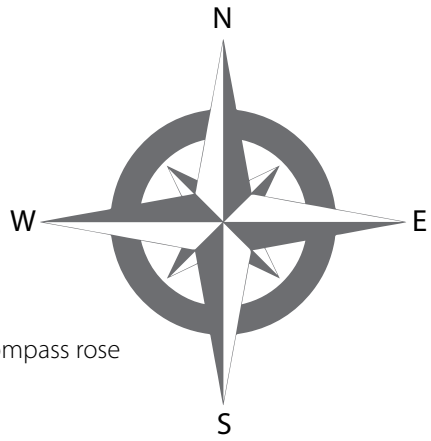
Note: If you print this PDF, please set scale to 100%
and turn off print scaling or "scale to fit" to make sure map scales print accurately.

Core Knowledge® History and Geography

Using Maps

Teacher Guide

Ferdinand Magellan



Compass rose

Map reading

Completion of Transcontinental Railroad, 1869


London
(Greenwich)
Using Maps
Teacher Guide
AFRICA
0°
60° W
30° W
SOUTH
AMERICA
ATLANTIC
OCEAN
Prime Meridian
N
W
E
S
Core Knowledge®

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Using Maps

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Using Maps

Reader

Core Knowledge Sequence History and Geography 4

UNIT 1

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 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 at the end of this Teacher Guide 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

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)
CKLA				
"Personal Narratives"	"Personal Narratives"	"Personal Narratives"	"Personal Narratives"	"Personal Narratives"

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
CKLA		
"Personal Narratives"	"Personal Narratives"	"Personal Narratives"

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

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.

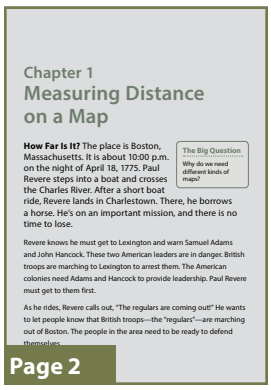
Introduce "Measuring Distance on a Map" 5 min

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.

Guided Reading Supports for "Measuring Distance on a Map" 25 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.

"How Far Is It?" Pages 2–6


Chapter 1
Measuring Distance on a Map

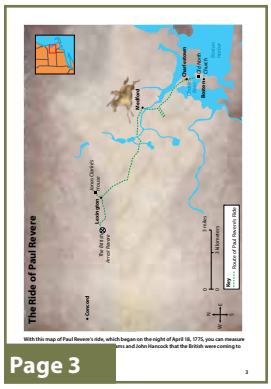
How Far Is It? The place is Boston, Massachusetts. It is about 10:00 p.m. on the night of April 18, 1775. Paul Revere steps into a boat and crosses the Charles River. After a short boat ride, Revere lands in Charlestown. There, he borrows a horse. He's on an important mission, and there is no time to lose.

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

Revere knows he must get to Lexington and warn Samuel Adams and John Hancock. These two American leaders are in danger. British troops are marching to Lexington to arrest them. The American colonies need Adams and Hancock to provide leadership. Paul Revere must get to them first.

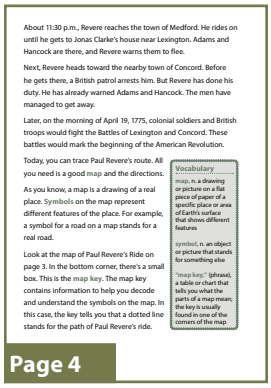
As he rides, Revere calls out, "The regulars are coming out!" He wants to let people know that British troops—the "regulars"—are marching out of Boston. The people in the area need to be ready to defend themselves.

Page 2



With this map of Paul Revere's ride, which began on the night of April 18, 1775, you can measure [illegible] and John Hancock that the British were coming to

Page 3


About 11:30 p.m., Revere reaches the town of Medford. He rides on until he gets to Jonas Clarke's house near Lexington. Adams and Hancock are there, and Revere warns them to flee.

Next, Revere heads toward the nearby town of Concord. Before he gets there, a British patrol arrests him. But Revere has done his duty. He has already warned Adams and Hancock. The men have managed to get away.

Later, on the morning of April 19, 1775, colonial soldiers and British troops would fight the Battles of Lexington and Concord. These battles would mark the beginning of the American Revolution.

Today, you can trace Paul Revere's route. All you need is a good map and the directions.

Vocabulary
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
symbol, n. an object or picture that stands for something else
"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

As you know, a map is a drawing of a real place. Symbols on the map represent different features of the place. For example, a symbol for a road on a map stands for a real road.

Look at the map of Paul Revere's Ride on page 3. In the bottom corner, there's a small box. This is the map key. The map key contains information to help you decode and understand the symbols on the map. In this case, the key tells you that a dotted line stands for the path of Paul Revere's ride.

Page 4

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.

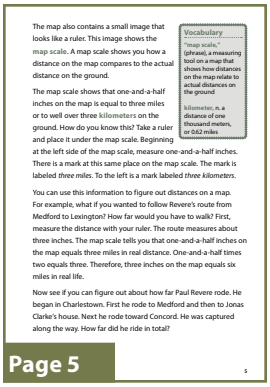
Explain that this map shows the route that Paul Revere took to warn the other colonists that the British were coming.

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.



The map also contains a small image that looks like a ruler. This image shows the map scale. A map scale shows you how a distance on the map compares to the actual distance on the ground.

The map scale shows that one-and-a-half inches on the map is equal to three miles or to well over three kilometers on the ground. How do you know this? Take a ruler and place it under the map scale. Beginning at the left side of the map scale, measure one-and-a-half inches. There is a mark at this same place on the map scale. The mark is labeled *three miles*. To the left is a mark labeled *three kilometers*.

You can use this information to figure out distances on a map. For example, what if you wanted to follow Revere's route from Medford to Lexington? How far would you have to walk? First, measure the distance with your ruler. The route measures about three inches. The map scale tells you that one-and-a-half inches on the map equals three miles in real distance. One-and-a-half times two equals three. Therefore, three inches on the map equals six miles in real life.

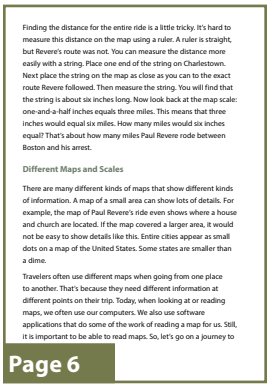
Now see if you can figure out about how far Paul Revere rode. He began in Charlestown. First he rode to Medford and then to Jonas Clarke's house. Next he rode toward Concord. He was captured along the way. How far did he ride in total?

Vocabulary

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

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

Page 5



Finding the distance for the entire ride is a little tricky. It's hard to measure this distance on the map using a ruler. A ruler is straight, but Revere's route was not. You can measure the distance more easily with a string. Place one end of the string on Charlestown. Next place the string on the map as close as you can to the exact route Revere followed. Then measure the string. You will find that the string is about six inches long. Now look back at the map scale: one-and-a-half inches equals three miles. This means that three inches would equal six miles. How many miles would six inches equal? That's about how many miles Paul Revere rode between Boston and his arrest.

Different Maps and Scales

There are many different kinds of maps that show different kinds of information. A map of a small area can show lots of details. For example, the map of Paul Revere's ride even shows where a house and church are located. If the map covered a larger area, it would not be easy to show details like this. Entire cities appear as small dots on a map of the United States. Some states are smaller than a dime.

Travelers often use different maps when going from one place to another. That's because they need different information at different points on their trip. Today, when looking at or reading maps, we often use our computers. We also use software applications that do some of the work of reading a map for us. Still, it is important to be able to read maps. So, let's go on a journey to

Page 6

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.

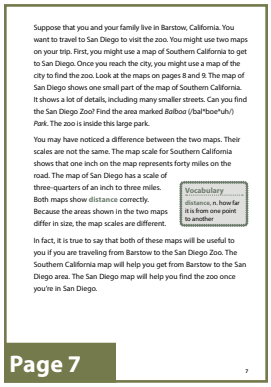
LITERAL—What can you tell by using the scale on a map?

» 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



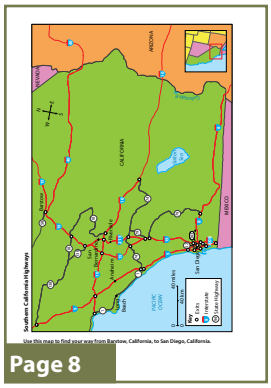
Suppose that you and your family live in Barstow, California. You want to travel to San Diego to visit the zoo. You might use two maps on your trip. First, you might use a map of Southern California to get to San Diego. Once you reach the city, you might use a map of the city to find the zoo. Look at 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.

Vocabulary
distance, n. how far it is from one point to another

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.

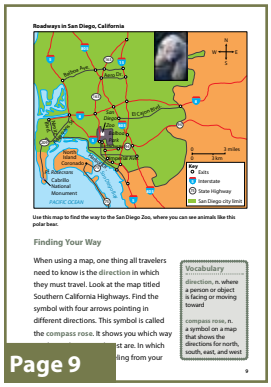
Page 7



Southern California Highways

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

Vocabulary
direction, n. where a person or object is facing or moving toward
compass rose, n. a symbol on a map that shows the directions for north, south, east, and west

Page 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.

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.

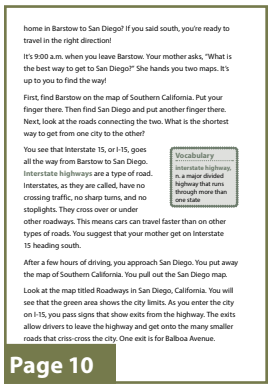
LITERAL—What information does the map of Southern California show?

» 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?

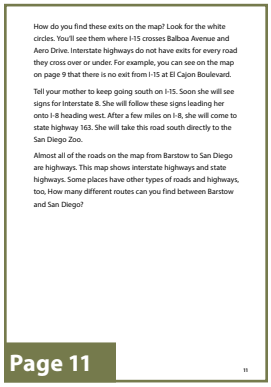
You see that Interstate 15, or I-15, goes all the way from Barstow to San Diego. Interstate highways are a type of road. Interstates, as they are called, have no crossing traffic, no sharp turns, and no stoplights. They cross over or under other roadways. This means cars can travel faster than on other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

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

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 criss-cross the city. One exit is for Balboa Avenue.

Page 10



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

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)

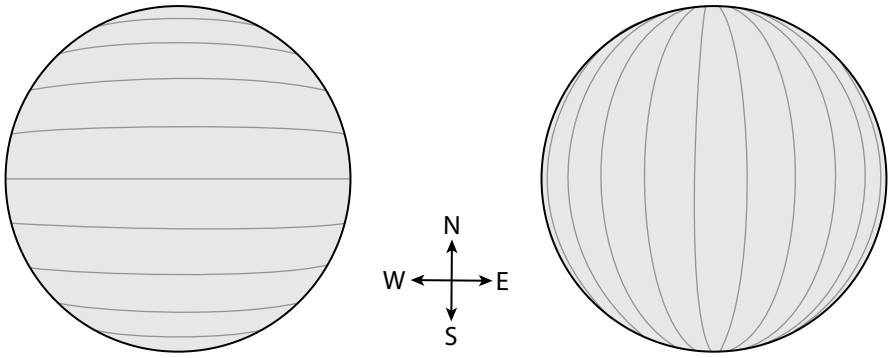
Example: Diego used coordinates to find his exact location on the map.
Variation(s): coordinate

The Core Lesson 35 min

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.



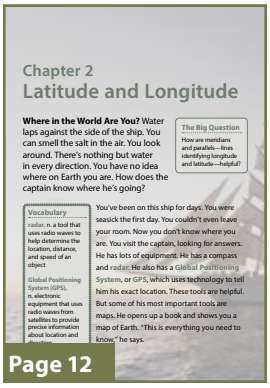
Parallels of Latitude **Meridians of Longitude**

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.

Guided Reading Supports for "Latitude and Longitude" 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.

"Where in the World Are You?" Pages 12–13


Chapter 2
Latitude and Longitude

Where in the World Are You? Water laps against the side of the ship. You can smell the salt in the air. You look around. There's nothing but water in every direction. You have no idea where on Earth you are. How does the captain know where he's going?

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

Vocabulary
radar, n. a tool that uses radio waves to help determine the location, distance, and speed of an object
Global Positioning System (GPS), n. electronic equipment that uses radio waves from satellites to provide precise information about location and direction

You've been on this ship for days. You were seasick the first day. You couldn't even leave your room. Now you don't know where you are. You visit the captain, looking for answers. He has lots of equipment. He has a compass and radar. He also has a Global Positioning System, or GPS, which uses technology to tell him his exact location. These tools are helpful. But some of his most important tools are maps. He opens up a book and shows you a map of Earth. "This is everything you need to know," he says.

Page 12


identify their location, just like people on land.

Page 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:

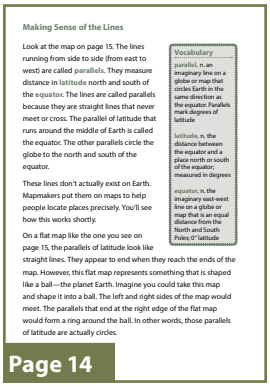
LITERAL—What is radar used for?

» 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


Making Sense of the Lines

Look at the map on page 15. The lines running from side to side (from east to west) are called parallels. They measure distance in latitude north and south of the equator. The lines are called parallels because they are straight lines that never meet or cross. The parallel of latitude that runs around the middle of Earth is called the equator. The other parallels circle the globe to the north and south of the equator.

These lines don't actually exist on Earth. Mapmakers put them on maps to help people locate places precisely. You'll see how this works shortly.

On a flat map like the one you see on page 15, the parallels of latitude look like straight lines. They appear to end when they reach the ends of the map. However, this flat map represents something that is shaped like a ball—the planet Earth. Imagine you could take this map and shape it into a ball. The left and right sides of the map would meet. The parallels that end at the right edge of the flat map would form a ring around the ball. In other words, those parallels of latitude are actually circles.

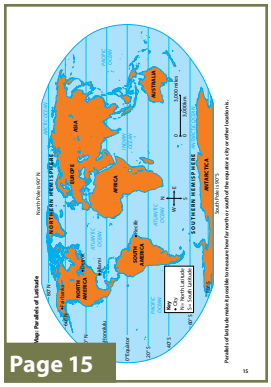
Vocabulary
parallel, n. an imaginary line on a globe or map that circles Earth in the same direction as the equator. Parallels mark degrees of latitude
latitude, n. the distance between the equator and a place north or south of the equator; measured in degrees
equator, n. the imaginary east-west line on a globe or map that is an equal distance from the North and South Poles; 0° latitude

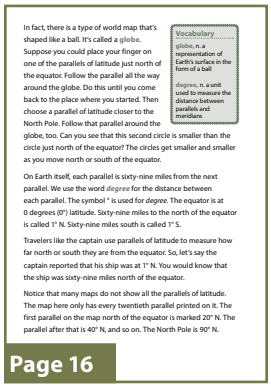
Page 14

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.

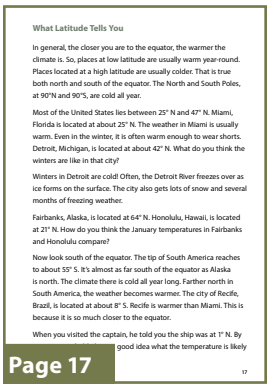
LITERAL—Using the compass rose, is the continent of Africa to the east or west of the continent of Australia?

» 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


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 warm 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.

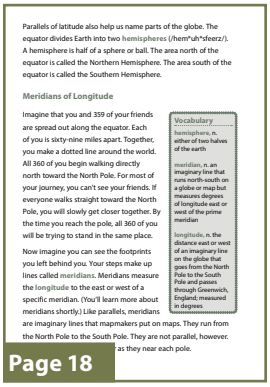
Fairbanks, Alaska, is located at 64° N. Honolulu, Hawaii, is located at 21° N. How do you think the January temperatures in Fairbanks and Honolulu compare?

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

17

Page 17


Parallels of latitude also help us name parts of the globe. The equator divides Earth into two hemispheres (/hem*uh*sfeerz/). 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.

Vocabulary
hemisphere, n. either of two halves of the earth
meridian, n. an imaginary line that runs north-south on a globe or map but measures degrees of longitude east or west of the prime meridian
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

Page 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.

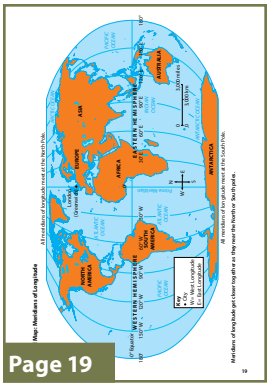
LITERAL/INFERENTIAL—The text said Fairbanks, Alaska, is located at about 64° N and that Honolulu, Hawaii, is located at 21° N. What do you think the temperature would be like in each of these cities in January? Why?

» 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.

"Meridians of Longitude" Pages 18–20

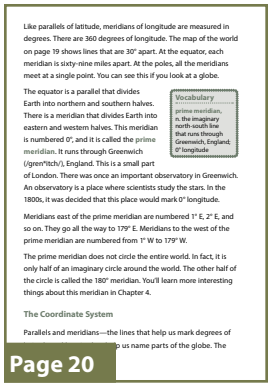


Page 19

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,


Like parallels of latitude, meridians of longitude are measured in degrees. There are 360 degrees of longitude. The map of the world on page 19 shows lines that are 30° apart. At the equator, each meridian is sixty-nine miles apart. At the poles, all the meridians meet at a single point. You can see this if you look at a globe.

The equator is a parallel that divides Earth into northern and southern halves. There is a meridian that divides Earth into eastern and western halves. This meridian is numbered 0°, and it is called the prime meridian. It runs through Greenwich (/gren*ɪtch/), England. This is a small part of London. There was once an important observatory in Greenwich. An observatory is a place where scientists study the stars. In the 1800s, it was decided that this place would mark 0° longitude.

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

Meridians east of the prime meridian are numbered 1° E, 2° E, and so on. They go all the way to 179° E. Meridians to the west of the prime meridian are numbered from 1° W to 179° W.

The prime meridian does not circle the entire world. In fact, it is only half of an imaginary circle around the world. The other half of the circle is called the 180° meridian. You'll learn more interesting things about this meridian in Chapter 4.

The Coordinate System

Parallels and meridians—the lines that help us mark degrees of [illegible] to us name parts of the globe. The

Page 20

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:

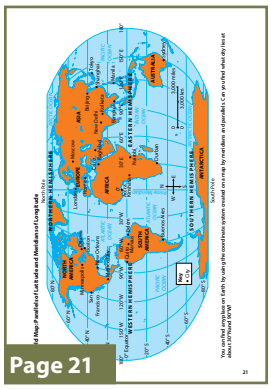
LITERAL—What is the measure 0° longitude called?

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

EVALUATIVE—How are meridians and parallels different?

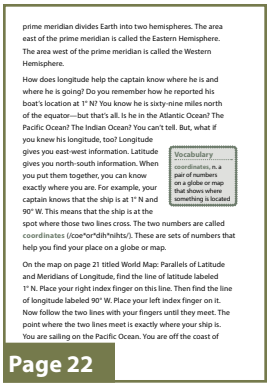
» Meridians run in a north-south direction and move closer together as they near the North and South Poles. Parallels run in an east-west direction alongside each other but never touch.

"The Coordinate System" Pages 20–23


Page 21

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*dih*nihts/). These are sets of numbers that help you find your place on a globe or map.

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

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

Page 22


Now 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

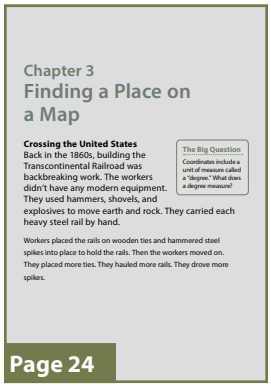
built had to meet in the middle. Leave the lines on the board; they will be used for discussion during class.

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


Chapter 3
Finding a Place on a Map

Crossing the United States
Back in the 1860s, building the Transcontinental Railroad was backbreaking work. The workers didn't have any modern equipment. They used hammers, shovels, and explosives to move earth and rock. They carried each heavy steel rail by hand.

The Big Question
Coordinates include a unit of measure called a "degree." What does a degree measure?

Workers placed the rails on wooden ties and hammered steel spikes into place to hold the rails. Then the workers moved on. They placed more ties. They hauled more rails. They drove more spikes.

Page 24

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.


The Transcontinental Railroad

Page 25

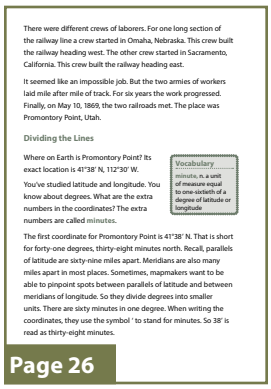
After the students finish reading, ask the following questions:

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.


There were different crews of laborers. For one long section of the railway line a crew started in Omaha, Nebraska. This crew built the railway heading west. The other crew started in Sacramento, California. This crew built the railway heading east.

It seemed like an impossible job. But the two armies of workers laid mile after mile of track. For six years the work progressed. Finally, on May 10, 1869, the two railroads met. The place was Promontory Point, Utah.

Dividing the Lines

Where on Earth is Promontory Point? Its exact location is 41°38′ N, 112°30′ W.

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

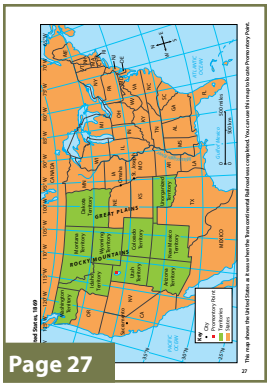
You've studied latitude and longitude. You know about degrees. What are the extra numbers in the coordinates? The extra numbers are called minutes.

The first coordinate for Promontory Point is 41°38′ N. That is short for forty-one degrees, thirty-eight minutes north. Recall, parallels of latitude are sixty-nine miles apart. Meridians are also many miles apart in most places. Sometimes, mapmakers want to be able to pinpoint spots between parallels of latitude and between meridians of longitude. So they divide degrees into smaller units. There are sixty minutes in one degree. When writing the coordinates, they use the symbol ′ to stand for minutes. So 38′ is read as thirty-eight minutes.

Page 26

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?

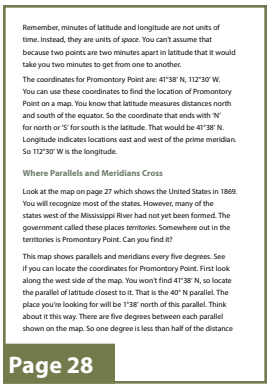
» If the directional designations for latitude and longitude were not included, it would be impossible to identify the precise location indicated by the coordinates. For example, 41° latitude could refer to two possible locations, one at 41° N or another at 41° S. Likewise, 112° longitude could refer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


Page 27

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.

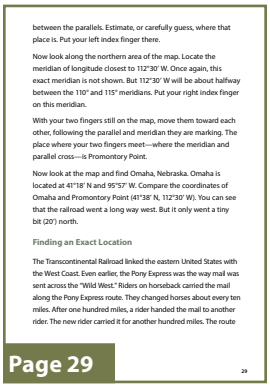
The coordinates for Promontory Point are: 41°38' N, 112°30' W. You can use these coordinates to find the location of Promontory Point on a map. You know that latitude measures distances north and south of the equator. So the coordinate that ends with 'N' for north or 'S' for south is the latitude. That 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. The 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


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.

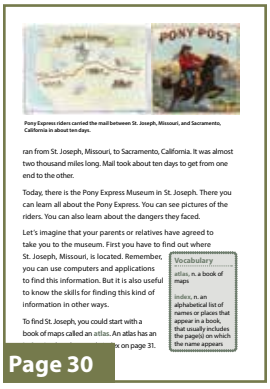
With your two fingers still on the map, move them toward each other, following the parallel and meridian they are marking. The place where your two fingers meet—where the meridian and parallel cross—is Promontory Point.

Now look at the map and find Omaha, Nebraska. Omaha is located at 41°18' N and 95°57' 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



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

Vocabulary
atlas, n. a book of maps
index, n. an alphabetical list of names or places that appear in a book, that usually includes the page(s) on which the name appears

Page 30

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.)

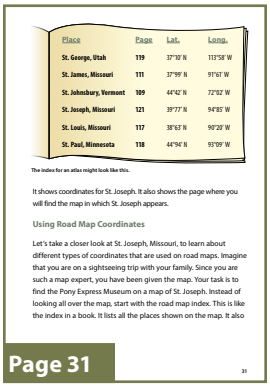
As you read this section aloud, pause to direct students to follow the directions in the text, using the map found on page 27 or AP 3.1. Go step-by-step through the instructions in the text. Work your way around the room, assisting students in finding each parallel and meridian described in the text. 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.

Have students read the section "Finding an Exact Location" independently. 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.



Place	Page	Lat.	Long.
St. George, Utah	119	37°30' N	113°58' W
St. James, Missouri	111	37°99' N	91°61' W
St. Johnsbury, Vermont	109	44°42' N	72°02' W
St. Joseph, Missouri	121	39°77' N	94°85' W
St. Louis, Missouri	117	38°63' N	90°20' W
St. Paul, Minnesota	118	44°94' N	93°09' W

The index for an atlas might look like this.

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

31

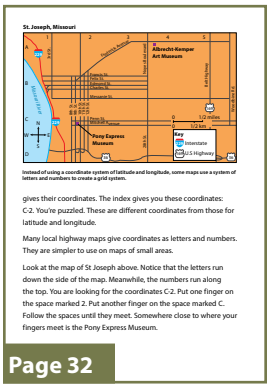
LITERAL—What is an atlas?

» 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



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

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.

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 1.2
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

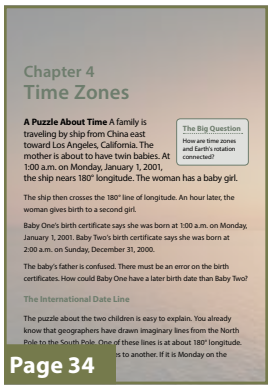
Ask students to think about different trips they may have taken. Has anyone ever traveled to a different state or even a different country? Did he or she ever notice a change in the time and have to adjust a watch or clock either ahead an hour or more or back an hour or more to make up for the time difference?

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


Chapter 4
Time Zones

A Puzzle About Time A family is traveling by ship from China east toward Los Angeles, California. The mother is about to have twin babies. At 1:00 a.m. on Monday, January 1, 2001, the ship nears 180° longitude. The woman has a baby girl.

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

The ship then crosses the 180° line of longitude. An hour later, the woman gives birth to a second girl.

Baby One's birth certificate says she was born at 1:00 a.m. on Monday, January 1, 2001. Baby Two's birth certificate says she was born at 2:00 a.m. on Sunday, December 31, 2000.

The baby's father is confused. There must be an error on the birth certificates. How could Baby One have a later birth date than Baby Two?

The International Date Line

The puzzle about the two children is easy to explain. You already know that geographers have drawn imaginary lines from the North Pole to the South Pole. One of these lines is at about 180° longitude.

Page 34

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.

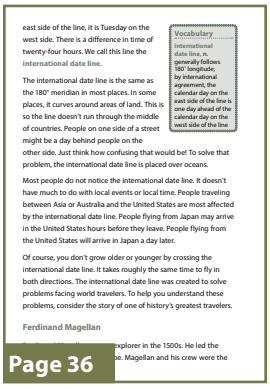
Now ask students to locate the 180° meridian. Call students' attention to the map key, and point out that this meridian corresponds closely to a line called the international date line. Explain to students that like


Page 35

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.


east side of the line, it is Tuesday on the west side. There is a difference in time of twenty-four hours. We call this line the international date line.

Vocabulary
international date line, n. generally follows 180° longitude; by international agreement, the calendar day on the east side of the line is one day ahead of the calendar day on the west side of the line

The international date line is the same as the 180° meridian in most places. In some places, it curves around areas of land. This is so the line doesn't run through the middle of countries. People on one side of a street might be a day behind people on the other side. Just think how confusing that would be! To solve that problem, the international date line is placed over oceans.

Most people do not notice the international date line. It doesn't have much to do with local events or local time. People traveling between Asia or Australia and the United States are most affected by the international date line. People flying from Japan may arrive in the United States hours before they leave. People flying from the United States will arrive in Japan a day later.

Of course, you don't grow older or younger by crossing the international date line. It takes roughly the same time to fly in both directions. The international date line was created to solve problems facing world travelers. To help you understand these problems, consider the story of one of history's greatest travelers.

Ferdinand Magellan

explorer in the 1500s. He led the ...e. Magellan and his crew were the

Page 36

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

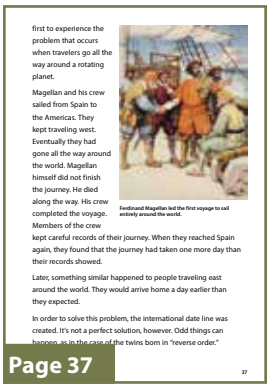
LITERAL—How does the international date line differ from the 180° meridian?

» 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


first to experience the problem that occurs when travelers go all the way around a rotating planet.

Magellan and his crew sailed from Spain to the Americas. They kept traveling west. Eventually they had gone all the way around the world. Magellan himself did not finish the journey. He died along the way. His crew completed the voyage. Members of the crew kept careful records of their journey. When they reached Spain again, they found that the journey had taken one more day than their records showed.

Ferdinand Magellan led the first voyage to sail entirely around the world.

Later, something similar happened to people traveling east around the world. They would arrive home a day earlier than they expected.

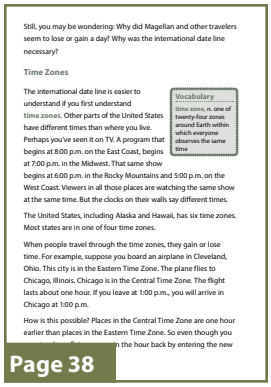
In order to solve this problem, the international date line was created. It's not a perfect solution, however. Odd things can happen, as in the case of the twins born in "reverse order."

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.


Still, you may be wondering: Why did Magellan and other travelers seem to lose or gain a day? Why was the international date line necessary?

Time Zones

The international date line is easier to understand if you first understand time zones. Other parts of the United States have different times than where you live. Perhaps you've seen it on TV. A program that begins at 8:00 p.m. on the East Coast, begins at 7:00 p.m. in the Midwest. That same show begins at 6:00 p.m. in the Rocky Mountains and 5:00 p.m. on the West Coast. Viewers in all those places are watching the same show at the same time. But the clocks on their walls say different times.

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

The United States, including Alaska and Hawaii, has six time zones. Most states are in one of four time zones.

When people travel through the time zones, they gain or lose time. For example, suppose you board an airplane in Cleveland, Ohio. This city is in the Eastern Time Zone. The plane flies to Chicago, Illinois. Chicago is in the Central Time Zone. The flight lasts about one hour. If you leave at 1:00 p.m., you will arrive in Chicago at 1:00 p.m.

How is this possible? Places in the Central Time Zone are one hour earlier than places in the Eastern Time Zone. So even though you

Page 38

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

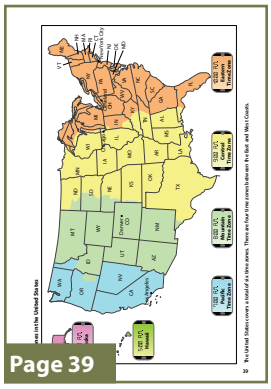
LITERAL—What issue did Ferdinand Magellan's crew discover when they returned from their journey?

» 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


Page 39

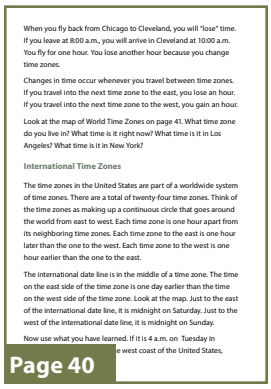
Read "Time Zones" on pages 38–40 aloud to the class.

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.


When you fly back from Chicago to Cleveland, you will "lose" time. If you leave at 8:00 a.m., you will arrive in Cleveland at 10:00 a.m. You fly for one hour. You lose another hour because you change time zones.

Changes in time occur whenever you travel between time zones. If you travel into the next time zone to the east, you lose an hour. If you travel into the next time zone to the west, you gain an hour.

Look at the map of World Time Zones on page 41. What time zone do you live in? What time is it right now? What time is it in Los Angeles? What time is it in New York?

International Time Zones

The time zones in the United States are part of a worldwide system of time zones. There are a total of twenty-four time zones. Think of the time zones as making up a continuous circle that goes around the world from east to west. Each time zone is one hour apart from its neighboring time zones. Each time zone to the east is one hour later than the one to the west. Each time zone to the west is one hour earlier than the one to the east.

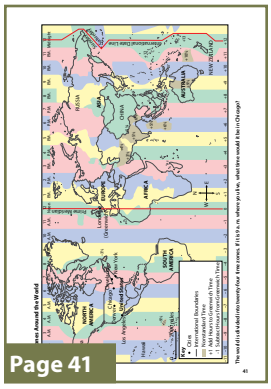
The international date line is in the middle of a time zone. The time on the east side of the time zone is one day earlier than the time on the west side of the time zone. Look at the map. Just to the east of the international date line, it is midnight on Saturday. Just to the west of the international date line, it is midnight on Sunday.

Now use what you have learned. If it is 4 a.m. on Tuesday in

Page 40

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

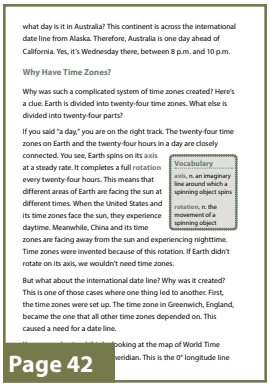
SUPPORT—Call attention to the map of international time zones on page 41, and read the caption out loud. Help students determine the time in London if it's 9 a.m. where your students live.


Page 41

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.


what day is it in Australia? This continent is across the international date line from Alaska. Therefore, Australia is one day ahead of California. Yes, it's Wednesday there, between 8 p.m. and 10 p.m.

Why Have Time Zones?

Why was such a complicated system of time zones created? Here's a clue. Earth is divided into twenty-four time zones. What else is divided into twenty-four parts?

If you said "a day," you are on the right track. The twenty-four time zones on Earth and the twenty-four hours in a day are closely connected. You see, Earth spins on its axis at a steady rate. It completes a full rotation every twenty-four hours. This means that different areas of Earth are facing the sun at different times. When the United States and its time zones face the sun, they experience daytime. Meanwhile, China and its time zones are facing away from the sun and experiencing nighttime. Time zones were invented because of this rotation. If Earth didn't rotate on its axis, we wouldn't need time zones.

Vocabulary
axis, n. an imaginary line around which a spinning object spins
rotation, n. the movement of a spinning object

But what about the international date line? Why was it created? This is one of those cases where one thing led to another. First, the time zones were set up. The time zone in Greenwich, England, became the one that all other time zones depended on. This caused a need for a date line.

looking at the map of World Time
eridian. This is the 0° longitude line

Page 42

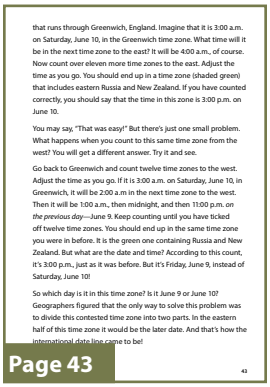
LITERAL—How many time zones are there in total around the world?

» 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


that runs through Greenwich, England. Imagine that it is 3:00 a.m. on Saturday, June 10, in the Greenwich time zone. What time will it be in the next time zone to the east? It will be 4:00 a.m., of course. Now count over eleven more time zones to the east. Adjust the time as you go. You should end up in a time zone (shaded green) that includes eastern Russia and New Zealand. If you have counted correctly, you should say that the time in this zone is 3:00 p.m. on June 10.

You may say, "That was easy!" But there's just one small problem. What happens when you count to this same time zone from the west? You will get a different answer. Try it and see.

Go back to Greenwich and count twelve time zones to the west. Adjust the time as you go. If it is 3:00 a.m. on Saturday, June 10, in Greenwich, it will be 2:00 a.m in the next time zone to the west. Then it will be 1:00 a.m., then midnight, and then 11:00 p.m. *on the previous day*—June 9. Keep counting until you have ticked off twelve time zones. You should end up in the same time zone you were in before. It is the green one containing Russia and New Zealand. But what are the date and time? According to this count, it's 3:00 p.m., just as it was before. But it's Friday, June 9, instead of Saturday, June 10!

So which day is it in this time zone? Is it June 9 or June 10? Geographers figured that the only way to solve this problem was to divide this contested time zone into two parts. In the eastern half of this time zone it would be the later date. And that's how the

43

Page 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 World Time Zones 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 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."

CHAPTER 5

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

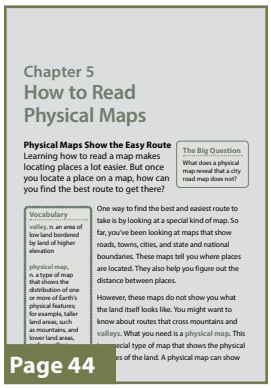
Introduce "How to Read Physical Maps" 5 min

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


Chapter 5
How to Read Physical Maps

Physical Maps Show the Easy Route
Learning how to read a map makes locating places a lot easier. But once you locate a place on a map, how can you find the best route to get there?

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

Vocabulary
valley, n. an area of low land bordered by land of higher elevation
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,

One way to find the best and easiest route to take is by looking at a special kind of map. So far, you've been looking at maps that show roads, towns, cities, and state and national boundaries. These maps tell you where places are located. They also help you figure out the distance between places.

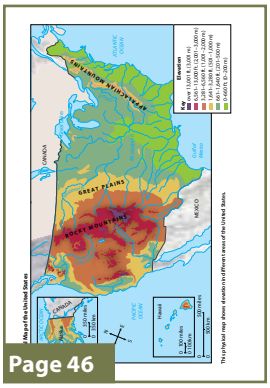
However, these maps do not show you what the land itself looks like. You might want to know about routes that cross mountains and valleys. What you need is a physical map. This special type of map that shows the physical ...s of the land. A physical map can show

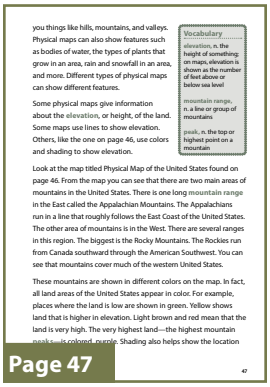
Page 44

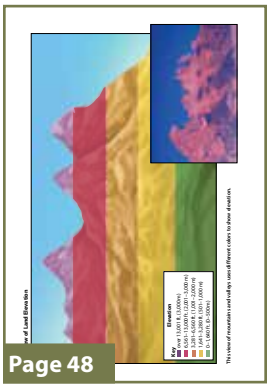
Ask a student volunteer to read the first three paragraphs of "Physical Maps Show the Easy Route" on pages 44–47 out loud. Note: The third paragraph on page 44 continues to the top of page 47.

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.

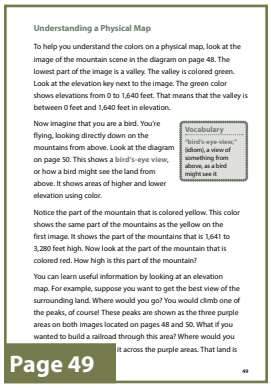
INFERENTIAL—Using the physical map on page 46, what is the lowest-lying land region in the United States?

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.

Vocabulary
"bird's-eye view," (idiom), a view of something from above, as a bird might see it

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

49

Page 49

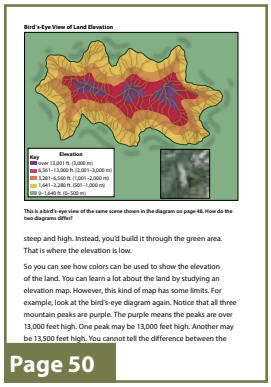
Read the entire section aloud to the class, pausing to explain Core Vocabulary, and use the various physical maps as students follow along in their Student Readers.

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.


Bird's-Eye View of Land Elevation

Key
Elevation
over 13,001 ft. (3,000 m)
6,561–13,000 ft. (2,001–3,000 m)
3,281–6,560 ft. (1,001–2,000 m)
1,641–3,280 ft. (501–1,000 m)
0–1,640 ft. (0–500 m)

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

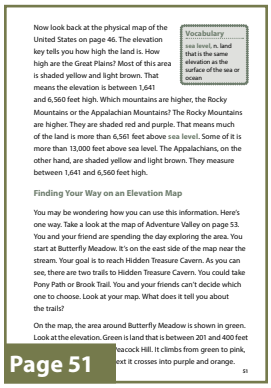
After reading the text, ask the following questions:

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.


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.

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

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 eacock Hill. It climbs from green to pink, ext it crosses into purple and orange.

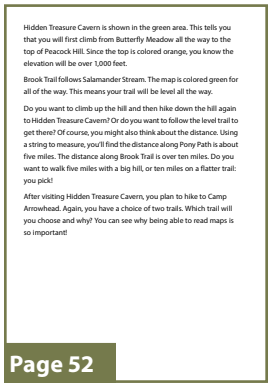
51

Page 51

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 Peacock Hill. Since the top is colored orange, you know the elevation will be over 1,000 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.

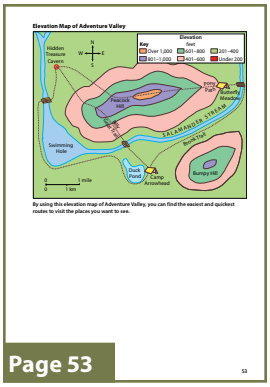
Do you want to climb up the hill and then hike down the hill again to Hidden Treasure Cavern? Or do you want to follow the level trail to get there? Of course, you might also think about the distance. Using a string to measure, you'll find the distance along Pony Path is about five miles. The distance 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.

UNIT 1

Teacher Resources

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.

Name _____ Date _____

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*

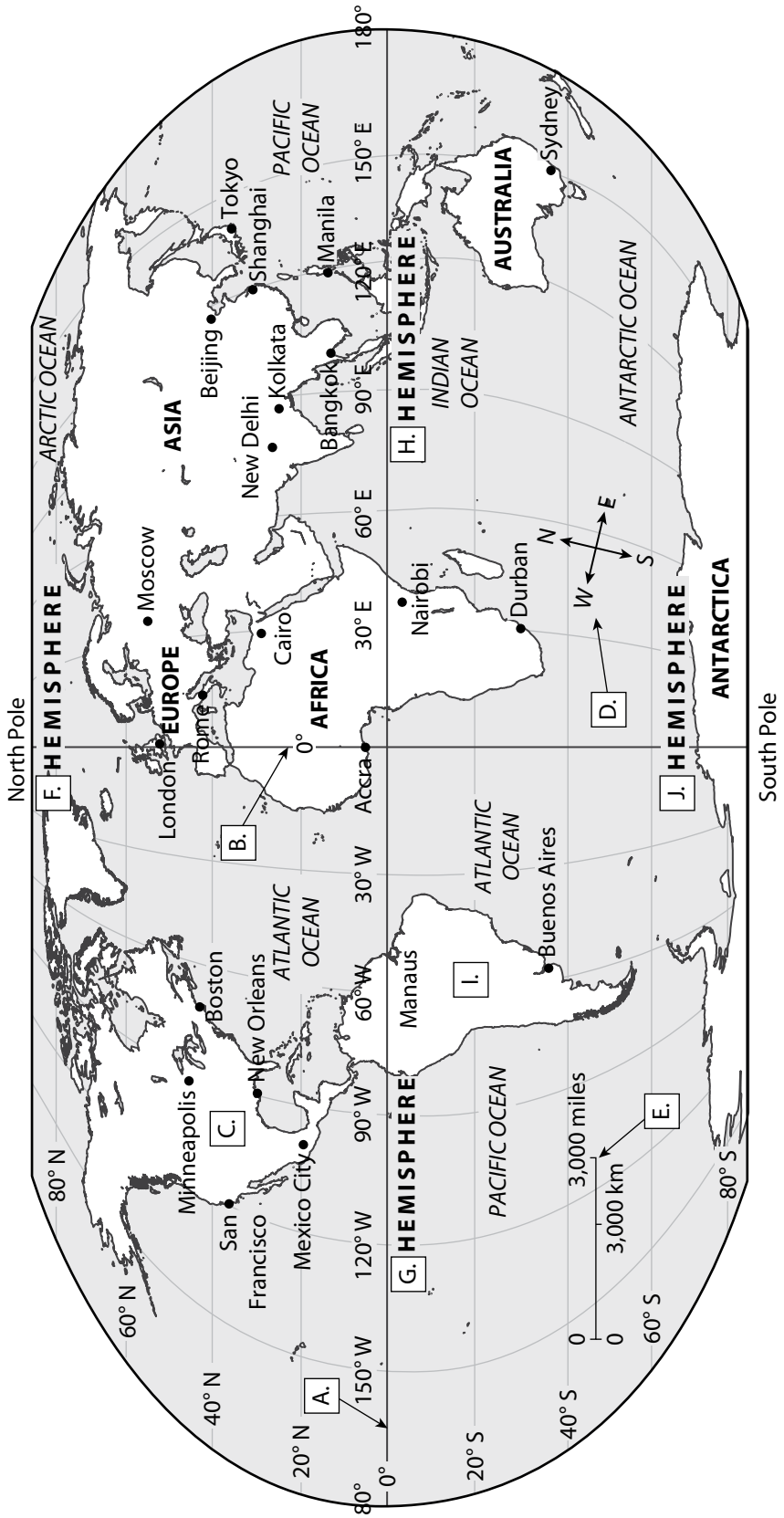
Teacher Directions: Using maps is a fundamental skill that helps students be successful across content areas. Have students use the pages that follow, Identify Parts and Labels of a World Map, Use a Map Grid, and Answer Questions About *Using Maps,* to demonstrate their proficiency at identifying and 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?

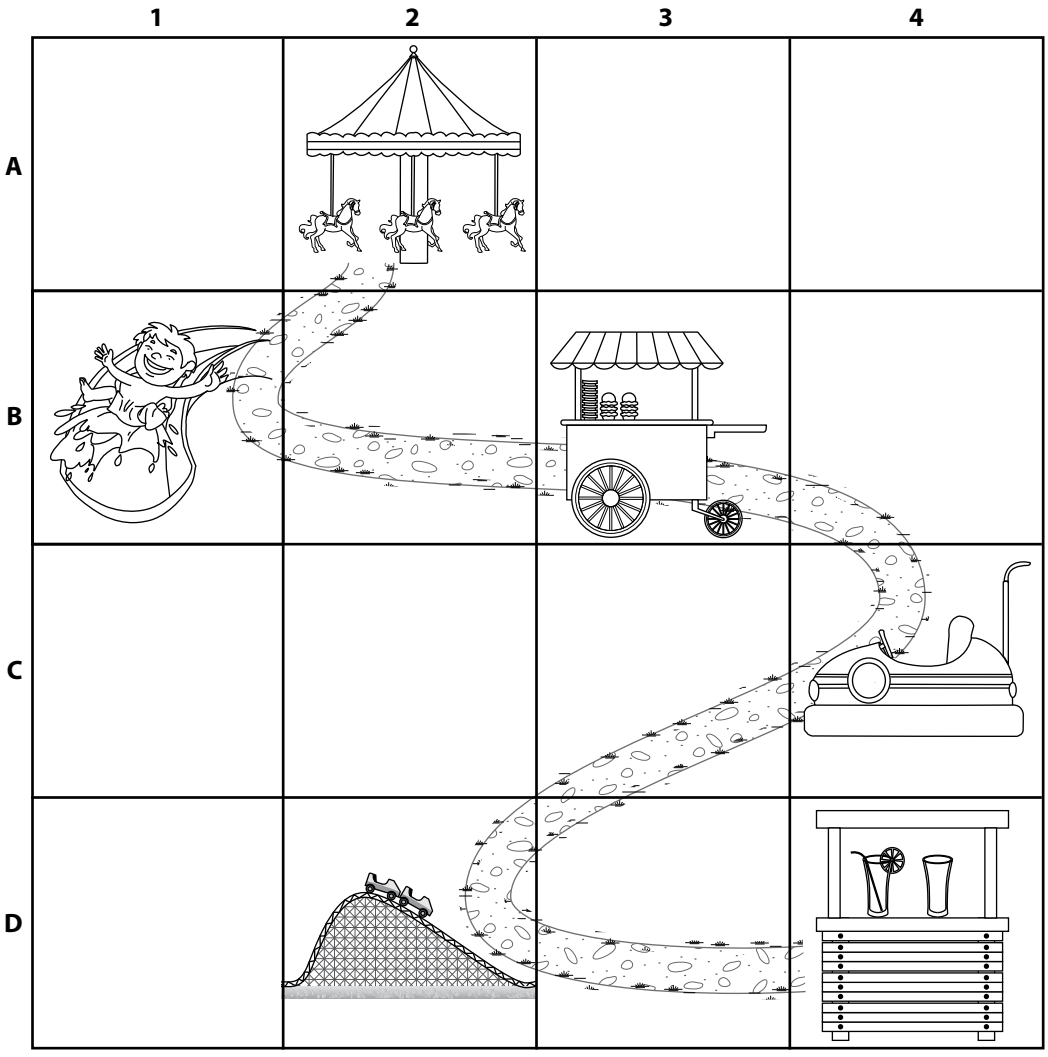
4. This city is located very close to 20° N and 90° E on the map. What is it?

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? _____

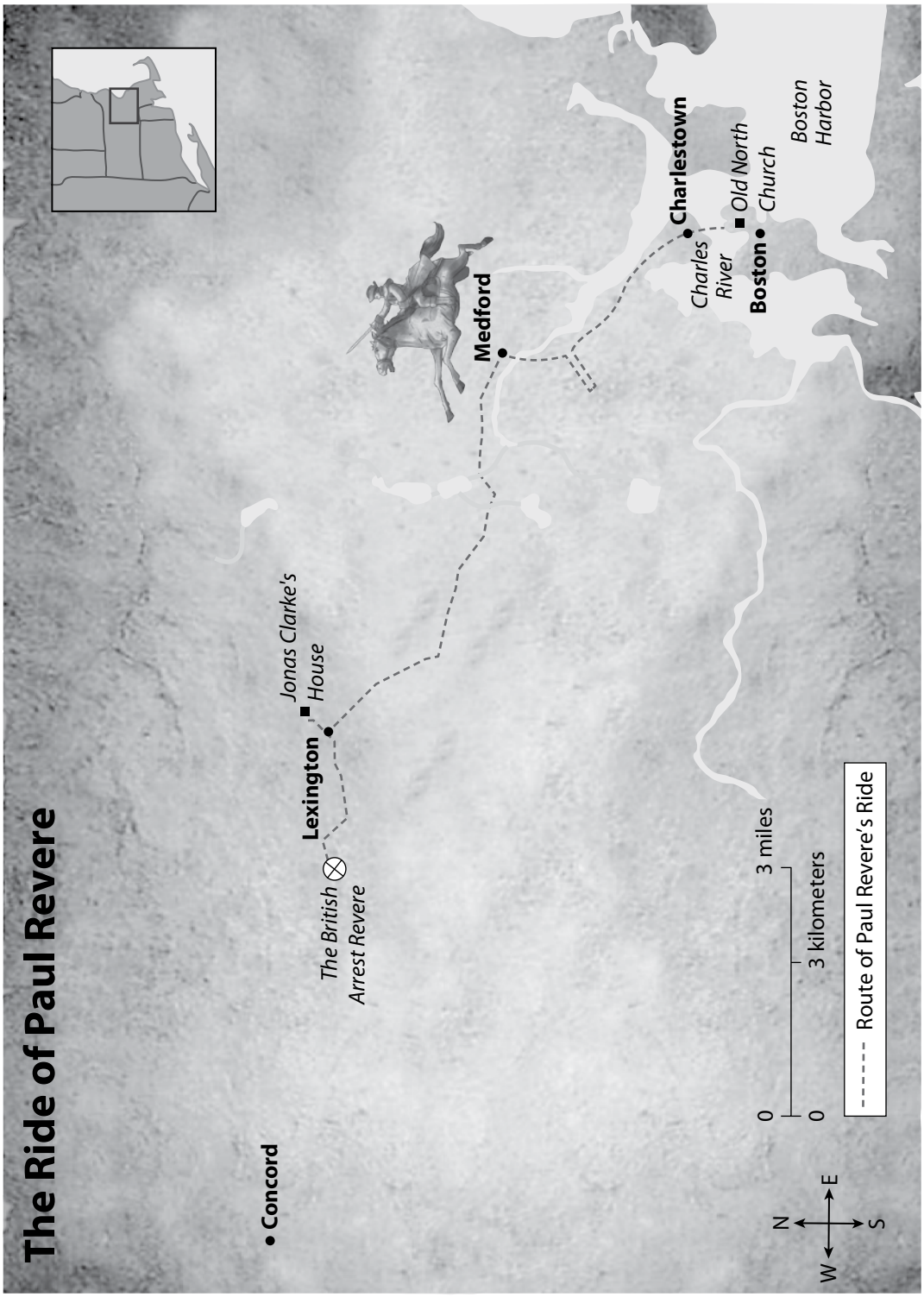
6. The prime meridian passes through which city and country? _____

7. What type of map would you use to locate rivers, mountains, and valleys? _____

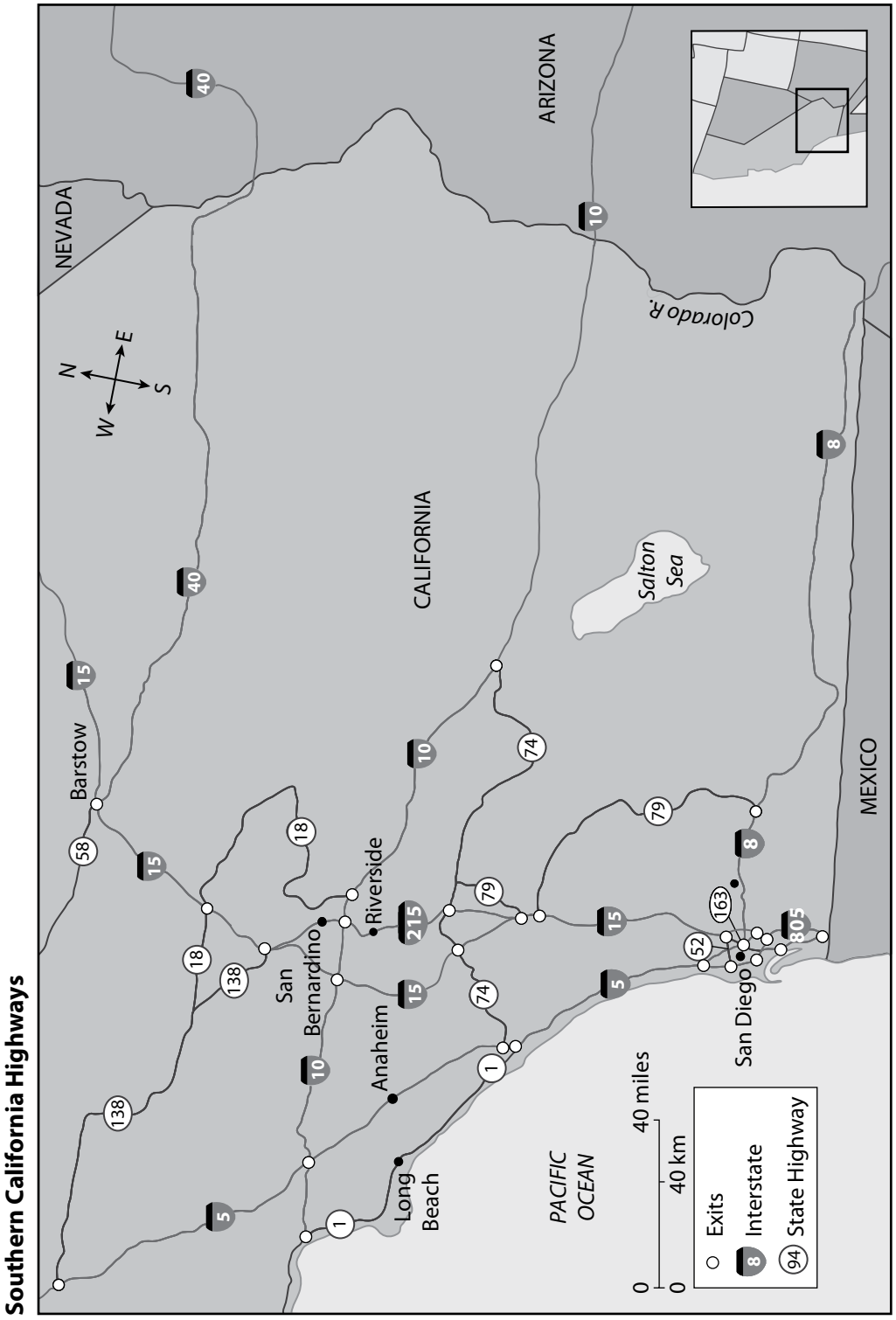
8. The international date line passes mostly through what? _____

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 _____


The Ride of Paul Revere
Concord
Lexington
Jonas Clarke's House
The British Arrest Revere
Medford
Charlestown
Charles River
Boston
Old North Church
Boston Harbor
0
3 miles
0
3 kilometers
Route of Paul Revere's Ride
N
E
W
S

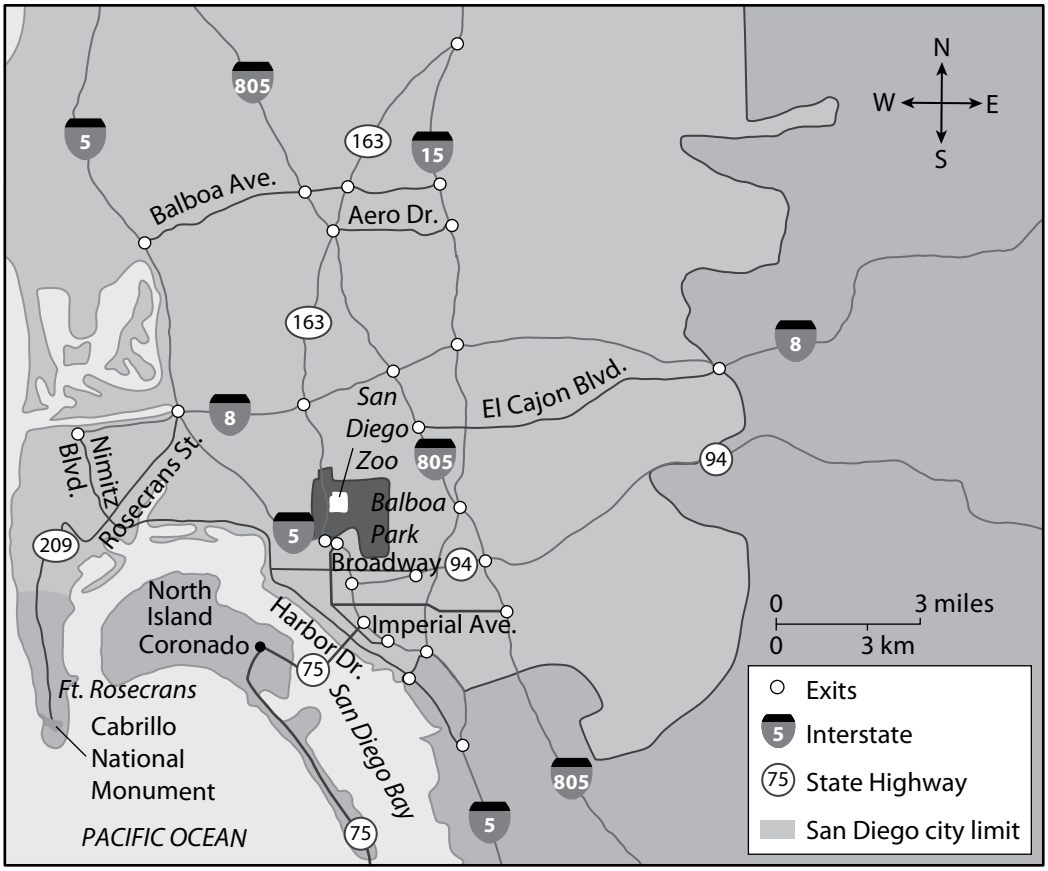
Name _____ Date _____


Southern California Highways
NEVADA
ARIZONA
CALIFORNIA
MEXICO
PACIFIC OCEAN
Salton Sea
Colorado R.
Barstow
San Bernardino
Riverside
Anaheim
Long Beach
San Diego
N
S
E
W
0
40 miles
0
40 km
Exits
Interstate
State Highway

Name _____ Date _____

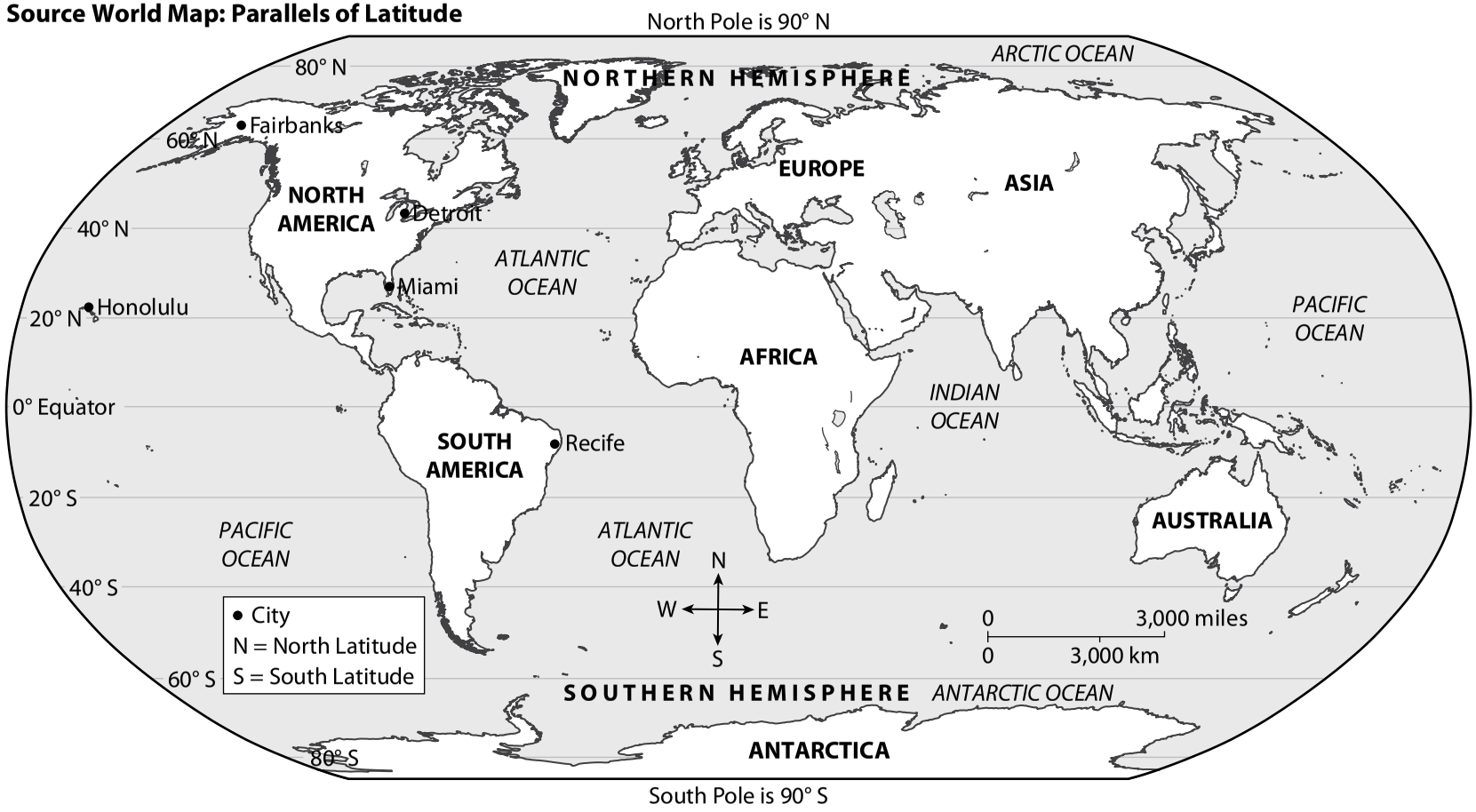
Activity Page 1.3: Source Map: Roadways in San Diego, California Use with Chapter 1

Roadways in San Diego, California



Name _____ Date _____

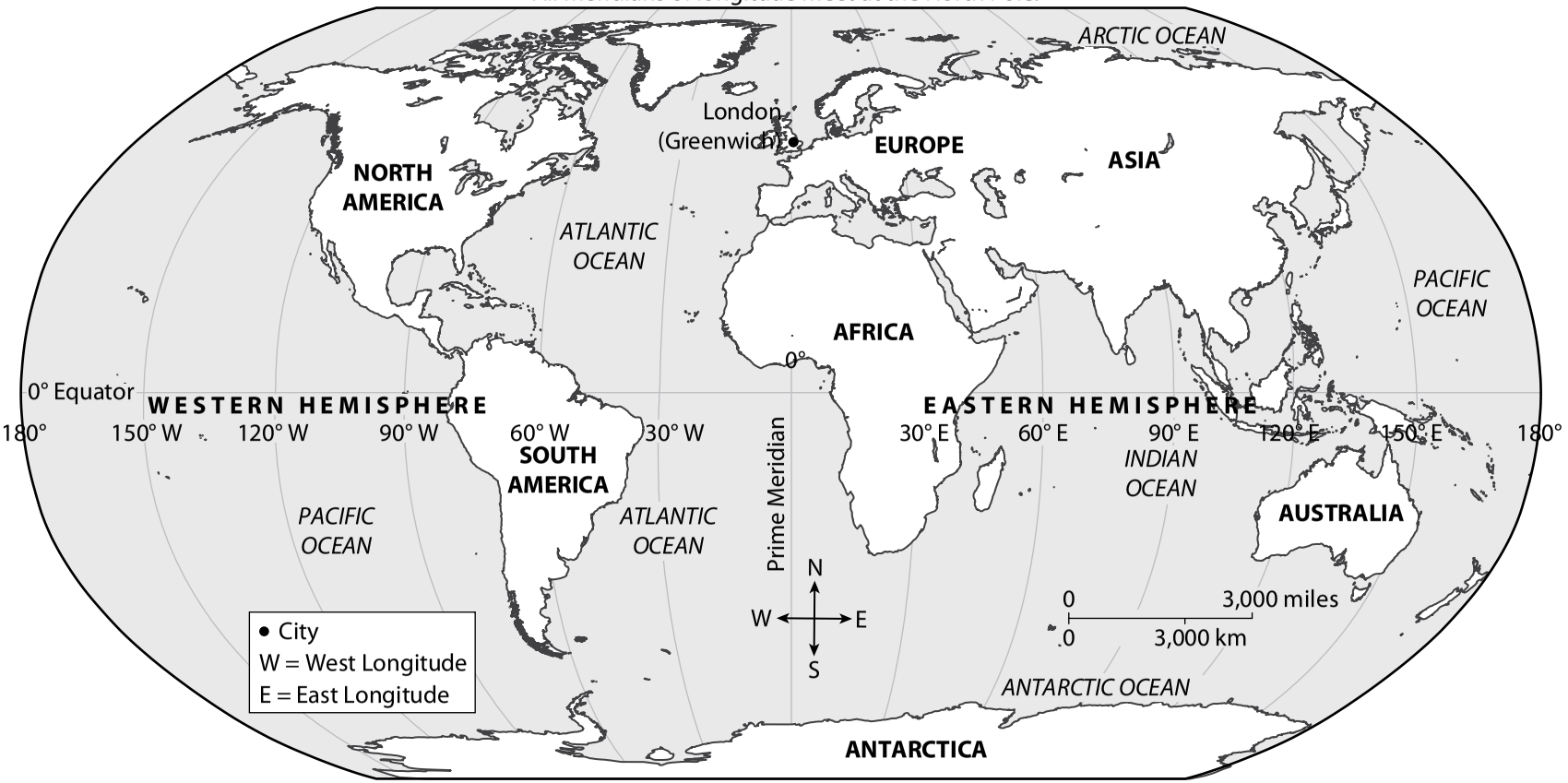
Source World Map: Parallels of Latitude



Name _____ Date _____

World Map: Meridians of Longitude

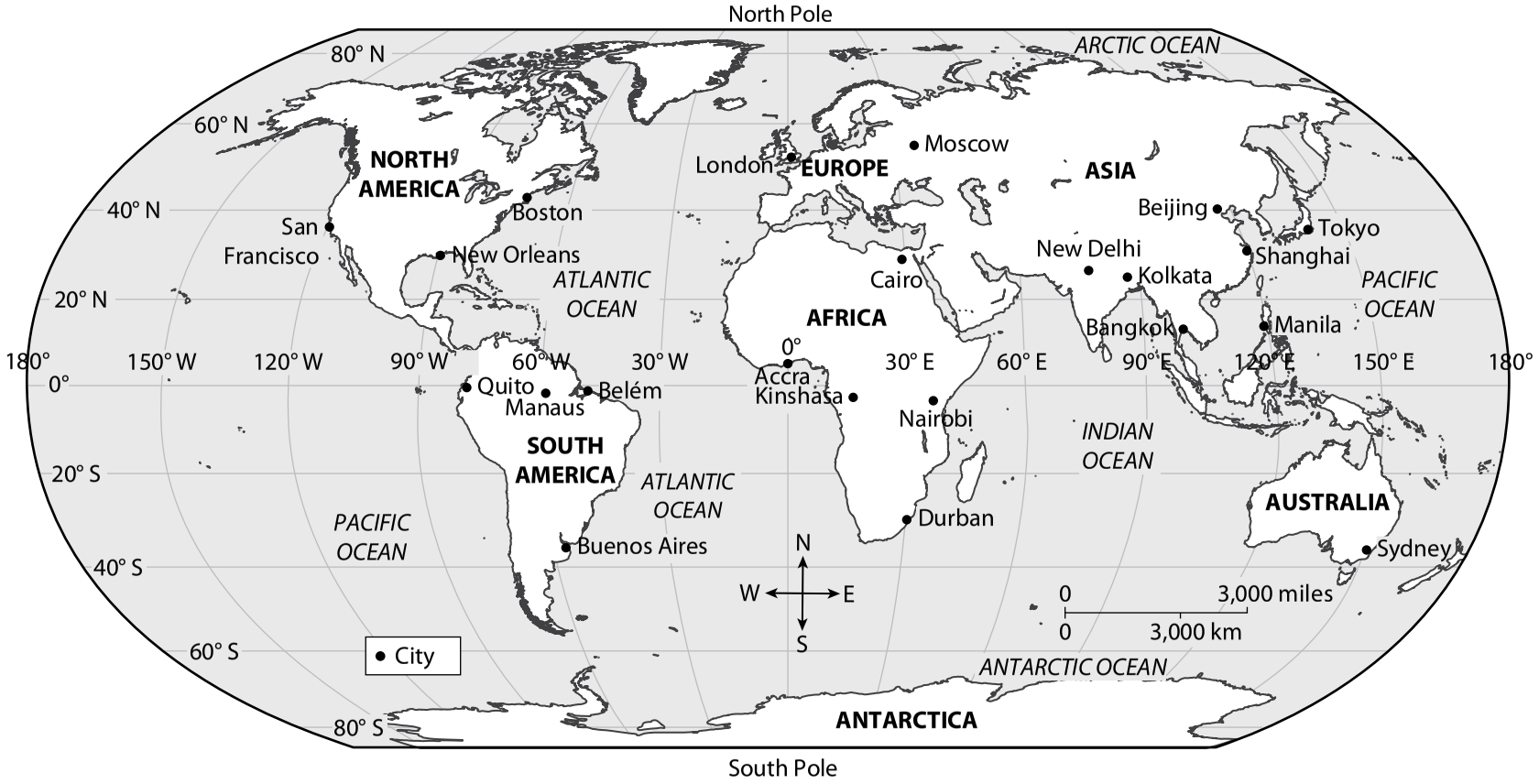
All meridians of longitude meet at the North Pole.



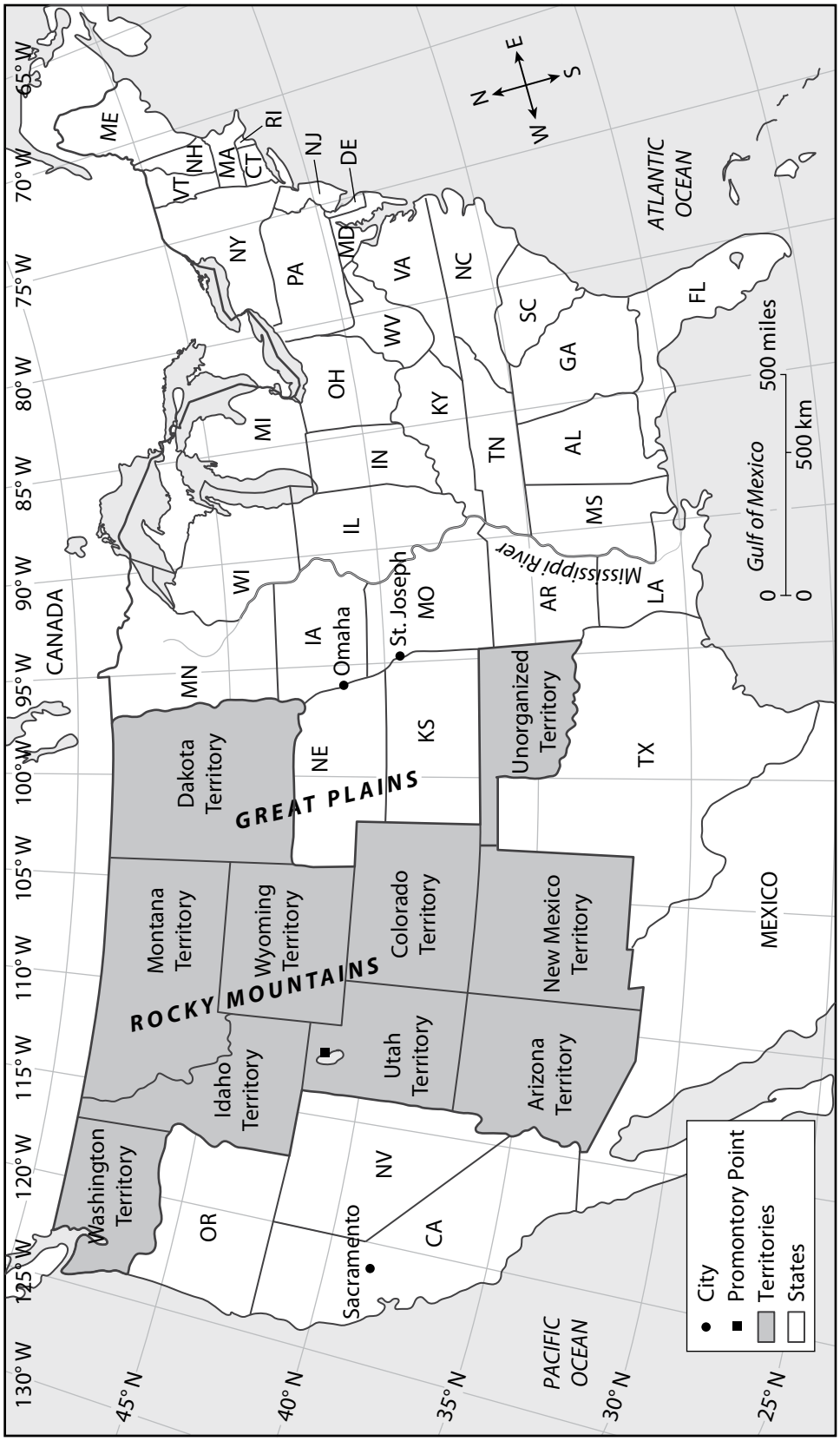
All meridians of longitude meet at the South Pole.

Name _____ Date _____

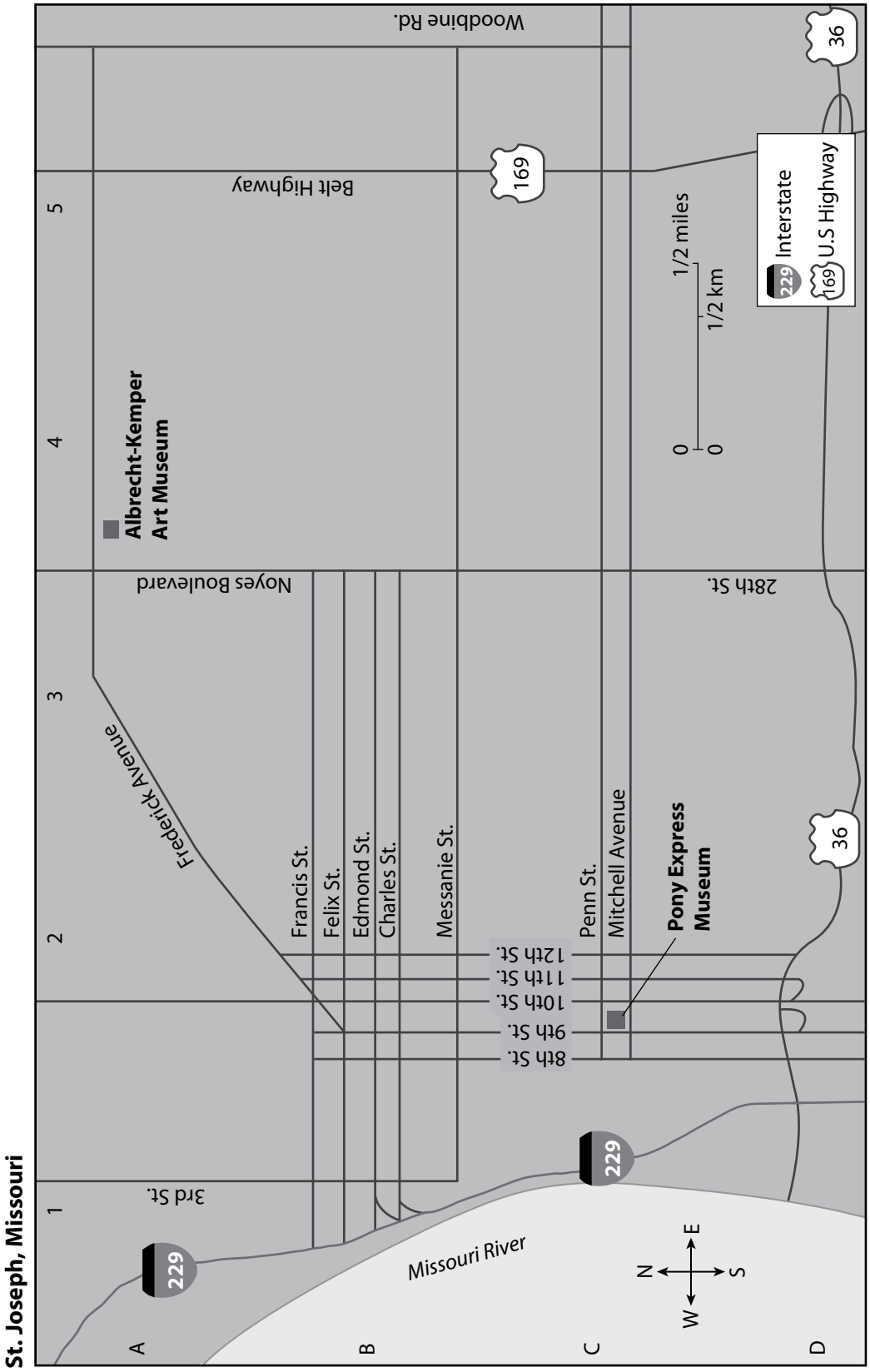
World Map: Parallels of Latitude and Meridians of Longitude



Name _____ Date _____


The United States, 1869
CANADA
MEXICO
PACIFIC OCEAN
ATLANTIC OCEAN
Gulf of Mexico
Mississippi River
GREAT PLAINS
ROCKY MOUNTAINS
Washington Territory
Idaho Territory
Montana Territory
Wyoming Territory
Dakota Territory
Colorado Territory
Utah Territory
New Mexico Territory
Arizona Territory
Unorganized Territory
Omaha
St. Joseph
Sacramento
ME
VT
NH
MA
CT
RI
NJ
DE
MD
NY
PA
VA
WV
NC
SC
GA
FL
AL
MS
LA
TN
KY
OH
IN
IL
MI
WI
MN
IA
MO
AR
TX
KS
NE
OR
NV
CA
0 500 miles
0 500 km
City
Promontory Point
Territories
States
65° W
70° W
75° W
80° W
85° W
90° W
95° W
100° W
105° W
110° W
115° W
120° W
125° W
130° W
45° N
40° N
35° N
30° N
25° N

Name _____ Date _____


St. Joseph, Missouri
1
2
3
4
5
A
B
C
D
3rd St.
Frederick Avenue
Noyes Boulevard
Francis St.
Felix St.
Edmond St.
Charles St.
Messanie St.
8th St.
9th St.
10th St.
11th St.
12th St.
Penn St.
Mitchell Avenue
Pony Express Museum
Albrecht-Kemper Art Museum
Missouri River
Belt Highway
Woodbine Rd.
28th St.
229
169
36
N
S
E
W
0
0
1/2 km
1/2 miles
Interstate
U.S Highway

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.

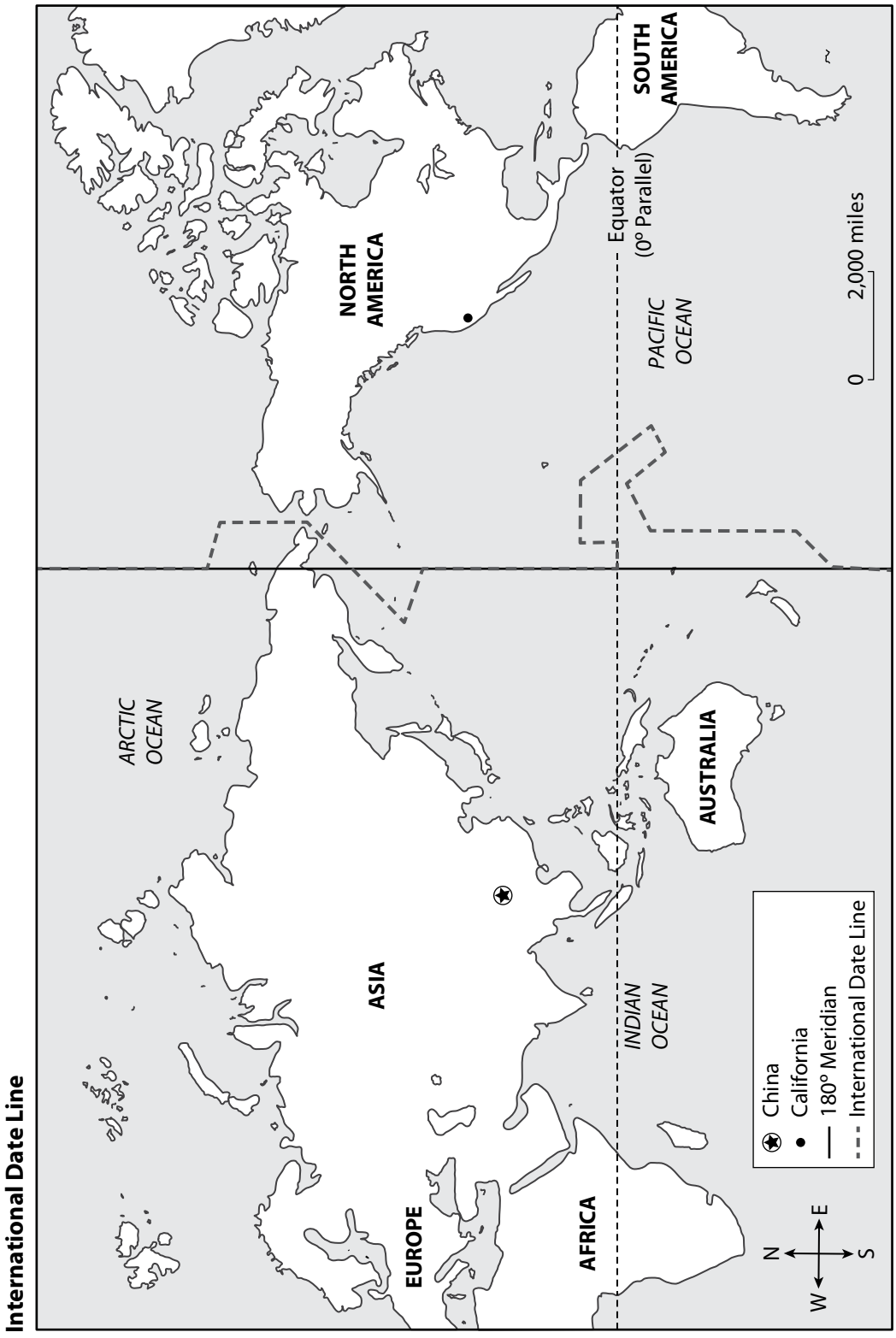
7. The _____ shows where north, south, east, and west are on a map.

8. The _____ is the name for 0˚ longitude, and it divides Earth into eastern and western _____.

9. The main unit of measure for meridans and parallels is called a _____.

10. An _____ is a major road that runs between two or more states.

Name _____ Date _____


International Date Line
ARCTIC OCEAN
NORTH AMERICA
SOUTH AMERICA
Equator (0° Parallel)
PACIFIC OCEAN
0 2,000 miles
ASIA
EUROPE
AFRICA
INDIAN OCEAN
AUSTRALIA
China
California
180° Meridian
International Date Line
N
E
S
W

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

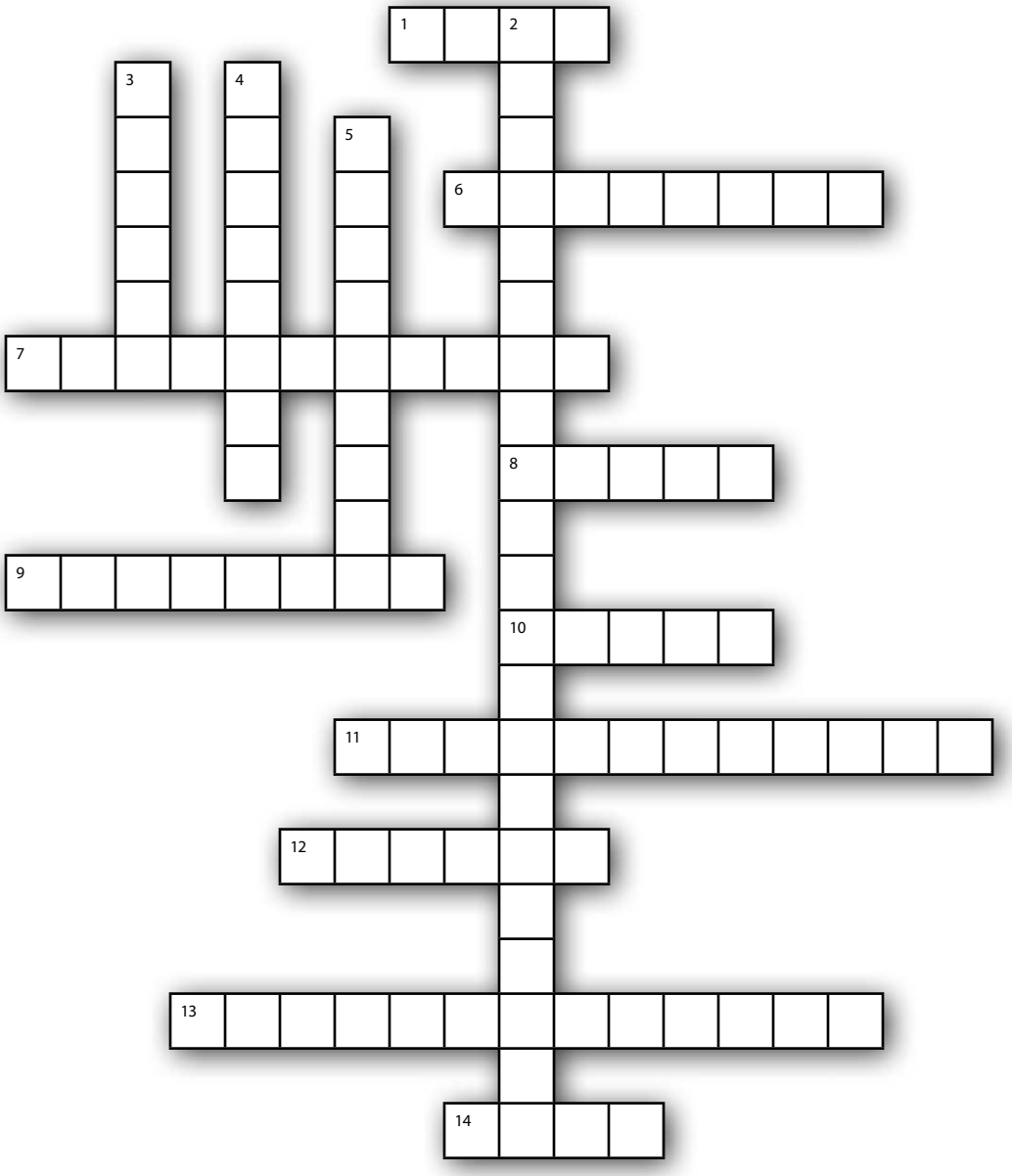
3. low land near land with higher elevation, like a mountain

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

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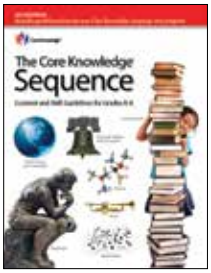
Using Maps

***Core Knowledge Sequence* History and Geography 4**



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2. **World Mountains**
3. **Medieval Europe**
4. **Medieval Islamic Empires**
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6. **Dynasties of China**
7. **The American Revolution**
8. **The United States Constitution**
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