator	Northern	compass rose

A. _____

B. _____

C. _____

D. _____

E. _____

F. _____

G. _____

H. _____

I. _____

J. _____

1. Using the map scale and your thumb as a measure, about how many miles are there between Mexico City and Rome?
2. If you flew from San Francisco to Moscow, and then from Moscow to New Delhi, about how many miles would you fly?
3. You get a text from a friend telling you that she is visiting a city on the map that is located just north of where the prime meridian and the equator meet. What city is she visiting?
4. This city is located very close to 20° N and 90° E on the map. What is it?

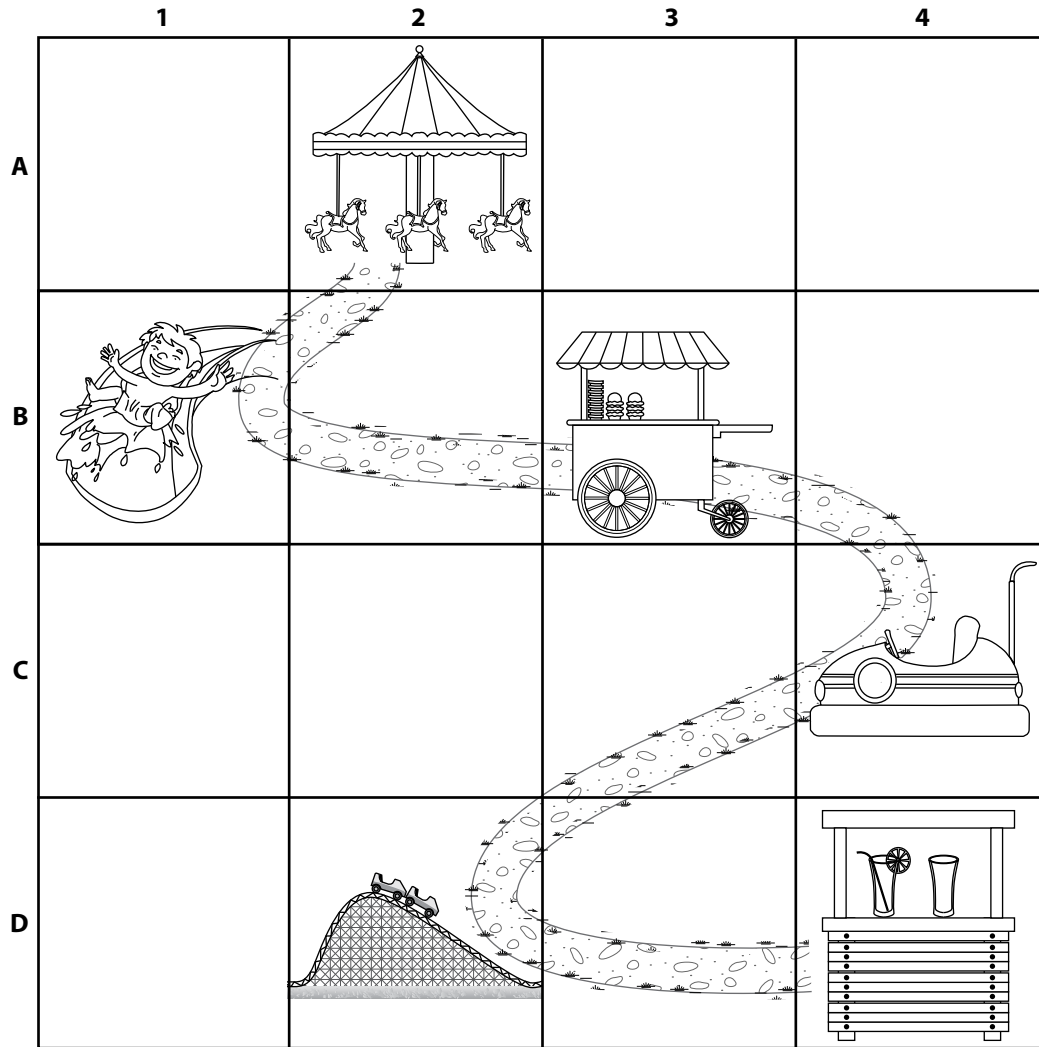
Name _____

Date _____

Performance Task Activity: Use a Map Grid

Directions: Identify the coordinates of each feature on the map using the grid, beginning with the horizontal and ending with the vertical (for example, D-1).

Map of Adventure Land



Bumper Cars: _____

Carousel: _____

Ice Cream Stand: _____

Lemonade Stand: _____

Rollercoaster: _____

Waterslide: _____

Carousel 

Waterslide 

Food Stand 

Bumper Cars 

Rollercoaster 

Smoothie Stand 

Name _____

Date _____

Performance Task Activity: Answer Questions About *Using Maps*

Directions: Answer the following questions about what you have learned in *Using Maps*. Select your answers from the word list provided. You may use the same answer more than once.

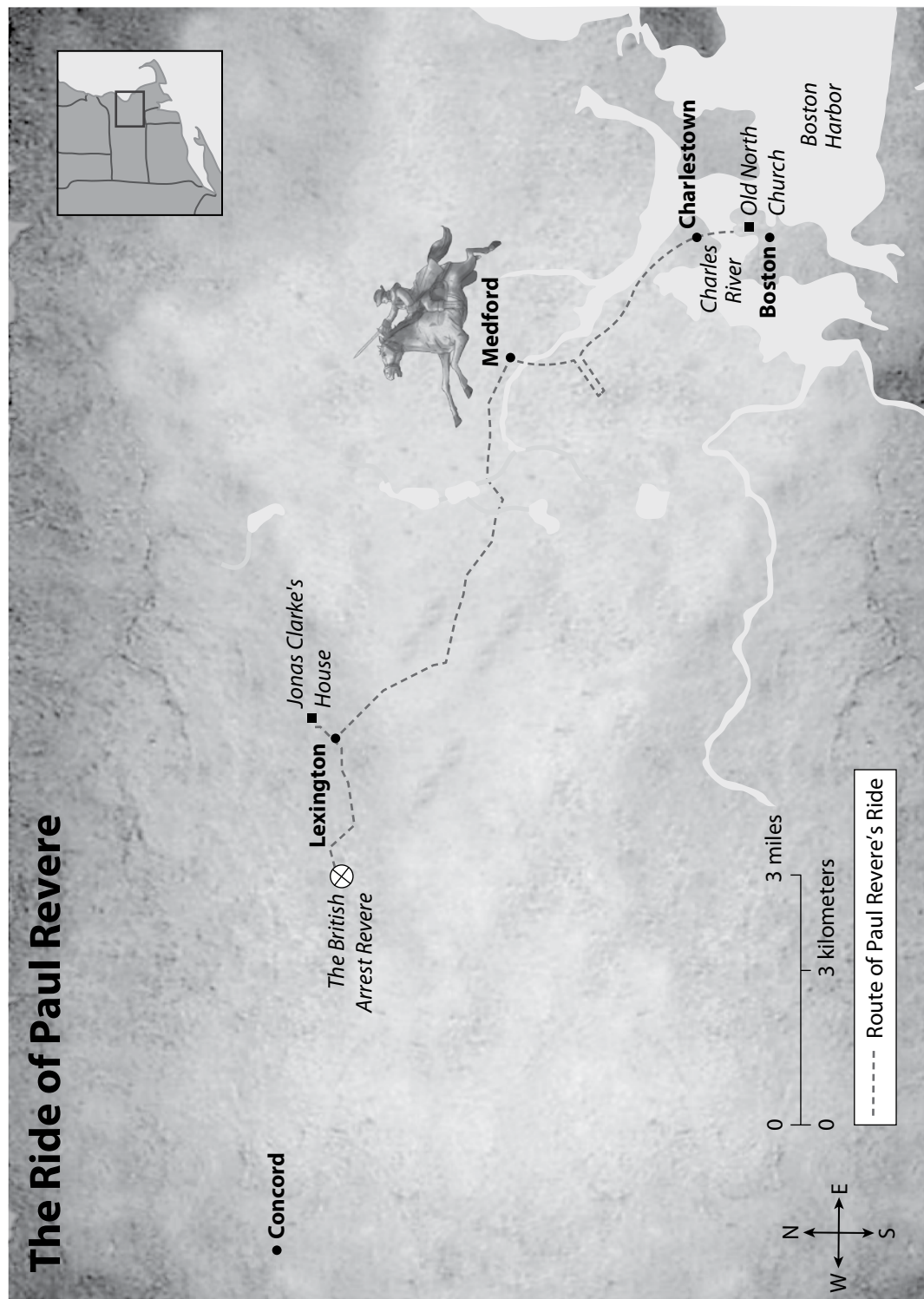
map key	four	equator	symbols	physical map	180° meridian
Greenwich, England	sixty	international date line	oceans	twenty-four	
weather map	prime meridian	city road map			

1. What type of map would you use to find how high the peak of a mountain is? _____
2. What type of map would you use to find your way from the Empire State Building in New York City to Times Square several city blocks away? _____
3. What map tool helps you understand and identify the meaning of symbols that appear on a map? _____
4. How many minutes are in a degree? _____
5. When you cross this line, the date changes from one day to the next. What is it? _____
6. The prime meridian passes through which city and country? _____
7. What type of map would you use to locate rivers, mountains, and valleys? _____
8. The international date line passes mostly through what? _____
9. A star that represents a capital city, a red line that represents an interstate highway, and a square that represents a landmark are all examples of what? _____

Name _____ Date _____

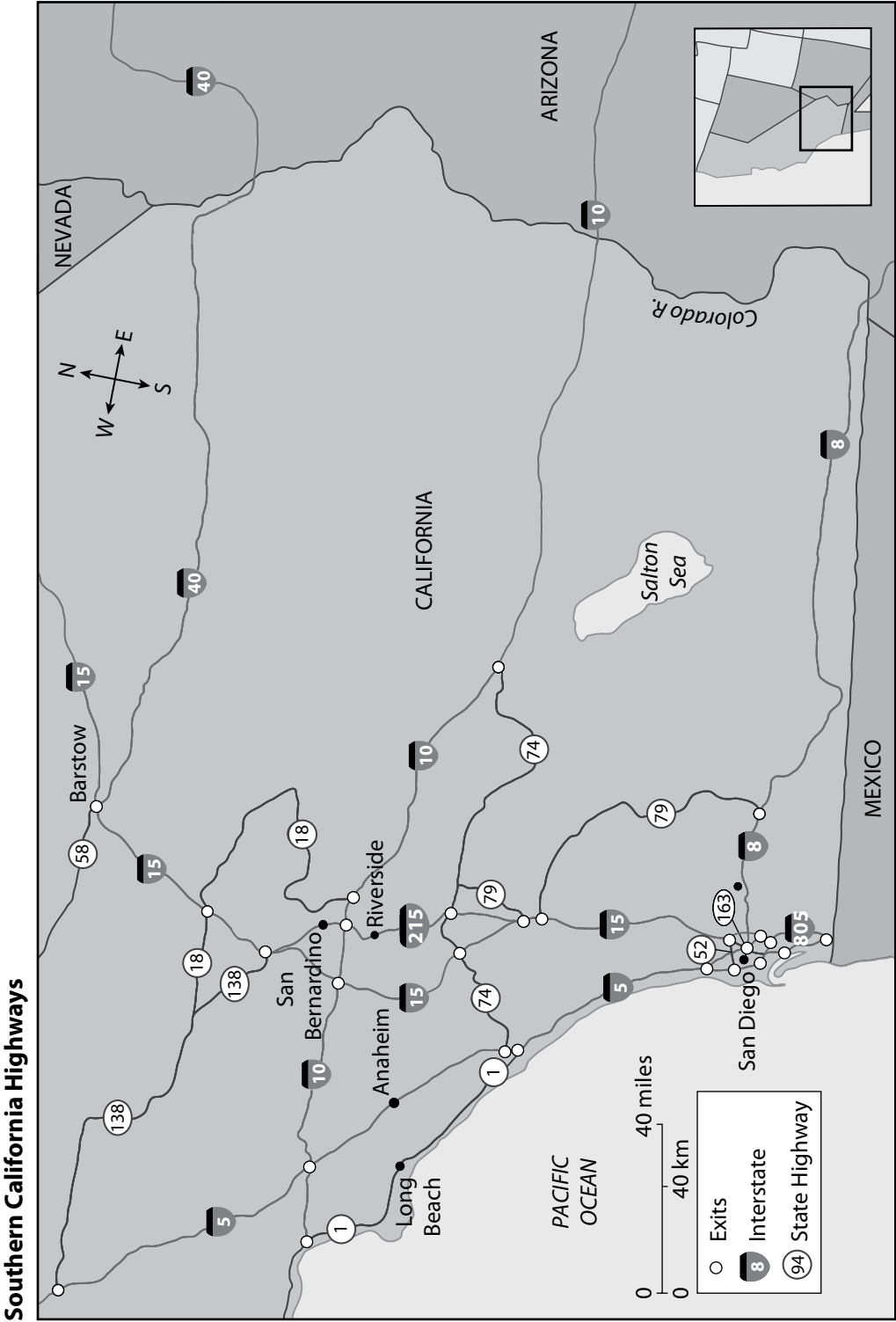
Name _____

The Ride of Paul Revere



Name _____

Date _____

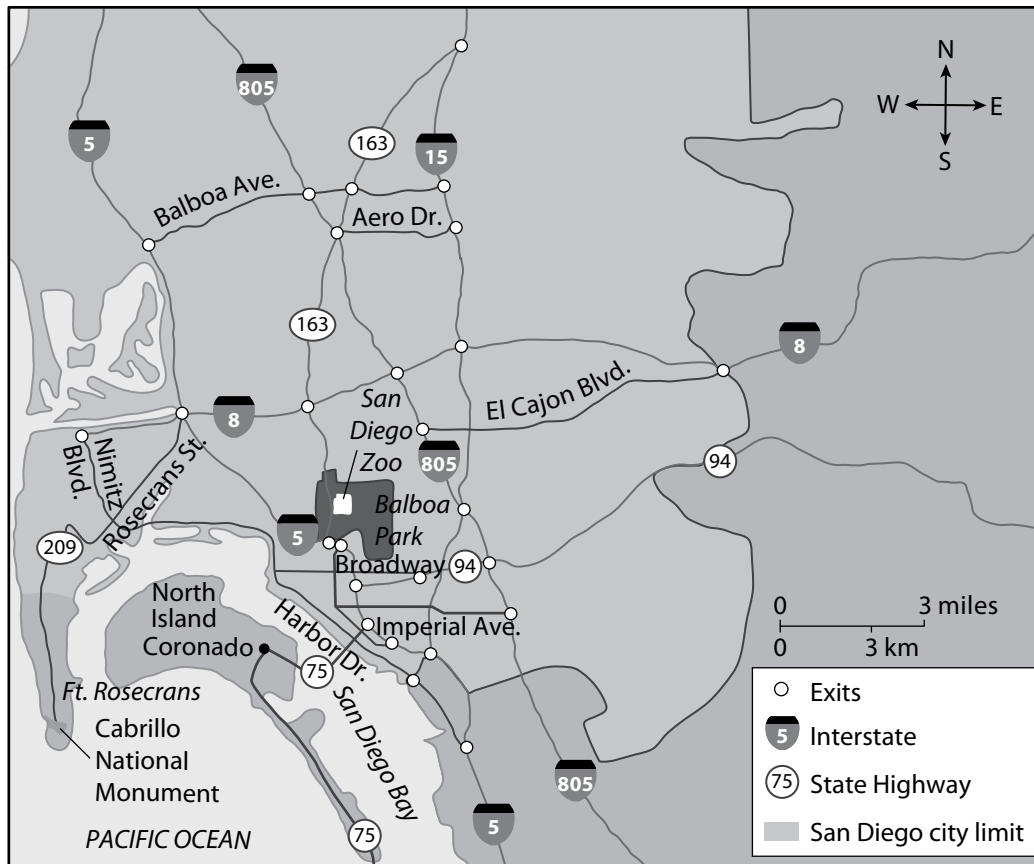


Name _____

Date _____

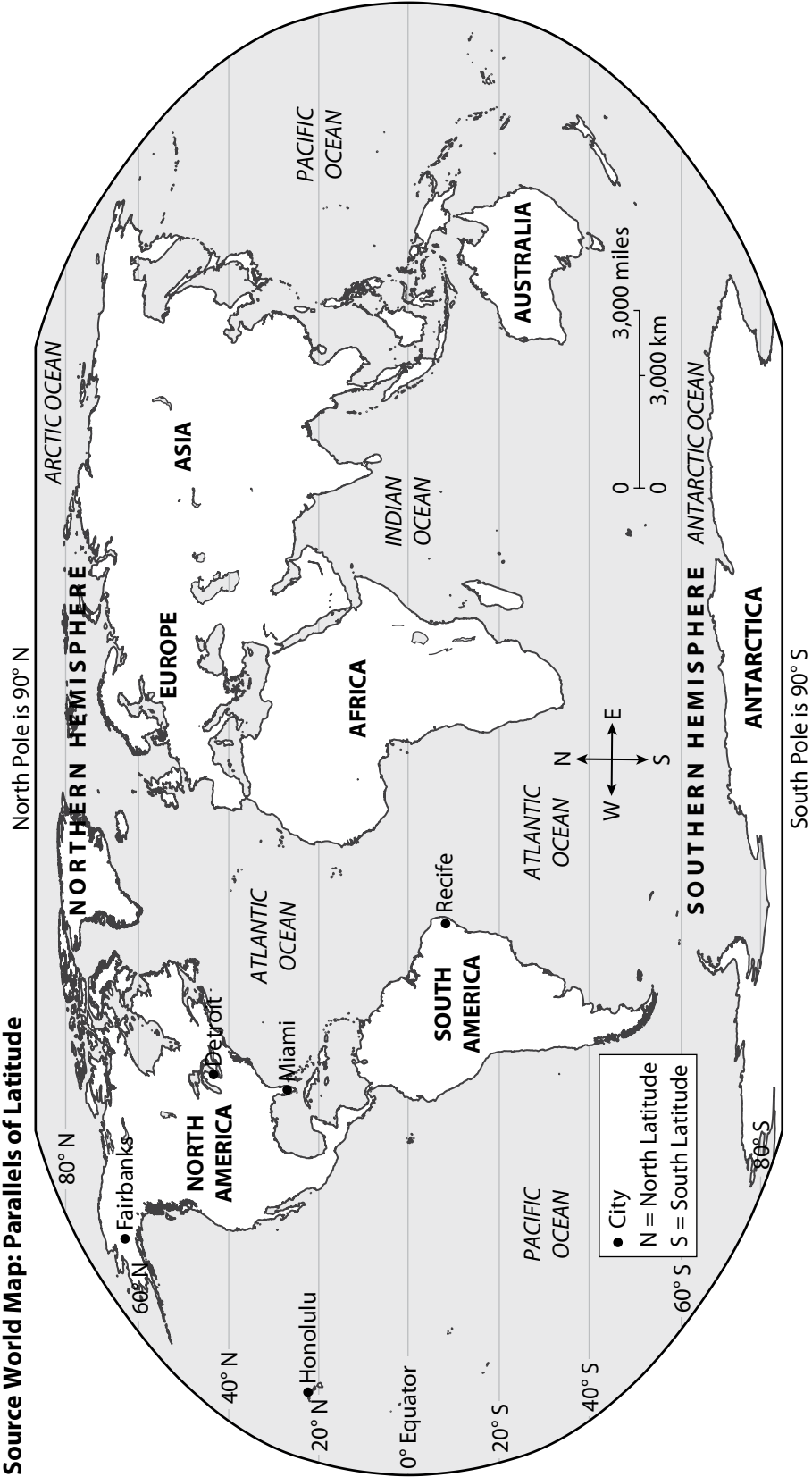
Activity Page 1.3: Source Map: Roadways in San Diego, California Use with Chapter 1

Roadways in San Diego, California

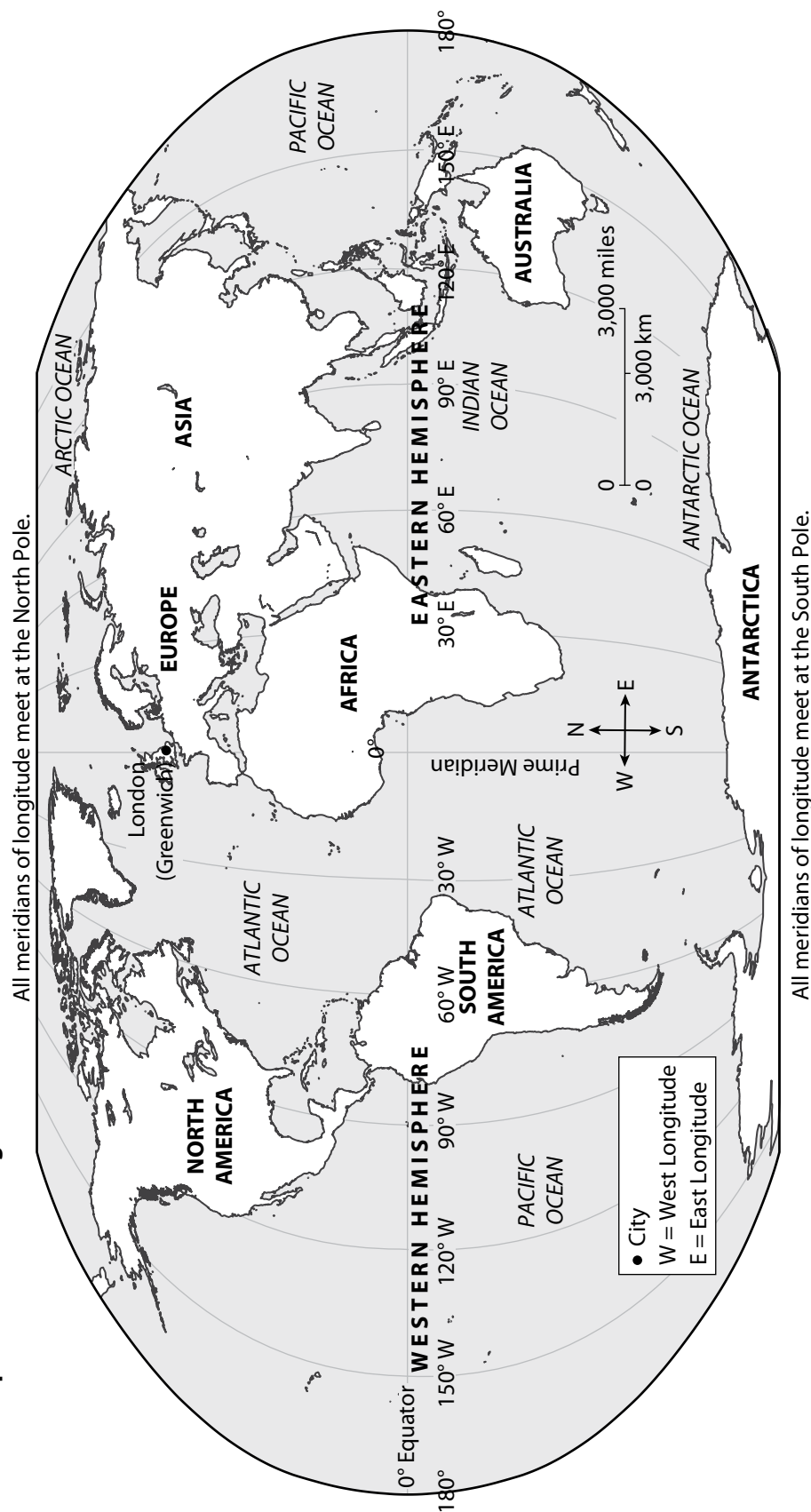


Name _____

Date _____



Name _____ Date _____

World Map: Meridians of Longitude

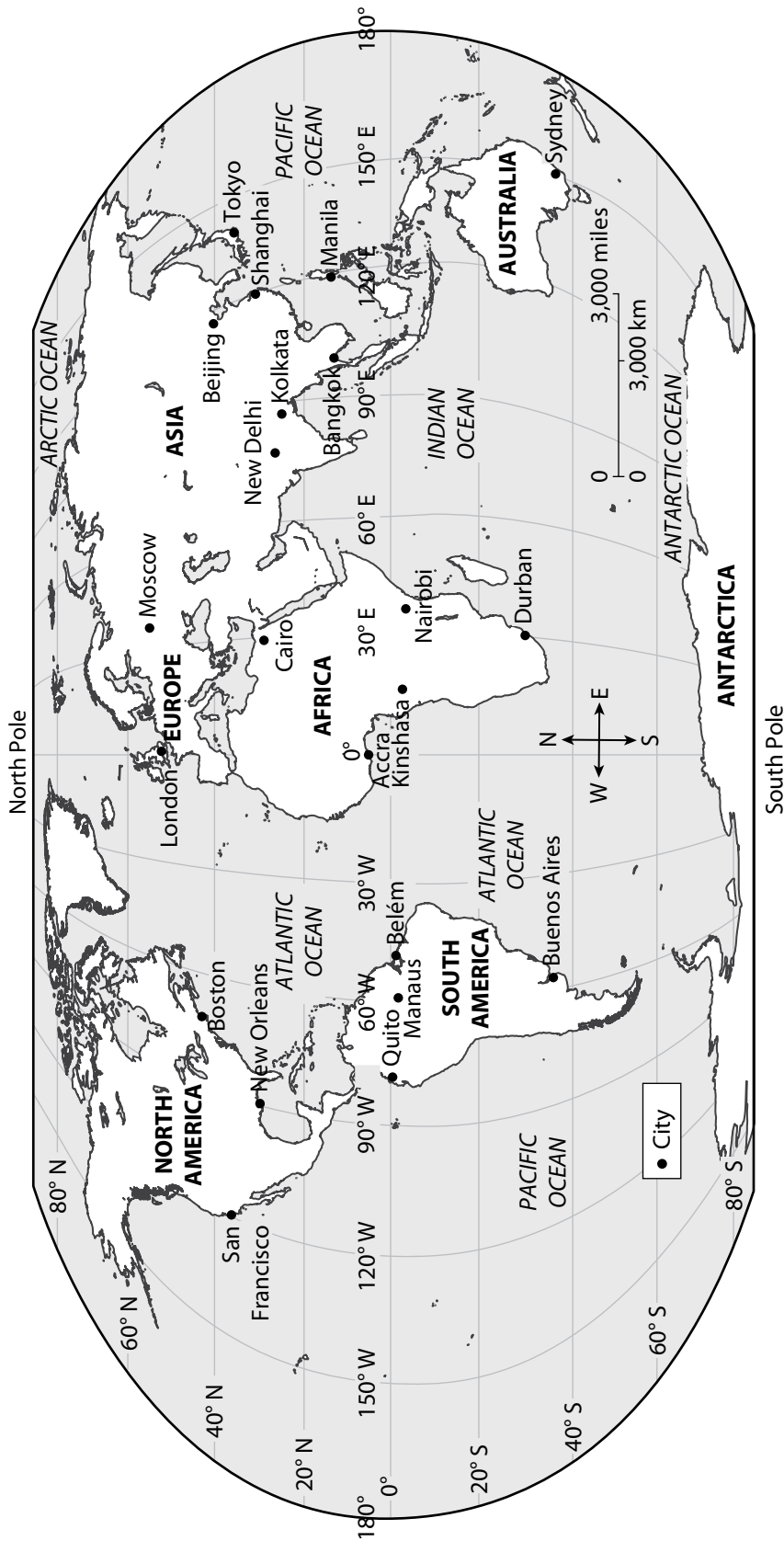
Name _____

Date _____

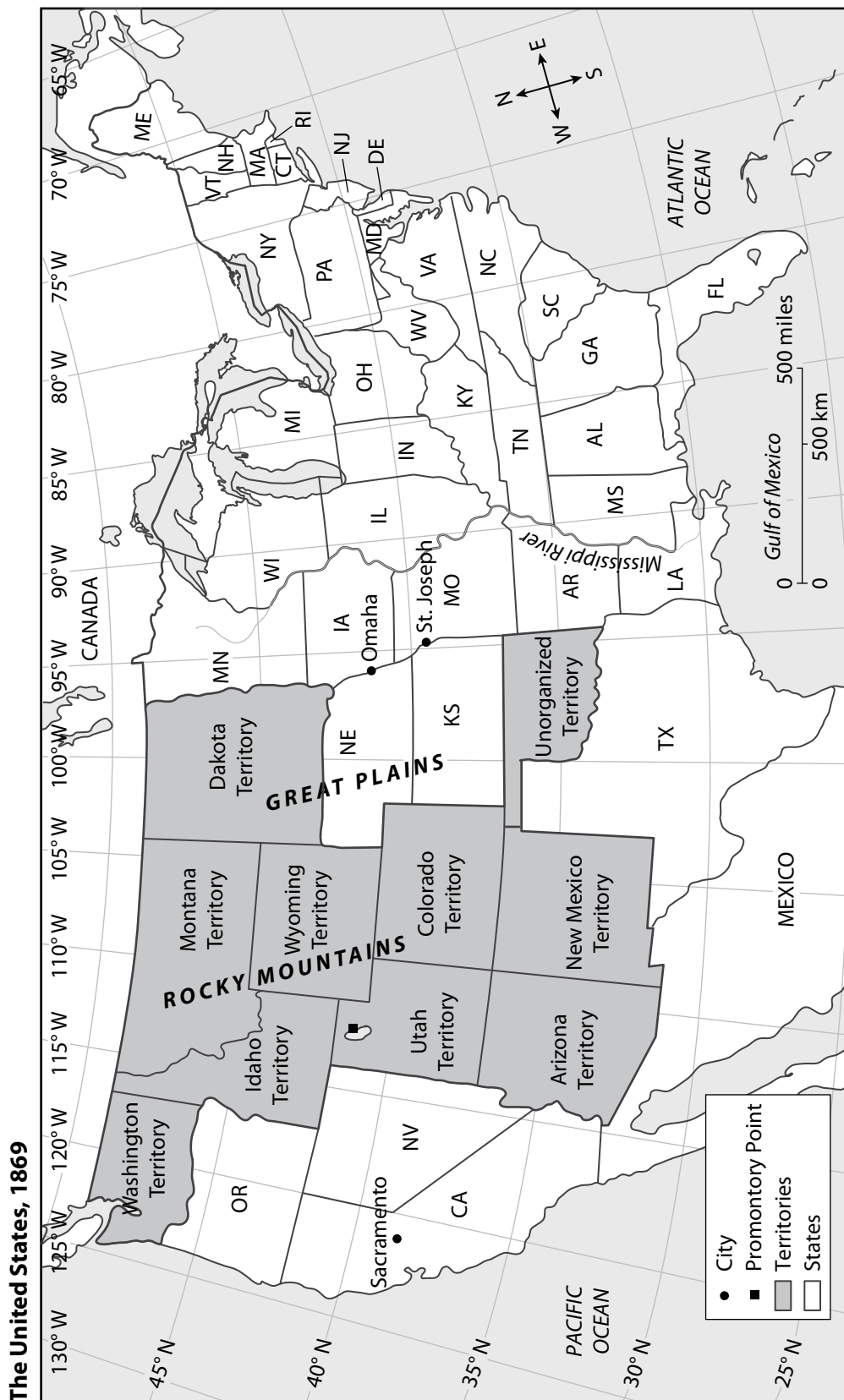
Activity Page 2.3: Source World Map: Parallels of Latitude and Meridians of Longitude

Use with Chapter 2

World Map: Parallels of Latitude and Meridians of Longitude



Name _____ Date _____

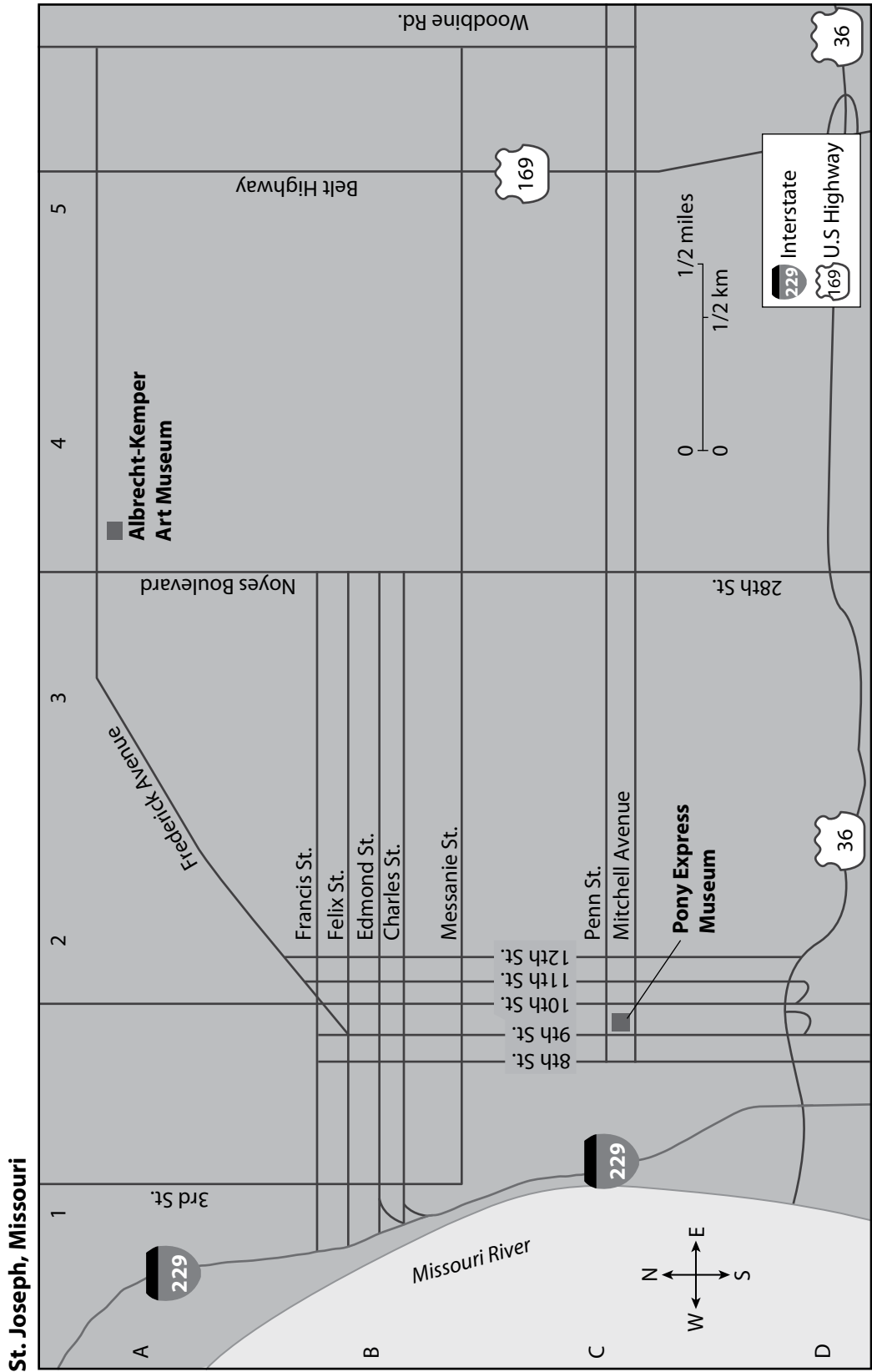


Name _____

Date _____

Activity Page 3.2: Source Map: St. Joseph, Missouri

Use with Chapter 3



Name _____

Date _____

Activity Page 3.3 Domain Vocabulary: Chapters 1–3

Use with Chapter 3

Note: This activity refers to content in Chapters 1–3.

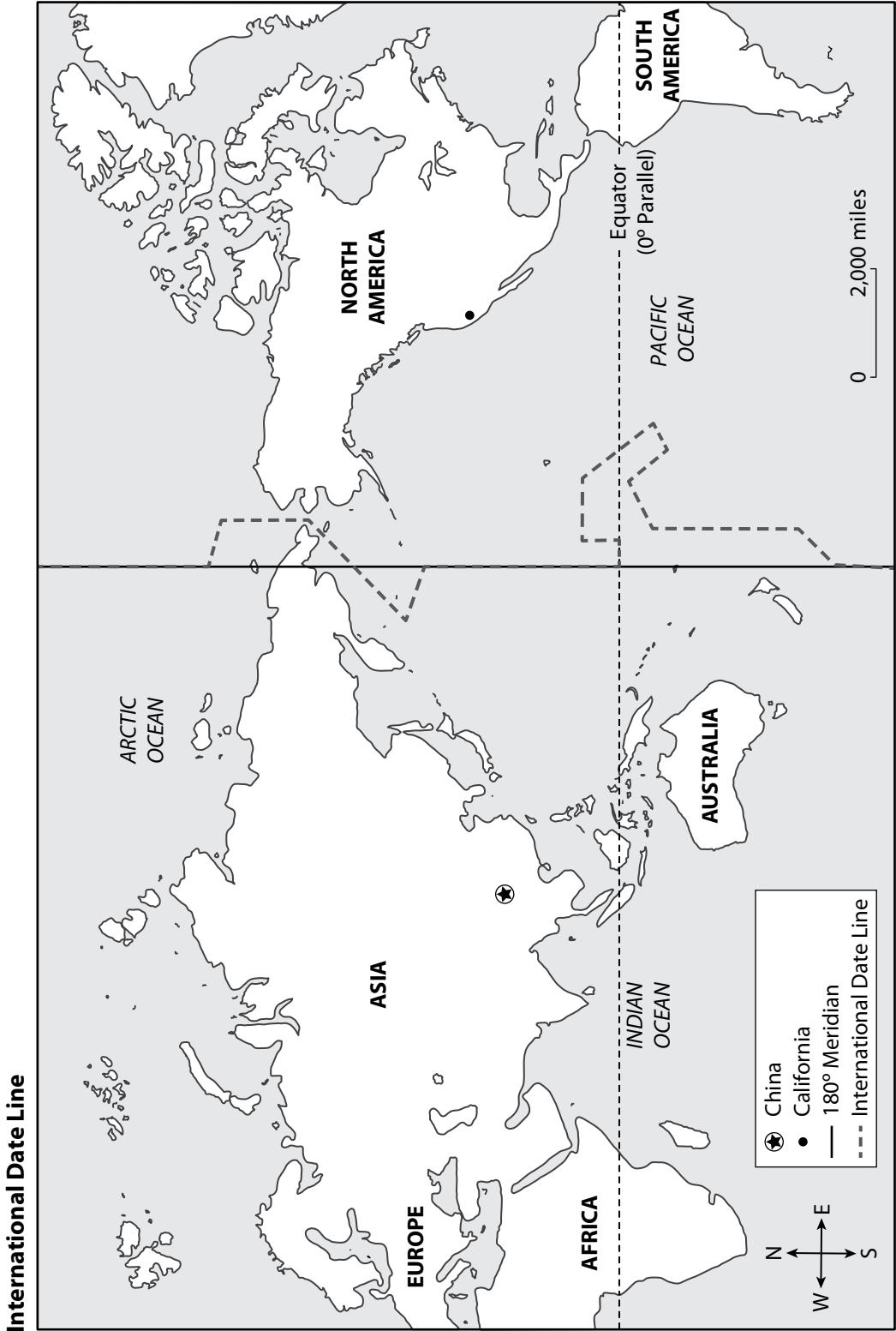
map	symbols	map key	distance	direction	compass rose
interstate highway		radar	Global Positioning System (GPS)		parallels
latitude	equator	globe	degree	meridians	longitude
prime meridian		coordinates	kilometer	hemispheres	

Complete each sentence with a Core Vocabulary word from the box.

1. Lines on maps that indicate latitude are also known as _____.
2. The line that runs halfway around Earth is called the _____.
3. Meridians of _____ run from north to south on the globe.
4. A spherical representation of a map of Earth is called a _____.
5. The _____ can tell you what different _____ represent on the map.
6. _____ is a kind of technology that helps detect the distance, direction, and speed of an object.
7. The _____ shows where north, south, east, and west are on a map.
8. The _____ is the name for 0° longitude, and it divides Earth into eastern and western _____.
9. The main unit of measure for meridians and parallels is called a _____.
10. An _____ is a major road that runs between two or more states.

Name _____

Date _____



Name _____

Date _____

Activity Page 4.2 : Time Zones and Map Skills Puzzles

Use with Chapter 4

Use the map Time Zones in the United States (page 39 of the Student Reader) to answer the following questions.

1. If it is 4:00 p.m. in New York City, what time is it in Los Angeles? _____
2. If it is 4:00 a.m. in Denver, Colorado, what time is it in Philadelphia, Pennsylvania? _____
3. If it is 1:00 a.m. on Saturday in Chicago, what time and day is it in San Diego? _____

Use the map Time Zones Around the World (page 41) to answer the following question.

4. If it's 10:00 a.m. on Friday in Los Angeles, what time and day is it in London, England? _____

Use the World Map: Parallels of Latitude and Meridians of Longitude (page 21 or AP 2.3) to answer the following questions.

5. Identify one of the parallels of latitude shown on the map that pass through each of the continents of South America, Africa, and Australia. _____
6. If you are on a ship in the ocean at the 40° N parallel of latitude and 30° W meridian of longitude, between which two continents are you sailing? _____
7. Locate the 90° E meridian of longitude. What two continents does this meridian pass through? _____
8. On the map, which meridian shown passes through the western edge of Australia? _____

Use The United States, 1869 map (page 27 or AP 3.1) to answer the following question.

9. Is Omaha, Nebraska, located to the east or west of St. Joseph, Missouri? How can you tell? _____

Name _____

Date _____

Activity Page 5.1 Domain Vocabulary: Chapters 4–5

Use with Chapter 5

Note: This activity refers to content in Chapters 4–5.

Use the clues to complete the crossword puzzle.

mountain range	physical map	minute	international date line	atlas
rotation	peak	sea level	bird’s-eye view	valley
index	time zone	elevation	axis	

Across

1. an imaginary line around which a spinning object spins
6. land that is the same elevation as the surface of the sea or ocean
7. a map that shows features of Earth’s surface
8. a place to look up information in a book or atlas
9. one of twenty-four zones around Earth within which everyone observes the same time
10. a book that contains many maps
11. a view from above
12. one-sixtieth of a degree
13. a line of mountains
14. a mountain’s highest point

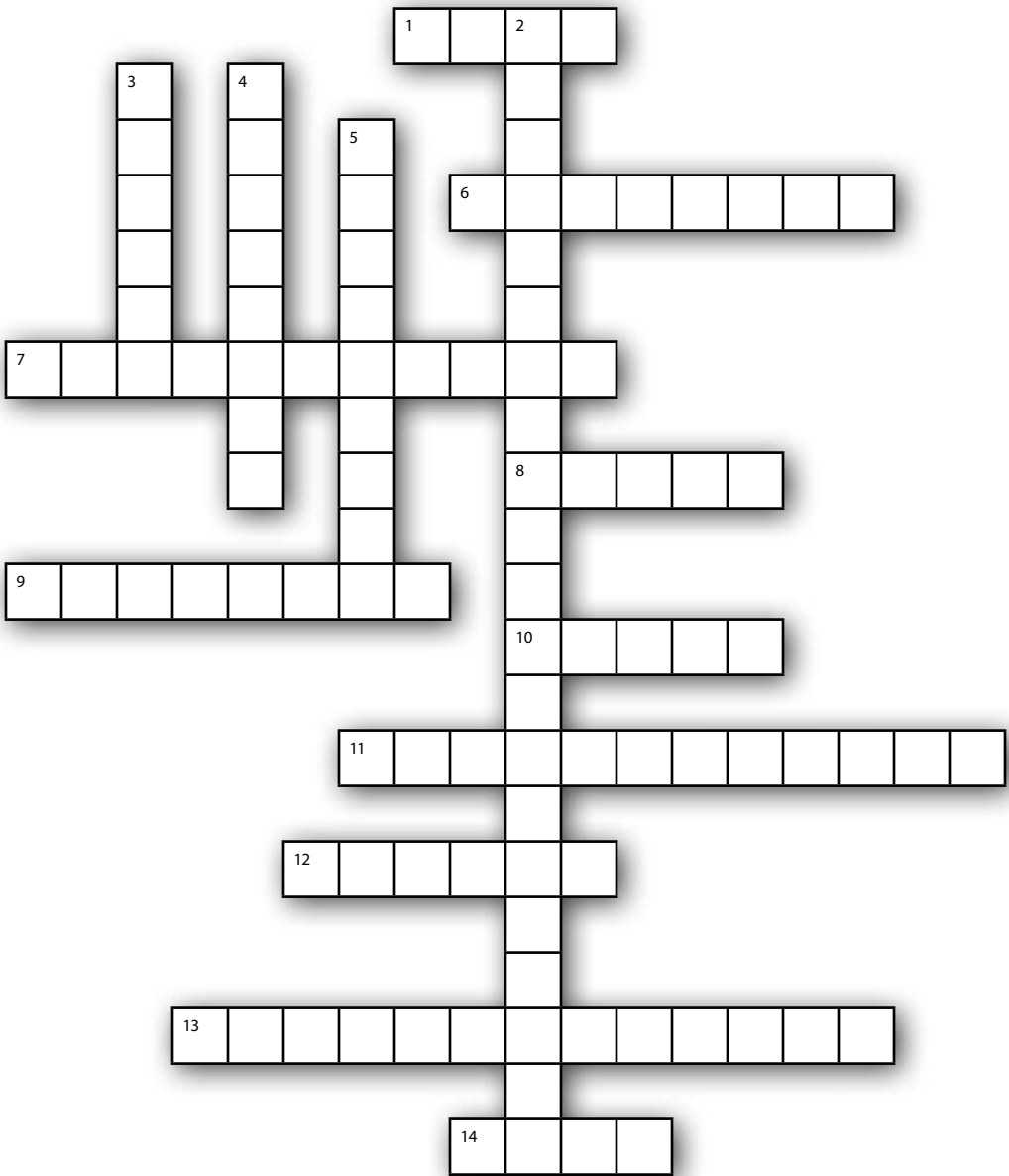
Down

2. an imaginary line where one calendar day appears on the east side and another calendar day on the west side
3. low land near land with higher elevation, like a mountain
4. movement of an object that spins
5. the height of something

Name _____

Date _____

Activity Page 5.1 continued



Answer Key: Using Maps

Unit Assessment

1. c 2. a 3. a 4. b 5. d 6. d 7. c 8. b 9. b 10. a 11. b
12. c 13. c 14. d 15. d 16. a 17. d 18. c 19. b 20. c
21. a 22. c 23. a 24. d 25. a 26. d 27. c 28. e 29. b
30. a

Performance Task Activities

1. Identify Parts and Labels of a World Map: (page 60)

- A. equator
- B. prime meridian
- C. North America
- D. compass rose
- E. map scale
- F. Northern
- G. Western
- H. Eastern
- I. South America
- J. Southern

- 1. The distance is more than six thousand miles.
- 2. You will have flown about 12,000 miles.
- 3. Accra
- 4. Kolkata

2. Use a Map Grid: (page 61)

Bumper Cars: C4
Carousel: A2
Food Stand: B3
Smoothie Stand: D4
Rollercoaster: D2
Waterslide: B1

3. Answer Questions About *Using Maps*: (page 62)

- 1. physical map
- 2. city road map
- 3. map key
- 4. sixty
- 5. international date line
- 6. Greenwich, England
- 7. physical map
- 8. oceans
- 9. symbols

Activity Pages

Domain Vocabulary: Chapters 1–3 (AP 3.1) (page 71)

- 10. physical map
- 11. parallels
- 12. equator
- 13. longitude
- 14. globe
- 15. map key, symbols
- 16. radar
- 17. compass rose
- 18. prime meridian, hemispheres
- 19. degree
- 20. interstate highway

**Time Zones and Map Skills Puzzles (AP 4.2)
(page 73)**

1. 1:00 p.m.
2. 6:00 a.m.
3. 11:00 p.m. on Friday
4. 6:00 p.m. on Friday
5. The 20° S parallel passes through all three of these continents.
6. You are sailing between North America and Europe.
7. It passes through Asia and Antarctica.
8. The 120° E meridian of longitude passes through the western edge of Australia.
9. Omaha is located west of St. Joseph. You can tell because you can see that Omaha is located at about 96° W longitude, while St. Joseph is located at about 95° W longitude.

**Domain Vocabulary: Chapters 4–5 (AP 5.1)
(page 74)**

Across

1. axis
6. sea level
7. physical map
8. index
9. time zone
10. atlas
11. bird's-eye view
12. minute
13. mountain range
14. peak

Down

2. international date line
3. valley
4. rotation
5. elevation

World Mountains

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World Mountains

Teacher Guide

Core Knowledge History and Geography™ 4

Introduction

ABOUT THIS UNIT

Big Idea

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

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

- 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

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

For background information, download the CKHG Online Resource “About Mountains and Mountain Ranges”:

www.coreknowledge.org/ckhg-online-resources

UNIT RESOURCES

Student Component

World Mountains Student Reader—four chapters

Teacher Components

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 in Teacher Resources, beginning on page 118.

- » 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

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

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

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

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
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

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



AP 1.1
AP 1.2
AP 4.1

The following activity pages can be found in Teacher Resources, pages 128–134. 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 (AP 1.2)
- 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. *Mongolia (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

Week 2

Day 6	Day 7			

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 Kilimanjaro. (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 (60)

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

Variation(s): minerals

barrier, n. something that blocks movement (60)

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 (60)

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 (61)

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 (62)

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 (63)

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

extinct, adj. having died out completely (64)

Example: An extinct volcano no longer explodes.

Variation(s): extinction

elevation, n. the distance above sea level of a spot on Earth's surface (65)

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 (65)

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 (65)

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"

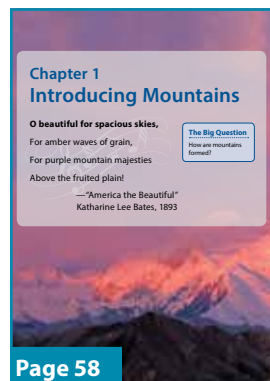
5 MIN

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 58–59



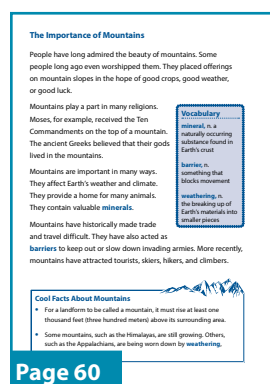
Invite a volunteer to read the four lines on page 58 aloud.

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 58–59, 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 60



Scaffold understanding as follows:

CORE VOCABULARY—Read aloud the four paragraphs in this section on page 60, 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 60. 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 61–67

Scaffold understanding as follows:

Invite a volunteer to read aloud the first paragraph in the section on page 61.

CORE VOCABULARY—Point out the vocabulary box at the top of page 61, 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 61.

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 61. 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.

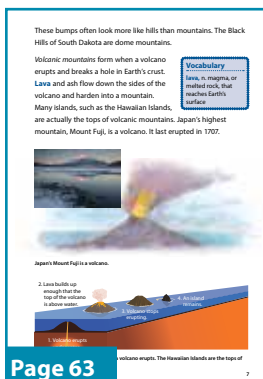
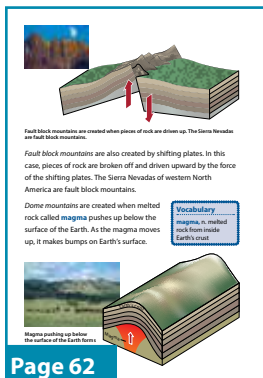
Read aloud the paragraph about *fault-block mountains* at the top of page 62.

SUPPORT—Call attention to the italicized text and the diagram of fault-block mountains on page 62. 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 62. Review the Core Vocabulary word *magma*, using the diagram at the bottom of page 62 to illustrate the word's meaning.

SUPPORT—Call attention to the diagram of dome mountains on page 62. 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 63–64. Point out the Core Vocabulary terms



The highest mountain in Africa, Mount Kilimanjaro (ki/uh'maɪn'jaɪ'oʊ), is an extinct (ek'stɪŋkt) 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 64

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-shən).

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 this 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'zān'ya), 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 circle/line that divides the Earth into the North and South Poles (2° latitude)

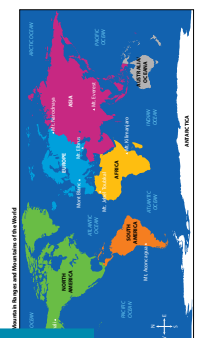
Page 65

Major Mountain Ranges and Mountains of the World

Mountain Name	Major Range or System	Location	Elevation (in feet)	Elevation (in meters)	Highest Point
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	Uzuli	Europe (Russia/Kazakhstan)	6,214	1,894	Russian Uzuli

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 66



Page 67

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 63.

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.

Have students read to themselves the last three paragraphs of the section on pages 64 and 65. 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 64. 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.

Call students' attention to the chart and map on pages 66 and 67. 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.

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 of the World

Ask students to turn to pages 66–67 in their Readers and distribute copies of the activity page Cool Facts About World Mountains (AP 1.1) and Major Mountain Ranges and Mountains of the World (AP 1.2). Explain that students will examine in greater detail today the chart and map on pages 66–67, 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 66. 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 67, 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 66 and 67 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.

CHAPTER 2

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 (68)

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

survive, v. to stay alive (70)

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 (70)

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 (73)

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.

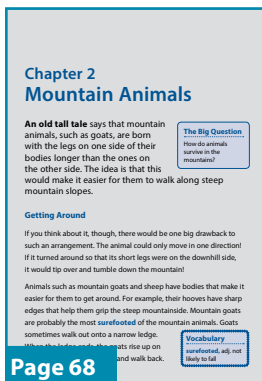
Draw students' attention to the Big Question. Explain the Core Vocabulary word *survive*. Tell students that they will be reading about the many kinds of animals that live on mountains and how they have adapted to help them survive harsh conditions.

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 68–69



Invite a volunteer to read the paragraph that begins "An old tall tale" and the first paragraph of the section "Getting Around" on page 68.

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 68. Explain the word *surefooted*. Point to the image on page 69 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.



"Surviving the Cold," Pages 70–71

Cool Facts About Mountain Animals

- The Rocky Mountains in western North America are home to 61 different species of mammals, including bobcats 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 western Himalayas. One new discovery is of a blue "walking" snailhead 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

hibernate, *h*-to go into a sleep-like state during winter and live off body fat

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

Page 70

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 unshaggy.

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 is found in the western United States. The mountain lion is a panther, cougar, or catamount. Once

This photo of a yellow-bellied marmot was taken in late autumn in the Rocky Mountains. Marmots can enter the winter by hibernating.

Page 71

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 70.

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 70–71 with a partner. Encourage students to refer back to the images on page 70 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.

"A Gallery of Animals," Pages 71–73

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 (gwah'nah'koos) live in the Andes of South America. Guanaos are related to llamas (lah'mas). 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!

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

This mountain goat lives high up in the most magnificent range of any animal. This photo was taken in the Alps, a mountain range in Europe.

Page 72

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.



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 (74)

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 (77)

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 (78)

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 (79)

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 (79)

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 58–59) and Mount Everest (page 64) 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.

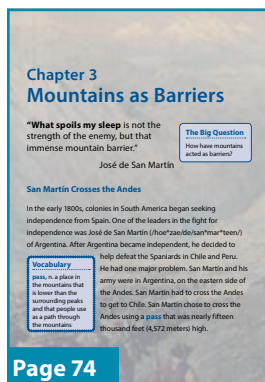
“What spoils my sleep” and “San Martín Crosses the Andes,” Pages 74–76

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 74. Explain the Core Vocabulary word *pass*, using the painting on pages 74–75 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 76.

SUPPORT—Direct students’ attention to the Cool Facts box on the bottom of page 76. 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 76

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 and Gaps,” Pages 76–79



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 years to complete. To drive a tunnel for cars, buses, and trucks runs

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

Page 77

Invite a volunteer to read the section “Getting Over or Through Mountains” on pages 76–77.

CORE VOCABULARY—Review the Core Vocabulary term *tunnel*, using the image on page 78 to illustrate the word's meaning.

Read aloud the section “Mountain Passes and Gaps” on pages 78–79.

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 79. 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.

INFERENTIAL—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.



This 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. Settles 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 the gap. It cut the amount of time needed to cross the state.

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

Page 78

"Mountains and People," Pages 79–81

Scaffold understanding as follows:

CORE VOCABULARY—Read aloud the first two paragraphs of the section on page 79. 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 80–81 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?

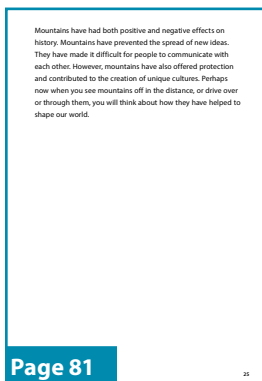
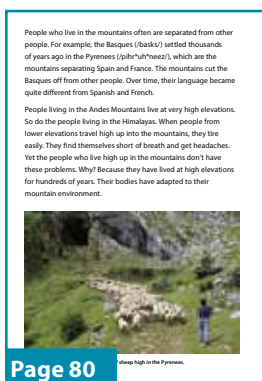
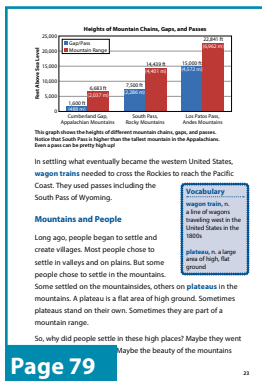
- » Their bodies have adapted to the thinner air so they don't get short of breath or get headaches.

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.



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 (82)

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

Variation(s): crystals

generator, n. a machine that makes electricity (85)

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 (85)

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 (86)

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

Variation(s): hydroelectric plants

industry, n. a business that manufactures a product or provides a service (87)

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 (87)

Example: People in the Himalayas raise yaks for milk.

Variation(s): yaks

terrace, v. to build level surfaces on a mountainside (87)

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 (89)

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 82–87 and add details to AP 1.1 on one day, finishing pages 88–91 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 82–84

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.

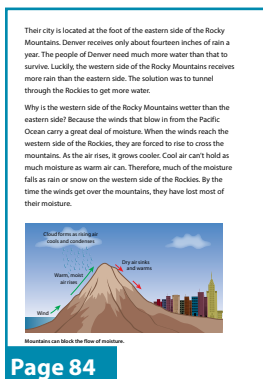
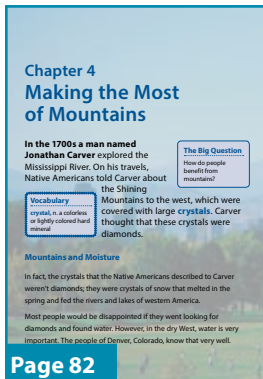
Invite volunteers to take turns reading the section “Mountains and Moisture” on pages 82–84.

SUPPORT—Draw students’ attention to the image on page 84. 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.



"Mountains and Power," Pages 85–86

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 85

Scaffold understanding as follows:

CORE VOCABULARY—Read aloud the first paragraph of “Mountains and Power” on page 85. 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 85–86. 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 86–87

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

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

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 less snow. This has created an extreme

Page 86

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 business that manufactures a product or provides a service. 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 86. 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 87

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'az), and people in the Himalayas raise yaks. Some farmers in the Alps herd 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 surfaces on a mountainside

Page 87

Scaffold understanding as follows:

CORE VOCABULARY—Read aloud the two paragraphs in the section “Farming” on page 87. Explain the vocabulary terms *yak* and *terrace* when they are encountered. Draw students’ attention to the image of terracing on page 88. 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 88–89



People have made a series of terraces 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 skiing, snowboarding, and hiking.

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 88

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 89–91



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.

Page 89

Scaffold understanding as follows:

Invite a volunteer to read the first two paragraphs of the section “Mountain Climbing” on page 89.

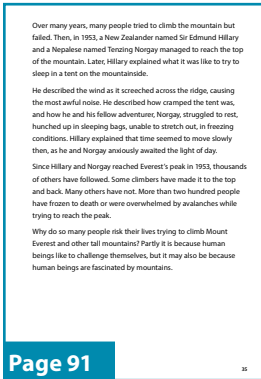
CORE VOCABULARY—Review the Core Vocabulary word *peak*. Direct students to a picture of a mountain, such as the image of Mount Everest on page 64 or Denali on pages 58–59. Ask students to point to the peak of the mountain in the image.

Read aloud the rest of the section on page 91.

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

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

Unit Assessment: *World Mountains* 119

Performance Task: *World Mountains* 123

- Performance Task Scoring Rubric 124
- Performance Task Activity: *World Mountains* 125
- *World Mountains* Performance Task Notes Table 127

Activity Pages

- Cool Facts About World Mountains (AP 1.1) 128
- Major Mountain Ranges and Mountains of the World (AP 1.2) 131
- *World Mountains* Domain Vocabulary (AP 4.1) 133

Answer Key: *World Mountains* 135

Unit Assessment: *World Mountains*

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*

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.

Benefits of Mountains	Challenges of Mountains
• provide homes for animals, such as goats, llamas, and yaks • contain valuable minerals, such as gold, copper, and zinc • contain coal, which is used to generate electricity • keep out or slow down invasions • allow unique cultures to develop • provide recreational opportunities such as skiing and mountain climbing • create downhill flow of water, which can be used to generate electricity	• act as barriers • difficult to farm on steep mountainsides • block the flow of moisture • can make people sick because of thin air at higher elevations • require different constructions, such as S-curve roads, tunnels, and canals, to make travel easier

Performance Task Scoring Rubric

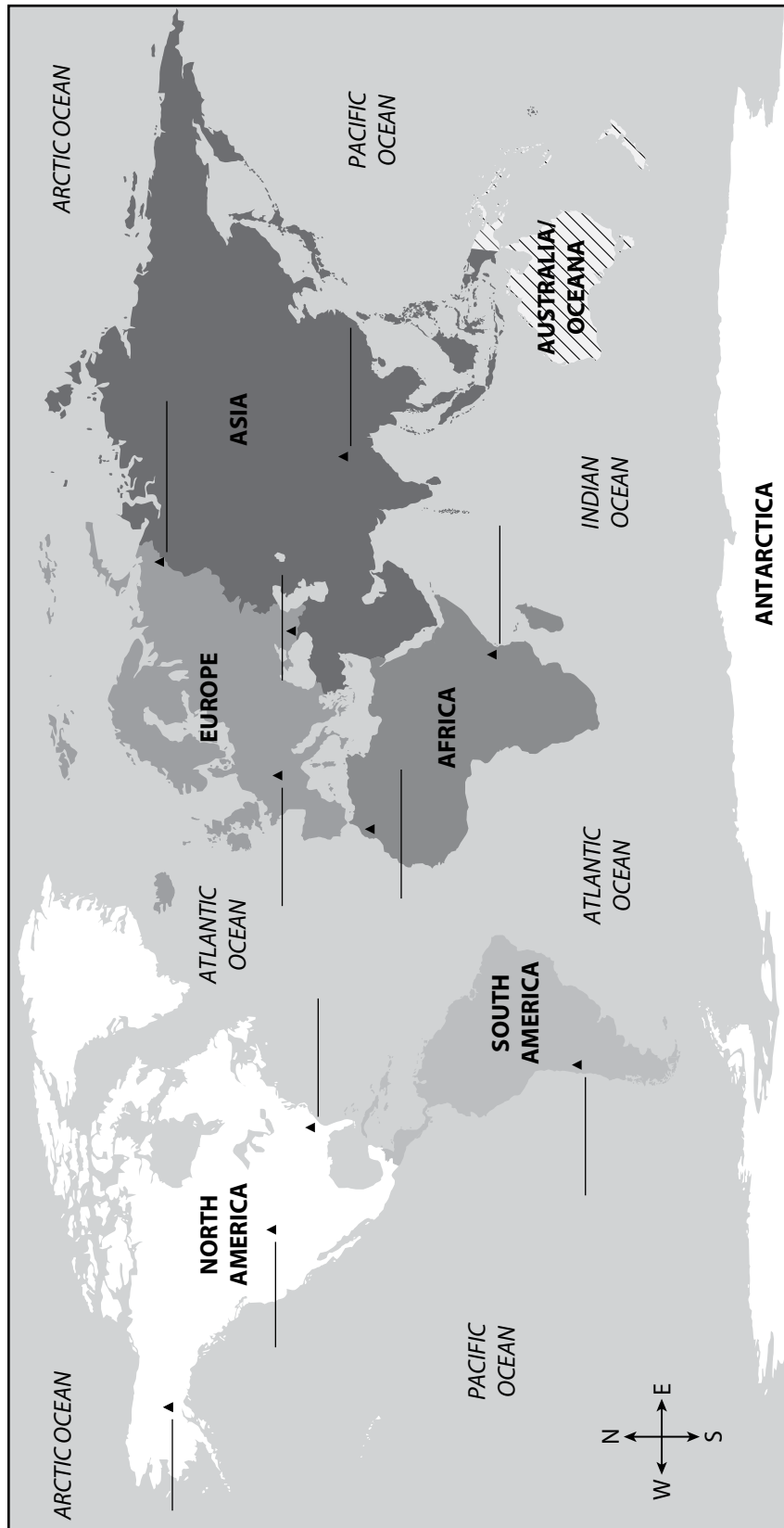
Note: Students should be evaluated on the basis of their completed maps and paragraphs, using the rubric.

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.

Above Average	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.
Average	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.
Adequate	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.
Inadequate	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*

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.

Benefits of Mountains	Challenges of Mountains

Name _____

Date _____

Activity Page 1.1

Use with Chapter 1

Cool Facts About World Mountains

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

Name _____

Date _____

Activity Page 1.1 (continued)

Use with Chapter 1

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

Name _____

Date _____

Activity Page 1.1 (continued)

Use with Chapter 1

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

Name _____

Date _____

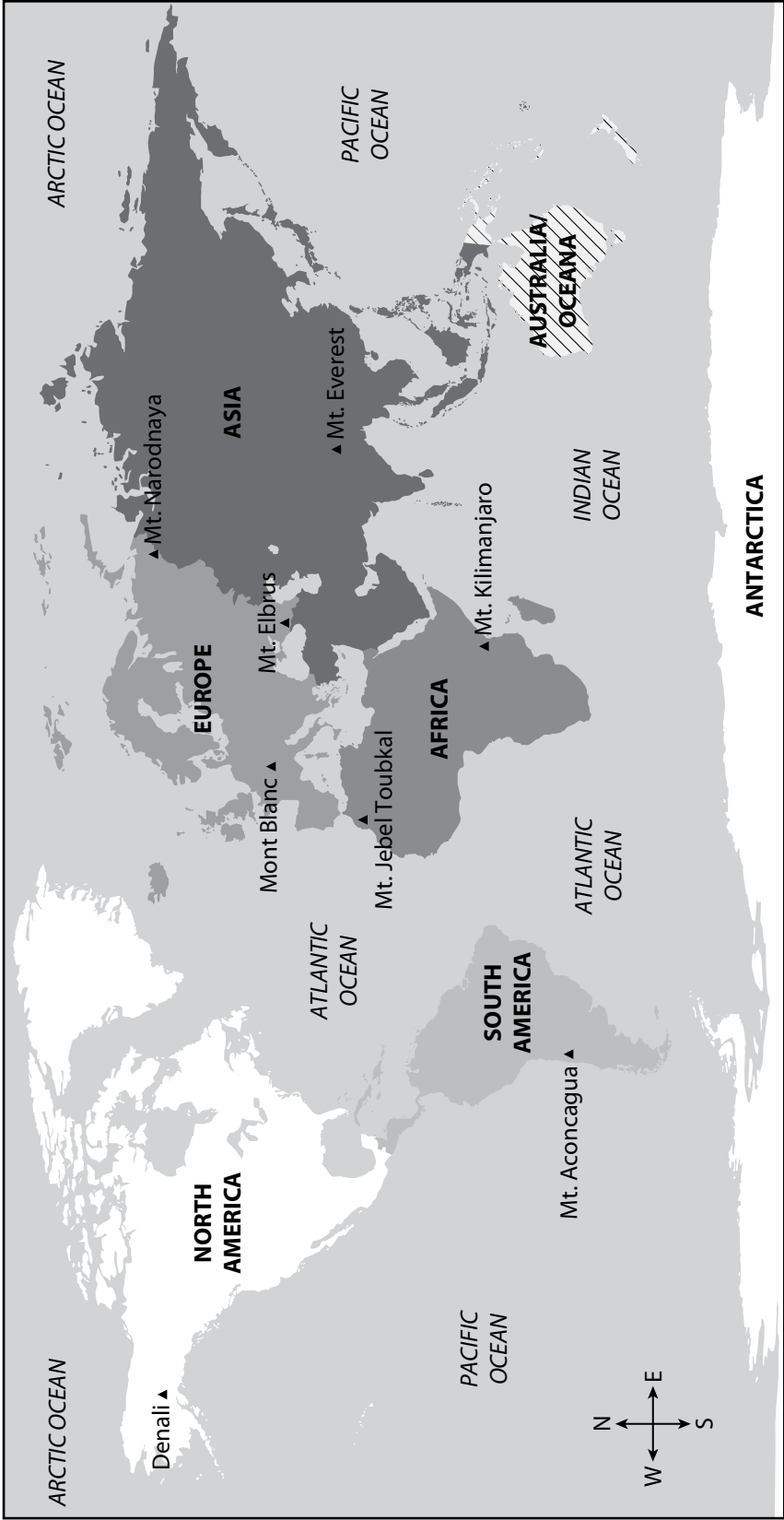
Activity Page 1.2**Use with Chapter 1****Major Mountain Ranges and Mountains of the World**

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



Name _____

Date _____

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

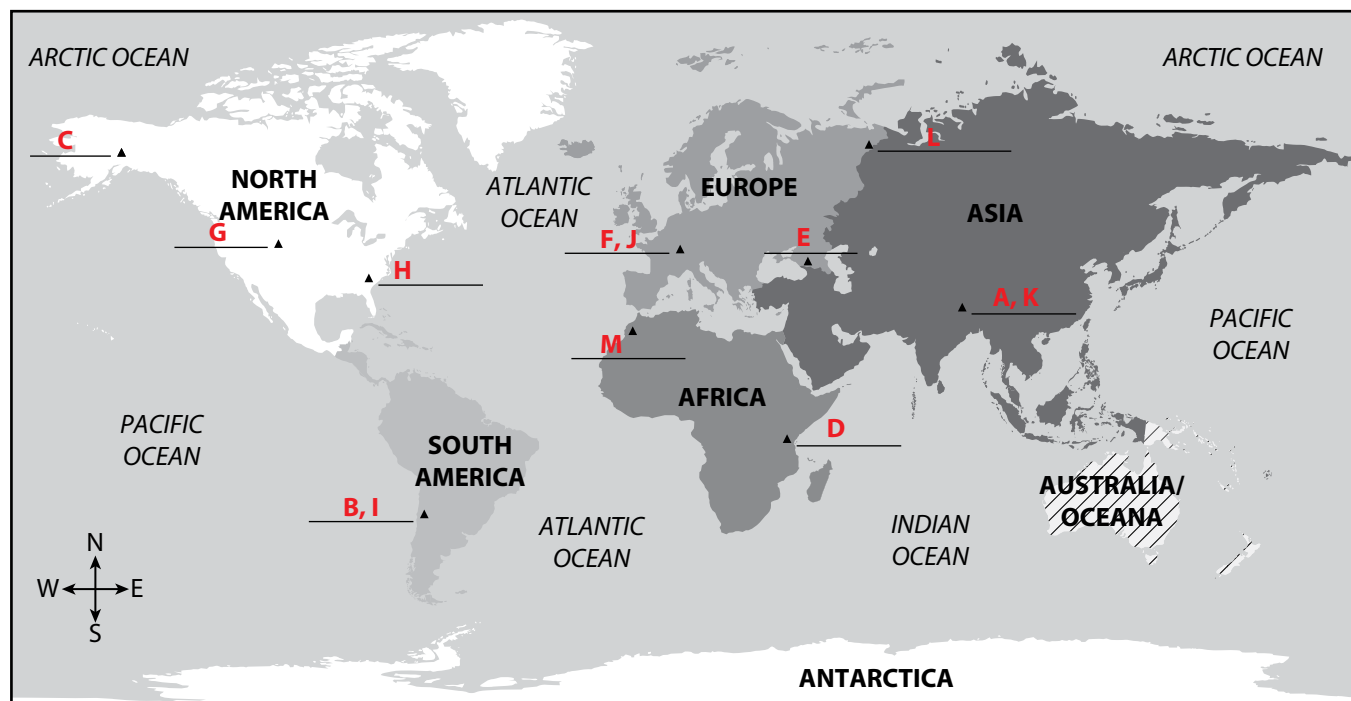
- _____ **14.** I am a passage through or under a natural feature such as mountain.
- _____ **15.** I am a large area of high, flat ground. I can stand on my own or be part of a mountain range.
- _____ **16.** I am a colorless or lightly colored hard mineral.
- _____ **17.** I am a wall used to stop the flow of water.
- _____ **18.** I am a machine that makes electricity.
- _____ **19.** I am a business that manufactures a product or provides a service.
- _____ **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 128–130)

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

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

World Mountains Domain Vocabulary (AP 4.1) (page 133)

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



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World Mountains

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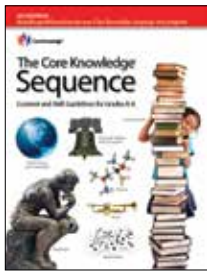
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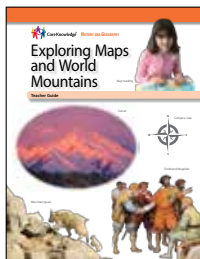
Exploring Maps and World Mountains

Core Knowledge History and Geography 4



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